

FINAL REPORT

Recreational fishing in Australia - 2011 and beyond: a national industry development strategy.

National recreational fishing education program. "Establish activities and tools to promote recreational fishing on a national level".

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Recreational fishing in Australia - 2011 and beyond: a national industry development strategy. National recreational fishing education program. "Establish activities and tools to promote recreational fishing on a national level"

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Abbreviations

- ARFF Australian Recreational Fishing Foundation
- EW Electronic Wall
- RF Recreational Fishing
- RFE Recreational Fishing Education
- **RFIDS** Recreational Fishing Industry Development Strategy
- RFR Recfishing Research
- RRF Responsible Recreational Fisher (RRF)
- TTS ThinkTank Social

Executive Summary

This project undertook the first national review of recreational fishing education (RFE) in Australia. This included a review of RFE in the nation's schools sector, and the first analysis of the use of social media by recreational fishers across Australia. The review also identified current and past RFE programs and those aspects that have been successful in promotion and instruction nationally. The review assisted the team to identify the key RFE messages currently used and those required for the future, indicating a need to address higher level messages regarding the environment and fish welfare to a greater extent. The reviews also revealed the need to innovate in both the promotion of recreational fishing and of RFE.

Two project workshops were held to develop a new National Strategy for RFE and to form a national RFE network. The project then developed several new RFE tools in the areas of social media, schools and strategic development. The research confirmed that many younger recreational fishers use social media and represent a generational change and an opportunity for RFE to adapt to these new media.

Several new tools for use in RFE nationally were developed over the course of the project which were informed by initial pilot studies. An "electronic wall" was developed as a RFE social media tool enabling integrated RFE information to be available nationally in one place, synthesising social media information with benefits to RFE communication, information availability and networking.

The schools review identified the need for teachers to have easy access to existing syllabus-compliant RFE teaching materials which led to the project developing a national RFE school teachers' portal enabling teachers to access currently available RFE teaching materials in each state of Australia.

A third tool was tested through a case study demonstration of how to try and alter angler behaviour through the use of a social media RFE campaign. This led to the "Think before release" case study in the Northern Territory which is now considered to be a social media campaign template for others to benefit from.

The reviews and workshops were also used to develop a national strategy for RFE which identified six main areas as key goals, viz: promotion participation, developing partnerships, developing people, source funding, consistent standards and key messages. It is recommended that the 72 actions under the National Strategy be implemented by the different sectoral groups involved in RFE planning and delivery. A national "RecfishEd" internet forum was devised to gather feedback from the emerging RFE national network on the draft RFE strategy document.

The project has been able to diagnose the development needs in the RFE sector and has made significant progress in opening up the use of new RFE tools for education in the sector. Over the course of the project a new specific RFE network has commenced and will be further developed by the sector adopting the tools developed in the project. This extension of this will require further development and the siting of the social media and strategic tools under the Australian Recreational Fishing Foundation (ARFF) website, is a strategic step towards further adoption and development by those deliver RFE across Australia.

Background

The Federal Minister of Agriculture's, Recreational Fishing Advisory Committee advised that there is considerable scope for recreational fishing (RF) to enhance the lives of more Australians through education. Recreational fishing faces many challenges associated with finite fish resources, access, environmental pressures and climate change uncertainty and a range of obstacles such as family, work and time pressures and competing interests. Newcomers to RF may be deterred by lack of knowledge and misinformation about sustainability, ethics and the environment.

Subsequently the "Recreational fishing in Australia - 2011 and beyond: a national industry development strategy (RFIDS)" established a "National recreational fishing education program". The current report addresses the need to "Establish activities and tools to promote recreational fishing on a national level".

The RF sector has an existing National Code of Practice and needs to make sure the strategic messages reach fishers across Australia. The RF sector is disparate and needs to network more fully in recreational

fishing education issues. The need for a combination of strategies, tools and networking are recognised as background for future RFE development nationally.

Aims/objectives

The project objectives were to:

- 1. Review and summarise education activities relating to recreational fishing occurring around Australia. Identify common themes, key messages, target audiences, success stories and gaps.
- 2. Develop a national network of all those involved in the education of recreational fishers nationally, to facilitate sharing of experiences, knowledge and resources and promote consistent delivery of messages at a national scale.
- 3. Develop strategies and tools to engage with audiences not currently reached through fisheries education activities, and to deliver key messages to target audiences not currently being communicated with (to be identified through objective 1).
- 4. Encourage recreational fishers to be involved in research, community monitoring and habitat enhancement programs.

Methodology

The project used a combination of literature review, interviews, social media analysis by consultants, and participant workshops to produce both strategic development and networking among RFE providers. The project developed several new RFE tools and used pilot studies to initially test them.

Reviews of different aspects of RFE were national and included the schools system and the use of social media by recreational fishers. The development of a RFE Network was based on information from the review of current RFE by different RF sectors, also informed by sectoral discussions held in two RFE workshops. The development of a national RFE strategy derived from the review findings from the general, schools and social media areas. The strategy was distributed to the sector for comments via the project's "RecfishEd" forum and by email. Feedback was sought on the tools developed from key RF educators as a trial of the potential of the products. The project then concluded recommending identified areas where future investigation could assist further RFE development.

Results/key findings

The Review identified the kinds of RFE messages currently being produced by government, nongovernment, private sector and community groups, and their methods of delivery, reflecting their organisational roles and responsibilities in developing and disseminating key RFE messages. Many RFE activities emphasise practical fishing instruction through clinics with varying content and few measures of effectiveness. There is a need to enhance the higher order messages for fishers with instruction on sustainability, environmental responsibility, the humane treatment of fish, awareness of ethics and respecting the rights of others to uphold the sector's social licence among the public.

RFE activities are greater in the more populous states and particularly those with recreational fishing licence funding for RFE. In other states without a licence, lack of continuity in government funding impacts ongoing RFE delivery. Only 11% of existing RFE programs were operated by the private sector, an area which should be encouraged to provide more RFE through public private partnerships.

Successful RFE projects such as innovative fishing clinics, community action programs (e.g. fisher safety) applied research programs (released fish survival and animal welfare initiatives) and adaptation programs (e.g. habitat) were identified. Successes were due to people with leadership and vision, committed volunteers and mentors, and simple messages that capture the desired behavioural change sought.

The RF sector needs a clearer national promotion and marketing strategy to provide RFE with agreed objectives. The role of media in carrying messages to anglers has grown with at least 12 different media platforms being used traditionally, followed in recent years by a range of new social media also. Television and magazine are important in promoting RFE though there is limited information on the

different segments among recreational fishers, their lifestyles and psychographics which are needed for future more directed RFE and marketing. Social media is used extensively and positively by RFs, in forums, photo sharing sites and especially Facebook, but there is currently little targeted RFE use of these powerful platforms. The current social media conversations were found to be overwhelmingly positive and constructive. Recreational fishing users of different social media can be classified into "casual", "new enthusiast" and "knowledgeable fishers" groups.

In response to the reviews, a schools' strategy, social media strategy and a general strategy were developed and were then combined into one national RFE strategy. The development of networking among RFE providers enabled the sharing of experience, knowledge and resources. The project developed a range of innovative tools for the strategic development of RFE:

- A national strategy for RFE, and a Social media and Education strategy
- A school teachers' education portal, sited on the ARFF website;
- An electronic social media wall for RFE, sited on the ARFF website;
- The RecfishEd forum for networking among RFE providers; and
- A template for running a social media campaign to influence anglers (Think before release).

Implications for relevant stakeholders

There are a range of implications for research and development flowing from this project:

- 1. A national RFE strategy to focus the delivery of key RFE messages to industry and the public;
- 2. National networking for RFE with a range of strategic networking tools and techniques benefitting management, industry and the public;
- 3. School children being influenced by RFE through building the capacity of school teachers and building connections between teachers and local fishing clubs;
- 4. The electronic wall, improving cross sectoral communication through social media, benefitting a range of RFE stakeholders and the public; and
- 5. Equipping stakeholders such as managers and industry to adopt and develop social media campaigns for promotion, RFE networking and influencing behavioural change, potentially reaching new RF audiences, such as younger fishers and the public.

Recommendations

Future steps should involve:

- 1. Adoption and implementation of the national RFE strategy outlined in this report, with the nominated groups and individuals being tasked to progress the strategy in the 1, 3 and 5 year time frames;
- 2. Continuing to build the network of RFE providers through use of the project tools the Electronic Wall and the School Teachers' Portal and investigate more stakeholder adoption and sustainable funding options; and
- 3. Promotion of the RecfishEd forum as a tool for national networking and communication on relevant RFE issues. The discussions would identify successes and failures and update RFE strategies as needed.

Keywords

Recreational fishing; Recreational fishing education; Recreational fishing promotion; Social media.

Introduction

National education of fishers was identified as a priority by the Federal Minister's Recreational Fishing Advisory Committee as part of the Recreational Fishing Industry Development Strategy. There is considerable scope for recreational fishing (RF) to enhance the lives of more Australians, but we face many challenges associated with finite fish resources, access, environmental pressures and climate change uncertainty.

For the first time in Australia this report takes a strategic look at Recreational Fishing Education (RFE) and seeks to address some of the key challenges and opportunities for RFE at a national scale. These include a decline in fishing participation, impacts on the social licence of recreational fishing, a need to support and promote sustainable and ethical fishing practices, a need to be actively engaged in efforts to improve environmental and sustainability outcomes for Australian fisheries, and a need to embrace and make strategic use of emerging technologies to support RFE activities.

Fishing participation

Various obstacles currently affect participation in recreational fishing such as family and work pressures, increased costs and distances involved, competing interests and lack of time. Newcomers to recreational fishing may also be deterred by a lack of knowledge or skills and misinformation about fishing ethics, sustainability and safety. There is a need to address these obstacles and promote recreational fishing participation as an enjoyable, healthy, sustainable, safe, family-friendly activity.

Throughout Australia, numerous fishing groups, industry bodies, fishing media and fisheries agencies are working to remove barriers and improve recreational fishing experiences through increased knowledge and skills for newcomer, novice and experienced recreational fishers. With government, industry and volunteer fisher support, school education programs foster environmental awareness, best practice fishing procedures and the practical 'how to' aspects of fishing. In addition to this, various fishing clinic programs target regional and urban schools, community groups and families around the nation. Recreational fishing media also play an important role in raising awareness of fishing opportunities, offering simple instructions and communicating research results and emerging issues. Many of these important initiatives are: limited in their outreach, or are intermittent; may rely on small groups with limited funding; and depend on the drive of individual fishers and teachers who are passionate about fishing and its benefits.

There is need to work towards consistent standards and messages to underpin RFE programs in Australia and more stable and long term funding arrangements. This report identifies some of the opportunities and challenges associated with growing the promotion of RF to new participants and ensuring the messages and training they receive are in keeping with an ethical and sustainable approach to fishing.

Social licence

Promotion of RF needs to go beyond targeting potential fishers to embrace the wider community. There is increasing recognition that RFE needs to aim at enhancing the 'social licence' of RF in order to reassure the non-fishing general public that RF is being managed and practised in a manner in keeping with community standards regarding fishery and environmental sustainability and the ethical treatment of animals. This will in part involve promoting the great changes that have occurred in the attitudes and behaviour of recreational fishers, resulting in a growing sense of personal responsibility for fish resources, environmental stewardship and respect for fish. It will also require ongoing work to strengthen the environmental credentials of recreational fishers through education and training programs, as outline below.

Sustainable and ethical fishing practices

Ensuring RF is being practised in an environmental and socially responsible manner is not just crucial to maintaining the social licence of RF, it is also essential to ensure the ongoing viability of the pastime. The National Code of Practice for Recreational and Sport Fishing" (Recfish Australia, 2010) identifies four main areas of fishing responsibility;

- Treating fish humanely;
- Looking after our fisheries;
- Protecting the environment and
- Respecting the rights of others.

RFE programs need to foster, support and grow fisher knowledge and practice in all of these four priority areas in an ongoing and consistent manner. Past key national projects in RF education have sought to inform and change angler behaviour. Examples include the Released Fish Survival Program, NSW Rock Fishing / Angel rings (Vic / NSW), and provision of fishing line waste bins at coastal fishing sites. These have been "from the ground up" RFE initiatives. This report identifies the need for a more strategic approach to RFE that ensures that the messages implicit in the Code of Practice are disseminated throughout the fishing and non-fishing community, including casual through to experienced fishers.

Embracing new technologies

In recent decades communication within society has changed, with the internet and the advent of social media. New technology, can instantly reach many more people than in the days of mail runs and high priced national advertising, promotional leaflets and campaigns. Social media is also participative, enabling two-way exchanges of ideas and opinions. This trend of growth in social media will continue and this report seeks to position recreational fishing education and promotion agencies (Government and industry), to capture the potential of this technology in the field of RFE.

Report format

The challenges and opportunities relating to RFE have been incorporated into the research objectives and design of this project. This report takes a sequential approach to assessing the challenges and opportunities associated with RFE, identifying additional areas of interest and developing appropriate responses through the following steps:

Review

The first step in the research design was a large scale review process that focused on the current 'state of play' in three important areas relating to RFE.

Firstly a review of the role of RFE in the current school system in Australia was conducted, including the potential for the new national curriculum to provide enhanced opportunities for consistent delivery of RFE messages.

Secondly a review of current use of social media by recreational fishers was conducted by consulting social media company 'Thinktank Social' which provided insights into the platforms used by fishers, some demographic insight in social media users engaged in RF and the topics and discussions points related to RF on social media. In doing so, potentials for use of different social media platforms were identified for RFE.

Finally a broad scale review of current RFE provision in Australia was undertaken. This review incorporated an enormous body of available information to provide an insight into the way in which RFE is currently being delivered in Australia.

Network

An important component of achieving a nationally consistent approach to RFE in Australia is the development of robust and collegial networks of RFE providers to assist in sharing of resources, ideas and messages. A network of RFE providers was established through two workshops associated with this project and grown and supported through the establishment of a number of network tools. These included:

• The establishment of a national RFE co-ordinator within the Australian Recreational Fishing Foundation

- An online 'electronic wall', which provides a central reference point for RFE related materials and social media feeds
- A teachers' 'portal', which provides a central clearing house for RFE resources linked to the national curriculum; and
- A RFE forum, which provides a secure, private platform for RFE providers to discuss points of interest, exchange ideas and network around particular RFE strategies or campaigns.

The establishment of these networking tools also assisted in the development of the final stage of this project in a collaborative way, with the outcomes of the review and RFE strategies fed into the network for comments and feedback.

Strategy

The final stage of the project involved using the findings from the review and the input of the RFE Network to develop a National RFE strategy aimed at addressing the key challenges and opportunities for RFE in the years ahead. Given the findings of the review the strategy prioritised to align all parties providing RFE nationally in a more effective way. Hence the strategy focused on four key delivery areas in order to address the challenges in the review and opportunities outlined above:

- Promotion: in order to grow participation in RF and maintain the social licence of RF;
- Networking and support for RFE: in order to ensure consistent, socially and environmentally responsible RFE by creating and maintaining connections between RFE providers which encourage knowledge sharing, focus attention on areas of priority (such as animal welfare) and embrace the potential of emerging and new technologies;
- Capacity building: in order to grow the potential of all providers to deliver effective, socially and environmentally responsible RFE and maintain a long term future for the industry; and
- Standards and messaging: in order to ensure RFE messages are consistent with the Code of Practice and embrace new and emerging technologies.

Objectives

- 1. Review and summarise education activities relating to recreational fishing occurring around Australia. Identify common themes, key messages, target audiences, success stories and gaps.
- 2. Develop a national network of all those involved in the education of recreational fishers nationally, to facilitate sharing of experiences, knowledge and resources and promote consistent delivery of messages at a national scale.
- 3. Develop strategies and tools to engage with audiences not currently reached through fisheries education activities (e.g. non-fishers), and to deliver key messages to target audiences not currently being communicated with (to be identified through objective 1).
- 4. Encourage recreational fishers to be involved in research, community monitoring and habitat enhancement programs.

Method

This project was the first of its kind in Australia in its attempt to assess the current state of RFE and explore potential opportunities for improvements and coordination of effort. Its wide-reaching nature meant a range of methods were necessary in order to fulfil the project milestones. These include three, largely experimental, pilot studies which sought to explore innovative approaches to RFE. The methods employed to meet the project objectives and deliver the key project outputs are summarised in Table 1 and details of the methodological approaches are provided below. As detailed in Table 1, the project objectives lead to the pursuit of three main areas of inquiry:

- A review of RFE currently;
- The development of a RFE Network; and
- The development of a RFE strategy.

Table 1: Summary of methods against objectives and outputs

| Objectives | Outputs | Methods |
|--|---|---|
| 1. Review and summarise education activities relating to recreational fishing occurring around Australia. Identify common themes, key messages, target audiences, success stories and gaps. (<i>RFE Review</i>) | OUTPUT 1: Diagnosis of past education and promotion in recreational fishing | Literature review (including grey literature) of current RFE efforts nationally. Literature review of current school syllabus in relation to RFE. Interviews with RFE providers, including school teachers and media personnel. |
| | | Desktop analysis of current use of social media by RF in Australia. Workshop 1: Discussion of review findings. |
| 2. Develop a national network of all those involved in the education of recreational fishers nationally, to facilitate sharing of experiences, knowledge and resources and promote consistent delivery of messages at a national scale. (<i>RFE Network</i>) | OUTPUT 2: A national recreational fishing network which can implement the sectoral strategy for RFE. OUTPUT 3: A national network can also support the introduction of RF into the national school syllabus, influencing each school age child in Australia. | First project workshop of those involve in RFE nationally Pilot study 1: Uptake of social media into RFE strategy and networking Pilot study 2: Development of RFE 'portal' providing access to RFE resources for educators. Development of consultative |
| 3. Develop strategies and tools to engage with audiences not currently reached through fisheries education activities, and to deliver key messages to target audiences not currently being | OUTPUT 4: Improve the strategy for the national delivery of RF education and promotion. OUTPUT 5: Introduce RF into the | RecfishEd forum for RFE providers. Second project workshop : Development of draft RFE strategies and key messages. |
| communicated with (to be identified through objective 1). (<i>RFE Strategy</i>) 4. Encourage recreational fishers to be involved in research, community monitoring and habitat enhancement programs. (<i>RFE Strategy</i>) | national school syllabus, influencing each school age child in Australia. OUTPUT 6: Assess the current use of social media by recreational fishers and the potential use of social media in fisher and non- fish community education about RF. | Pilot study 3: Exploring the value of social media in recreational fishing education campaigns |

RFE Reviews

The project identified three Review tasks:

- 1. An overall review of RFE activities nationally;
- 2. A review of the use of social media by recreational fishers; and
- 3. A review of RF in the formal school system.

In all three cases a range of methods and techniques were used to develop an inventory of available materials, assess their effectiveness and identify potential gaps. The methods used to conduct each of these reviews are outlined below.

An overall review of RFE activities nationally

Literature and document analysis

An analysis of current RF educational material and promotional programs was undertaken to examine the messages and the gaps in the current approach (Output 1) and to develop a more strategic pathway for RF education outputs both to (a) recreational fishers and (b) the general populace (Output 2). This involved an assessment of both the communication efforts currently undertaken and their effectiveness. Communication efforts currently employed were determined through the following means:

- The development of an inventory of resources used by organisations and individuals engaged in RFE or motivated to source RFE messages: This involved identifying and locating past approaches, case studies and documenting the extent of RF education and promotion initiatives that have targeted (a) the general populace (b) recreational fishers nationally in all regions of Australia. This was facilitated by contacting and working in conjunction with personnel responsible for state and national fishery jurisdictions and RF representative organisations. Educational material was sourced and archived so as to be available for education and promotion of RF and future reference (e.g. through the RFE portal).
- The identification of key RFE messages nationally derived from a range of policy documents: This involved analysing and summarising messages and gaps, successes and failures and examining the potential strategic directions that arise from such an overview of RF education and promotion initiatives for (a) the general populace (b) recreational fishers. This included analysis of past RF educational networking and communication efforts between states, agencies and industry. This was achieved by comprehensively reviewing policy documents and educational materials as well as through interviews and workshops (see below) with relevant personnel involved in RFE.
- Analysis of the media that are used in delivering RFE, including a summary of the different RFE audiences: a search was conducted or the relevant RF related media including an audit of recreational fishing magazines, their readership and circulation statistics and interviews with a selection of magazine editors (see below).

Interviews with key informants

A range of interviews were conducted throughout the course of this research. These included the following:

• RFE contacts (including peak body members, industry and government representatives): In order to complete a systematic review of current RFE efforts in each state and territory, and nationally, key contacts were interviewed in relation to their knowledge about RFE in their jurisdiction. The results of these interviews were built into the review documents (Appendix 1) through the development of activity profile tables for each state.

• RF magazine editors: In order to canvas editorial policies in relation to angler education, the editors of a small cross section of representative magazines were contacted and interviewed. They were asked to consider the role of the magazine in communicating information and messages to anglers, in general, and also with respect to key RFE messages.

Workshop 1

Workshop 1 – 'Recreational fishing and education workshop' - was held prior to RECFISH Australia's National Conference in August 2012 as one of the first project activities. The project was presented to the workshop and the intention to undertake a review of RFE programs and activities, a review of social media and a review of RFE in the formal schools program were outlined. The intention to develop RFE tools and networking was explained to the attendees who were potential RFE network participants. Feedback from this workshop helped to refine the planning for the conduct of the project.

A review of the use of social media by recreational fishers

The methodological approach to the review of social media by recreational fishers was guided by a 2010 US Recreational Boating Fishing Foundation (US RBFF) study aimed at determining the impact of the voice of the angler and boater in social media (RBFF, 2010). It asked the questions; Who is talking? What are the topics they are talking about? Where are they talking? How often and when are conversations taking place? Who are the online influencers (people and sites) in this segment?

Social media consultants 'Thinktank Social' (TTS) were engaged to undertake a review of this nature in Australia. This involved conducting an appraisal of social media traffic in the year ending December 2012, which incorporated analysis of the number, age and location of people engaged in RF discussions and the topics of these discussions on social media platforms, including forums, websites, Twitter and Instagram. Facebook was under represented in their initial report due to social media privacy protocols not enabling monitoring of Facebook. This meant that a different approach needed to be taken to analyse the use of Facebook by RF in Australia. A manual search of recreational fishing related pages by the project team resulted in more than 300 businesses and sites using Facebook in the recreational fishing space being supplied to the consultants for analysis, using the same criteria as the other platforms. In May 2013 a report of the use of social media in RFE was submitted (Appendix 2).

A review of RF in the formal school system.

The first stage of the school system review was an in-depth study of the NSW school system. It was important to examine in detail the placement of recreational fishing, if any, across primary and/or secondary syllabuses as well as the content and general messages. For example in what key learning area was the recreational fishing information cited and did the content deal mainly with basic instruction on "How to fish" or have wider sustainability, environmental and ethical and community related messages? The second part was to compare the main findings of the NSW case study to other states and territories. This would highlight common themes, identify gaps and potential avenues for future work and collaboration.

All this was undertaken by a combination of desktop research (searching syllabus documents from appropriate state or territory statutory bodies using key words such as Fish, Fishing and Fisheries) and telephone/e-mail conversations with primary and secondary teachers, government, peak bodies, clubs and individuals throughout Australia. Where available, teacher associations, such as The Marine Teachers Association of NSW and Queensland were also contacted. Contacts were also developed by attending the 2012 Marine Discovery Centre Australia (MDCA) meeting at Terrigal on the NSW Central Coast.

The second stage of the review examined the new Australian curriculum. Here it was necessary to first explore its structure to find where recreational fishing could be strategically positioned. For example many teachers now use elements of the Science curriculum – Environmental Strand/Sustainability to teach marine studies which includes sustainable fishing issues. All documentation was available from the on-line website (http://www.australiancurriculum.edu.au). The final part of the review was to identify relevant material for inclusion into the new national curriculum.

Initial overviews were presented to workshop participants in August, 2012 and September 2013. As each state has a different education system, there were issues in alignment and the emerging national curriculum to address. The feedback from this workshop was incorporated into the final review document (Appendix 1).

Forming a RFE Network

The development of a new RFE network involved the development of a range of strategies designed to facilitate cross collaboration and learning, which are outlined in the sections below. It also involved two pilot studies that investigated two online tools which could assist in RFE networking. In addition it involved the establishment of a RFE forum open to RFE providers and educators as a platform to exchange ideas and resources.

Pilot Study 1: Uptake of social media into RFE strategy and networking

The project's review of the use of social media by recreational fishers indicated that there was little explicit use of social media in what we consider to be RFE. An internet search of RFE also brings a variety of sites and information from across the globe of which many have social media capacity.

From these observations a pilot exercise was conceived where the most relevant RFE messages on social media would all be available in one location on the internet. The pilot study aimed to produce an electronic and networking interface that can benefit not only RFE providers, but can also be a place for recreational fishers and the general population to learn and gain information on RFE across Australia.

The delivery of the pilot began by holding discussions with the executive of the Australian Recreational Fishing Foundation (ARFF) about the potential of the organisation 'hosting' the proposed network/electronic wall on their existing website to give it a nationally accessible position within the RF community. (It could also have been located within the FRDC's Recfish Research site). Following the successful completion of these negotiations, an ARFF staff person was nominated to work with the pilot project team and the social media consultants Thinktank Social.

Inspired by Origin Energy's <u>www.knowledgeispower.com.au</u>, the Social Network 'Wall' was proposed as a digital tool that would share knowledge - discussing the latest information about recreational fishing in an interesting way; via Social Media.

The technology behind the EW supports 15 social networks (incl. Facebook, Twitter, Google + and LinkedIn) and includes 60 feed options. It gives a single stream for all of social network updates from nominated sites, and can display them in two different formats: a rotating feed or network wall which displays multiple up-to-date 'notices' on a scrollable screen.

The electronic wall (EW) drew on social media aggregating tools that were able to refer to a list of RF sites that the team selected as having information worthy of inclusion under an educative social media platform. Eventually a pilot EW was developed to aggregate the social media news and information from 14 key RF sites (see Figure 1). The draft EW was produced in October 2014 and then circulated to a number of selected reviewers in the RF community for comment.

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Figure 1: Screenshot of the ARFF Electronic Wall- the social media aggregating noticeboard

In summary, the EW collects and aggregates information from the selected RFE providers and displays it in a spatial array like an electronic news sheet, with contextual information on the source and date of the news. This tool gathers available RFE information in a continuously updating informative display that will benefit many RFE providers and fishers. The feedback from the reviewers was very positive liking the integrated information being in one place on the internet and being available to both users and non users of social media.

Pilot study 2: Development of a RFE 'portal' providing access to RFE resources for educators.

The project PI met with Allan Hansard of ARFF in the first week of August 2013, to discuss the potential development of a pilot project within ARFF, involving the incorporation of the 'digital library' into the ARFF website. Following agreement from ARFF, work commenced on the development of the library in February 2014. Social media consultants Thinktank Social (TTS) were engaged to design and implement the pilot, in consultation with Dr Jeff Guy, project team member and lead researcher on the school review. It was resolved that the teachers' portal would be developed as part of the 'Education' tab of the ARFF website (see Figure 2).



Figure 2: Screenshots of the ARFF website – the digital library or portal will be housed under the 'Education' tab.

The project team resolved that the resources of the digital library would be available to download at no cost, but would require the user to supply contact details before they could access any files. This would allow for the development of a database of users to assist in the development of a network of RFE providers and the dissemination of future RFE materials.

The portal was listed on 'Scootle' to maximise exposure to school teachers in Australia. 'Scootle' is a web resource for Australian school teachers administered through Education Services Australia. The website,

'Scootle' acts as a database of curriculum related materials for educators, with lesson plans available for different year levels and across all aspects of the National Curriculum.

A key component of the design of the digital library was the identification of a filtering mechanism which would allow teachers to easily find resources of use to them. The development of logical, but generic categories of resources was seen as essential to laying the foundations of the library in a way that would enable the continued growth of the database over time.

The development of the library's filtering mechanism was adapted from the example provided on the Marine Waters website (<u>http://marinewaters.fish.wa.gov.au/</u>). This website was developed by the Western Australian Government in partnership with Woodside Petroleum over a period of two years. It was highlighted in a number of interviews and discussions with teachers, educators and Industry representatives during the review as the best available example of an online resource library relating to marine issues in Australia and an exemplar for delivery of digital resources. It employs the following filtering system to enable easy access to relevant information for educators:

- Phase of Learning
- WA Curriculum
- Australian Curriculum
- Topics
- Resource Types

This filtering system was modified slightly to incorporate filters for each state syllabus. These features were taken into account in the design of the RFE portal.

Pilot study 3: Exploring the value of social media in recreational fishing education campaigns

Pilot Study 3 was designed to investigate whether social media is an effective tool for encouraging behavioural change amongst fishers and raising awareness of relevant fishing messages. A social marketing company 'Thinktank Social' was engaged to assist in the development of the pilot study.

The design of the project was iterative and adaptive in response to emerging knowledge. As a case study, the consultants were engaged to develop an integrated and strategic approach to the question of using social media as an education tool to reduce incidences of barotrauma in reef species in the NT.

A steering committee was formed to guide the project consisting of representatives of Northern Territory (NT) Fisheries, the Amateur Fishermen's Association of the Northern Territory (AFANT), UoW and Thinktank Social. This committee formulated the objectives of the study and workshopped appropriate methods for its delivery. They titled the pilot 'Think Before Release' as a reference to a past 'Catch and Release' campaign (spearheaded by well known fishing celebrity, Rex Hunt).

The pilot project was devised in partnership with AFANT and NT Fisheries, which both have websites and social media capacity. The project involved three main mechanisms for reaching the fishing public.

- 1. Website: <u>http://thinkbeforerelease.com.au/</u>. An independent website was established which was 'supported' by (and linked to) AFANT and NT Fisheries. The site was designed to include a social media 'wall' supporting live feeds pertinent to the topic from Facebook, Instagram, Twitter and YouTube, as well as more 'static' information on fish barotrauma, endorsements from celebrity ambassadors (i.e. Rex Hunt) and contact information of the relevant partners.
- 2. Facebook account <u>facebook.com/thinkbeforerelease</u>.
- 3. Twitter #thinkbeforerelease

These three tools were monitored over a period of six weeks (March 14 - April 14, 2014). During the trial period a range of strategies were employed to maximise web traffic.

- Celebrity endorsement (Rex Hunt): Rex Hunt is a highly influential figure within the recreational fishing community. He has a large network of industry-related organisations, corporates, friends, fans and the general public that were made accessible through him becoming the 'face' of the campaign. His involvement in the project was seen as critical to adding credibility to the cause and message, particularly given his influence in popularising the 'catch and release' ethic.
- Social Media Advertising: Thinktank Social identified two main platforms, where most of the recreational fishing related advertising was concentrated:
 - <u>Facebook</u>; advertisements were run promoting both the page and content simultaneously in order to gain a new audience.
 - <u>YouTube</u>; the site was linked with the NT Fisheries YouTube page where videos of barotrauma injuries and a message from Rex Hunt were uploaded.

The 'Think before Release' campaign therefore used these two platforms most heavily in the interests of maximising exposure.

- Social Media Content / Community Management: It was considered critical to actively manage the social media content, particularly in the infancy stages of the pilot. A 'content calendar' was prepared every two weeks by 'Thinktank' consultants, approved by members of the steering committee and loaded at predetermined times throughout the course of the trial to keep the Facebook site active and engaging.
- **Marketing Collateral**: The Facebook site and website were supported through a simultaneous launch of a Think Before Release #(hashtag) campaign. Facebook, Twitter and Instagram all carried the same hashtag (#thinkbeforerelease) and material from Rex Hunt also promoted the hashtag. This was designed to build recognition for the hashtag so it could subsequently be used on print material as well as all digital content that was released to the public.

Throughout the six week trial period the 'reach' of the material was monitored using the following metrics: website 'hits'; user exchanges (ie 'talking about this', retweets); 'tweets'; and Facebook 'likes'.

RFE Strategies

The knowledge gained from the review process, facilitated by improved networking amongst RFE providers, led to the development of a range of strategies aimed at supporting and growing RFE at a national scale. Initially, three draft strategies were developed – a schools strategy, a social media strategy (Appendix 4) and a more general RFE and networking strategy (Appendix 5). In the interests of providing a final cohesive document that included holistic guidance for the development of RFE in Australia, the draft schools and social media strategy were incorporated into a national strategy discussion paper, as explained in greater detail below.

The Schools strategy

The large scale review of school based RFE (conducted in 2013) explored the current and potential inclusion of RFE in state and national curricula and identified a clear pathway for promoting participation and the benefits of fishing as an enjoyable outdoor activity to school-children. It included a range of recommendations designed to enhance the delivery of RFE through the school system.

Underlying the recommendations of the school review was a guiding principle that any Recreational Fishing (RF) strategy should aim to lay the **Foundations** in the early years, build **Breadth and Depth** in the middle years and provide **Pathways** for the later years of schooling. It is essential to engage primary school children at a young age and to provide a positive and memorable experience of RF; continue this positive engagement into early high school while ensuring students understand the career potential primary industries (fisheries) offers through tertiary studies in their final years.

RF education must therefore involve a whole school approach that leads (or contributes to) sustained behaviour and skills rather than deliver one-off information activities and events. The former has been the current model for delivery in many schools, focusing on the later years of primary (Y5-6) and recording either the number of schools visited or number of students participating rather than evaluating whether a change in behaviour or pastime occurred, post-delivery.

The recommendations of the review document were used to develop the specific strategies to be incorporated into a wider national recreational fishing education and networking strategy.

Relevant pedagogies and contexts for 21st Century Learning

While the Australian Curriculum describes the scope of what is to be learned, the pedagogy is the responsibility of system authorities, school leaders and teachers who make decisions about how best to organise learning, the contexts for learning and the depth of learning that will be pursued for each student in their class.

RF provides an ideal avenue through which students can make connections with the natural world and learn about ecosystems in an authentic learning environment. The pedagogy of '*experiential education*' is learning that occurs through active involvement in what is being studied and values direct experience more highly than abstract knowledge. The constructivist theories of learning are also supported by experiential education strategies also known as learn-by doing, real-world learning, problem-based learning, and child-centred learning.

In the early years of primary schooling, the Australian Curriculum prioritises English and literacy and mathematics and numeracy. With so much time allocated to these in the classroom each day any RF strategy must address outcomes in both these to maximise uptake. This involves learning literacy skills and writing (including posters, persuasive texts, discussion, and research elements) which must also be reinforced and strengthened through learning in other contexts, such as mathematics, science, history and geography. For example an integrated literacy plan for early childhood that utilises counting books also addresses mathematics and numeracy.

In the early years of high school, schooling must be relevant and flexible and take into account personal differences and needs. It must keep young adolescents on a path of continuous learning and prepare them for a world outside of school. At this time students need to be engaged in 'real-life' learning; demonstrating to students how fisheries knowledge they learn in the classroom (e.g. in Science) can be applied in an everyday context. In the final two years of school, choices are informed by previous success and enjoyment. If these previous strategies have been implemented, future options will involve RF as a pathway through school and beyond.

The Social media strategy

The development of the social media strategy (Appendix 4) was underpinned by the review into the use of social media by recreational fishers, undertaken in 2012-13 (Appendix 2) and recommendations from social media consultants. In addition, guidance into the ways in which social media can be used in RFE campaigns was provided through Pilot study 3.

The National RFE strategy

The process for developing a national RFE Strategy involved four stages, outlined below:

- 1. Bringing together the findings of the three review processes: schools, social media and broader RFE activities and messages (as outlined above).
- 2. Workshop 2 presented the review findings to relevant organisations from each of the main sectors with a stake in RFE delivery: government, peak bodies, the private sector and the community. We sought industry feedback and suggestions on priorities of each sector as initial contributions to a national RFE strategy.

- 3. A draft RFE strategy document was circulated to the network members for comment via the newly developed RecfishEd Forum and through email; and
- 4. Finalisation and implementation of the strategy with incorporation of other sectoral input to assist with implementation, take-up and adoption.

The three strategies were combined into the one final national RFE strategy.

The 2nd National RFE workshop was held in Sydney on 3rd/4th September 2013. The workshop focused on improvements in disseminating RF messages more effectively through networking and what the strategic priorities of RFE should be across the sector.

Representatives from government, the private sector, peak bodies and community groups attended the workshop to discuss a draft national education delivery strategy and alternative networking. The workshop included discussion on the key areas of strategic responsibility for each sector, gaps and examined alternative networking models. A presentation of how social media might add to the existing mix and future of strategic RF education, promotion and networking was also included, which incorporated research and community monitoring for recreational fishers.

Development of a draft strategy and consultation

Based on the results of the review and the workshop deliberations, a draft RFE strategic plan discussion paper was prepared which incorporated and built on the recommended approaches of the social media and schools strategies. This paper was circulated amongst the workshop participants and also loaded onto the newly established RecfishEd Forum. This tested the forum as a mechanism for networking as well as for gathering feedback on the discussion paper from network participants. The forum was moderated around the key points contained within the discussion paper for a period of 12 weeks, during which time feedback and discussion amongst participants was actively encouraged on the strategies contained within the document. The feedback gained through this process was used to modify the discussion paper and produce the final National RFE Strategy (Appendix 5).

Results

RFE Review

The project identified three reviews tasks:

- 1. An overall review of RFE activities nationally in the past ten years;
- 2. A review of the use of social media by recreational fishers; and
- 3. A review of RF in the formal school system.

The results from each of these reviews are presented below.

1. An overall review of RFE activities nationally

The review examined the sources of RFE messages and the resource inputs used to promote messages. A range of Government, non-government organisations, private sector businesses, fishing clubs and community organisations are promoting RFE messages. For government agencies this role reflects statutory needs to inform and regulate the fishing public on fishing regulations, licensing and safety. Fishery departments also inform and reassure the general public that fish resources and being well managed.

Peak bodies represent recreational fishing in each state and have mandates to promote recreational fishing (RF) and RFE, albeit, with uncertain resourcing. The Australian Recreational Fishing Foundation leads national representation in the RF sector with RFE being one of its three key priorities.

The RF private sector includes fishing gear manufacturers and importers, as well sections of the boating industry and recreational fishing media. Each of these actively informs fishers, and to some extent, the public, about recreational fishing practices and issues.

There is a strong heritage of fishing clubs and community groups that source RFE messages relevant to basic practice, best practice and RF issues arising, such as rock fishing safety. Much of the resourcing is through volunteering and mentoring.

There is a diverse range of roles and motivations among organisations promoting suites of different RFE messages. The sector has promoted a range of RFE messages nationally. The document "*Recreational fishing in Australia - 2011 and beyond: a national industry development strategy*" includes two outcome goals under its National Education Program (NEP): "*Stewardship of fish and their environment ensures quality and sustainable RF opportunities into the future*"; and "*The RF industry is attractive, vibrant and adaptive, encouraging investment and participation*".

The "National Code of Practice for Recreational and Sport Fishing" developed by Recfish Australia, introduced four main objectives in fishing responsibility: "Treating fish humanely; Looking after our fisheries; Protecting the environment; and Respecting the rights of others". These 'umbrella' objectives illustrate the benefits of gathering RFE messages together, to promote national consistency.

For some sectors, RFE messages include initial basic fishing skills and more advanced fishing skill tuition. We find there is also a range of desired messages on less tangible concepts such as sustainability, environmental responsibility, the humane treatment of fish and awareness of ethics and respecting other users. Messages have become more diverse and the sector seeks to impart 'good practices' and increase positive behavioural change among anglers nationally.

Up to a dozen different media platforms are used as tools to carry the RFE message to a variety of RF audiences and to the general population or to targeted sectors. Growth in social media has opened new doors for communication in RFE. The RF sector also utilises a range of private sector media, TV and magazine companies that are important in promoting RFE messages. However, there is limited information on the makeup of RFE audiences in Australia that can be used to target segments of the population and more

research on values, lifestyles and psychographics of RFs is needed for future education, promotion and marketing.

The Review team used RFE contacts in each state to confirm recent RFE activities and programs and the messages that are being promoted. There is considerable information on basic fishing clinic activities, but the evaluation of RFE is made more difficult by deficiencies in program logic with few projects having included any evaluation of outcomes or project effectiveness in their design.

RFE activities and programs were compared between states. In the past decade the advent of a general RF license in several states, particularly NSW and Victoria, has enhanced the capacity of government and the sector to resource RFE programs. As a consequence, NSW and Victorian RFE programs are much larger than in other states. We also see that in the states without a general RF licence, political change can positively, or more often negatively, alter the funding available for RFE (e.g. Queensland, NT) impeding continuity in RFE.

We found that two thirds of RFE programs examined by the review are "government funded", including funds raised from RF licences, one quarter are partnership programs and only a tenth are private sector activities. Over half of the "government funded" RFE programs, involve either school children or youths. We note many RFE initiatives happening in the fishing community are not recorded centrally, meaning that non-government RFE activity, such as volunteering and mentoring, are underestimated nationally.

The exact form and extent of private sector involvement in RFE activities varies. Many fishing competitions have been sponsored with free fishing gear from tackle firms seeking to engage young fishers into this pastime, but this is not centrally recorded by the sector. The line between promotion of RF, product promotion and RFE is necessarily mixed in the private sector and is an area where commercial incentive could increase private sector involvement in RFE, which all too often has been left to government.

The majority of "face to face" RFE is taking place in "fishing clinics", with a high number of volunteers and mentors being involved in delivery and instruction. More innovative clinics have been successfully developed to accommodate the needs of different niche groups (disabled fishers etc).

The review analysed the extent and coverage of key messages delivered, gaps and identified where messages could be expanded. For basic fishing clinics, it is difficult to determine which messages are included in which clinics as there is no national consistency in content. There is limited monitoring of the effectiveness of the messages being imparted, other than satisfied instructors and participants, which has limited validity if content varies.

RFE messages provided during fishing clinics normally follow instruction on how to fish, with safety tuition high on the agenda. Generally, messages about sustainability, the environment, ethical aspects and respect for others are delivered through government information, media, and by volunteers or by mentors in the Fishcare programs established in several states. However, measures of effectiveness in of RFE messages are not generally undertaken and represent a distinct gap in understanding the uptake and penetration of key messages.

RFE via schools programs has been happening in parallel with other RFE initiatives. For example in NSW, RF information is provided within the formal and non-formal education (sports/recreation) education system available to students in the secondary system. The RFE content does not contribute to ATAR scores for University admission. RF appears in marine studies courses in the High school and VET sector. Marine Discovery Centres Australia have a network of marine education facilities which provide marine and RFE to the general public.

Education of the public regarding RF has been limited and has usually been by government re-assuring the general public about the sustainability and environmental acceptability of RF activity. It also includes ethical perceptions about the RF sector and the RF sector feels it is very important to maintain its "social licence" to fish.

Interviews indicated that groups requiring more RFE attention were: *multicultural audiences; special needs fishers; mentoring young fishers and leaders; and indigenous anglers.* RFE message areas that appear to be growing in significance nationally are: *the health benefits of RF; RF as a family-friendly activity; general*

boat and fishing safety; maximising post-release survival of fish for all the public; and the use of environmentally friendly fishing gear.

The current practice in many RFE activities records some outputs, such as numbers of anglers participating in clinics quite well, and also focuses on client feedback. We find that the approach to many RFE programs is adequate in producing the required outputs, however the assessment of program outcomes could be improved by applying more evaluation principles in project design. Experiences with RFE innovation and successful delivery experiences could be made more widely available to other RFE instructors or program co-ordinators across Australia.

Categories of RFE projects which have been successful are (1) the basic fishing clinic, (2) Innovative fishing clinics, (3) Community action programs (e.g. Rock safety, and tangler bins), (4) Applied research programs (e.g. Released fish survival) and Animal welfare initiatives, (5) Adaptation programs (e.g. RF habitat restoration, animal welfare and habitat adaptation programs). Fish guiding (which certainly has some RFE components) has also been developing with accreditation available in some cases.

The review identified success stories for RFE nationally and analysed what are the important factors in achieving success, at the same time, identifying any gaps. Success often does follow funding, but the influence of key people with vision and leadership skills is critical, as are volunteers and mentors involved in program planning and building messages to achieve behavioural change through project outcomes. Increasingly there is recognition of a need for RFE messages to bring about behavioural change, often achieved through memorable communication catch phrases to facilitate uptake by the average angler. This "crafting" of messages requires an integrated understanding and agreement on the issues, the people and the sector and is an essential part of successful RFE projects.

Some gaps were also identified by the review. The RF sector needs to have a clearer promotion and marketing strategy, so that RFE can supplement these priorities. Fishery Departments tend to be reluctant to promote fishing by more recreationalists, as they often regulate commercial fishingthrough reductions in fishing effort. The private sector needs to be encouraged to develop and capture incentives in RFE promotion. In states without a RF licence the inconsistency in RFE funding leads to gaps in program and activity delivery.

Experience in delivering new clinics and programs should be shared to enable more outputs to be achieved from the limited funding in the sector. More consistency in the content for fishing clinics could be achieved through more common content at an agreed national standard and would reassure the sector as to what key messages are being delivered. There are significant gaps in applying program logic methods, as some programs do not have clear RFE objectives, goals, outputs or outcomes. Some of the successful projects identified by the review have recognised and addressed these shortfalls.

There is a gap in communicating higher level messages to recreational fishers with no clear approach on how RFs are to be educated about these higher values of sustainability, environment, welfare and ethics. The RF sector needs strategic pathways to inform RFs about sustainability, the environment, ethics and respecting the rights of others. Informing non fishers in the general public about sustainability and ethics of RF is required to keep RF's "social licence" to fish in the longer term.

The review confirmed a set of clear and sustainable RFE messages for both RF and the public as illustrated below:

- **Treating fish humanely:** Promote fish welfare best practices in RFE; and extending information on maximising post-release fish survival to all fishers and the public;
- Looking after our fisheries: Learn to fish using best practices (e.g. recognised training providers);
- **Protecting the environment:** Look after habitat it will improve your fishery; Follow fishery regulations; Take rubbish and line home with you; Provide RF's with information on the ecological impacts and the carbon footprint of RF;
- **Respecting the rights of others:** Following boat and fishing safety guidelines and good practices; Follow signage and respect property and access of others; and

• **Promoting fishing:** The health benefits for anyone doing this family-friendly activity in a safe way; Helping other less advantaged groups to learn to fish (e.g. special needs anglers, single mothers); Best practice messages towards specific groups - e.g. multicultural communities; and mentoring young fishers and leaders.

The addition of "promoting fishing" to the previous messages in the Code of Conduct reflects the link between promotion and education and also RFE that is increasingly targeting specific angler groups, including mentoring of young fishers and leaders.

2. A review of the use of social media by recreational fishers

The review conducted by the social media consultants (Thinktank Social) found that recreational fishers actively use social media. However there was very low use of social media in formal RFE. Given the current use of other media for RFE, this indicates a strategic opportunity for the RFE sector to provide RFE in the social media arena.

The report found that fishers on social media tend to discuss subjects of interest (such as rigs, baits and gear related topics) and display photos and videos of fishing catches rather than topics relating to RFE (Appendix 2). For example, 70% of the Facebook posts analysed (taken from 304 industry related public Facebook pages) related to catches, with only 4% related to education (Appendix 2). However things like some individuals having a site with a large following (i.e. large number of likes, comments, shares etc.) make generalisations on impact difficult.

Among recreational fishers, fishing forums were one of the most heavily used social media platforms. Online forum discussions tended to concentrate on the technical aspects of fishing where members sought or gave advice on fishing destinations, bait, gear and target species. The study found that these discussions were overwhelming positive, especially in Twitter, and constructive (Appendix 2).

The low level of engagement with RFE messages, including higher order messages around animal ethics and sustainability, on Facebook and internet forums presents a challenge in incorporating RFE into the social media realm. However the study also revealed an interesting dynamic occurring on online forums which presents opportunities for RFE provision online. The analysis found three 'classes' of recreational fishers engaged in the social media sphere (Figure 3), with informal education occurring between knowledgeable fishers and new enthusiasts. However there was also a strong correlation in social media activity with "episodes", such as the "super trawler".

Casual

Goes fishing from time to time, or joins someone else for the experience. Not consistent, knowledge is highly limited. Often younger age, mix of females and males, predominantly on Twitter (sometimes coupled with Instagram).

New enthusiast

Beginning to get hooked, starting to look into the technical details of fishing (which quickly becomes an overwhelming thing). Found on online forums asking a lot of questions, quite often seemingly simple questions which return with extensive responses from the knowledgeable fishers. Interestingly, most New Enthusiasts tend to not last more than 80/90 posts on forums. Either they reach a level of knowledge which is consistent with their needs, or winter has forced a pause on their new-found interest.

Knowledgeable Fisher

Heavy forum user. Vast wealth of knowledge which they are keen to share with those who ask questions. "Fisher-speak" is heavy with slang. Only topic which is harder to source from the knowledgeable fisher is specific fishing locations. This golden information is kept for a select few, and there is open surprise (and appreciation) when others (usually new enthusiasts) share a location in their fishing stories/reports.

Figure 3: Fisher Persona groups derived from social media analysis (see Appendix 2).

These informal avenues of learning provide significant scope for RFE, for example by targeting RFE messages at knowledgeable fishers who will then pass this message onto new enthusiasts and disseminate them through their networks. The 2013 TTS report (Appendix 2) provided some insight into the way each 'class' of fisher currently uses social media (Table 2). While not a quantitative account of the use of social media by recreational fishers it does provide useful information that can guide the development of an RFE strategy.

| Social medium | Casual fisher | New Enthusiast | Knowledgeable fisher |
|---|---------------|----------------|-------------------------|
| Forums (eg Fishraider.com.au Ausfish.com.au) | | | |
| Photo-sharing sites e.g. Instagram #fishingaustralia. | | | |
| Facebook eg Shimano Australia fishing (>90 000 likes), iFish (>300,000 likes) | | | |
| Twitter | | | |
| Video sharing sites eg Youtube (YoufishTV Australia) | | | |

Table 2: Current digital and social media presence of recreational fishing

3. A review of RF in the formal school system.

The schools component of the project was undertaken by Dr Jeff Guy, Southern Cross University (see Appendix 6).

Initially the work focused on a case study of RFE in NSW schools which found that many primary school teachers were lacking the confidence to undertake fishing activities by themselves. Generally, teacher understanding of primary industries was also poor, weakest in relation to fisheries with many teachers being unfamiliar with any issues related to the fishing sector. In high school, students did not see fishing as a viable or potential career path with the common perception that it has a negative influence on a students' ATAR. The key finding was that the current positioning of RF outside the science curriculum was responsible for its current low profile and hence its minimal entry into the schools formal education system. To address this, any RF strategy must therefore target the Science curriculum, especially the strands 'Science Understanding (Biological)' and 'Science as a Human Endeavour' as well as giving a new meaning to school delivery by placing it in a positive 21st century context.

It is noteworthy that some teachers would also be of the opinion that RF might be seen as not environmentally friendly, but as a form of damage to the environment and hence be reluctant to include it in teaching.

The F-10 Australian Curriculum also pays explicit attention to how 3 cross-curriculum priorities contribute to, and can be developed through teaching in each learning area. This is a major strength of RF as it provides an avenue through which students can make connections with the natural world and learn about ecosystems in an authentic learning environment while also addressing two of the three cross-curriculum priorities; Aboriginal and Torres Strait Islander histories and cultures and; Sustainability. An integrated literacy program was also proposed using a series of key texts built around a natural resources theme of dreamtime stories, oral histories and cultures.

Previous approaches were also found to be too narrow, targeting upper primary and neglecting a whole school approach which involves laying the Foundations in the early years, Building Breadth and Depth in the middle years and providing Pathways for the later years.

There was also a need to connect with, raise the confidence of and improve teachers' levels of knowledge about RF which can be addressed through Research and Development Corporations (RDCs) such as the Primary Industries Education Foundation (PIEF). An integrated "grass roots" approach to servicing schools was proposed for a successful and ongoing school education program, one that produced ongoing links between schools, clubs and the community. The work also identified the need of school teachers to easily obtain syllabus compliant teaching materials which minimise the preparation required in adopting recreational fishing content. This was enabled using an education portal (Appendix 3) that provided easily accessible lesson plans and information with a clear and direct connection to areas of the curriculum.

Discussion of the results of the reviews and their implications

The results of the three Reviews indicated a diverse range of RFE activities across the RF community, and also RFE activity in schools and the use of social media by RF, but with limited current use in RFE. From the outcomes of these studies we were able to determine mechanisms to establish activities and tools to promote or enhance RF on a national level.

The proposed approach was to address gaps and take up opportunities through the development of both strategies and the networking of existing RF organisations. These steps, including forming a national RFE network and then pilot studies of proposed RFE tools are reported below.

The project results for the national RFE review, the review of RFE in social media and the review of RFE in schools are then incorporated into a single National RFE Strategy document. This integrates both the findings of the reviews and the tools developed into a strategic framework for the sector that will enable each of the organisations within the sector to be part of a more unified national approach to RFE.

Forming an RFE Network

The first workshop held in 2012 indicated that there needed to be specific reasons and benefits for busy people in RFE to want to engage in sustainable networking. There was strong interest for the use of social media as a way to overcome the technical limitations in developing a national approach to RFE. The workshop endorsed further investigation of the use of social media in developing RFE and RFE networking.

The prospective RFE network was further progressed through the completion of the Second RF workshop (September 2013). The 32 participants represented Government, non-government, private sector and the fishing community.

The participants considered the draft Review report and made informal and formal comments. The initial RFE strategies, potential RFE networking strategies, social media strategies and the draft review of RFE in schools were also presented as part of a strategic networking approach. The formation of a national RFE network was debated at the workshop and alternatives discussed.

What became evident in using the workshop results to form a national RFE strategy, was the need for networking to be guided by a clear set of RFE strategic goals. It is evident that RFE providers have an incentive to be involved in RFE networking potentially obtaining significant benefit from sharing experience, knowledge and resources.

Following the workshop the project commenced work on developing a pilot study which sought to explore the value of social media in enabling and supporting networks of RFE providers. This pilot study focused on the use of an 'electronic wall' which provides a central point for up to 15 different social media platforms, allowing a single stream for all social network updates relating to RFE (see Appendix 3).

Without clear RFE goals, a RFE network will likely default to discussing current issues in recreational fishing. Current RF issues are already the focus of many existing blogs and forums and communications between RFishers on various RFE matters. The project faced mis-understanding in the sector that communication and information are equivalent to education, which tends to under emphasise education as a pathway to behavioural change.

The RFE forum

In the interests of providing a convenient platform on which RF Educators could network, and to gather final feedback regarding the National Recreational Fishing Education Strategy document, an online forum was commissioned. Fifty nine individuals who had attended previous workshops, and who came recommended by attendees, were invited to join the forum.

An email advising of the formation of the forum was sent to all invited individuals before a full invitation was sent, including a link to the forum and the password necessary to access it. The invitations were followed up by a telephone call, and the provision of a forum 'manual' for prospective members.

The forum was constructed to reflect the structure of the 'National Recreational Fishing Education Strategy' document, with the strategies being nested within the outcomes they were designed to achieve, which were themselves, nested within several major goals of RFE. The response through the Forum was minimal and may have been too large a task, too time consuming for those invited to participate. There remains a need for further checks on the factors limiting the effectiveness of the RecfishEd forum by using it in a different situation, such as promoting networking on a limited set of issues.

Pilot study results

We used three pilot studies to examine some of the possible tools that could be used to assist the development of RFE nationally. The results of these pilot studies are reported below.

Pilot Study 1: Uptake of social media into RFE strategy and networking

The electronic wall (EW) acts as an information aggregator from nominated social media sites, as opposed to generating content independently. The content is loaded onto a website and the website administrator is required to input social media accounts, filters and hash tags (Instagram and Twitter for the latter) to pull relevant posts to the 'wall' (which resembles a constantly updating notice board). A social media account is NOT required on any medium (i.e. Twitter, Facebook etc.) to participate or view posts fed through the EW. For users that do not partake in social media activity frequently, or do not wish to participate on any social media platform, the 'Wall' acts as a safe gateway into the realm of social media without participating. For active social media users, the EW provides an opportunity to actively participate in conversation across multiple platforms simultaneously with other like-minded individuals.

The draft version of the EW was produced in September 2014 and some minor adjustments in formatting made for greater accessibility. The EW was initially hosted within the Thinktank domain in October 2014. The link is: <u>http://arffsocialwall.thinktanksocial.com.au/</u>

In October 2014 the project contacted six members of the RFE network with interests in social media and RFE requesting comments on the draft wall. These comments were taken into account and were addressed in early 2015 before the final version is transferred to ARFF website in April/May 2015.

Comments from Recfishing Research led to the commissioning of a moderating function being included in early 2015. This will enable information from social media sites (twitter and Facebook and RSS feeds) to be edited by comments, as opposed to removing the whole feed from a given information source site. The result of the pilot has illustrated this has considerable potential as a tool for RFE. To date we have not had a public test of the tool and would expect it to be positive.

Pilot study 2: Development of RFE 'portal' providing access to RFE resources for educators

The second pilot study developed a RFE digital portal to make existing syllabus-compliant RFE educational materials available in each State more accessible to a range of teachers who the review indicated were constrained in introducing RFE into their teaching due to a lack of suitable teaching materials.

The project's social media consultant, Thinktank Social, was commissioned to build the RFE portal to provide access to available digital material. This was to hold both national and state level RF educational resources for teachers to access.

The teaching material resources to be included in the website were converted into pdf format and coded to allow for easy sorting, searching and retrieval. They were loaded onto a specially created digital library net site within the Thinktank domain in October 2014.

The contact link was http://arfflibrary.thinktanksocial.com.au/

Six teachers involved in the RFE network were invited to comment on the digital library. These comments were incorporated into the final version of the tool which will be loaded onto the ARFF website in April – May 2015. It is envisaged that the site content would need to be revised annually.

Pilot study 3: Exploring the value of social media in targeted recreational fishing education programs – "Think before release".

The third pilot examined potential use of social media in national RFE and RF promotion. As explained in the methods section, the review showed that, while recreational fishing has a strong presence in social media, there is limited use of these platforms for educational purposes. The project worked with Thinktank Social to conceive a pilot study on methods to produce a template on the use of social media for any RFE provider interested in addressing behavioural change issues among recreational fishers. The results of the pilot are given below and report on the specifics of a NT case study, and also indicate how other RFE providers may use this approach.

The NT 'Think Before Release' campaign, with a key message of not releasing certain species was intended to gauge RFE users' interest in consuming information presented on social media platforms, and social media's potential as an RFE tool. Over the course of the six week trial period the Think Before Release Facebook page generated 1202 likes and 208 people were 'talking about this'. 'Talking About This' involves sharing, liking or commenting on Think Before Release Facebook posts. 'Talking About This' industry standard percentage of metric is between 10-12% (pers. comm. TTS). The Think Before Release page had a 'Talking about this' metric of 17% of the overall community, indicating the page generated significant interest. The Think Before Release Instagram account attracted 94 followers over the same period, with a great deal of positive feedback and engagement with followers.

As indicated in Figure 4, the large majority of the social media community who engaged with the Think Before Release Facebook page were young males (96%) between the ages of 25-34 (57%). Despite the focus on NT fishers and fish species the site generated significant interest from across the country, with the largest number of likes coming from Brisbane, Queensland (113), followed by Sydney (86) and Darwin (73).

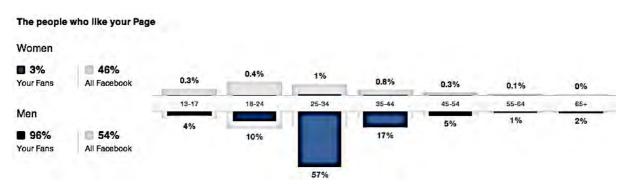


Figure 4: Demographic makeup of Facebook likes (from Thinktank Social consultants)

The top performing posts from the page reached over 3,600 people, with 122 likes, comments and shares on the most popular post (a story about barramundi and barotrauma).

The results of this pilot clearly demonstrate the potential of targeted social media campaigns to reach recreational fishers, and in particular the younger age brackets of 25-34. This is an age bracket that was highlighted in the review as requiring additional efforts to engage with and promote fishing.

While social media appears to be less successful in reaching other age groups, it does provide a useful platform for transmitting informal learning that takes place between older and younger fishers to a wider range of fishers. Therefore, while a multi-faceted approach to RFE is needed this pilot demonstrates the value of incorporating social media into education strategies, particularly those aiming to reach a large number of people.

Discussion

Following the development of a national RFE network, the three pilot studies were conceived as development tools that could benefit RFE nationally. By definition they were developmental and illustrative with their scope limited by the available resources. Like any product development process they also will need to be refined as their exposure to the needs of the targeted client groups is increased. For example, the Electronic Wall aggregates information from a range of different social media platforms around themes prescribed by the site programmer and could benefit the RF sector if they chose to develop this for other sectoral information needs. In our case the lack of sites exclusively dedicated to RFE information means the wall has a diversity of content and may risk the educational theme getting lost or the purpose of the wall being misunderstood. This feedback revealed the need for a moderating function to be added to the Electronic wall to enable on-going moderation of content.

The teachers' portal is to be hosted on the ARFF website with a main challenge being to make teachers aware of it and for them to be able to use it. The portal is to be listed on "Scootle", a site listing on-line resources for teachers assisting the exposure of the site.

The third pilot is a template for those in RFE wanting to influence fisher behavior in response to an issue using social media. The pilot showed the steps involved, and the limits in being able to measure program effectiveness and difficulties in making any measurement of behavioral change. Some of these limitations are inherent in social media and in the technology, but as the review discovered the measurement of effectiveness of RFE messages is difficult in all technologies. The design of social media campaigns in recreational fisheries management and education is an area meriting further research and development.

RFE Strategies

The results of each strategy are outlined below, and then incorporated into the overall national strategy document.

The Schools strategy

One of the main research results was the importance of science and cross-curriculum priorities to the Recreational Fishing Industry Development Strategy (RFIDS). The current positioning of RF content outside the Science curriculum (like Agriculture) and as either optional or elective modules or with an "Outdoor Education" focus is now thought to be responsible for its current low profile and hence its minimal entry into the schools formal education system. Secondary students currently do not see it as a viable or potential career path with the common perception that it has a negative influence on a students' Australian Tertiary Admission Rank (ATAR), especially in NSW (Appendix 1). Furthermore primary teachers are also lacking the confidence to do fishing activities by themselves and many are unfamiliar with any issues related to fishing, restricting its development. Any RF strategy must therefore work to increase the knowledge and skills of teachers while targeting the Australian Curriculum - Science (Science Understanding (Biological) and Science (as a Human Endeavour strand) so that schools make it "core business".

RF is also ideally placed to contribute to two of the three cross-curriculum priorities 1 and 3 respectively, contained in the Australian Curriculum F-10; Aboriginal and Torres Strait Islander histories and cultures (national focus) and Sustainability (global focus). These cross-curriculum priorities are also part of global education that assist learning to be relevant to the lives of students and address the contemporary issues they

face. Cross-curriculum priority 1 also has synergies with Goal 6 Strategy 6 (Promote the cultural heritage value of recreational fishing in Australia) of the Recreational Fishing Industry Development Strategy (RFIDS) while Goal 5 Strategy 2 (Encourage recreational fishers to use best practices in all aspects of their fishing activities) is an important component of sustainability.

Year groupings and resources

To simplify delivery across the learning spectrum the four Learning Groups¹ and Unifying Ideas² of science have been used to underpin the schools strategy (Appendix 4 and 5), which is condensed in Table 3. Unifying ideas draw together the strands and disciplines of science and are developmental in nature with subsequent ideas building on those for the previous year grouping. In this way, unifying ideas enable students to accumulate knowledge over time for deeper understanding. The table also incorporates the recurring themes in global education. Suitable resources are also identified and assigned to these development groupings, as is Science Understanding (Biological) and Science as a Human Endeavour content.

The Sustainability cross-curriculum priority is explicitly addressed in the Biology curriculum. Biology provides authentic contexts for exploring, investigating and understanding the function and interactions of biotic and abiotic systems across a range of spatial and temporal scales. By investigating the relationships between biological systems and system components, and how systems respond to change, students develop an appreciation for the interconnectedness of the biosphere. Students appreciate that biological science provides the basis for decision making in many areas of society and understand the importance of using science to predict possible effects of human and other activity, and to develop management plans or alternative technologies that minimise these effects and provide for a more sustainable future.

| Development Groupings and Unifying Idea/s | Related Global Education Learning Emphases and Curriculum Focus including specific Biological Science Content (Understanding/As a human endeavour) | Proposed Content and Available Resources |
|---|---|---|
| Years F–2 (typically from 5 to 8 years old) | Identity and cultural diversity Exploration (be curious, wonder and ask questions). | Dreamtime stories which illustrate traditional care for country and natural resource management practices (e.g. The Sea Eagle and the Gull Dreamtime story from the Bardi people of North Western Australia) |
| Exploration and observation leads into the idea of order that involves describing, comparing and sorting. | comparing, sorting and classifying objects and materials living and non-living things | Introduction to National Fishing Code of Practice and Junior Fishing Codes (1-3) through colouring in pages |
| | needs, structures and growth of organisms changes on earth and the effects on living things. | Into the Blue – NT Marine and Fisheries Education Kit - Module 1 (early childhood) ACT Aboriginal Natural Resource Management Curriculum Program (Y2) Sustaining River Life. Waterwatch/Murray- Darling Basin (K-6) |

Table 3: Four 'Learning Groups' and 'Unifying Ideas' of science which have been used to underpin the schools strategy

¹ Years F-2, 3-6, 7-10 and 11-12

² Unifying ideas include: patterns, systems, order and organisation; exploration, observation, questioning and speculating; cause and effect; evidence, models, explanation and theories; change, constancy and measurement; equilibrium and interdependence; sustainability of systems; form and function; and energy

| | recognise aspects of science in everyday life identify work associated with science in the community care for the environment | River Country Spirit Video– Aboriginal perspectives on River Country (You-Tube) Parts of Get HookedIt's Fun to Fish Program – NSW DPI (Y3-6) |
|--|---|--|
| Years 3–6 (typically from 8 to 12 years old) | Interdependence and globalisation Social justice and human rights Sustainable futures | Y3-4 Integrated literacy plan. In a 2 to 5 week class room activity, students read and discuss key texts that target the issue of sustainability within the marine environment (e.g. Tim Winton's books) |
| The unifying ideas of patterns, systems, cause and effect, and evidence and explanation will be developed. | Recognising questions that can be investigated scientifically and investigating them | Y4-5 National Junior Fishing Code activities |
| | structures and functions of living things | Y5-6 School yard "How to fish" activity. Guided instruction using a community based education model (i.e. clubs servicing schools- repeat visits essential to develop skills) |
| | Iife cycles of organisms | |
| | living things and the environment earth's resources and their uses. | Into the Blue – NT Marine and Fisheries Education Kit - Module 2 & 3 (middle to upper primary) Get HookedIt's Fun to Fish Program – NSW DPI (Y3-6) |
| | consider how science is used in work and leisure | The Living Murray Story - Murray Darling Basin Authority (Y5-6) Marine WATERS – WA Teacher Education |
| | become aware of science-related careers | Resources (Y3-6) GBRMPA "Let's go Fishing!" teaching unit (Y6) |
| | recognise the effect of science and technology on our environment be aware of the historical nature | Sunfish QLD Inc. – Sunfish Angler Education Manual (Y4-6) Marine Links - TAS Marine Education Resource- Unit 3 - Sustainable Fisheries |
| | of science ideas | (Y5-6) Get HookedIt's Fun to Fish Program - VIC Fishcare (upper primary) Seafood Industry Partnerships in Schools (SIPS) Program includes numerous activity ideas for classroom partnerships including |
| Noora 7, 10 | | upper primary (FRDC Final Report 2009/328) |
| Years 7–10 (typically from 12 to 15 years old) | Sustainable futures (balancing the social, political, economic and environmental aspects of sustainability). | Y7-8 Cross-curriculum unit combining environment, life cycles, fish behaviour, aquatic food chains, habitat use, fishing gear technology, tides and climate/weather. |
| The unifying idea of sustainability is central | Explaining phenomena involving | Y9-10 Vocational pathways "Fishing/guiding as |

| to the nature of | colonge and its analisations | a career" and work owner is real reservents |
|---|---|--|
| to the nature of dynamic systems which have inputs, outputs | science and its applications. | a career" and work experience placements |
| and a variety of internal | | |
| functions. | cells and living things | Belmont High School Pilot Program, |
| | • the human body | Geelong, VIC Secondary (Y7-10) targeted Y7-8 Science, Y9 Maths , Y9 Physical |
| | • ecosystems | Education, Y10 Marine Science and VET Outdoor Education curriculum. |
| | theory of evolution and the diversity of living things. | SIPS activities targeting Maths, Science, Society and History and VET secondary curriculums. |
| | be aware of contemporary issues such as water and its management, climate change, stem cell research, nanotechnology, gene technology apply scientific understandings to make responsible, ethical and informed decisions about issues | Marine WATERS – WA Teacher Education Resources (Y7-10) Sustaining River Life. Waterwatch/Murray- Darling Basin (7-10) The Living Murray Story - Murray Darling Basin Authority (Y7-9) Sunfish QLD Inc. – Sunfish Angler Education Manual (7-10) Marine Links - TAS Marine Education Resource- Unit 3 - Sustainable Fisheries |
| | • be aware of the nature of science and research of Australian scientists | (Y7-8) |
| | appreciate that science provides rewarding careers | |
| | • appreciate the diversity of people who have contributed to, and shaped the development of science. | |
| Years 11–12 | Disciplines of science | Y11-12 Vocational or university pathways |
| (typically from 15 to 18 years old) | | |
| | •Biodiversity and the interconnectedness of life | Schools career adviser |
| Opportunities and pathways for | •Cells and multicellular organisms | |
| specialisation. | •Heredity and continuity of life | |
| | •Maintaining the internal environment | |
| | | |

Note: Most resources are concentrated in the late primary and early secondary phases of education.

These findings were used to develop some key strategies specific to the school sector which have been incorporated into the National RFE Strategy (Appendix 5). The full "Review of Recreational Fishing in Australian Schools – Pre and Post National Curriculum" document is presented in Appendix 6 and shows the potential avenues for influencing schools children through a variety of syllabus compliant RF inputs.

The Social media strategy

A draft Social Media Strategy (Appendix 4) was developed by the project team after an initial report from social media consultants Thinktank Social (TTS). The result of the TTS review of the use of social media by recreational fishers was recognition of the negligible use of social media in RFE. As this is a new tool this is

not that surprising, but means the strategic development of social media in RFE needs to start at a low level. Firstly, the consultant report recommended a central body to supervise social media in RFE. This led to discussions with ARFF about taking a lead role in the development of social platforms to assist in RFE. The project team then aligned the social media RFE strategic issues identified with the overall RFE strategy as shown in Table 4.

Table 4: Key challenges for the strategic development of social media use in RFE and their relationship to the national strategic goals for RFE.

| Key challenges | Related strategic goals |
|--|--|
| No central RFE body to coordinate or guide the national development of social media in RFE to assure nationally consistent messages and ongoing strategic development. | Goal 2. Develop partnership, collaboration and networking among all parties involved in delivering the RFE vision.Goal 5. Develop consistent RFE program structures, standards and messages nationally. |
| A low level of use of social media for RFE, as opposed to communication among fishers. A need to provide guidance to those involved in RFE on how social media can be used as a tool to promote RFE. | Goal 3. Develop human capacity to promote motivated and effective delivery of RFE. |

To assist RFE suppliers in their use of social media in RFE campaigns, the project implemented the "Think before release" pilot as reported in Appendix 3.

The National RFE strategy

The final strategy document (Appendix 5) has been developed in order to meet the following vision statement for the sector:

"A recreational fishing community that resources, supports information giving, guidance and training, demonstrates responsible stewardship and is recognised for implementing best practice in its care of Australia's natural environment and fisheries resources"

The Draft National RFE Strategy has developed four focus areas, as illustrated in Figure 5 below, to guide the development of goals, outputs and strategies to achieve the vision.

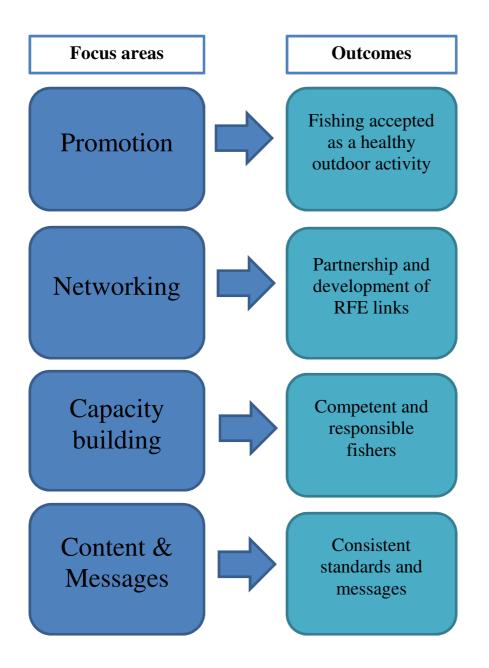


Figure 5: The focus areas and outcomes of the national RFE strategy

Each of the focus areas, promotion, networking, capacity building and content and messages has specific goals which address some fundamental issues leading towards the commissioning of this project i.e. fishing as a healthy outdoor activity; community partnership and networking in RFE; and competent and responsible fishers using best practice as captured in standards and messages. These outcomes also sit well with the national code of practice.

There are then six strategic goals as outlined in Figure 6 below. Under the six goals are a total of 72 individual strategies.

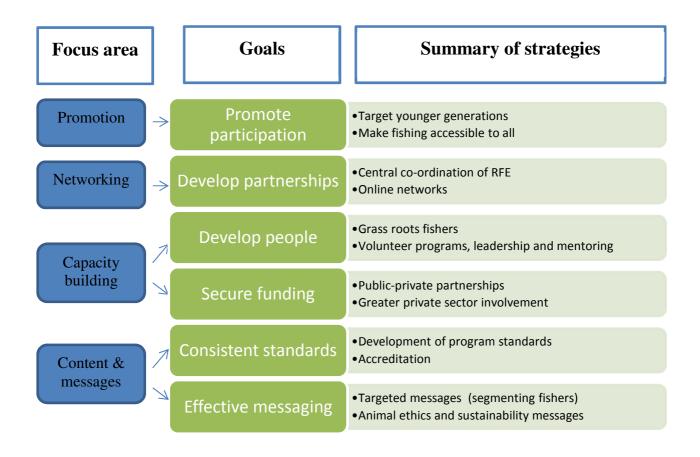


Figure 6: The goals and summary strategies from the national RFE strategy

Key areas in the strategy are:

Promotion- that recognises RF as a sustainable, socially responsible and healthy outdoors activity that has many community benefits. This includes targeting younger fishers, by improving access of teachers to RFE materials and making more RF opportunities available for disadvantaged groups;

Networking- that involves partnerships towards improved coordination of RFE and development of on-line networks. For example, growing the project's formal network of RFE providers and resources to assist in information sharing, and the exchange of ideas and resources and a responsive, up to date and adaptive RFE network which incorporates and makes use of the benefits of social media and internet technologies. It is also desirable to have RF education delivery personalised by using a community-based approach to servicing schools

Capacity building- that develops people at grass roots and volunteer levels, as well as leadership and and mentoring skills at all levels. More secure funding requires greater public/private partnerships and involvement of the private sector. It is envisaged that grass roots level fishers are the main recipients of educational input. RFE leadership needs to be developed and supported at all levels, including the identification of the next generation of leaders in RFE. RFE leaders and practitioners should be capable users of social media as RFE and networking tools. A variety of volunteer programs are available for fisher involvement, which utilise fisher enthusiasm and knowledge and provide meaningful outcomes for fishers and the environment. RFE delivery in schools could be enhanced through improving levels of knowledge & understanding of RF amongst teachers.

RFE also needs to be sustained through *secure funding* sources. The roles of government and the private sector in delivery of RFE should be well defined and complementary, increasing the involvement of the private sector and private public partnerships in RFE.

Content and messages requires more consistent standards and accreditation of services and key messages need to be targeted to identifiable segments and be considerate of both human and animal welfare and sustainability. Nationally consistent RFE program structures, standards and messages and a strategic, co-

ordinated approach to their delivery is desirable. Also, the consistent, national recognition of professional services in fishing instruction and guiding and delivery. There is also a need for RFE messages to be packaged and delivered in an interesting, engaging and effective way.

The RFE strategy also has an appendix which illustrates a proposed certificated **"Responsible Recreational Fisher"** (**RRF**) course program. This is built around the National Code of Practice and is proposing that fishers undertake a face to face "Responsible Recreational Fisher" training to support competence and use of best practice among anglers (See end of Appendix 5).

The strategy should also develop and *promote key RFE messages* incorporating appreciation of aquatic life and environments, stewardship of fisheries resources, rules and regulations, and ethical and animal welfare considerations. RFE is a means of building an improved community understanding of aquatic ecosystems and the environment. Recreational fishers can actively engage in sustainable, ethical and humane practices that maintain the social license of the activity among the community. Effective and targeted dissemination of key messages to different segments of the RF community according to different communication needs is required as is a cross-curriculum ecosystems unit developed for teaching that promotes all key messages.

A special consideration in the strategy is an awareness of **animal welfare** considerations. Appendix 7 addresses The National Animal Welfare Strategy and RFE considerations and finds that while there have been changes in national animal welfare committee processes there is an increasing awareness of the responsibilities and best practices that RF need to adopt to meet welfare criteria. It is also important to demonstrate the sector's awareness of fish welfare obligations and ethical responsibility to the general public.

The specific strategies contained within the document have been developed in partnership with the RFE network established as part of this process. It is envisaged that the ongoing implementation of the strategy will require continued engagement with this national network around each of the strategic goals.

In the strategy, the particular RFE sector that is most suited to implement each area of the strategy is also identified. This is to reduce the duplication of effort by organisations, but has to be worked through by and with those organisations in an implementation exercise as recommended by this report. The implementation needs to be over a five year period enabling the RFE strategy to develop in parallel with other RF initiatives.

Discussion

The project has reviewed RFE activities nationally and sought to establish and develop RFE strategies and tools that can assist the sector to develop and promote recreational fishing as a healthy leisure activity. Currently RFE programs tend to focus on the delivery of activities, rather than key messages with an educational or promotional outcome. Few fishing clinic programs were proactive in measuring statistics relating to numbers of participants, and their satisfaction with the program, they were less engaged with determining their success in producing changes in fishing practice based around higher order messages relating to sustainability or animal welfare.

The reviews found an increasing emphasis on key messages to promote good practice. There has been an increase in the number and types of educational messages that are communicated to and taken up by recreational fishers. There is a need to keep innovating in the way the sector approaches the communication of the higher order messages through use of codes of conduct and a full range of media, social media and other communication avenues. This will require improved networking within the sector to carry the messages to the desired target audiences.

The sector has started to respond to a range of fish welfare messages that others in the community will push, for example, generating applicable fish handling procedures to meet welfare guidelines. These issues are more fully explored in Appendix 7. Communicating RF as a responsible environmental and sustainable activity to the general public will help the sector to maintain the social licence to fish with the Australian community.

The reviews identified the need for a more strategic approach to RFE, with a clear articulation of RFE goals and a greater emphasis on 'higher order' messages relating to animal ethics, environment and sustainability. This involves both education and promotion. Education is necessary to encourage behavioural change and enhance the long-term sustainability of recreational fishing. Promotion is important in highlighting 'good news stories' which help to maintain the social licence of RF in the wider community and encourage greater participation. In turn, greater participation rates increases the number of fishers with educational needs.

To assist both RFE and promotion we found the RF sector needs research into the motivational drivers and psychographic characteristics of recreational fishers and non-fishers of all ages and types if promotion is to influence the current generation of young RFs with the range of messages required. It is a shift that can be assisted by messaging via the internet and social media platforms.

The RF community in Australia has been successful and resilient in using many funded and voluntary resources to deliver many types of RFE fishing clinics to the general public. The same resolve can hopefully be applied to more planning and evaluation of projects and activities that enable behavioural changes to be achieved. This is an ongoing process and will require a more systematic approach to promoting the higher level messages that are required to educate fishers and the general public about this healthy and sustainable outdoors recreational activity.

The reviews recognised that a basic level of networking is inherent amongst recreational fishers and RF organisations. For example, the social media study indicated that fishers are very connected online in informal ways, with regular exchanges detected between the 'knowledgeable' and 'new enthusiast' fishers in web forums. In addition, informal mentoring and leadership occurs regularly within communities and clubs, with many older fishers taking pleasure from teaching younger fishers tricks and techniques relating to fishing. Where possible this project has sought to capitalise, formalise or expand on these existing networks in a strategic way, but recognises this is both an ongoing challenge and opportunity.

The social media RFE review found that social media is an under-utilised tool in relation to the delivery of RFE and the development and maintenance of RFE networks. One of the most obvious networking needs is between RF educators, and both social media and web based technologies provide a useful platform to develop messages, exchange resources and ideas and to build long term support for RFE on a national scale. The project explored the use of social media as a promotional, educative and networking tool through several pilot studies which resulted in the delivery of the following RFE tools:

- An 'electronic wall' which provides a multi-platform educational resource for information relating to RFE on the internet. This can be moderated and altered according to the changing needs of the users through time;
- A web based RecfishEd forum for RFE providers, which allows RFE providers to discuss issues, exchange ideas and resources and provide feedback on strategic directions in a secure, moderated online environment;
- A schools 'portal' which provides RFE materials relevant to and contextualised within the national curriculum to school teachers who wish to engage in RFE; and
- A social media campaign template which provides guidance on the incorporation of social media into RFE campaigns.

The tools seek to look beyond the distribution of key messages to establishing connections between providers, educators and the general public around the key strategic goals of RFE as outlined in the Strategy document (Appendix 5).

The RecfishEd Forum is a networking tool that the project used to consult with network members, but can also be used as needed to discuss specific topics of interest among the network, rather than being driven in a 'top down' manner. The limitations of having an internet forum include:

- Potential forum members must know about the forum and deliberately sign on to participate. Passive exposure is highly unlikely. This problem can be mitigated by using the existing RFE network developed as part of this project to contact as many RF Educators as possible. Forum members will also be actively encouraged to encourage other RF Educators to join. The forum should also encourage discussion about a wide range of topic matters relating RFE further appeal. to to add

- Limitations of time, or willingness. Internet forums typically suffer if those signed on to the forum (or who we wish to sign onto the forum), feel they do not have the time or willingness to deliberately sign on, and voluntarily participate in discussions. This might be mitigated in some way through offering incentives to join/participate in the online forum.

- Internet security/capability. Internet forums operate most easily when the forum website is not hampered by firewalls etc., which are commonly used in the private, commercial and management sectors to guard against computer viruses etc., and to limit staff's abilities to access websites deemed irrelevant to their work. Internet forums also require participants to have easy and consistent internet access for obvious reasons. While access to reliable internet is becoming less of an issue over time (particularly with the proliferation of the use of smart phones), internet security is a harder issue to solve. Ensuring the online RFE forum will be mobile friendly might be one way to make the forum easily available to those whose access is otherwise hampered by their company/agency's firewalls.

- Computer reliant. Internet forums require forum members to have a certain level of comfort with software and computers in general. Some RFE members might not feel computers are the most efficient/appropriate way to discuss matters about RFE. Rather than attempt to persuade RF Educators who do not wish to use computers to discuss RFE to do so. Instead it might be more sensible to organise regular physical workshops to ensure as many RF Educators can be part of the network, and engaged in RFE discussions as possible.

A national RFE networking forum may involve RFE organisations, but have less influence on the informal networks that exist in communities between fishers including intergenerational learning (i.e. older fishers teaching younger fishers in informal settings), though this cannot be predicted with any certainty. This illustrates that the network tool pilots in this project are experimental and it remains to be seen how they are taken up by the RF community and incorporated into the existing environment, including whether it will expand from an initial network of formal providers into more informal and leadership mentoring areas. In the long term the usefulness and adoption of the network tools established by this project will be decided in consultation with the RFE community and their needs, which may also change with time.

The RFE review indicated the need to develop a national RFE strategy. This required the reviewing of all current RFE activity, gaps and successes, the use of social media by recreational fishers and the role of RFE in the formal schools system. The national RFE Strategy brought these different areas together under the four focus areas of promotion, networking, capacity building and content and messages (Figure 4). In addition the goals of secure funding and consistent standards and messages were also highlighted (Figure 5). Outcomes were proposed to be achieved through a range of specific strategic actions. The responsibility for each action was stated and also the envisaged timeframe.

The results of the reviews, workshops and pilot studies all pointed towards the need for RFE to be coordinated, consistent and working towards some common goals. In order to ensure that different RFE products and providers complement and build on each other a strategic approach to RFE was considered necessary. The national RFE strategy developed as part of this project, in conjunction with industry and a broad suite of RFE providers, is designed to allow for better organisation and greater efficiency of RFE efforts in Australia. It assists by defining who does what and why, allows for more consistency in approaches, driven by outcomes and common national objectives rather than focusing only on messages.

Ongoing evaluation of the success of the strategy is considered essential to meet the changing needs of the RF sector, especially within the context of rapidly changing digital technologies. The online RFE forum has the potential to be a national conference on specific RFE issues, but the limitations to uptake experienced in the project would need to be addressed. For example, the forum could be engaged on a regular basis (e.g. biannually) to review the strategy, identify successes and failures and update strategies as needed.

The envisaged implementation and extension to the RF sector organisations can be seen in Figure 7 below.

The strategy therefore provides a framework for each sector to work towards the delivery of their RFE priorities within the national strategy. This is intended to delineate tasks and to reduce duplication where it may be wasteful of the limited funding in the sector. The delineation is also important in encouraging the private sector to increase their involvement in RFE, which may require government to step back in some areas, or to negotiate private public partnerships to increase incentives for private sector involvement in RFE delivery. The strategy makes these recommendations for organisations in each sector, but will require adoption by the organisations and adjustment through a recommended five year period.

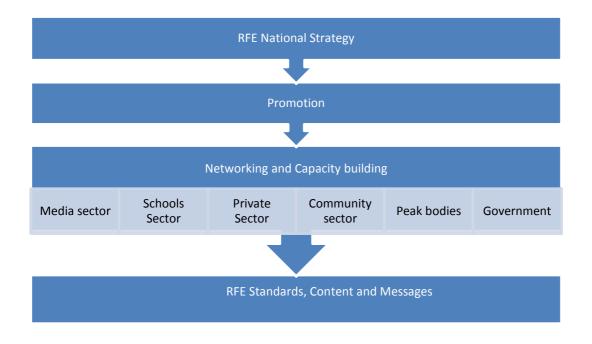


Figure 7: An illustration of the differing components and activities needed to support the National RFE strategy

The RFE strategy contained in Appendix 5 is the first national strategy of its kind and it is therefore expected to develop through time. It will need to be applied at a regional level, and through the network. After two years we propose an evaluation in order to determine its efficacy and success in fulfilling its objectives and achieving the stated outcomes. Rather than being a definitive and static document, the strategy provides a framework for further development according to stakeholder priorities and future needs.

Conclusion

This first national RFE project has been able to review existing programs and activities nationwide and identify gaps and areas that can be promoted as required in the first project objective. (*Review and summarise education activities relating to recreational fishing occurring around Australia. Identify common themes, key messages, target audiences, success stories and gaps*). The RFE review recognised that in the past industry and Government have relied on key messages to deliver outcomes without grounding those messages in a wider strategic process of producing behavioural change.

The project was able to hold two workshops to initiate a national network of those involved in RFE. (Develop a national network of all those involved in the education of recreational fishers nationally, to facilitate sharing of experiences, knowledge and resources and promote consistent delivery of messages at a national scale).

The reviews fed into the development of an overall national strategy for RFE which is a significant output of this project that can be further extended by the sector in the future. (Develop strategies and tools to engage with audiences not currently reached through fisheries education activities (e.g. non-fishers), and to deliver key messages to target audiences not currently being communicated with (to be identified through objective 1). The strategy document developed as part of this process seeks to redress this by articulating objectives and measurable outcomes, establishing evaluation procedures and allocating responsibility for RFE delivery of key messages.

The project produced several tools which can benefit RFs seeking information on fisheries research, involvement in community monitoring and habitat programs. (*Encourage recreational fishers to be involved in research, community monitoring and habitat enhancement programs*). The Electronic Wall developed as part of this project was designed to encourage the involvement and engagement of recreational fishers in research, community monitoring and habitat enhancement through the selective presentation of social media posts relating to these activities. To this end, priority will be given to social media posts by groups and organisations promoting citizen science, community monitoring and habitat enhancement (e.g. the Fish Habitat Network, Recfishing Research etc.).

References

RBFF (2010) Social media in recreational fishing. Recreational Boating and Fishing Foundation, Virginia, US. (Now under "Takemefishing.com").

Implications

A range of planned outcomes were identified in the development phase of this project. These are outlined below alongside an assessment of the impact of the outcomes on end users such as management, industry and the general public.

1. *Improved national strategy to allow for the delivery of clear key sustainable RFE messages:* The development of the national strategy sought to identify key areas of responsibility for RFE delivery, including the development of messages along a spectrum, from 'skills based/introductory' to 'higher order' messages.

Management and Industry will benefit from this approach by having clear, well-defined areas of responsibility for the development and dissemination of key messages and a strategy for facilitating these messages to achieve desired objectives. The general public will benefit from having a consistent approach to RFE that aims to gradually build knowledge and understanding of RF.

- 2. *Strategic national networking for RFE:* The project has delivered this outcome through a range of networking tools and techniques. One of the key benefits of these tools is that they can be used in a consultative and collaborative way to assist management and industry to work together on RFE projects, guided by the national strategy. This will provide management agencies and industry groups with an easily accessible network of RFE providers which they can use to assist in the development and delivery of RFE projects. This would also provide an opportunity for the cross fertilisation of new ideas to grow the sector and build a long term, sustainable future. The network tools, such as the electronic wall, will also provide the general public with enhanced opportunities to access information on RFE, as well as contact information to RFE providers if they wish to improve their knowledge of RF or participate in an RFE activity.
- 3. *School children being influenced by RFE:* The project revealed a range of opportunities to make use of the national curriculum to incorporate RFE into school-based learning. The main mechanism for achieving this was identified as building the capacity of school teachers to deliver RFE through provision of materials, and building connections between teachers and local fishing clubs. This has the potential to build relationships within local communities of benefit to the children, teachers and fishers. It also assists management and industry by introducing concepts of sustainability and ethical RF to a new generation of fishers.
- 4. Social media users exposed to RFE messages and

The electronic wall improving cross sectoral communication through social media befitting a range of RFE stakeholders and the public;

5. Stakeholders adopt and develop social media for promotion and RFE networking:

The project identified the underutilisation of social media by RFE providers and therefore developed a range of tools to assist in making use of the enormous potential of this resource. Incorporating social media into RFE campaigns can assist key messages in reaching a large audience, at relatively low cost when compared with tradition paper based techniques, and will also reach new audiences such as younger age groups. In addition clever use of social media help in targeting campaigns towards specific segments of the community (fishing and non fishing). This would be of great benefit to both management and industry by allowing them to deliver cost-effective and strategic RFE campaigns aimed at achieving behavioural change. The general public will also benefit from having messages tailored to their specific needs, levels of understanding or areas of interest.

Recommendations

Following the conduct of this extensive project with several major areas we would recommend the following future steps:

- 1. Adoption and implementation of the national RFE strategy outlined in this report, with the nominated groups and individuals being tasked to progress the strategy in the 1, 3 and 5 year time frames;
- 2. Continuing to build the network of RFE providers through use of the project tools The RecfishEd Forum, the Electronic Wall and the School Teachers' Portal and investigate more stakeholder adoption and sustainable funding options; and
- 3. Promotion of the RFE forum as a tool to facilitate national networking and communication on relevant RFE issues. The project identified limits in using the forum for gaining feedback on in depth strategic issues and sees it as a tool with the potential for networking among RFE providers.

Further development

There are several areas of RFE that would benefit from further development in the future:

- The adoption of more program logic for RFE projects to enable the measurement of effectiveness is desirable;
- Clearer directions on the national promotion priorities of the RF sector nationally would assist RFE to adjust its priorities toward the sector's developmental needs;
- A fuller understanding of the motivations, values, lifestyle and psychographic segments of fishers and non-fishers would assist RF to align messages and promotion more effectively, and is an area for future research; and
- Increasing networking among the RFE community by implementing and further developing social media and networking tools developed by this project (Electronic wall, portals and programs) to achieve behavioural change among anglers.

Extension and Adoption

The first workshop for this project was intended to secure network membership, and later involvement of those involved in RFE. The initial results of a study by Thinktank Social, commissioned by this project examining recreational fishers' current use of social media, were also presented to workshop attendees. Fourteen government employees, seventeen representatives of recreational fishing peak bodies/organisations/fishing clubs, five independent Recreational Fishing Educators, and three academics with experience in research relevant to recreational fisheries attended this workshop. Following this first workshop, key Recreational Fishing educators from each state were independently contacted to inform development of the review documents.

A second workshop was held to discuss the draft National Review document and the draft Schools Review of RF education efforts in the formal and informal education spheres, which had previously been sent to all workshop attendees. Topics discussed with the network attendees in this workshop included issues facing RFE, including networking and strategic development of RFE by the key groups within the sector (i.e. government, non-government, private, Indigenous and community).

Volunteers were also sought for the pilot studies investigating the utility of using social media to address RFE issues. This led to the development of the NT Think Before Release (TBR) campaign. This workshop was held in October 2013, and was attended by twenty-three representatives of government agencies, seventeen members of recreational fishing related peak bodies/organisations/institutions, four Recreational Fishing Educators from the private sector, and twelve academics/researchers.

The project's progress was presented to ARFF in February of 2014, and the concepts of the Electronic Wall and ARFF portal were also discussed at this point.

The NT TBR social media campaign was trialled with members of the recreational fishing industry. Over the six weeks it was monitored, the NT TBR campaign reached over 3600 people, achieved 122 likes, comments and shares, and appeared to be reaching a large number of younger individuals between 25-34 years old, an age bracket which has proven difficult to reach using more traditional means of extension. The NT TBR campaign, the progress of this project and its findings were extended using more remote and informal methods. Methods of extension included an internet forum, regular email correspondence, and individual telephone conversations and interviews.

Upon completion of the review documents detailing the current state of RFE in the formal and informal education spheres, and the finalisation of the draft National Recreational Fishing Education Strategy, fifty nine attendees of the previous workshops were invited to sign up to a password-protected Recreational Fishing Education Forum. The aim of launching this forum was to facilitate discussions on both the review and National RFE Strategy documents, enabling the project team to refine the National RFE Strategy document, and also for RF Educators to share their experience and views regarding the execution of some of the proposed strategies. The forum was not used as much as we envisaged.

Before, during and after the launch of the forum, invited forum members were telephoned individually. Before the launch of the forum, the purpose of these phone calls was to raise awareness about the progress of the project and encourage invited members to use the forum where it was needed. During the running of the forum, invited members were called to again encourage their participation in the forum, provide any technical support, and also to give those invited members who were reluctant to use the forum another avenue through which to make their comments. The last round of phone calls was made towards the end of the trial period of the forum, those who had not made any comments through email, or on the forum, were called to gather their feedback about the National Recreational Fishing Education Strategy document.

Emails were also sent to all those invited to sign up for the internet forum. Emails were sent to advertise the launching of the forum, a step-by-step guide for the use of the forum was sent out to all invited members, and periodic emails reminding/asking invited members to make their comments using the forum were sent out along with offers of technical support.

After the initial development of the RFE portal and the Electronic Wall, a number of Recreational Fishing Educators from previous workshops were invited to test, review and comment upon the two instruments. The six individuals asked to review the RFE portal were formal educators, government employees, and representatives of peak bodies representing the interests of the recreational fishing sector. The Electronic Wall was also reviewed by 6 individuals from the Recreational Fishing Education network comprising government employees and representatives of peak bodies representing the interests of the recreational fishing sector. Though this exercise was primarily to gain feedback for the refinement of the two instruments, it was also treated as an opportunity to engage with RFE network members and inform them about the progress of the project.

The Electronic Wall, RFE portal, and final National Recreational Fishing Education Strategy will be presented to the ARFF in April 2015. The outcomes and outputs of this project will also be presented at the National Recreational Fishing Conference scheduled to be held on the 25th of July 2015 at the Gold Coast.

The Electronic Wall will be regularly updated, and remain public after the conclusion of this project. The RFE portal hosted by the ARFF website will be advertised through 'Scootle', a digital noticeboard and database used by formal educators around the country. The RFE portal will be listed in the 'Scootle' database for the foreseeable future, making it easily, and indefinitely accessible to formal educators around Australia.

Project materials developed

This project has delivered a range of materials as presented in the appendices listed below.

Appendices

Appendix 1: The Review of Recreational Fishing Education in Australia (151 pages)

Appendix 2: A Review of the Use of Social Media by Australian Recreational Fishers (63 pages).

Appendix 3: Tools for Recreational Fishing Education (19 pages):

- Pilot 1- Uptake of social media into the Recreational Fishing education strategy and networking -The electronic wall;
- Pilot 2- Development of a 'digital library' for school based RFE; and
- Pilot 3- Exploring the value of social media in recreational fishing education campaigns; "Think before release".

Appendix 4: The Recreational Fishing Education Social media and Schools strategy (27 pages)

Appendix 5: The National Recreational Fishing Education Strategy (28 pages)

Appendix 6: Review of Recreational Fishing in Australian Schools – Pre and Post National Curriculum (206 pages).

Appendix 7: The National Animal Welfare Strategy and RFE (7 pages).

FRDC FINAL REPORT CHECKLIST

| Project Title: | Recreational fishing in Australia - 2011 and beyond: a national industry development strategy. National recreational fishing education program. "Establish activities and tools to promote recreational fishing on a national level". | | | | | |
|--------------------------|--|-------|------|--|--|--|
| Principal Investigators: | Alistair McIlgorm, Julian Pepperell, Jeff Guy and Russell Conway | | | | | |
| Project Number: | 2011/527 | | | | | |
| Description: | The project reviewed recreational fishing education (RFE) activities in Australia and developed a strategy to enhance the sectors involvement in the delivery of RFE. This included an analysis of the use of social media by recreational fishers, investigation of RFE in the formal school's sector and the development of several social media and internet tools to facilitate networking among those providing RFE nationally. | | | | | |
| Published Date: | 15/08/2015 | Year: | 2015 | | | |
| ISBN: | 978-1-74128-253-5 (paperback) 978-1-74128-254-2 (ebook) | ISSN: | | | | |
| Key Words: | Needs to include key subject areas and species name (see www.fishnames.com.au) | | | | | |

Please use this checklist to self-assess your report before submitting to FRDC. Checklist should accompany the report.

| | Is it included (Y/N) | Comments |
|--|----------------------|----------|
| Foreword (optional) | | |
| Acknowledgments | у | |
| Abbreviations | у | |
| Executive Summary | | |
| What the report is about | у | |
| Background – why project was undertaken | У | |
| Aims/objectives – what you wanted to achieve at the beginning | У | |
| Methodology – outline how you did the project | У | |
| Results/key findings – this should outline what you found or key results | У | |
| - Implications for relevant stakeholders | у | |
| - Recommendations | у | |
| Introduction | у | |
| Objectives | у | |
| Methodology | у | |
| Results | у | |
| Discussion | у | |
| Conclusion | у | |
| Implications | у | |
| Recommendations | у | |
| Further development | у | |
| Extension and Adoption | у | |

| Project coverage | У | |
|-----------------------------|---|--|
| Glossary | у | |
| Project materials developed | у | |
| Appendices | у | |

Fisheries Research and Development Corporation (FRDC) Project 2011/527.

Appendix 1: A review of recreational fishing education in Australia.

AUSTRALIAN NATIONAL CENTRE FOR OCEAN RESOURCES & SECURITY



Report to:

Fisheries Research and Development Corporation (FRDC) Project 2011/527: "Recreational fishing in Australia - 2011 and beyond: a national industry development strategy. National recreational fishing education program. "*Establish activities and tools to promote recreational fishing on a national level*".

A review of recreational fishing education in Australia

Report 1st June 2014



App. 1-2

The Australian National Centre for Ocean Resources and Security (ANCORS), University of Wollongong, is Australia's only multidisciplinary university-based centre dedicated to research, education and training on ocean law, maritime security and natural marine resource management providing policy development advice and other support services to government agencies in Australia and the wider Asia-Pacific region, as well as to regional and international organizations and ocean-related industry.

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A range of participants of the national RFE workshop in September 2013 also commented and we acknowledge their contributions. The normal caveat applies with any errors remaining the responsibility of the authors.

Please cite as:

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Executive Summary

This is the first nation-wide review of Recreational Fishing Education (RFE) activities and messages in Australia and is part of a National RFE project¹. The first project objective is to: *"Review and summarise education activities relating to recreational fishing occurring around Australia. Identify common themes, key messages, target audiences, success stories and gaps"* to give an outcome of *"Clear key sustainable RF educational messages for both recreational fishers and the public".*

The review analyses current RFE program activities to clarify the key messages that can be used in future strategies to promote RFE nationally. The study finds RFE is much more than "teaching others to fish" as the diversity in messages on how fishing should be undertaken is increasing due to a range of environmental, ethical and community influences.

The review method combines a communications and program logic approach to analyse RFE messages and activities. The communication approach proposes that senders create messages to reach target recipients via different media, though RFE communication can also be driven by a 'mission' approach, reflecting a motivation to deliver a message on an issue to a defined target group.

We examine the sources of RFE messages and the resource inputs used to promote messages. A range of Government, non-government organisations, private sector businesses, fishing clubs, researchers and community organisations are promoting RFE messages. For government agencies this role reflects the statutory needs to inform and regulate the fishing public on fishing regulations, licensing and safety. Fishery departments also inform and reassure the general public that the fish resources are being well managed.

Peak body representative RF organisations are found in each state and have mandates to promote recreational fishing (RF) and RFE, with uncertain resourcing. The Australian Recreational Fishing Foundation leads national representation in the RF sector with RFE being one of its three key priorities.

The RF private sector has an opportunity to add RFE to the promotion of both product and services. Various fishing media have a role in informing fishers and the public.

¹ FRDC project 2011/527 "Recreational fishing in Australia – 2011 and beyond: a national industry development strategy. National recreational fishing education program. "Establish activities and tools to promote recreational fishing on a national level".

There is a strong heritage of fishing clubs and community groups that source RFE messages relevant to basic practice, best practice and RF issues arising, such as rock fishing safety. Much of the resourcing is through volunteering and mentoring.

There are a diverse range of roles and motivations among organisations promoting suites of different RFE messages. The sector has promoted a range of RFE messages nationally. The document *"Recreational fishing in Australia - 2011 and beyond: a national industry development strategy"* includes two goals under its National Education Program (NEP): Encourage *"Stewardship of fish and their environment ensures quality and sustainable RF opportunities into the future"*; and *"The RF industry is attractive, vibrant and adaptive, encouraging investment and participation"*.

The "National Code of Practice for Recreational and Sport Fishing" developed by Recfish Australia, introduced four main objectives in fishing responsibility: "Treating fish humanely; Looking after our fisheries; Protecting the environment; and Respecting the rights of others". These 'umbrella' objectives illustrate the benefits of gathering RFE messages together, to promote national consistency.

RFE messages are seen in initial basic fishing skills and in more advanced fishing skill tuition. We find there are a range of messages on less tangible concepts such as sustainability, environmental responsibility, the humane treatment of fish (fish welfare) and awareness of ethics and respecting other users. Messages have become more diverse as the sector seeks to impart "good practices" and increase positive behavioural change among anglers nationally.

A diverse range of media are used as tools to carry the RFE message to a variety of RF audiences and to the general population or to targeted sectors. We identify RFE messages using over a dozen different media platforms for distribution. The RF sector also has a range of private sector media, TV and magazine companies that are important in promoting RFE messages. However it is difficult to determine the best media to select for promotion of RFE messages. While there have been several surveys of the use of different media clear assessments of the effectiveness of reaching different audiences are required.

General results are that Specialist fishing magazines reach specialist readers (e.g. game fishing, fly fishing, kayak fishing) whereas TV fishing shows have a far broader audience, an unknown proportion of which are not fishers, but simply being entertained. Whether or not TV fishing shows increase participation in fishing is unknown, although it is likely that this is the case. Radio fishing shows, usually early morning, would reach mainly hard core rec fishers.

The growth in social media has opened new doors for communication in RFE and the project examines how RFE can be part of this new media in the longer term in a separate project report. A range of commonly used APPs are used for fishing information and communication, though their current use in RFE is limited.

Recreational fishers can be described by a range of approaches such as their activity, demographics or social attributes, though there is limited information on the social and attitudinal differences and motivations among RFE audience groups. Socio-economic and demographic variables can be used to

determine significantly different target segments. Similarly information on the values held by different recreational fishers could segment fishers by lifestyle, attitudes, beliefs and values, referred to as "psychographic" variables. A few recent studies have identified motivational descriptors in a survey of RF attitudes. There is a need to further this understanding of RF values, lifestyles and psychographics as it is needed for more targeted and effective RF education, promotion and marketing.

The Review team used RFE contacts in each state to confirm recent RFE activities and programs and the messages that are being promoted. There is a lot of information on basic fishing clinics activity, but the evaluation of RFE is made more difficult by deficiencies in the program logic with few projects having included any evaluation of outcomes or project effectiveness in their design.

RFE activities and programs were compared between states. In the past decade the advent of a general RF licence in several states, particularly NSW and Victoria, has enhanced the capacity of government and the recreational fishing sector to resource RFE programs. Appended Tables of interstate comparisons of RFE activity indicate NSW and Victorian RFE programs are much larger than in other states. We also see that in the states without a general RF licence, political change can positively, or more often negatively, alter the funding available for RFE (e.g. Queensland, NT) impeding continuity in RFE which is not desirable.

We found that 64% of RFE programs examined by the review are directly government funded, 25% are partnership programs and 11% are private sector activities. Over half of the government funded RFE programs involve either school children or youths. We note many RFE initiatives happening in the fishing community are not recorded centrally, meaning that non-government RFE activity such as volunteering and mentoring are underestimated nationally.

The exact form and extent of private sector involvement in RFE activities varies. Many fishing competitions have been sponsored with free fishing gear from tackle firms seeking to engage young fishers into this pastime, but this is not centrally recorded by the sector. The line between promotion of RF, product promotion and RFE is necessarily mixed in the private sector and is an area where commercial incentive could increase private sector involvement in RFE, which all too often has been left to government.

The majority of "face to face" RFE is taking place in "fishing clinics", with a high number of volunteers and mentors being involved in delivery and instruction. More innovative clinics have been successfully developed to accommodate the needs of different niche groups (specialist methods, specific species, disabled fishers, socially disadvantaged youths and others).

The review analysed the extent and coverage of key messages delivered, gaps and identified where messages could be expanded. For the basic fishing clinic it is difficult to determine which messages

are included as there is no national consistency in content. There is limited monitoring of the effectiveness of the messages being imparted, other than satisfied instructors and participants, which has limited validity if content varies.

The RFE messages in the activities taking place in clinics normally follow the instruction on how to fish, with safety tuition and a great deal of variation in additional messages. Generally, messages about sustainability, the environment, ethical aspects and respect for others are delivered through government information, media, and by volunteers or by mentors in the Fishcare programs established in several states. However, measures of effectiveness in delivering a range of RFE messages are not generally available and represent a gap.

RFE via schools programs has been happening in parallel with other RFE initiatives. For example in NSW, RF information is within the formal and non-formal (sports/recreation) education system available to students in the secondary system. This project reviews RFE in schools in Appendix 5 (Guy 2014). The RFE contact does not contribute to ATAR scores for University admission. RF appears in marine studies courses in High school and VET sector. Marine Discovery Centres Australia have a network of marine education sectors which provide marine and RFE to the general public.

Education of the public about RF has been limited and has usually been by government re-assuring the general public about the sustainability and environmental acceptability of RF activity and ethical perceptions about the RF sector.

The government assurance on these matters contributes to keeping the "social licence" to fish.

Interviews with contacts in each state indicated that RFE messages areas that appear to be growing in significance across more than four of the six states and territories are:

(1) Health benefits of RF; Promoting the family-friendly nature of fishing; Reducing fishing litter (lines and replace lead sinkers); Maximising fish survival (latest information on barotrauma) extending to public; General fishing and boat safety; and using environmentally friendly fishing gear.

The audience groups perceived as requiring more emphasis with respect to RFE were:

(2) Mentoring of young fishers/future leaders; Multicultural audiences; Special needs anglers; and Indigenous anglers.

Other message areas mentioned by two or three states were:

(3) Fish handling techniques; Underwater safety; Accreditation of Guides; RF and carbon footprint; Quality habitats and quality fishing; Rockfishing safety (croc fishing safety in NT); and "Limit catch, don't catch limit";

Perhaps surprisingly there was only one mention of fish welfare which is undoubtedly an important emerging area, but did not appear to be prioritised by the consultation approach used.

The dominant system used to assess the effectiveness of RFE in Australia records outputs, such as numbers of anglers participating in clinics quite well, and also focuses on client feedback. However the assessment of program outcomes could be improved by applying more evaluation principles in the project design. Experiences with RFE innovation and delivery experiences could be made more available to other RFE instructors or program co-ordinators across Australia.

Categories of RFE projects which have been successful are (1) the basic fishing clinic, (2) innovative fishing clinics, (3) community action programs (e.g. Rock safety, and tangler bins), (4) Applied research programs (e.g. Released fish survival) and Animal welfare initiatives, (5) Adaptation programs (e.g. RF habitat restoration, animal welfare and habitat adaptation programs). Fish guiding has also been developing with accreditation available.

We identify the success stories for RFE nationally and analyse what are the important factors in achieving success and any gaps. Success often does follow funding, but the influence of key people with vision and leadership skills is critical, as are volunteers, mentors, involved in program planning and building messages to achieve behavioural change through project outcomes. Increasingly there is a need for RFE messages to bring about behavioural change achieved through memorable communication catch phrases to facilitate uptake by the average angler. This "crafting" of messages requires an integrated understanding of the issues, the people and the sector and is an essential part of successful RFE projects.

Successful RFE projects have used a range of media including face to face fishing clinics (media releases), Fishing and rock fishing safety (media releases, magazines and segments on TV shows), government websites (media and website information), pamphlets and dvds through tackle shops, Radio (weather safety etc) and a limited amount of social media.

The role of media in project success is difficult to measure without doing follow-up surveys and past experience is often called on. The Released Fish Survival campaign was the only case in which this was done, and clearly shows that TV and fishing magazines were most effective then (2003). The rock safety campaign has also used a media mix, but without follow up surveys, it is not possible to know which works best.

The recent advent of social media has not seen it included in many RFE projects. Like the comments above on media, the effectiveness of social media and, to some extent, websites in RFE remains relatively unassessed. However we know from the social media section of this project that social

media has strong penetration among recreational fishers in Australia, if little direct use in RFE projects to date (TTS 2013; Appendix 2).

Some gaps are also identified by the review. The RF sector needs to have a clearer promotion and marketing strategy, so that RFE can supplement these priorities. Fishery Departments tend to be reluctant to promote recreational fishing activity, as they regulate its sustainability through the control of fishing effort. The private sector needs to be encouraged to develop and capture incentives in RFE promotion. In states without an RF licence the inconsistency in RFE funding leads to gaps in program and activity delivery.

Experience in delivering clinics and programs to more diverse new audiences should be shared to enable more outputs to be achieved from the limited funding in the sector. More consistency in the content for fishing clinics could be achieved through more common content at an agreed national standard and would reassure the sector about what messages are being delivered. There are significant gaps in applying program logic methods, as some programs do not have clear RFE objectives, goals, outputs or outcomes, though some of the successful projects identified by the review have addressed these shortfalls.

There is a gap in communicating higher-level messages to recreational fishers with no clear approach on how RFs are to be educated about these higher values of sustainability, environment, welfare and ethics. The RF sector needs strategic pathways to inform RFs about sustainability, environment, ethics and respecting the rights of others. Informing non-fishers in the general public is required to keep RF's "social licence" to fish in the longer term.

Sustainable RFE messages

The review confirms a set of clear and sustainable RFE messages for both RF and the public as illustrated below:

- **Treating fish humanely:** Promote fish welfare best practices in RFE; and extending information on maximising fish survival to all fishers and the public;
- **Looking after our fisheries:** Learn to fish correctly (use recognised training providers);
- **Protecting the environment:** Look after habitat it will improve your fishery; Follow fishery regulations; Take rubbish and line home with you; Provide RF's with information on the ecological impacts and the carbon footprint of RF;
- **Respecting the rights of others:** Following boat and fishing safety guidelines and good practices; Follow signage and respect property and access of others; and
- **Promoting fishing:** The health benefits for anyone doing this family friendly activity; Helping other less advantaged groups to learn to fish (e.g. special needs anglers); Best practice messages towards specific groups - e.g. multicultural communities; and Mentoring young fishers and leaders.

The addition of "promoting fishing" to the previous messages in the Code of Conduct reflects the link between promotion and education and also the RFE that is increasingly targeting specific angler groups, including monitoring of young fishers and leaders.

In addition to messages there are also a range of key findings in the report which have strategic implications as outlined below.

Key Findings

The Review has found there to be three areas which require action: **Organisations and roles; National Directions;** and **policy and Producing behavioural change.**

Organisations and roles

• RFE is dominated by government and there needs to be more emphasis on Private sector involvement;

• There is a need to secure improved pathways to more consistent and sustainable RFE funding; (e.g. introduce RF licences in all states and encourage the private sector to innovate in adding on RFE to commercial promotion);

• There is a need to clarify organizational roles in RFE- who does what? An increased awareness of what other organisations are doing is also needed;

• Support fishing clinics - implement a more nationally consistent content;

• Promote private sector delivery of fishing clinics and fish guiding services, reducing government involvement in fee for service delivery;

• Increase sharing of RFE program innovations, developments and experiences nationally (this need will be addressed later in this project).

National directions and policy

• Set promotion and marketing priorities for RF nationally, so that RFE can promote the right messages to achieve the goals desired by the sector;

• Communicate RF to the public as a clean healthy family outdoor recreational activity;

• Maintain the "social licence" to RF by reassuring the public of a well managed, responsibly behaved sector;

• Improve the consistency of all RFE messages nationally communicating the higher-level RFE messages to RFs. The range of messages include messages on environment, respecting others, welfare and ethics (This need will be addressed later in this project);

• Improve program logic, goals, objectives, inputs, outputs and outcomes with methods for evaluation in RFE projects; and

• Develop ways to design and measure program effectiveness and outcomes, not just project outputs.

Producing behavioural change

• Prioritise the behavioural changes we desire in the RF sector and use RFE to address it;

• Identify generic messages and issues which need more specific messages to address behavioural change priorities, linking with sustainability, environment, welfare and ethics objectives;

• Integrate social media into RFE. The national RFE strategy indicates ways to involve the private sector, government and community in the use of social media for RFE;

• Focus study of RF target audiences, their motivations, values and psychographic profiling, identifying new refined RFE messages for appropriate audience segments; and

• Support the development of RFE leadership, volunteering, mentoring, program logic planning, and message development and crafting to create behavioural change.

In the past decade the RF sector has focused on key messages to promote good practice. RFE needs to become more strategic in pursuing its desired goals effectively asking "What kind of impact is your program having on the knowledge, attitudes and behaviours of your audience?" This requires enhancing program logic characteristics and being able to learn from others who have measured RFE program effectiveness. This information needs to be shared with other RFE providers nationally.

There has been an increase in the number and types of educational messages that are communicated to and taken up by recreational fishers. There is a need to keep innovating in the way the sector approaches the communication of the higher messages through use of codes of conduct and a full range of media, social media and other communication avenues. This will require improved networking within the sector to carry the messages to the desired target audiences.

The higher RFE messages are not generally nested in the "hands on" instruction that is happening in many clinics, but require the inculcation of a new awareness among the rank and file anglers about their fishing behaviour and its impact on the environment and their relationship with others in the community. The sector has started to respond to a range of fish welfare messages that others in the community will push, for example, generating applicable fish handling procedures to meet welfare guidelines.

The sector needs research into the motivational drivers and psychographic characteristics of recreational fishers of all ages and types. This is required if we are to influence the current generation of young RFs with the range of messages required. It is a shift that can be assisted by the increase in communication and the dimensions in messaging available via the internet and social media platforms. The RF sector needs to increase its use of RFE tools to promote higher-level message areas of environment, caring for others and various forms of ethics that are inherent in this pastime. RFE is an essential tool to prepare anglers for the changes that fuller community accountability will bring in the future. Communicating RF as a responsible environmental and sustainable activity to the general public will help the sector to maintain the social licence to fish with the Australian community.

The RF community in Australia has been successful and resilient in using many funded and voluntary resources to deliver many types of RFE fishing clinics to the general public. The same enthusiasm can hopefully be applied to more planning and evaluation of projects and activities that enable behavioural changes to be achieved. This is an ongoing process and will require a more systematic approach to promoting the higher level messages that are required to educate fishers and the general public about this healthy and sustainable outdoors recreational activity.

1. Introduction to recreational fishing education

There has not previously been a national review of recreational fishing education (RFE) across Australia. There is no agreed definition of RFE as it is both a mix of practical learning and conceptual skills involved in being a competent, safe and responsible recreational fisher. It is therefore useful to define education and recreational fishing as follows.

Education - "the act or process of imparting or acquiring general knowledge, developing the powers of reasoning and judgment, and generally of preparing oneself or others intellectually for mature *life*"- (Dictionary.com).

Education needs to be differentiated from communication, which is "the imparting or exchanging of information by speaking, writing, or using some other medium" (Oxford dictionary). The impartation of information by itself will not bring about behavioural change. Sometimes additional information is just promotion. The instruction within education enhances the individual's capacities, their thinking and actions and can bring about autonomous behavioural change.

The National Policy (RECFISH 2009) stated that:

"Recreational fishers aim to catch a fish, and for a variety of personal reasons enjoy the experience, without commercial gain or profit, and without affecting the sustainability of fish stocks or the enjoyment of others."²

Recreational fishing education can be included within the definition of education, as it may involve *"information about or training in a particular subject"*. So RFE could be: *"information giving, guidance and training in recreational fishing"*.

However RFE is about more than just catching fish. It also includes "maintaining and enhancing the sustainability of the fish stocks and the enjoyment of others in the outdoors environment".

So a potential definition of RFE is:

"information giving, guidance and training in recreational fishing, leading to maintaining and enhancing the sustainability of the fish stocks and the enjoyment of others, in the outdoors environment".

The review takes a wide interpretation of the term RFE and progresses from generic government and private sector RF clinics and programs, to other aspects of the RF experience, such as safety in RF and boating.

² Recreational fishing is assumed to cover a variety of line angling, trapping, recreational netting and spearfishing methods. Recreational fishing is generally referred to as a recreational activity, but sometimes as a sport. It is non- commercial in nature and usually co-exists in areas where the commercial fishing industry operates.

The purpose of the current FRDC project is to:

"Review and summarise education activities relating to recreational fishing occurring around Australia. Identify common themes, key messages, target audiences, success stories and gaps. The project will achieve the following outputs". It will "Conduct a comprehensive review and analysis of previous and current RF educational material and promotional programs, summarising the messages and the gaps in the current approach. Successes and failures will be highlighted, and as a result improved strategic pathways for RF education outputs both to (a) recreational fishers and (b) the general populace will be identified". The review also reflects the background of the funding of this project as part of the Recreational Fishing Industry Development Strategy (RFIDS).

What types of education are involved in RFE?

RFE can involve several types of education due to the diversity of the activity and the elements within it requiring a range of approach styles as shown in the Box below.

- **Formal education** primary, secondary, university education processes requiring a curriculum and recognised course of study;
- Non formal education- occurs in a formal learning environment, but that is not formally recognised. It typically involves workshops, community courses, interest based courses, short courses, or conference style seminars.
- Informal education- the many forms of learning that take place independently from instructor-led programs;
- **Special education** was only provided to people with severe disabilities in its early years, but more recently it has embraced anyone who has experienced difficulty in learning;
- Self-paced learning: is "learning on your own" or "by yourself", but usually with a set curriculum;
- Vocational education: is a form of education focused on direct and practical training for a specific trade or craft;
- **Indigenous education:** refers to the inclusion of indigenous knowledge, models, methods and content within formal and non-formal educational systems; and
- Lifelong learning: a combination of formal, non-formal and informal learning.

There is also a fundamental interpretation of the nature of RFE. To some people RFE is largely an action-based sports instruction, but to others, it involves imparting more knowledge, skill and focus on the way fishing is conducted. This illustrates that individuals have different learning modalities. Probably the most common are:

- Visual: learning based on observation and seeing what is being learned;
- Auditory: learning based on listening to instructions/information; and
- Kinesthetic: learning based on hands-on work and engaging in activities.

It is clear that RFE does, and needs to communicate with fishers and non-fishers through combinations of all of these modalities, depending on the activity or program, impacting the uptake of what is being taught.

The study commences by examining two models that can analyse RFE. The first is the program logic model approach and the second is the communication model approach through which we can analyse RFE messages.

1.1 Recreational fishing education – an international perspective

There is no single model of RFE and there has been little literature published on the theory and practices in RFE within Australia. This provides a limited context for the current review of RFE. Much of the international literature on strategic approaches to RFE has been published through the United States (US) recreational sector, and by the US Recreational Boating and Fishing Foundation (RBFF) in particular. This section summarises some of key elements of RFE found in US literature, but with implications and applicability to RFE in Australia.

RFE in the US has an outdoor parks and recreation perspective and seeks to develop citizens as "stewards" who follow "best practices" while enjoying recreation. Seng and White (2006) note that: "Fishing serves as the perfect portal to achieving multiple aquatic education goals. Educators want to affect awareness, knowledge, attitudes, skills, and levels of participation. You want people to fish and boat safely and often. You want to attract new anglers and retain others who will buy fishing licenses. Educators want constituents to think highly of agencies and organizations, supporting their budgets and aims".

However they query the extent that fishing programs actually effectively promote aquatic responsibility and stewardship. "A lot of stuff is fun for agencies to do and for people to participate *in- but might not be what is needed*" (RBFF 2003). How effective are different approaches to RFE and how is effectiveness of programs measured? Fedler (2001a) asks, "What proven measures do aquatic education professionals have? How can they build effective programs that show leaders, administrators, and constituents that efforts have a true impact on organizational missions and goals?"

In the US guidance on RFE is available through a series of recommendations, derived from research, data, and a suite of tools called "*Best Practices for Boating, Fishing and Aquatic Stewardship,*" developed by the Recreational Boating and Fishing Foundation (Fedler 2001b). Best Practices are methods to derive specific outcomes that have been clearly defined, refined, and evaluated through repeated delivery, where outcomes are supported by a substantial body of research (Seng and Rushton 2003).

The program logic model is an overview of what is involved in developing a RFE program. This aligns inputs, throughputs, outputs and outcomes in RFE programs as shown in Figure 1. In Figure 1 the outputs and outcomes are shown for RFE program goals and objectives, being achieved through the inputs and throughputs that are required to make a program happen. The inputs are the resources

required to implement a program, whereas the throughputs are mechanisms to achieve the goals, such as activities and participants.

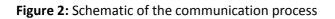
| Inputs | Thro | ugh puts | Outputs | Outcomes | | | |
|-------------|----------------------|---------------|----------------------|------------------------|------------------|------------------|--|
| (resources) | Activities | Participation | (counts / feedback) | Short term Medium term | | Long term | |
| | | | | | | | |
| Staff | Presentations | Participants | Number reached | Awareness | Practice | Social | |
| Volunteers | Events | Customers | Experiences | Motivators | Decisions | Economic | |
| Curricula | Curriculum design | Stakeholders | Satisfaction surveys | Knowledge | Action behaviour | Political | |
| Donors | Product dev. | Citizens | Service quality | Values | Stewardship | Civic | |
| Time | Recruiting | Volunteers | Cost per unit | Attitudes | Policies | Environmental | |
| Money | Clinics | Trainers | | Opinions | | Public relations | |
| Materials | Workshops | Teachers | | Aspirations | | | |
| Equipment | Meetings | Youth | | | | | |
| Technology | Assessments | Families | | | | | |
| Partners | Training | | | | | | |

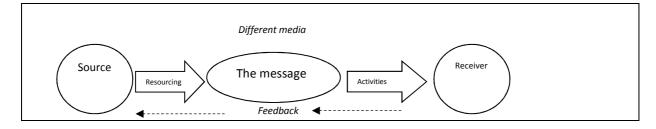
Figure 1: A conceptual logic model for developing fishing education programs (Seng and White 2006; Timmons 2006). (*Should be read as vertical lists under a heading, not across columns*).

Outputs include the experiences of the participants, their evaluated level of satisfaction and how many were exposed to key messages. Outcomes include a range of short term learning outcomes, leading to changes in participant actions in the medium term and longer-term outcomes. Measuring outcomes requires us to *"build accurate and aggressive evaluation tactics"* (Seng and White 2006). The second model is based on communicating RFE messages through activities and programs

1.2 Recreational fishing education – a communication approach

RFE is often an extensive form of education which relies heavily on effective communication. Here we outline the communication approach we use to provide a framework to analyse the recreational fishing education sector nationally. One of the simplest communication models is shown in Figure 2 and is a technical description of communication as a process.





App. 1-18

The technical approach to describing communication shown in Figure 2 can be used to provide a framework to analyse recreational fishing education in this report. We will identify those organisations that are the source of RFE messages, then describe the messages being sent out and finally assess who is receiving the messages and how behaviour may be influenced. Various media can be used to carry the message and the extent of resourcing and activities to further the message can be described. The diagram in Figure 2 also has a second layer of feedback responses (dashed arrows) going the other way, indicating that communication is a two way process. The large arrows show how organisations resource their messages and so activities follow. Using this approach will enable us to map the RFE sector and to identify strengths and gaps in the current approaches. This will feed into strategic development of RFE in the recreational fishing sector nationally. The following paragraphs give a brief overview of the structure of the study.

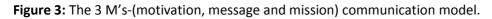
1.2.1 Who is initiating RFE? (the source)

RFE takes place within the structure of the RF sector and its range of governance entities. Chapter 2 examines the range of government, non-government, private sector and community organisations that are the sources of educational messages for recreational fishing. The study identifies those organisations generating the messages and the reasons behind promoting certain types of message in the sector.

1.2.2 What are the key RFE messages?

Many of the RFE education messages have been around for a long time, while others are newer. We would expect that many of the messages are practical, about how to go fishing, whereas others are about *"the way to fish"* and minimizing the impacts that a fisher's activity has on the fish stock, the environment and other people. Previous national policy documents have sought to capture these messages.

The need for messages can be analysed in another communication model aligning the motivation, the message and the mission, (the 3 M's) as shown in Figure 3 below.





This approach looks at the motivation of the message sender, the message and the mission is the objective of the message. The motivation leads to a direct mission to induce behavioural change in the target group through a simple message. An example, would be concerns about rock fishing fatalities, the mission being to reduce the incidence of angler drownings by messages that make

targeted groups of recreational fishers more aware. Broader RFE missions could be to make recreational fishers more environmentally aware.

In Chapter 3 the range RFE messages being promoted by the sector nationally are identified and analysed. Later chapters look at what is happening in RFE activities and whether the current national messages are being successfully implemented.

1.2.3 What media are used to communicate the RF messages and to what audiences?

Messages can be transmitted by a range of alternative "media". In Chapter 4 we identify more than 14 different media that have been used to communicate in RF and RFE in Australia. These range from word of mouth and hands-on demonstration at fishing clinics, to websites, radio, television, printed literature (leaflets, magazines), and of course the growing use of social media in recent years.

RFE has often delivered generic messages to RFs, with little consideration of the RFE audience. We summarise what we know about RFs and the public audience also. Understanding the RFE audience may enable messages to be more specific and targeted to segments of the population if required.

1.2.4 What activities are used to communicate the messages?

Chapter 5 reviews recent RFE activities and programs in each state of Australia producing a national summary. There have been a range of fishing clinics by the fishing community, clubs, government and fishing guides. We examine the activities and the messages that they contain.

Inevitably the communication analysis has to combine with the program logic model to evaluate if activities contain the desired messages. For example there may only be certain parts of the whole RFE message that can be communicated to children in a formal school syllabus constrained setting.

1.2.5 How are recreational fishers impacted by the messages and activities?

Those in RFE talk about success stories and areas that have failed. We need the program logic model to appraise the effectiveness of messages and their impact on recreational fishers.

1.3 The review document

The Review document is structured to capture, and analyse the diversity and high level of activity in RFE in Australia. The approach we take recognises the need for a framework to analyse both activity programs and also key RFE messages.

Figure 4 is an overview of the integrated communications and program logic approach that will be used for the structure of the review document. This will integrate the communication and activity effectiveness approaches.

| | Inputs | | | Through puts | | Outputs | Outputs Outcomes | | | |
|--------------------|--|-----------------------------------|-----------|--------------------------|--------------------------|--|------------------|---------------------|------------------|--|
| | (resources) | | | Activities | Participation | (counts / feedback) | Short term | Medium term | Long term | |
| approach | Chapter 2: Organisations & resources | | | Chapter 5- Activities | Chapter 4b- Audiences | Chapter 5: Activities in each state | Chapter | r 6: Success sto | ries and gaps | |
| appr | Staff | | | Presentations | Participants | Number reached | Awareness | Practice | Social | s |
| ations | Volunteers | ages | | Events | Customers | Experiences | Motivators | Decisions | Economic | usion |
| The communications | Curricula | Chapter 3: Reviewing the Messages | dia | Curriculum design | Stakeholders | Satisfaction surveys | Knowledge | Action behaviour | Political | Chapter 7: Discussions and Conclusions |
| ie con | Donors | 'ing th | 4a: Media | Product dev. | Citizens | Service quality | Values | Stewardship | Civic | ns an |
| - | Time | eview | Chapter 4 | Recruiting | Volunteers | Cost per unit | Attitudes | Policies | Environmental | cussic |
| s RFE? | Money | r 3: R | Cha | Clinics | Trainers | | Opinions | | Public relations | 7: Dis |
| Vhat i | Materials | hapte | | Workshops | Teachers | | Aspirations | | | apter |
| er 1: V | Equipment | 0 | | Meetings | Youth | | | | | ਤੰ |
| Chapter 1: What is | Technology | | | Assessments | Families | | | | | |
| | Partners | | | Training | | | | | | |

Figure 4: A conceptual communications -logic model for developing fishing education programs (adapted from Seng and White 2006; Timmons 2006).

In summary, Chapter 2 examines the organisations motivated to source RFE messages and the resources that are used. Chapter 3 identifies key RFE messages nationally coming from a range of policy documents. Chapter 4 examines the media that are used in delivering RFE and also summarises the different RFE audiences.

Chapter 5 examines the RFE activities taking place across Australia that have been derived from interviews with RFE contacts in each State and activity profile tables for each state that are appended to the main report.

Chapter 6 identifies RFE success stories and gaps that are evident from the review of activities and RFE programs and analyses why have these programs have been successful. The Review concludes with Chapter 7 discussing strengths and weaknesses in RFE nationally and indicating lessons learned and key directions for the future.

2 The organisational sources and resourcing of RFE messages

This section provides an overview of what bodies develop RFE messages and examines their motivation. RFE initiatives come from a variety of Government, non-government, private sector and community bodies involved in the recreational fishing sector, as summarised in Table 1 below.

Table 1: An overview of categories of organisations involved in the recreational fishing sector in Australia.

| Government | National | RF policy Maritime policy & regulation Fisheries Research and Development Corporation (FRDC) Other Departments (e.g. NRM agencies). |
|----------------|--------------------|---|
| | State | RF management agencies RF policy Maritime policy & regulation Other Departments (e.g. NRM agencies). Recreational Fishing Trusts RF research agencies |
| | Local | Land access/coast / maritime policy/ Local councils |
| Non Government | National | RF Peak representative bodies, Marine Discovery Centres |
| | State | RF Peak representative bodies |
| Private sector | National and State | Fishing Tackle suppliers and retailers Boat suppliers and retailers Media – various Fishing charter and guide services Environmental and Animal Welfare NGOs |
| Community | National & state | RF clubs Other RF organizations The non-club fisher The general public |

This table indicates the diverse range of entities with an interest in the RF sector and hence in "education" in its broadest sense.

2.1 Organisations and their motivations to promote RFE

2.1.1 Government

Government involvement in recreational fisheries derives from the fact that fish resources are held in common, so national and state governments usually have a statutory obligation to maintain the sustainability of their fish resources. Fisheries management in the RF sector has gradually developed to limit and control the total catch by recreational fishers by a combination of regulations, information and client education as to the fishing rules and regulations. The RFE motivation for government is to achieve sustainable harvest and to protect the resource while enabling citizens to pursue their fishing activity safely. This includes re-assuring the public that the resource is being managed and cared for through regulation, education and community involvement.

The safety obligations of government towards RF have generally been seen to fall within the maritime area of government involving small boat use. The motivation is the safety of citizens in boat use involved in RF. Government has been less clear as to which arm of government is involved in general safety of shore-based RF. Local government uses its zoning approach and care for citizens in indicating safe access points for RF boat launching and indicating bridges, for example, where RF is considered to be unsafe and thus merit a "no fishing" sign.

Other government departments can be involved in RFE following specific needs identified, such as recreational fisher fatalities due to rock fishing, which has been addressed in several reports and initiatives (Pepperell 2008; Bradstreet et al. 2012). However some of the practical initiatives have been developed by community and non government sources, for example, Angel rings program (Fishing World 2013³). In Queensland the Reef Guardian program and Reef Water Quality Improvement Plan engage with recreational fishers to address coast and inshore ecosystem connectivity issues that underpin marine fish stock productivity. In 2012-13 the use of VHF radios by small RF boats has been a national safety priority as it is unclear as to the level of capacity of many RF small boat anglers to use radios properly (ACMA 2012).

Another area of non fisheries specific government involvement in RFE is that of Marine Protected Areas (MPAs). These normally fall under the jurisdiction of departments responsible for the environment. Engagement with the RF community by these departments is usually as part of the stakeholder consultation process when new MPAs are being declared, and once established, as ongoing communication of rules and regulations within MPA boundaries. This has added new educational issues for the RF community.

In summary the broader government involvement in RFE focuses on safety, Environment departments consult with RFs on MPAs, while Fisheries Departments cover RF governance and management towards maintaining sustainable outcomes in a responsible manner. All government departments are motivated by statute responsibilities, but also a wish to be seen to be meeting public expectations of government.

³ Examples Angel ring program, Stan Konstantaris, ANSA and Rock Fishing Safety Program by Life Saving Victoria

Research

The government sector also includes the fisheries research community who have involvement in RFE. The Fisheries Research and Development Corporation (FRDC) is a major research agency which is motivated to address RFE issues. This includes Recfishing Research which coordinates RF research for the FRDC. The Recfishing Research Business Plan 2012-2013 includes RFE themes of "investment in building capacity in the recreational fishing sector" and "best fishing practices that are sustainable, ethical and humane" (Recfishing Research 2012).

RFE research is also undertaken in differing degrees by state fishery departments. The advent of Recreational Fishing Licence Trusts has encouraged research into RFE including habitat issues. Natural resource management (NRM) agencies have also had research involvement in RFE through their regional and catchment management and habitat protection mandates.

2.1.2 Non government organization (NGOs)

The primary non government organisations that engage in RFE are specific RF peak bodies. Other NGOs may also engage with the RF sector across a range of both representational and other issues faced by fishers in the pursuit of their recreation.

Recreational fishing peak bodies exist at both state and national level. Each state has a RF peak body that communicates widely with its member organizations, and, through the media, with the general recreational fishing community. These peak bodies are generally club-based, with representation from umbrella 'fishing method' sectors such as game fishing, freshwater, rock and beach, spear fishing and so on.

At the national level, Recfish Australia has been the primary peak RF body since the mid-1980s. With removal of Government funding, the effectiveness of Recfish Australia has been hampered, which has led to the formation of a new peak body, The Australian Recreational Fishing Foundation (ARFF). The formation of a foundation is new to the recreational sector in Australia, but has been successful in the United States where the NGO activities are more developed.

2.1.3 Private sector

Private sector involvement in recreational fishing focuses on supplying goods and services, but this can involve certain aspects of RFE. The fishing tackle industry consists mainly of retailers and wholesalers, represented by the Australian Fishing Trade Association (AFTA). RF specific media (print and electronic) also fall within the membership of AFTA.

The extensive print and electronic RF media actively supply news and information to anglers through magazines and television which have both an entertainment and educational value. Such media are the main recipients and disseminators of Media Releases from Government departments aimed at the RF sector.

Recreational fishing services are provided by fishing charter businesses, fishing guides and businesses instructing people on how to fish. These businesses often form their own professional associations which communicate with the RF sector through various channels.

The recently formed organization, 'Keep Australia Fishing' (KAF), engages actively with the RF sector, especially with respect to issues likely to impact on RF activities. This represents a relatively new area of recreational fishing engagement in the political process, involving active communication with the general recreational fishing public with the purpose of creating awareness of particular messages, and subsequent action in the form of petitions, phone-ins, trending on social media platforms and so on.

2.1.4 Community

There are many thousands of fishing clubs throughout Australia that are an established part of the recreational fishing community. They provide information, services and entertainment to fishers. Other community groups share in the recreational experience through local representative organisations, pursuing activities such as fish stocking and fish tagging. Overall, club membership represents only about 4% of Australian anglers, although that percentage is higher for specialized forms of fishing such as fly fishing and game fishing. Members of fishing clubs tend to be more avid than non members. Many fishing clubs also provide for special needs, running clinics for Camp Quality and Canteen as well as juniors and Grey Power e.g. Narooma Sport and Gamefishing clinics (http://www.acr.net.au/~nsgfc/care_for_kids.html).

2.1.5 Discussion – RFE and resourcing

The organizations identified in this review are the sources of educational messages targeting RF. What is the motivation of each sector? And how will this influence RFE and national networking?

Being directly involved in fishery regulation, government agencies such as fisheries departments have statutory obligations to manage recreational fishing and to make sure that it is conducted in a responsible and sustainable manner. They provide information on "best practices" and host a variety of fish environment and habitat programs.

Traditionally Government RFE requirements and programs have been funded from the central budget. In the past decade several states have developed a RF licence, with slight variations between jurisdictions. There are usually resources available for at least some aspects of RFE, but the extent varies between state governments and through time. The advent of general recreational licence fees has led to considerable funds being available for RFE in some states, though many programs fund coordination of volunteers in the recreational fishing community e.g. "Fishcare" contributing a considerable amount of time to RFE. Inevitably, some of this educational activity is aimed at spreading 'good news' stories about what the government is actually doing with recreational licence fees (which is not necessarily a bad thing). There has been extensive development of regulatory information and instructional materials by government, but fewer examples of curricula supporting RFE initiatives.

In contrast to government, non government organisations have no statutory or regulatory roles, but reflect the representational needs of recreational fishers and their wish to influence government and society on issues such as fishing access. Funding of peak bodies varies by state and involves levies, direct government funding, or both. Historically, the stability of these funding arrangements has varied between states and through time and this does not assist ongoing commitments of peak bodies to RFE programs. Peak bodies have limited resources to expend on RFE and therefore target what they do have into prioritized programs. These programs may be able to access government funds through RF licence fees, but often they rely on volunteers on-the-ground contributing a considerable amount of their time.

National representation of the RF sector through Rec Fish Australia contribute to national strategies for the sector. However uncertainties in annual funding impacted the consistency of RFE initiatives. The formation of the ARFF seeks to use available funding and supplement it from its status as a Foundation. RFE is prioritised as an ARFF objective and may benefit from any funding arising through the foundation structure.

The private sector is diverse and resources RFE in several ways. There are clear incentives to those supplying fishing tackle and boats to promote RFE as a way to increase participation in fishing. The media, especially television, can reach people who may not fish, providing both entertainment and a generic educational function regarding positive aspects of recreational fishing taking place in the broader community. The tackle industry often partner with RFE providers and sponsor RFE programs with free tackle, as their contribution to instructional education.

There are at least 33 recreational fishing magazines in Australia with an annual estimated circulation in excess of 2 million copies as estimated in Table 2.

| Title | lssues per year | Circulation per period | Annual Circulation | Titles not audited | |
|------------------------------------|-----------------------|------------------------|-----------------------|-------------------------------------|----|
| Queensland Fishing Monthly | 12 | 23,000 | 276,000 | Barra Bass & Bream | 4 |
| Hooked Up | 11 | 20,000 | 220,000 | Bush n Beach Fishing | 6 |
| Fish & Boat | 12 | 16,000 | 192,000 | Escape with ET online magazine | ? |
| Modern Fishing | 12 | 15,000 | 180,000 | Fishing Tips & Techniques | 10 |
| Tradeaboat | 13 | 13,500 | 175,500 | Fishing Wild | 4 |
| Fishing World | 12 | 14,000 | 168,000 | FishLife | 6 |
| NSW Fishing Monthly | 12 | 13,000 | 156,000 | FlyLife | 4 |
| Victoria Fishing Monthly | 12 | 13,000 | 156,000 | Go Fishing | 8 |
| Trailerboat | 13 | 10,000 | 130,000 | NAFA (Northern Aust Fishing Annual) | 2 |
| Tackle Junkie | 1 | 100,000 | 100,000 | North Australian Fishing & Outdoors | 6 |
| Freshwater Fishing | 6 | 13,000 | 98,000 | Saltwater Fishing | 6 |
| Western Angler | 6 | 13,000 | 98,000 | South Australian Angler | 12 |
| Bluewater Boats & Sportfishing | 6 | 12,000 | 72,000 | Spearfishing Downunder | 5 |
| Sportfishing Australia | 4 | 10,500 | 42,000 | The Fishing DVD | 4 |
| Catch | 1 | 20,000 | 20,000 | Trailerboat Fisherman | 12 |
| Tournament Angler Guide | 1 | 10,000 | 10,000 | Travelling Angler | 6 |
| Estimated total annual circulation | | | 2,093,500 | Wildcoast. Fishing South Australia | 6 |

Table 2: Estimates of the circulation of RF magazines in Australia (Source: J. Pepperell).

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This array of magazines probably appeals to more avid anglers and can develop RFE content to improve the experience of readers through access to knowledge, skills and promoting "best practice" in a range of areas. The magazines have considerable capacity to influence readers through editorial policy on current issues which can have RFE content.

The rise of websites and social media platforms has resulted in an increase in two-way communication between RF suppliers and anglers. Government agencies can also use this path. These media forms are well suited for RFE since those who access the internet and social media, wish to receive benefits such as useful information. Charter operations, fishing guides and private sector instructors work on a "fee for service" basis and impart a range of knowledge, skills and experience to customers. Their businesses are educative by nature and there is an incentive to promote RFE and to gain sponsorship from government or the private sector to increase their customer base and enhance their influence.

Community fishing groups have their established pattern of RFE and serve the needs of club and group members. Club fees can assist with education programs and volunteers combine to run fishing clinics and other RFE activities (e.g. at boat and tackle shows). Resourcing for community RFE can be from government schemes, private sector sponsorship and through community fundraising. There is a wide and diverse range of organisations examined that are motivated to provide RFE.

3. Reviewing RFE messages

3.1 Identifying key messages in RFE

There has not previously been an analysis of RFE messages across the sector in Australia.

We examine the key RFE messages by gathering information from three sources. Key messages come from:

- the motivations and roles of the organisations that promote them, as discussed in previous chapters. Thus previous policy developments have driven some of the key educational messages;
- national RF policy documents; and
- observing the educational messages that are currently communicated to those in the recreational fishing sector and the public. (This information is derived from an analysis of the lists of activities and messages for each state found in the Appendices).

This approach recognises the institutional need to promote messages, the previous national policy initiatives that have been taken and the types of messages that are being transmitted in and to the sector through RFE activities. We will consider each of these below.

3.1.1 Organisations and RFE messages

RF educational messages are often part of the normal communication and information processes of RF organisations. RFE is a form of promotional communication from organisations with roles in recreational fishing, but is often thought of as simply instructive (e.g. how to fish), not recognising the breadth of the term education and the extent to which a range of messages attempt to bring about "behavioural change" among anglers. However there is also the recognition that RF activity can have an impact on resources, needs to be managed and relies on healthy connected ecosystems.

Table 3 has been developed to provide an overview of our expectations of the kinds of messages that different organisations try to convey, reflecting their motivations in doing so.

The table lays out the "base level messages" which organisations will use to educate both recreational fishers and the community. These messages are often taken for granted, but comprise some of the big picture areas of communication within RFE.

Table 3: Organizations and their presumed motivations and messages in communicating with the recreational fishing sector.

| Organisational | Motivation | Messages |
|----------------|---|--|
| sector | | |
| Government | To communicate that | Fish resources are sustainable; |
| fishery Dept. | the conditions of | Recreational Fishing is being properly regulated; |
| | relevant legislation are | - The activity is managed and not imposing on other |
| | being met. | parts of society; |
| | | - RF is environmentally sound with ethical and welfare |
| | | practices; |
| | | Changes/ developments are conveyed to the sector; |
| | To communicate their | -meet regulatory requirements, provide order; and |
| | effectiveness | -inform what services are provided for licence fees. |
| Government | To assist RF through | - Informing on a range of technical, sustainability, and |
| Research | provision of research | environmental issues in recreational fishing; |
| | | |
| NGOs – Peak | To communicate the | -Member angling groups are: |
| *Bodies | contribution of rec. | well represented on many common issues; |
| | fishers | are being kept informed about important issues that |
| | | affect them; |
| | | - Rec. fishing activity is a beneficial leisure and |
| | | sporting activity; and |
| | | - Peak bodies can respond to threats or opportunities. |
| | Some other NGOs | |
| | communicating | - Conservation problems with RF; |
| | problems with RF | - Environmental impact and sustainability questioned. |
| Private sector | To communicate the | - RF has many economic, societal and health benefits; |
| RF | contributions of the | - Keep anglers aware of new innovations in RF and |
| Industry(ies) | private sector to the RF | fishing equipment (including 'fish-friendly' gear); |
| | sector; | Poinformed about your PE activity/coerty |
| | To get people | Be informed about your RF activity/sport; |
| | fishing/buying tackle watching media etc. | Undertake your fishing responsibly and ethically; and To secure access for rec. fishers |
| Community | To communicate the | - join others in the recreational activity and sport; - |
| (clubs) | grass roots desire to go | benefit from the experience of others in the club; and |
| | fishing | -To secure access for recreational fishers. |
| | lisillik | - TO Secure access for recreational fishers. |

Across all organisational sectors the base level messages have been gradually adopted with an increasing number of additional issues surrounding RF practices...for example, environmental, ethical and welfare⁴ impacts and how the RF sector is responding. It is these additional messages that have driven the need for higher policy documents across the RF sector nationally.

⁴ Fish welfare issues are part of the National Consultative Committee on Animal Welfare (NCCAW), replaced in 2013 by the Australian Animal Welfare Advisory Committee (AAWAC), which was disbanded in 2014.

3.1.2 RFE messages in recent policy documents

There have been several strategic documents that have developed strategic frameworks for RF nationally and these have included RFE to differing extents. Two of these recent strategic initiatives are particularly relevant to the development of RFE.

Firstly, "Recreational fishing in Australia - 2011 and beyond: a national industry development strategy" includes two goals under its National Education Program (NEP) with suggested strategies and actions. Goals 5 and 6 are of an educational nature, and are summarised in Table 4a. This shows that the recommended practices within the Strategy also have environmental, welfare and ethical implications.

| Goal | Strategic response | Practices | Environment | Welfare | Ethics |
|-------------------------|------------------------------|-----------|-------------|---------|--------|
| Goal 5: Encourage | Encourage RF to be in | Х | Х | | |
| stewardship of | research, communication, | | | | |
| environment and | monitoring and habitat | | | | |
| quality and | enhancement programs. | | | | |
| sustainable RF | | | | | |
| opportunities | | | | | |
| | Encourage RF to use best | Х | Х | Х | |
| | practices. | | | | |
| Goal 6: Include, invest | Develop new innovative | Х | Х | | х |
| and participation | fishing opportunities | | | | |
| | Respond positively to | Х | Х | | х |
| | Climate change and reduce | | | | |
| | carbon footprint | | | | |
| | Improve recreational fishing | Х | | х | |
| | safety | | | | |

Table 4a: The two goals (5&6) of the National Industry Development Strategy relevant to RFE

Secondly the "National Code of Practice for Recreational and Sport Fishing" developed by Recfish Australia introduced four main objectives in fishing responsibility. These are: Treating fish humanely; Looking after our fisheries; Protecting the environment; and Respecting the rights of others.

These four main objectives overarch 14 principles for RF-related practices (see Table 4b).

The national code of practice (NCOP) contains a suite of key and other messages and their associated recommended actions, as shown in Table 4b. As expected the NCOP provides actions to address each of the priorities. However it is clear that there is a range of messages with educational implications behind the nested actions in the code.

Table 4b: The four key categories of message and 14 recommended action in the National Code ofPractice for Recreational & Sport Fishing, 2009).

| Message and Recommended Actions | Practices | Environment | Welfare | Ethics |
|---|-----------|-------------|----------|--------|
| Treating fish humanely | х | | x (fish) | х |
| Quickly and correctly returning unwanted or illegal catch to the water | | | | х |
| Quickly and humanely killing fish that are kept for consumption. | x | | x (fish) | х |
| Looking after our fisheries | | | | |
| Using only appropriate, legal tackle, attending all fishing gear and valuing our catch | x | | | х |
| Taking no more than our immediate needs | x | x | | х |
| Protecting the environment | | | | |
| Supporting and encouraging activities that preserve, restore and enhance fisheries and fish habitat | x | x | x | |
| Understanding and observing all fishing regulations and reporting illegal fishing activities | x | | | х |
| Preventing pollution and protecting wildlife by removing rubbish | x | х | x | |
| Taking care when boating and anchoring to avoid damage to wildlife and habitat | x | х | x | |
| Respecting the rights of others | | | | |
| Using established roads and tracks | х | х | | |
| Reporting environmental damage | x | х | | |
| Avoiding unnecessary interactions with wildlife species and their habitats | x | х | x | |
| Practising courtesy towards all those who use inland and coastal waters | x | | | х |
| Obtaining permission from landholders and traditional owners before entering land | x | | | х |
| Caring for our own safety and the safety of others when fishing | x | | x | |
| - | | | (human) | |

From Table 4b we see there are 14 educative actions identified for communication. Of these, six relate to environmental aspects requiring some education on habitat and environment, six deal with welfare, of which two are concerned directly with fish welfare, three with welfare of wildlife associated with fishing activities and one relating to human welfare, i.e. safety of self and other anglers. Finally, three recommended actions deal with ethical aspects, recommending that anglers

make informed decisions on catching, releasing and/or killing fish humanely, and on limiting the catch to equitable or acceptable levels. We have therefore used these groups of messages (practices, environment, welfare, ethics) in further analysis.

Welfare and ethical considerations are likely areas where RFE is needed in the angling community, with the purpose of the code of conduct being to translate these messages into complying actions. Apart from sending messages to the RF sector, a secondary function of the code is to assure the non fishing public, that anglers are conducting their activities in the correct manner, for the right reasons and are socially responsible. The code therefore also serves to educate the general public in helping to make non anglers aware of required and acceptable standards in recreational fishing practices.

The code of conduct and the NIDS are calling for both minimum standards in RFE and also for the promotion of best practice. In Table 4a and b the emerging perceived need for anglers to be involved in research, communication, monitoring and habitat enhancement introduces new areas requiring RFE. An additional theme is adaptation to both innovation and opportunities as well as to the threats of climate change. Recreational fishing safety remains a baseline issue for RFE.

3.1.3. Commonly observed RFE message theme across Australia's states

In this section we present an overview of the different RFE message themes that are currently being communicated to those in the recreational sector, including the general public, through specific activities. Chapter 5 attempts to assess the success in the delivery of different RFE messages, whereas in this chapter we are concerned with what RFE message themes should be sent. Table 5 presents a summary of the range and types of current RFE message themes that have been identified from the synthesis of national responses in Appendix 1.

| Activity with associated message themes | Status – nationally, all states and territories |
|--|--|
| Basic fishing skills (via Fishing Clinics) | Common in all states and territories, less applicable nationally. |
| Rock fishing safety | Mainly in southern states – (NT/Qld "croc" fishing safety) |
| General boat & water safety | Common – nationally, all states and territories |
| Fishing regulations | Common in all states and territories, less applicable nationally. |
| Humane treatment of fish | Common – nationally, all states and territories to differing extents |
| Respect for environment (litter etc) | Common – nationally, all states and territories |
| Caring for Fish (Fishcare or equivalent) | In NSW, Vic., previously in Qld, with possible equivalent in other states, no national equivalent in WA. |

⁵ NB. The following messages are mentioned in national documents, but we were not able to measure the extent of their "take up" in each state: [Limit catch, don't catch limit, Environmentally friendly gear, Respect for others, Mentoring young fishers, Carbon footprint of RF, Health benefits of RF, Community monitoring].

In Table 5 it can be seen that basic messages on fishers' safety (rock fishing and boat safety) and regulations for anglers to follow are often communicated. However as we examine the table further, we see messages becoming more advanced and conceptual and seeking to change angler behaviour and conduct.

• Initial messages are usually concerned with basic instruction on "How to fish"- safety, gear, proper use of equipment, and knowledge of basic regulations;

• More advanced messages involve instruction on improving fishing practices – species-based fishing, catch and release methods and knowledge of more advanced regulations or practices;

• Wider sustainability and environmental responsibility messages are aimed at influencing fishing practices ("only take what you need", "take your rubbish home" etc); and

• Higher level ethical and community related messages then follow, including aspects such as respect for fish, the environment and for others in resource access and sharing.

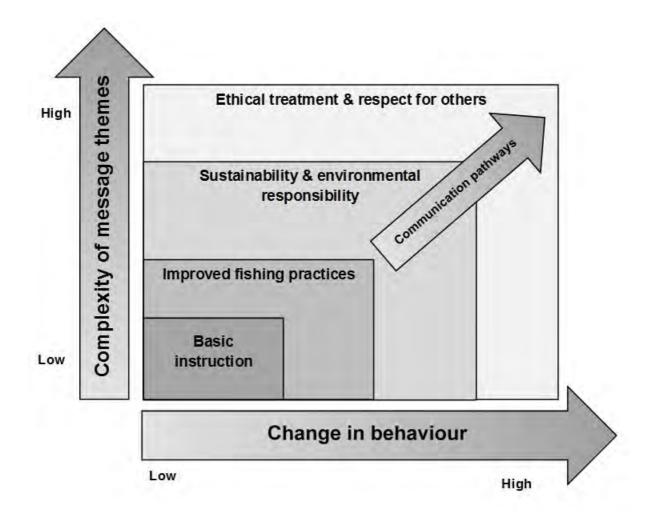
Activities directly involved with fishing, such as fishing clinics, transfer a range of "how to" messages, but it is unknown if the higher level messages are included in a basic fishing course.

The overview of key RFE messages from all sources has revealed the following:

- There are base level messages that organisations such as government, NGOs, private industry and community groups promote to explain their roles and mandates in recreational fishing and to reinforce the contribution of those roles to recreational fishers;
- Recently developed national strategic developments and codes of conduct have addressed a range of environmental, animal welfare and ethical issues which are not readily delivered to the recreational fishing community. For example, someone in a learn-to-fish clinic is unlikely to be able to receive these messages in the time available in which case, a separate strategy for communication of such issues is likely required.
- The analysis of past RFE activities reveals a large number of fishing clinics and "learn to fish" initiatives being promulgated by different organisations⁶.
- A basic learn to fish course cannot adequately communicate the increasing range of higher level environmental, welfare and ethical issues and requires alternative approaches.

The increasing number of higher level messages on sustainability, environment, ethics and access will require a variety of communication paths in order to reach rank-and-file anglers and more importantly, to be able to change their behaviour. The RFE challenge is illustrated in Figure 5.

Figure 5: A representation of the layers of RFE message themes, with their complexity, behavioural change and implications for communication pathways.



In Figure 5 increasing complexity of the message themes is related to the requirement for behavioural change, illustrating the challenge in developing communication pathways. The concepts in the message themes may be complex, but the actual messages are often simple and direct e.g. the message theme of sustainability requires conceptual explanation, but leads to simple messages such as "reduce fishing effort".

The higher level message themes of sustainability, environmental responsibility, ethics and respect for others, are conceptual and are less likely to be effectively delivered in a "one off" face-to-face fishing clinic. Repetition will be required over a period of time.

3.1.4 Discussion

The previous section showed that RFE message themes and behavioural outcomes are linked and vary for different communication pathways. In Australia there has not been a formalised integrated approach to engendering change among anglers. In the US, *"Making recreational fishers into*"

aquatic stewards", Seng and White (2006) identified a series of variables that contribute to environmentally responsible behaviours:

• *"Entry level - improve participants' environmental sensitivity and ecological knowledge;*

• Ownership level - people internalize issues and problems. They create a personal connection with areas, an in-depth understanding of issues, and personal investment. (e.g., I love to go fishing and boating; therefore, I want to prevent the spread of aquatic nuisance species that could affect these activities);

• Empowerment level - Empowerment gives people a sense they can make changes and help resolve important issues. People are empowered when they believe their personal actions can make a difference; and

• Best practices - offer the research and systematic methods to identify strengths and fill gaps in existing aquatic stewardship education efforts. This includes setting goals and objectives, applying precepts of a program logic model, evaluating activities and results, and making modifications as needed" (Seng and White 2006).

In Australia we have not been so explicit in analysing these steps towards improved environmental stewardship by recreational fishers. The National RF Code of Conduct has condensed many higher level messages and concepts to the level of "best practice" actions for the angler on the ground. The messages and consequent recommended actions are delivered to rank-and-file anglers informally through the RF community. However, the proportion of Australian anglers who have read or can recall the actions in the National Code of Conduct is unknown.

The higher level message themes are aimed at an increase in angler responsibility, care and accountability and require assessment that behavioural change is taking place. In the National Released Fish Survival project, Pepperell (2004) surveyed "Managers, communicators and Peak bodies" and also the "RF industry" with respect to the uptake of new fish release practices and behavioural change among anglers. Pepperell concluded "the strategy must be considered to have been very successful in meeting its objectives. Responses from all groups reflect their recognition that the active promotion of released fish survival will be an ongoing task as newcomers enter recreational fishing, technology advances and new research is undertaken" (Pepperell 2004).

There is also an increasing awareness of the need for best practice in fish welfare. In research currently being undertaken, Hardy-Smith (in progress) surveys recreational fishers in Victoria about their fish welfare practices. This will lead to an assessment of their impact and recommending changes in fish welfare for recreational fishers where required. The diversity in the types of higher level RFE messages may require different modes of communication to those used in a traditional "teaching someone to fish" activity. Future RF educational strategies need to include media, messages and recreational fisher-client groups and examine how to promote these diverse messages. Ideally, they should also have ways to assess the uptake of the messages. In the next Chapters we examine how messages can make their way to audiences though alternative media.

4. Media and audiences for RFE

In the introductory chapter we outlined the approach to analysing RFE using a communication model. Previous chapters have looked at the organisations which are sources of RFE and the types of messages that need to be communicated.

This chapter identifies the different media that transmit the messages to the RF audience and broader public as described in Chapter 5. The project is examining the use of social media in a separate deliverable currently being undertaken by Thinktank Social (TTS in progress). This chapter provides background to the analysis of RFE activities that have taken place across Australia as described in Chapter 6. It also gives background to the success of RFE projects as described in Chapter 7.

4.1 Communication media and RFE

In the communication process described in Figure 1 the media is a general term used to describe the technical vehicles by which the message can be carried to the receiver. We will see that for RF there are many different media and there are also many different receivers in audiences that may be contacted. Each of the different media as used in RFE are described below.

4.1.1 Personal communication

Word of mouth is often the underestimated medium and possibly the most frequently used in RFE. Parents instruct kids on safe places to fish, how to use the fishing gear, what to do when the fish bites and how to land and look after a fish, or how to release it. Spoken communication can influence others, particularly when explaining the "whys" behind a change in practices or behaviour.

4.1.2 The actions of others

Recreational fishers often learn by watching others preparing to fish or in action. For example, observing the actions of someone else washing down a cleaning table, or caring for a fish being returned to the water is a key RFE learning medium. Recreational fishers and the general public are influenced by what they see others doing. When RF practices are bad this can lead to the wrong messages being communicated to the public. Most clubs encourage their fishers to be role models and to follow good practice – a way of educating others and giving a good impression of RF activity and the sport.

4.1.3 Written communication

Written material is one of the core communication mediums for RFE. Examples are:

- Leaflets in the tackle shop explain the local fishing regulations the do's and don'ts; requests for assistance in research, etc
- Letters and mail outs; often included with fishing licence renewal notices
- Fishing magazines and periodicals Numerous titles in Australia catering to all aspects of RF

- Material produced by government RF organisations
- Local newspaper columns..."what's biting" and messages about safety and good practice.

Written material is a key tool in RFE.

4.1.4 Pictorial communication

The pictorial medium is one of the simplest communication tools used in RFE and the promotion of RF. Pictures of fish and anglers catching them are used in RFE, magazines, posters, adverts etc. The advent of digital camera and phones has made the picture a more common currency in communication between recreational fishers.

4.1.5 Instructional diagrams and cartoons

In many parts of recreational fishing there is a need to explain using diagrams, flow charts and other sketch tools to communicate RFE messages.

In this area, cartoons are a humorous method to put across a RFE message...communicating about size limits, boat safety and other issues of the day. Government has used this method in the past (e.g. Queensland Fisheries and Victorian Fisheries calendars) and the Tackle Trade has used it to highlight issues to fishers and the general public.

Then there are the electronic/digital communication media.

4.1.6 Radio

Radio has been a popular medium for regional fishing shows, news on catch prospects and information about weather. Questions and answers from angler phone-ins are often educative. No survey has been done on how many of these shows exist in Australia, but they are believed to be very numerous. They often go to air very early in the morning, targeting active anglers preparing for a day's fishing.

4.1.7 Television

Sparks and Munro (2011) identify television as the major media influencer in RFE potentially reaching across the whole community. The combination of personal communication, visual images and action commentary enable such TV shows to be highly educative. Those based around personalities (Rex Hunt's Fishing shows, Escape with ET, iFish) offer a wide range of education messages in many areas and to many audiences.

TV shows with RF content are one of the main ways non RF learn about RF and are key tools in informing the public who have no experience of or connection with RF, but who still make up a significant part of the audience of such shows.

4.1.8 DVDs, video clips

These can be entertaining, instructive and targeted to audiences in communicating certain RFE messages that are better illustrated via the moving image. These are often used to good effect in tackle stores, running on continuous loops. A number of printed fishing magazines now make use of DVDs (sometimes advertorial, sometimes instructive) as 'free' attachments to the magazine. In one interesting development, a specifically filmed and designed 'Fishing DVD' successfully competes side by side on newsagent shelves with printed magazines.

4.1.9 Telephones- fixed line and mobile, sms text messages

Fixed phone communication is still a medium for regional communication although mobile is becoming almost ubiquitous. The latter also enables sms text messages and pictorial content to be added. Mobile phones can also connect to the internet and have potential safety uses for anglers. Some recreational fishing guides are now available through 'Apps' delivered by iPhone and Android.

4.1.10 Fishing games

The development of personal computer and hand held devices has led to a range of popular fishing games being available. These have educational value in fishing instruction and skills enhancement.

4.1.11 The internet, websites email and iPhone applications (APPs)

Email communication has been able to increase the number of contacts made at low cost. Internet websites have become a major store of Recreational fishing knowledge and RFE. Government, NGOs, businesses and community groups have all benefitted from using websites to communicate to stakeholders, customers and RF community members.

Mobile phone APPs are also becoming important media for fishers. For example, recently, Fisheries Victoria has developed an iPhone application to provide fishers with timely information on regulations and codes of conduct when fishing in Victoria. In Queensland "redmap" and Integrated Eye on the reef (IEOTR) have been introduced.

Table 6 displays a range of features of nine commonly available Fishing Apps. Their content is ranked by frequency of features and shows that information on size and bag limits is most commonly provided as is sharing of photos of catch and location and social interfacing. Information on popular fish species, and fishing tips are slightly less popular (although this information varies considerably among Apps). In contrast, information on closed seasons, licence requirements, weather, tides and green zones is less frequently included on Apps. Some of these omissions are not unexpected since mapping all green zones in MPAs in Australia is a laborious task, and because accurate information on local weather and tides needs to be paid for on a subscription basis by the App developers.

| Name of App. | Catchability | The Australian | Fishabout | My Fishing | My Fishing | The Fishing | Movtan** | Fishing | Fish |
|----------------------------|---------------|----------------|-----------|------------|------------|-------------|----------|---------|---------|
| Platform | | Fishing App | | Mate | Mate Pro | Mate* | | NSW | Assist# |
| iPhone | 1 | × | 1 | × | × | 1 | 1 | 1 | 1 |
| Android | 1 | * | × | 1 | 1 | × | × | × | × |
| Information on App. | | | | | | | | | |
| Size limits | 4 | 1 | 1 | 1 | 1 | 1 | × | 1 | 1 |
| Bag limits | 1 | 1 | 1 | 1 | 1 | 1 | × | 1 | × |
| Share photos of catch | 1 | 1 | 1 | 1 | 1 | 1 | ~ | × | × |
| Share location of catch | 1 | * | 1 | 1 | 1 | 1 | ~ | × | × |
| Social interface | 1 | * | 1 | 1 | 1 | 1 | ~ | × | × |
| Fish information | 1 | 1 | 1 | × | 1 | 1 | × | × | 1 |
| Fishing tips | 1 | 1 | 1 | × | 1 | 1 | × | × | × |
| Integrate with Facebook | 1 | * | × | × | × | 1 | * | × | × |
| Green zones | × | × | 1 | × | × | 1 | × | × | × |
| Tides | 1 | × | 1 | × | × | × | × | × | × |
| Weather | 1 | × | 1 | × | × | × | × | × | × |
| Closed seasons | 1 | × | × | × | × | × | × | × | × |
| Licence requirements | × | 4 | × | × | × | × | × | × | × |
| Cost | Free | \$2.99 | Free | Free | \$1.99 | Free | Free | \$2.49 | \$3.79 |
| *Not live | | | | | | | | | |
| **Developed overseas,so | ome Australia | in content | | | | | | | |
| # Identifies fish from pho | to | | | | | | | | |

Table 6: A range of features of commonly used recreational fishing APPs.

The better fishing Apps are designed to allow a lot of sharing of photos and information, the forming of groups (eg, 'following' fish species) and posting to Facebook. This kind of content appears to be informative and communicative, but is not necessarily educational in the sense of engendering behavioural change. Information on fishing regulations is included in most of the Apps, and while 'educational' to some extent, is available from official websites of Fisheries Departments. The Apps usually contain caveats regarding the accuracy or otherwise of regulatory information but the convenience of having such information readily available is clearly an attraction.

Currently Apps are indicating the range of issues that recreational fishers are prepared to gain information on. Presumably, free apps are downloaded more often than those for which payment is required, although without a study of the frequency of use of these Apps, it is not possible to quantify their penetration within the Australian recreational fishing community. One of the Investigators of this project (JP) has been involved in the development of one of these Apps ('Catchability'), which has been downloaded 13,200 times since its launch on iPhone six months ago. Of those, there has been a very high proportional uptake by anglers, with just over 10,000 registered users of the App as of 1 June 2014.

4.1.12 Social media – Facebook, Twitter

Social media is a rapidly emerging communication tool for RFE. The current project incorporates a specific study of how social media is being used among RFs. This study is being conducted by Thinktank Social, Victoria (TTS in progress). Patterns of use of different social media platforms vary by avidity, with highly avid fishers often using chat rooms and similar forums. New fishers tend to use Twitter and Facebook, with the latter being a favoured and very active platform for a wide range

of fishers, fishing gear suppliers, charter operators, peak bodies and to an increasing extent, Government. Youtube and Instagram are increasingly popular with all fishers and other platforms are emerging as the social media industry develops (TTS in progress). This part of the project is also developing a strategy for communicating with anglers and conducting pilot studies of how social media can promote RFE messages.

Discussion - Media for delivering messages

There is a need to know which media are accessed by which sectors of the recreational fishing community (Television: Magazines: General print: Radio: Social media). Who are the audiences of each of these? Do they differ? If so, how?

Answer: We don't know because specific studies have not been conducted. However, we can speculate that:

- Specialist fishing magazines reach specialist readers (e.g. game fishing, fly fishing, kayak fishing);
- TV fishing shows have a far broader audience, an unknown proportion of which are not fishers, but simply being entertained. Whether or not TV fishing shows increase participation in fishing is unknown, although it is likely that this is the case; and
- Radio fishing shows, usually early morning, would reach mainly hard core rec fishers.

There have been several surveys which have included some questions on the use of different communication media in RFE. Sutton (2006) surveyed the sources of information about recreational fishing in the Great Barrier Reef (GBR) Queensland. The highest level of use in decreasing order (highest to lowest influence) were: television shows; newspaper columns and articles; local bait or tackle shop; attending public meetings; making a formal submission to a government agency; or contacting their government representative about a fisheries-related issue (Sutton 2006).

In a survey for the FRDC, Sparks and Munro (2011) indicate that the following were the media sources of information on "current access to information on research": TV Shows or documentaries 59%; Other fishers 45%; Printed media 39%; Tackle or other fishing stores 25%; Fishing Blogs 20%; Online forums 17%; Email 14%; Youtube 6%; Facebook 4%; SMS 2%; Twitter 1%; Podcast 1% and Other 7%.

In a survey of fishers and habitat in the Northern Rivers, Baker (2010) found the majority of fishers would prefer to access "fish habitat information" online (66 %), via articles in fishing magazines (17 %) through word of mouth (14 %), articles in local newspapers (9%), talks at fishing competitions or clubs (7%), brochures (7%), email listing, printed newsletters (8%) and government, books or television, bait or boat shops and electronic newsletters (9%)⁷ (Baker 2010).

⁷ Percentages sum to more than 100% due to multiple answers. See Baker (2010).

The available information indicates that the purpose of a given survey is important in determining which media is most useful. In the Sutton (2006) and Sparks and Munro (2011) studies the power of television to propagate information is evident as is printed media and the influence of other fishers. In the Baker (2010) study, recreational fishers had to choose their preferred media to gain information on habitat and information online was highest and TV was low. As we have previously seen, the advent of social media has added diversity to the media options available and while these did rate in the Sparks and Munro study, they do not appear as options in the other two studies.

4.2 Media and RFE messages

In order to canvas what kinds of editorial policies fishing magazines may have in relation to angler education, the editors of a small cross section of representative magazines were contacted and interviewed. They were asked to consider the role of the magazine in communicating information and messages to anglers, in general, and also with respect to the key messages identified in this report.

FishLife

This is what might be called a 'niche' fishing magazine, targeting skilled anglers in both fresh and salt water. Circulation: 5,000

The editorial philosophy of the magazine is to portray "the true evocativeness of fishing". The magazine consciously avoids political issues to a large extent, concentrating more on fishing experiences and imagery. The editor commissions articles on how to fish and where to fish, extending to the 'why we fish' messages (which includes the 'wellness' aspects of fishing).

As well as featuring stories on fishing for the highly popular species, the magazine also focuses on less fashionable fish such as mullet and leatherjackets and has a policy that there is no such thing as a 'trash' fish.

A strong editorial policy is to emphasise careful and humane treatment of fish, with many photos of releasing fish in excellent condition. They also emphasise the importance of pristine habitats and how anglers play a role in that area. One recent example of this is a forthcoming article on finding healthy eastern cod populations in the upper reaches of the Clarence River.

In conjunction with the careful handling of fish for release, the editorial policy is also to include the other side of fishing – catching fish for the table. Here, they ask contributors to emphasise humane dispatch of fish, and respect for the fish in how it is prepared and cooked. A recent article talked about the joy and pride of children in not only catching their first fish, but also in their being able to contribute to a meal of fresh fish for the family.

There has been a decision not to include a 'News' section in the magazine since it is felt this would distract from the main themes, which are apolitical. On the other hand, the magazine is proactive on Facebook, leading to a particularly active website where information is made available and

discussion encouraged via forums. It is believed that many more anglers are reached through these media than through the magazine, although they are all linked under the one 'brand'.

Fishing World

This is one of the leading national fishing magazines that covers all forms of fishing. Circulation: 14,000.

The underlying editorial emphasis of the magazine is on techniques to become a better angler. Editorial content often emphasises fishing sustainably, angler responsibilities and environmental awareness.

The magazine has a News section in which the editor selects press releases that are relevant to the readership, especially in real time, often commenting on the content rather than just using the section to fill space. The magazine is interested in following political issues that affect fishing access, overfishing and so on. Two regular contributors cover educational issues on fisheries management/conservation and fisheries biology respectively.

Regarding other key messages, the magazine certainly emphasises safety in fishing, reports on rock fishing tragedies and always stresses safety aspects in any stories on rock fishing in particular.

On fish welfare, the magazine policy is to advocate the best techniques for releasing fish, or if the fish is to be kept, how to kill it humanely (the science writer for this magazine has developed an app showing the correct *ike jime* method for humanely dispatching many different species of fish. The app is promoted by the magazine).

A recent editorial piece educated anglers about the dangers of *ciguatera* poisoning, especially in light of a case involving the eating of large Spanish mackerel.

Regarding feedback from anglers, the magazine has an active 'Letters to the Editor' section that receives much input. Again, the Facebook page is used for short items, leading to the magazine's website where feedback commentary is strongly encouraged. This magazine also issues enewsletters twice weekly that lead the many thousands of subscribers to the website and links to stories and news items.

Bluewater Boats & Sportfishing

This specialist magazine targets the offshore gamefish angler. Circulation: 12,000

This magazine is strong on techniques for all aspects of offshore fishing. It also has a conscious policy to deliver the latest factual information to the readership on science and on issues that affect access to fishing, such as MPA developments, changing regulations, national and international fisheries management and so on.

The editorial policy is to include an extensive News section but does not consider that it has an obligation to be merely a conduit for Government press releases. The editor will run these if

considered relevant, of course, but will always filter these on a need-to-know basis, or with respect to general interest of the readership.

Regarding key messages to anglers, the magazine actually commissions pieces on such topics as proper techniques for releasing fish for optimal survival (given the high release rate for billfish in particular) and all pieces are subedited where possible to include information on fish welfare, boating safety and so on. The editor considers that the regular columnists conform to the ethical standards of the magazine.

Social media platforms are not utilized to a great extent by this magazine (although there is a Facebook page and website), and consequently, feedback is usually only received via email, telephone or personal contact. Some specific messages can use a certain media to target a specific sector of the public audience. Sales and marketing industries are experienced in strategies used to reach target audiences. In the RF sector much of the past promotion and education has been generic messages to the whole population. In the next section we examine what is known about RFE audiences.

4.3. RFE audiences

This section examines the audience for RFE. The general population is a potential target audience for RFE, while many people are not RFs. However most of the available information we have on RFE audiences is from surveys of recreational fishing.

4.3.1 An overview of RF and RFE audiences

Using information summarised from a range of past RF surveys, Table 7 presents an estimation of recreational fishers numbers relative to the whole population. There are an estimated 30% of the total national population who have fished in the past ten years. This leaves 70% of the general public as non-fishers. An unknown percentage of non-fishers may be open to try RF, and there is also another unknown percentage of the public who either may not approve of RF activity, or have no interest.

Table 7: A conceptualisation of the RFE audience in Australia, estimated from generalised resultsfrom past RF participation, summaries from past surveys.

| 30% Rec. fishers | | | 70% | 6 non fishe | ers in genera | l population | |
|------------------|----------------|----------|-----------------------|--------------|---------------|------------------|-------------|
| | | | | | | | |
| | | | | | | | |
| 1/2 fish le | ess than 5 day | ys /year | | | | | |
| | < | > | | | | | |
| | | | Unknown % that may be | | may be | | |
| | | | willi | ng to try fi | shing | | |
| 4/10 fish (| 6-50 days pei | ryear | | | | | |
| | | <> | | | | L Indun au | |
| | | | | | | | n % that do |
| 1/2 | 10 avid fishei | rs | | | | not approve of R | |

In Table 6 of those that go recreational fishing, approximately 50% are occasional fishers, fishing less than 5 days a year. In contrast, about 10% of RFs fish more often and can be regarded as avid anglers. In the general population we propose there are unknown percentages of people who may try recreational fishing, or who do not approve of RF, while the rest may be indifferent, or content to let this leisure activity be available for those who wish to partake. This passive permission of the majority is sometimes referred to as the "social licence" that accepts fishing as an acceptable pursuit. In Australia today an estimated 6.9m people⁸, have been recreational fishing at some time in their lifetime. The National Survey in 2001 indicated the participation rate in RF in a given year is 20%, that is 4.6m RFs across Australia, of whom 3.25m are adults.

In Table 6 the horizontal arrows indicate the degree of exiting and entering between the recreational fishing population and the non-fishing population. The audience that is most likely to require "learn to fish skills" are young, or new fishers, who wish to try, or are taken recreational fishing. This potential "recruitment" audience is a major target of the generic "learn to fish" message. However there is also an unknown potential audience in the general population, a "target market" that may be open to try RF and would require a basic learn to fish course.

4.3.2 Segmenting Recreational fishers

Recreational fishers can be described by a range of approaches such as their activity, demographics or social attributes. The National Survey is the last cross sectional study of recreational fishers nationally (Henry and Lyle 2003) and provides data on recreational fishers' participation nationally e.g. the number of fishers, by state/ area, or by household, and the gender and age of fishers. Alternatively membership of fishing clubs is another possible segment, but only 4.3% of RFs nationally belonging to clubs (Henry and Lyle 2003). Fishers who hold a licence automatically become an audience segment that can receive Fishery department messages on RFE issues. Often the messages are public information and will be communicated generically to all licence holders.

Differences in activity

Different activity among recreational fishers can be seen in RF survey results (Henry and Lyle 2003):

- Ownership and use of boats, with many recreational fishers not using boats. Within boat use, there are owners of small and large boats, with about 80% of boats being able to be towed by trailer. There are no doubt some safety issues that RFE could communicate specifically to boat owners, if they could be identified;
- Grouping fishers by their annual level of fishing effort is common. According to the national survey, 67% of all fishers nationally fish less than 5 days per annum;
- Fishing location preference (-offshore 4%, coastal 48%, estuaries 35% and freshwater 20%):
- Fishing methods (line fishing 85%, pots nets and traps 7%, diving 1% and bait 4%; and
- Catch by RFs. Fishers target finfish, baitfish, crabs and lobsters, yabbies, cephalopods and molluscs and seek information and RFE to help capture different species.

⁸ 30% of 23m population in 2013, includes children and those under 18 years

Does RFE need to be able to communicate a different message to boat owners, the 50% of less frequent anglers, or other sub- groups? (e.g. Less avid anglers, or pot and trappers, or spear fishers only?) Or should some messages be communicated to only more avid anglers? Fisher attitudes, motivations and awareness are also important.

Motivations, values and the psychographics of RFs

There is little descriptive material on recreational fisher motivations, such as why fishers choose to fish. Past research on the motivation of fishers (Fedler and Ditton, 1994; Henry and Lyle 2003- see Table 8) has suggested that factors related to fishers' psychological state, the physical environment, social interactions and resource status are among the primary motives for fishing.

Table 8: Importance of factors influencing recreational fishing motivation (% of respondents) based on nationally aggregated data (Henry and Lyle 2003)

| Importance rating (%) | | | | | | |
|-----------------------|------|-------|----------|------------|--------|--|
| Motivation | Very | Quite | Not Very | Not At All | Unsure | |
| Relax and Unwind | 63 | 27 | 8 | 2 | - | |
| To be Outdoors | 58 | 33 | 7 | 2 | - | |
| For Solitude | 19 | 23 | 35 | 24 | - | |
| To be with Family | 39 | 30 | 19 | 13 | - | |
| To be with Friends | 32 | 41 | 17 | 10 | - | |
| Fishing competitions | 2 | 3 | 11 | 84 | - | |
| Fish for Sport | 48 | 34 | 12 | 5 | - | |
| Fish for Food | 33 | 28 | 25 | 14 | - | |

Considering Table 8 the National survey found:

"to relax or unwind and to be outdoors were identified as important factors (i.e. 'very important' or 'quite important') by the vast majority (>90%) of recreational fishers. Fishing for the enjoyment or sport of catching fish was also rated as being important for the majority of fishers (82%), as was to be with friends (73%) and family (69%) and catching of fish for food (61%). Less than half of the respondents (42%) identified to get away from people (for solitude) as important and only a very small proportion of fishers (5%) considered competing in fishing tournaments was an important motive for fishing".

These findings do not really give a "values" or "psychographic" understanding of individual or groups of RFs and how these will impact RFE. There is a need for further research in the area of angler motivation.

Social variables, Values and angler Psychographics

Segmenting the general population and target groups by socio-economic and demographic variables can determine significantly different target market segments. In a recent study in NSW McIlgorm et al. (2013) used multiple regression and cluster analysis to identify statistically different clusters of

anglers when their household income, fishing trip frequency, trip expenditures, tackle expenditures and boat capital expenditures were considered (McIlgorm and Pepperell 2013).

Segments may be trip related, fishing with family, friends/mates, or fishing alone. In RFE, fishers from "ethnic" backgrounds and non-english speakers can have language problems which RFE can address. Family participation has become a more diverse categorisation variable given the increase in the prevalence of "blended families". Alternatively Household type, can include youths, singles, young workers, young couples, couples with young children or single parents, couples with teenage or young adult children, empty nesters and so on.

The past decade has also seen values being used to identify groups for marketing and promotion. In marketing psychographic variables are used for "segmenting consumers by lifestyle, attitudes, beliefs, values, personality, buying motives, and/or extent of product usage. Psychographic analyses are used like geographic (place of residence or work) and demographic (age, income, occupation) criteria to describe and identify customers and prospective customers and to aid in developing promotion strategies designed to appeal to specific psychographic segments of the market for a product" (All Business 2013).

A recent US study identifies the demographic and psychographic profile of the charter fishing customer in order to better understand the market (Boehm 2013). Another University study on outdoor recreation activities in the US included saltwater, freshwater and fly fishing and identified differences in *baby boomers, generation X and generation Y* participation (Merrit 2013).

In Australia, Baker (2010) included motivational descriptors in a survey of RF attitudes to RF and to fish habitat in NSW. The approach recognises a link between Values > Behaviours > Opinions (Rose and Dade 2013) proposing there are three major "Values Modes" in the United Kingdom:

- Settlers (security; 20% of UK national population);
- Prospectors (outer directed or esteem driven; 40%) and
- Pioneers (inner directed; 40%).

These value modes for the population can be used to target marketing messages to the most appropriate groups. The system has been used effectively in campaigns by Environmental organisations (Rose and Dade 2013) and using it Baker (2010) finds: "that recreational fishers fall into two motivational groups: so-called 'Pioneers' and 'Prospectors'. "Although there are some aspects of 'recreation' that are likely to appeal to people who fit the 'Pioneer' type, it appears that the majority of fishers in Northern Rivers fit the 'Prospector' profile" Baker (2010).

"People who fall into the Pioneer profile have predominantly inner directed needs. They look forwards, like change and discovery, as long as it ethically acceptable, and are largely unworried about status. When confronted with a global, long term problem, people in this group are more likely to respond with 'it's a problem'. If offered a solution, the response is likely to be 'If it's for the good of the planet, or has an ethical imperative, we must do it. I'll do it myself and hang the consequences." Baker (2010). "Prospectors are outer-directed, they need both high self esteem and the esteem of others. They live for today and seek rewards in terms of status, achievement and recognition. They are unconcerned about belonging, security and identity as they perceive they have those already. When confronted with a global, long term problem, people in this group are more likely to respond with 'that's not a problem unless it affects my prospects for achievement and success'. If offered a solution, the response is likely to be 'I'm not taking up causes or things that may not work but if it's the done thing and makes me look good, it's for me. We should organise!" Baker (2010).

"The Settlers, who do not appear to be fishers, need to belong, they tend to look backwards to a better yesterday and dislike anything new as this threatens identity, belonging and security. When confronted with a global, long term problem, people in this group are more likely to respond with 'that's not a problem unless it immediately affects my family, my local area, my identity, my traditions'. If offered a solution, the response is likely to be 'I'd rather not change and someone in charge should do something, but if other people like me are involved, then okay" Baker (2010).

These approaches illustrate the potential use of such segmentation, but which should be used with caution as the characteristics used to segment are not necessarily statistically significantly different. The approach needs a firmer statistical basis given the high risk of mis-specifying motivational groups.

Further research into statistically reliable measurement of motivational groups, values and social clusters is needed to improve understanding of anglers motivations and behaviour and the way in which these might be used to focus different RFE strategies. Currently available studies should be used with caution.

4.3.3 Reaching RFE audiences

In the past RFE has often been concerned with generic messages, such as information about regulations, which is required to reach all recreational fishers and the general population which is also an audience for some types of RFE message. The 'spill over' to the general public can enhance the social licence for recreational fishing through, for example, a re-assurance that government is managing the fish resource well.

However some RFE messages may need to be targeted to a specific segment of the RF community. The messages may be missional in nature. For example, for rock fishing safety, it may be desirable to inform fishers from some ethnic groups, who have been disproportionately impacted by rock fishing accidents (Bradstreet et al. 2012).

In the last decade more RFE initiatives have targeted special fishing clinics towards different age groups, socio-economically disadvantaged groups (such as single mothers), disabled groups and those recovering from cancer. Initially fishing clinics were offered to anyone, through a public poster or leaflet, a generic strategy for a general audience. Over time specific programs have started to target different segments of the population. The rise in digital communication means that potential

target groups for RFE messages may become more defined, identifiable and reachable through websites, smart phones and especially social media platforms.

This is a marketing trend that "Companies must pay attention to the fact that customers are getting more educated and have better tools such as the Internet at their disposal to buy with more discrimination." (Kotler 2013). RFE is part of the outdoors leisure product and is likely facing competition from a range of competing alternatives, e.g. other recreational sectors and young people preferring to play indoor computer /*i-games*.

4.3.4 Promotion of RF and RFE.

Each of the organisations described earlier have different incentives to promote and market RF and RFE. Government may not consider that it has a promotional or marketing role for Recreational fishing *per se*, but has a clearer role in promoting RFE.

NGOs and community fishing groups promote RF and RFE, but have limited financial resources and limited prospect of any financial returns above costs from promotions. The private sector has the most marketing incentive, but their product is often specific RF equipment and not necessarily involved with key RFE messages. However it would seem that the private sector has more scope and incentive to mix product and RFE promotion.

Promotion and marketing needs to be prioritised nationally for the RF sector. It is then more sensible to consider promotion and marketing of RFE within the national priorities of the RF sector. The RF private sector markets equipment and the media sells information and entertainment. Private sector RFE training providers, such as fishing guides, provide services and skills.

Figure 3 suggests that RFE messages are layered. Promoting RFE messages to the general public is like marketing a new product with questions such as: "1. Who is the product aimed at?;2. What benefit will customers expect?; 3. How does the firm plan to position the product within the market?; and 4. What differential advantage will the product offer over their competitors?" (Kotler 2013).

RFE messages are often aimed at current RFs, with limited inclusions of non fishers. How does the general public become aware of the product? After watching a TV fishing show and seeing the thrill of catching fish, how would someone translate this into actually going fishing, and fishing successfully? Is there a pathway to learn to fish available and how would they find it?

The benefits from RF usually refer to the "outdoor activity" aspects of RF. Engagement with nature, peace and tranquillity can be seen as benefits. However there are concerns that children today are less adventurous and take less risks in engaging with the great outdoors (Louv 2008).

There is also an increasing awareness of decreasing participation in outdoor activities as identified by the Outdoors Council of Australia (OCA 2010). They indicate *"There are five broad categories of barriers or constraints to participation in physical activity commonly identified in leisure research. These are:*

- the costs of participating in leisure activities;
- lack of time and/or the pressure of other commitments;
- inadequate or inaccessible facilities;
- isolation (including social isolation and geographical isolation); and
- lack of skills and abilities.' (OCA 2010).

How does the RF sector plan to position its products and services in the national leisure activities market? What points of difference does RF have in the national leisure market? There are few facts on the degree of competition RF experiences from other leisure pursuits. Boating, sailing, golfing, bush walking, caravanning, camping and hunting are potentially competing "outdoor" activities. Does this mean those undertaking these activities are also open to recreational fishing and RFE? Could RF promotion specifically target these groups in the general public?

The RF community have prioritised research into the "health benefits" or "well-being benefits" of RF. If these health benefits were proven then RFE could be part of general health promotion directed to the general public (McManus et al. 2011).

4.3.5 Discussion – media, audiences and RFE promotion.

The relationships between organisations, roles, objectives and their use of different types of media to reach RFs or the public is complex and difficult to measure. In Table 9 we provide an overview of how the different organisations seem to use media to reach different RF audiences.

Table 9: An overview of organisations and their relative use of media to reach RF and public audiences⁹.

| Communication media | Gov't | NGOs- | private | | Audience: |
|--|---------|--------|---------|-----------|-------------|
| | Fishery | Peak | sector- | Community | RF or |
| | dept. | bodies | media | | Public (P)? |
| 4.1.1 Personal communication | ** | ** | *** | *** | RF |
| 4.1.2 The actions of others | * | ** | *** | *** | RF |
| 4.1.3 Written communication | *** | *** | *** | *** | RF and P |
| 4.1.4 Pictorial communication | ** | *** | *** | *** | RF |
| 4.1.5 Instructional diagrams and | | | | | RF |
| cartoons | ** | ** | *** | * * * | |
| 4.1.6 Radio | * | ** | *** | ** | RF and P |
| 4.1.7 Television | * | ** | *** | ** | RF and P |
| 4.1.8 DVDs, video clips etc | ** | *** | *** | ** | RF |
| 4.1.9 Telephones- fixed line and mobile, | | | | | RF |
| sms text messages | ** | *** | *** | *** | |
| 4.1.10 The internet, websitess, and | | | | | RF and P |
| email and iPhone applications. | *** | ** | * * * | ** | |
| 4.1.11 Social media – facebook, twitter | * | * | *** | * * * | RF and P |

⁹ These are subjective evaluations made by project team in the absence of any common quantitative measure and should be treated with caution.

We use a three star grading system to estimate reliance on a given media. The likely audience is either RFs or RFs and the public. This overview suggests that fisheries departments are more constrained in their potential use of media than the private sector which has the highest potential use of all media. Personal communications and actions are highest in the community area and written and pictorial communication is important to all organisations. Radio and TV have wide public coverage and are used by the private sector in particular with budgets probably limiting their use by other sectors (certainly the case for Government).

Government, RF peak bodies and private sector media are producing a range of detailed information that is partially addressing the suite of messages that recreational fishers need to hear. The strategic coordination in delivery of these messages and the effectiveness of their delivery and uptake by anglers is often unknown.

The National Code of Practice for Recreational and Sport Fishing was first developed by Recfish Australia in 1995 and fully revised in early 2009 with assistance from the Commonwealth Recreational Fishing Community Grants Program. As part of that process, a brochure (physical and electronic) was produced and widely circulated as part of a communication plan. Key points of the Code were also included in fishing magazine advertisements and editorials and in interviews on radio (mainly regional ABC).

Following this media campaign, a survey was conducted among key personnel to assess the success of this campaign by investigating awareness (or otherwise) of the Code (Recfish Australia 2008). There was strong awareness of the Code by all respondents combined, with about 36% indicating that they were very aware and a similar proportion that they were 'somewhat aware' of the Code. On the other hand, this meant that slightly more than a quarter of respondents stated that they were unaware of the existence of the Code. The Recfish website was the most popular source of awareness of the Code, followed by the media release, the printed brochure and hearing about it from friends. Interestingly, magazine material was a significant source for hearing about the Code, suggesting that the paid advertisements and/or editorial derived from the media release were reasonably successful in reaching the targeted audience. Only a small number of respondents had heard about the Code via radio (Recfish Australia 2008).

This chapter has presented an overview and analysis of the media choices for organisations in targeting audiences with RFE messages. The missing link in past RFE has been in the area of delivering messages to the general non fishing public, with RF programs often "preaching to the converted" in promotional materials and courses.

The next chapter considers the RFE activities that have been taking place nationally.

5. Reviewing RFE activities and programs in each state – analysis and results

In Chapter 3 we examined the range of RFE messages that we wish to be promoted in Australia. In this Chapter we appraise the range of messages that are being delivered through activities and programs and seek to identify success stories and gaps in current RFE delivery. This section reviews RFE activities and programs that have been taking place in each state and territory as presented in Appendix 3 and brings them together in summarised tables. RFE activities, such as fishing clinics, are in all states and have been identified. Government activities, such as distributing information and Fishcare programs are then addressed. The review wishes to see if the current activities are promoting key RFE messages and to also identify which RFE messages are not currently being delivered.

5.1 Evaluating RFE activities

The review has identified a large range of RFE activities and requires a framework to appraise these activities. Going back to Figure 2 in this study, the Communication program logic model has output based measures of completion and achievement, but also has desired outcomes. Ideally we should be able to have information on all RFE activities and their success in terms of both delivery and effectiveness as evidenced by the outcomes achieved.

In the US, in similar studies of RFE programs, the evaluation of programs is seen as being as important as program goal setting and is often overlooked (Seng and White, 2006). According to the Best Practices Workbook, (*RBFF 2003*): "far too often programs are based, not on research evidence supporting their effectiveness or on an accepted education theory, but only on what another program or agency is doing. And most evaluation efforts rarely report more than simple program outputs such as the number of participants at an event, participant satisfaction, and cost of delivery".

In gathering the Australian information on RFE programs this observation from the US may also apply to Australia. In Australian RFE there are no formal evaluation requirements in most activities. Mechanisms for evaluation can vary and are commonly surveys, testing, feedback from focus groups and altering of the experimental design (Seng and White 2006).

5.2 Profiling RF educational activities and programs nationally

While each state/territory in Australia has RFE activities, the first finding of the national comparison is that the number of RFE activities vary between states due to the following reasons:

- The size of the state's population;
- Area of the state and its coastline; and
- Funding for the activities.

We may expect NSW, the most populous state, to have more RFE activity than states with smaller populations. However we find that the level of RFE activity is disproportionally larger than in other

states, due to the influence of the Recreational Fishing Licence Trust Fund which has resulted in over 10 years of substantial expenditure on not only research and development, but also RFE programs. Both Victoria and WA both have RF licence systems that have contributed to RF education programs also over the past 10-15 years. Inevitably the different level of RFE funding leads to difficulties in comparing licenced with unlicenced states.

States with licence funds generally have more staff and funding for their RFE programs. The current Review study was able to identify information on RFE activity more easily in states with licence fees, than in states where lack of central resourcing does not assist RFE activities to be formally recorded. The central recording of specific RFE activities, new initiatives and developments in different jurisdictions will be an on-going challenge for monitoring RFE nationally. Hopefully networking within the sector can assist this communication challenge.

The Review compares the RF activities in each state and differentiates between types of activity, categorizing them in terms of clinics (several varieties), programs (several types) and information (both general and regulatory).

The amount of expenditure on RFE was most transparent in NSW and Victoria, where the details for RFL grants are available, whereas in other states the actual funding for RFE programs is not recorded in one place, but rather, the programs reside under a suite of different arrangements between government, peak bodies and the community. Ultimately a lot of the RFE funding is sourced from government, taking many pathways to peak bodies and community groups for RFE activities. However the sustainability of funding for planning future RFE programs is not reliable as government budgets wax and wane. As a result, elements of RFE are often reduced or omitted under tight government budgets (for example in Qld and NT in 2012 when funds for fishing clinics were not available).

RF activities supported by the private sector are more difficult to identify and measure and we note that sponsorship from the private sector is taking place in many ways, for example, donating fishing equipment to specific clinic initiatives. Through time it would be desirable to measure the private sector sponsorship of RFE activities, where it is applied and whether it is increasing. It is desirable to reduce the RF sector's dependence on government and co-funding of RFE programs may increase their sustainability.

5.2.1 Fishing clinics

Recreational fishing clinics occur in each state and are promoted by many organisations. Table 10 provides an overview of recreational fishing clinic activity for basic "learn to fish" programs.

| | Introductory fishing clinics by Government | Introductory fishing clinics by RF Peak body | Introductory fishing clinics by Clubs | Introductory fishing clinics by private sector |
|----------------------|--|--|---|--|
| National | No | | n/a | |
| NSW* | Yes-large | Yes, in past, less emphasis now | Yes | Yes |
| NT | In past, not since 2010-11 | | Yes | |
| Queensland | In past, not in 2013 | Yes | Yes | |
| South Australia | No | Yes | Yes | |
| Tasmania | No | ТВС | Yes | |
| Victoria* | Yes | Yes | Yes | |
| Western Australia | Yes | Yes | Yes | Yes (funding by Oil & mining sector). |

Table 10: Summary findings – Activity programs (Source: State activity tables in Appendix 2)

*NSW and Victoria have annual expenditures records.

The overview of fishing clinic activities show that government has funded clinics in most states, but funding is vulnerable to changes with changes in government and budget issues. For example:

- The RF Licence in NSW has led to considerable funding for a range of learn to fish and fuller course activities; Victoria's licence fees have also assisted funding of RF clinics;
- Learning to fish clinics are delivered by RF Clubs in each state examined by a variety of funding; and
- There is a small and emerging set of private guides and RF instructional businesses nationally based on fee for service.

While many learn to fish clinics are run by government, clubs and the private sector, there are a range of objectives and no uniform instructional content nationally. State bodies run 'Fishing Clinics', which are primarily designed to teach children (not adults) how to Fish. The extent of those taught to fish is unknown, but we estimate could be 5,000-7,000 annually. Private sector clinics and fishing event attendance in Qld, NSW and Vic. exceeded 65,000 persons per year in 2011-12 (pers. comm. M. Young)¹⁰.

Part of the content delivered in clinics also covers information on other key messages, such as: Respect for fish and environment, following fishing regulations, respect for others, and safety. However the uptake of such messages at learn-to-fish clinics is unknown.

¹⁰ All services including programs for, vacation care centres, schools, scouts, girl guides, corporate, youth programs, private kids lessons, private adult lessons, recorded contact with individuals at expos, disabled groups, kids fishing birthday parties, fishing club and community days/events.

In all states fishing clinics are a main avenue for volunteers to pass on their skills to the younger generation. Anecdotally the importance of this mentoring is recognised, but there is little formal information on mentoring, outside of some mention in Fishcare programs.

Other types of fishing clinics

There is also a range of other fishing clinics targeting:

- More advanced fishing methods, or specific species capture (e.g. Fly fishing);
- Adult, seniors and Family Fishing days;
- Socially disadvantaged kids;
- Youth in trouble (work with police system etc) ;
- Disabled persons (e.g. Fishing 4 Therapy program);
- Rehabilitation (medical/ surgical recovery) clinics, e.g. Breast cancer recovery etc), returning servicemen; and
- Other clinics.

These clinics have generally been developed by individuals in RF organisations responding to needs identified and tailoring a program towards a target group. States could benefit from information sharing on these activities and work towards agreed content for instruction at fishing clinics. The objective should be to give clients the best experience, through standards in delivery, rather than prescribing "national guidelines", which seems too regulatory. The Fish Guiding industry have made moves towards improving professionalism, accreditation and standards in delivery of clinics (PFIGA 2013)¹¹.

5.2.2 Information on RF

Government and other sectors provide a variety of information to recreational fishers. Government fishery agencies usually places information about regulations on websites and issues via media or press releases. This leads to questions and enquiries from the fishing public about where to fish, size limits and bag limits etc.

The RF Industry though bodies such as The Australian Fishing Trade Association (AFTA) sends out messages (some via the initiative, "Keep Australia Fishing"), and certainly through the Tackle Shop network and the electronic and print media.

There are a number of RF Codes of Practice (CoP) in Australia, most notably, that of Recfish Australia (RecFish Australia 2008). Others have been established by national bodies such as ANSA and GFAA. The Recfish Australia CoP appears to have had good penetration and been adopted (or promoted) by Government Departments and various fishing bodies. It has also had a good run in the RF print media.

¹¹ The PFIGA Accreditation has now been approved by NSW National Parks and Wildlife Service and is on the list of approved Accreditations applicable to gaining an Ecopass for guiding in National Parks as of December 2011.

In the community sector information is spread via associations, clubs, volunteers and mentoring of younger fishers by more experienced fishers. There is little formal information on these communication pathways and networks, but they are recognised within the RF community.

5.2.3 Fishcare programs (or equivalent)

Fishcare programs are shown in Table 11 and are primarily run in the two States (NSW and Victoria) with general fishing licence revenue. These programs focus on face-to-face interactions with anglers (adults and children), emphasising the same key messages (respect for fish and environment, follow fishing regulations, respect for others, safety) as well as promoting what Government is doing with licence moneys. In other states, this role is to some extent carried out by peak bodies (e.g. Sunfish in Qld, at Boat and Fishing Shows).

| Area | Government Fishcare program | Activity and funding estimate | Size of program |
|-------------------|-----------------------------------|-------------------------------|--------------------------|
| National | - | - | |
| NSW | Yes | Fishcare | Large – From licence RTF |
| NT | - | Other program | |
| Queensland | Yes (ended 2012) | Ended 2012 | - |
| South Australia | Yes | Fishcare | Small |
| Tasmania | Yes | Fishcare | Small |
| Victoria | Yes | Fishcare | Medium – from licence |
| Western Australia | - | Other program | |

Table 11: Fishcare or equivalent programs

5.2.4 Schools program activities

An example of RFE in NSW schools is presented in Appendix 2. A separate report reviewing Recreational Fishing and School Education in Australia – Pre and Post National Curriculum, is available from this project and builds on the main findings derived from the NSW case study.

5.2.5 Marine Discovery Centres Australia - Marine educators network

The Marine Discovery Centres Australia (MDCA) are a centre-based entity and collaborative group of marine educators. Some are part of schools, while others are community or government-funded and most have RF messages (see Appendix 2). The majority are situated in NSW (7 centres; 2 schools (Port Macquarie and Ballina), 1 private (Hastings Point) and 4 Not–for-profit community organisations (Eden, Bondi, Sydney Northern Beaches, Terrigal)) with others throughout Australia (see http://www.mdca.org.au/ for locations).

The best funded are the government fisheries centres (Queenscliff Marine and Freshwater Discovery Centre, Victoria and Naturaliste Marine Discovery Centre, Perth, WA) which service around 67,000

people per year and provide education programs that all have higher level sustainable fishery messages delivered via the latest devices (Interactive touch screens and iPad applications). These always include compliance (RF rules and regulations) but also involve more sophisticated stories, such as the science behind management, catchment care and community interaction with the aquatic environment, to connect with the public. The Queenscliff Marine and Freshwater Discovery Centre also has an outreach program that targets festivals and ethnic community events to promote sustainable fishing. The Naturaliste Marine Discovery Centre, Perth, has an excellent on-line marine education curriculum resources site (http://marinewaters.fish.wa.gov.au/) that includes recreational fishing lesson plans.

By contrast most of the community not-for-profit centres, such as Eden, Terrigal and Sydney Northern Beaches, have limited resources and cannot rely on sophisticated technology, such as Interactive touch screens, to engage and educate visitors. However, they are still an important facility for environmental education, although via more traditional methods (e.g. static displays and hand-outs of RF rules and regulations). School based entities have become specialists in delivery and Henley Beach Marine Discovery Centre, Adelaide, (Star of the Sea -Catholic Primary School) has become a leader in kids discovery and education (12,500 visits per year). The school has developed sophisticated interactive touch or joystick screen models for learning about recreational fishing and sustainability (e.g. Good Fishing Practices, Gone Fishing and Fish Forever models). (http://www.marinediscoverycentre.com.au/Marine_Discovery/models/Models.html)

Woodbridge Marine Discovery Centre (Woodbridge State School), Tasmania (7,000 visits) uses practical learning via their research vessel for fisheries education (hand and long lining), has provided training for Fishcare volunteers and developed links with organisations such as the Oceanwatch/Seafood Industry Partnerships in Schools (SIPS) program (http://education.tas.edu.au/woodbridge/mdc/default.aspx).

Overall the MDCA network is well managed, provides an excellent framework for networking (FRDC funds a yearly workshop for the MDCs) and are a popular attraction - 120,472 people visit them per year (2012 data, excluding Bondi MDC).

5.2.6 Educating the non fishing public about Recreational Fishing

Government Departments have a statutory duty to assure the public that recreational fisheries are being managed sustainably. This usually takes the form of public information on what the Fishery department does in regulating recreational fishing and protecting the environment. These tend to be generic information messages to the public, rather than targeted campaigns just to those who fish.

Peak bodies perceive one of their roles is to educate the general public on recreational fishing and do so at Boat shows and events where the audience does not always consist entirely of recreational fishers. The RF Industry educates the public through advertising the attractions and benefits of fishing, and sponsoring the many TV RF shows which are often viewed by non recreational fishers.

Perhaps the most famous direct campaign towards the public was the US fishing tackle-sponsored "Take me Fishing^(c)" promotion in which highly emotive advertising aimed to re-kindle parents taking their children fishing, as in the good old days.

Overall we found little material on how the RF sector tries to educate the general public. Most of what we have found is generic – assuring the non RF community that the "public good" of environment or fish stocks are not being over exploited by this hobby activity. This is a form of education of the public with a view to establishing the RFs "social licence".

5.2.7 Which messages are included in each activity type?

There is generally a range of RFE messages in each activity. For example, RF Clinics have basic recreational fishing competency activities and messages. They may have a range of messages, but generally other caring and safety messages are added to different extents depending on the type of clinic. It is unknown if time in clinics is sufficient to communicate the higher RFE messages. There is a need to try and make RF Clinic activities and messages more standardised and consistent nationally.

Advisory information on fishing includes details on basic regulations and rules, but also extends to education and safety and also care for the environment, e.g. Take your fishing line and litter home. Fishcare programs engage volunteers to promote a range of different messages on basic fishing, safety, care, environment and education as part of the fishing experience. The volunteers are likely in a good place to be able to communicate some of the higher RFE messages.

The messages promoted in schools can vary from how to fish at a primary level, to RF as part of environmental studies in secondary education. The RF activity may be less emphasised than the messages on environment and care for habitat etc. The messages are generally weighted slightly differently in the schools arena due to syllabus and other delivery constraints.

General RF activity is observed and assessed by the public. The RF community seek to re-assure the non fishing public with messages that RF is sustainable, environmentally responsible and humane. This is part of the need to inform the public if the RF sector's "social licence" to fish is to be maintained.

5.2.8 Media and networks used to deliver key messages

In the past, both Government and peak bodies have tended to use websites, posters, brochures, pamphlets, and some DVDs, to deliver educational messages. There has been relatively little use of mass media due to its cost, other than Press Releases and occasional radio interviews. The RF print media do pick up on angling education stories, but TV and Radio are not widely utilized.

The relatively new innovations in social media are starting to be used by Government and peak bodies and by anglers themselves. This project examines how these social media platforms are used by the private and community sectors in RF and in RFE will be given in a separate project report.

Networks and networking is a form of communication medium. A message can be put into a communication network and find its way to the network members. In the RFE sector there are various states based RF associations, clubs and general anglers. Networking can be structured or casual as anglers meet around the local tackle shop. Word of mouth is a power transmission device to fuel networks with information, with both good and mischievous content.

Previously circa 2000, a formal networking initiative was the "The fishery communicators' network". It had annual meeting where members from each state presented their RFE experiences. It lasted several years, but failed to be consistently funded after the first few annual workshops (pers. comm. Dee Payne NSW DPI). Through this network government and NGO organisations interested in RFE met to share and discuss common issues.

5.2.9 National analysis

RFE activities- what is happening nationally?

The RFE activities for all states are outlined in Appendix 3 and a review of RFE messages from discussions with contacts in each state is in Appendix 4. Table 12 summarises the diverse range of material in Appendix 3 to present a national overview.

| Sector and major activity RFE programs | NSW | NT | Qld | SA | Tas | Vic. | WA | Total |
|---|---------|---------|---------|---------------------|---------|----------|---------|---------|
| Government | | | | | | | | |
| Major programs | 11 | 4 | 1 | 1 | 5 | 3 | 2 | 27 |
| Fishing workshop-clinics for schools or young people | 6 | 3 | 0 | 0 | 3 | 1 | 1 | 14 |
| Fishcare, workshops-clinics for public | 5 | 1 | 1 | 1 | 2 | 2 | 1 | 13 |
| Information programs | 4 | 5 | 5 | 4 | 1 | 6 | 2 | 27 |
| Partnership programs | 6 | | 6 | 2 | | 4 | 3 | 21 |
| Private sector Progams | 4 | 2 | 1 | | | 1 | 1 | 9 |
| Community- club events | unknown | unknown | unknown | unknown | unknown | unknown | unknown | unknown |
| Raw sum of programs | 25 | 11 | 11 | 7 | 6 | 14 | 8 | 82 |
| Rec Fishing Licence | Yes | No | No | No* | No* | Yes | Yes | Yes |
| Estimated funds available for RFE? | Large | minimal | minimal | minimal | minimal | Moderate | minimal | minimal |
| | | | | * some methods only | | | | |

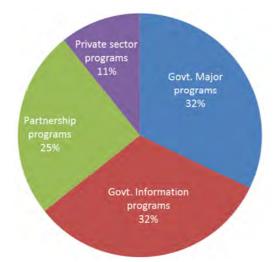
Table 12: Summary of sector programs and funding for RFE in different states¹² (Appendix 3).

In Table 11 the study identifies approximately 82 RFE programs nationally. Figure 6 indicates that 64% of the RFE programs identified are provided by government, while 25% are partnerships

¹² This table should be interpreted with care as it compares the numbers and not the scale of projects as seen in Appendix 3. Comparable funding details of RFE programs are not available across states.

between government and non-government bodies. Approximately 11% of programs are provided by the private sector.

Figure 6: The percentage of government programs (major and minor), partnership programs and private sector programs all funded (Unfunded community and club programs not included).



In Table 11 the major government programs (32%) tend to be Fishcare, workshops and clinics with approximately 50% involving school children and the others young people in the general public. In the big picture this government intervention is outdoors recreational education for young people. The other part of major government programs is to inform the public and RFs in particular, about regulations and good practices. Partnership programs combine resources between government and peak bodies to address key issues such as angler and boat safety, where the non-government contributions are connections with other anglers, volunteers and enthusiasm.

The analysis was of funded programs and did not include community programs which happened through clubs with minimum funding for which information was not available. While the accuracy of the figures may be questioned, the predominance of government in providing RFE programs is irrefutable. However we suspect that the 25% of partnership projects probably has grown over the decade prior to 2013 to reflect joint funding between peak bodies, government and the assistance of RF Trust funding. There are a limited number of private sector RFE activities with growth in the areas of clinics and fish guiding. While there are issues in comparing activities between states, but it is clear from the overview and the appendix material that the states with recreational fishing licences (NSW, Vic. and WA) are able to direct most funds towards RFE (NSW and Vic.).

RFE messages- what is happening nationally?

The measurement of RFE messages required further discussion with RFE contacts in each state who had previously assisted with information on RFE activities and programs in each state. A template was used by each respondent to record comments on the degree to which current activities were including key RFE messages.

The results of this exercise are reported in Appendix 4. The responses for each state included columns for respondents to confirm each message area was included, to add explanatory comments and also to note gaps. The gaps and comments indicated if more or less development or "need" was required in a message area. The tables are shown in Appendix 4 and are summarised in Table 12 below¹³.

The approach enabled messages to be confirmed as being delivered or not. The most frequently confirmed messages are numbered in the Sum column of Table 12. These responses were then grouped by the frequency of responses into four or more states confirming, and two to three states. This may represent the extent to which the message is being prioritised.

In Table 12 the messages that are mentioned by four or more states were:

(1) Health benefits of RF; Promoting the family friendly nature of fishing; Reducing fishing litter (lines and replace lead sinkers); Maximising fish survival (barotrauma) extending to public; General fishing and boat safety; and using environmentally friendly fishing gear.

The audience groups requiring more emphasis of RFE messages were:

(2) Mentoring of young fishers/future leaders; Multicultural audiences; Special needs anglers; and Indigenous anglers.

The messages that were found to be covered by two or three states were:

(3) Fish handling techniques; Underwater safety; Accreditation of Guides; RF and carbon footprint; Quality habitats and quality fishing; Rockfishing safety (croc fishing safety in NT); and "Limit catch, don't catch limit";

Social media (e.g. facebook and twitter) and community monitoring were mentioned as tools increasingly used in RFE messaging.

Of the several issues with one mention, *animal welfare* was surprising. This likely illustrates a weakness with this method, as the frequency of mentions may not necessarily reflect the importance of the message to the sector, or the impact on the sector from its future omission. The lack of an entry in the table can also be interpreted as "being content with the current situation", which cannot always be assumed to be the case.

The feedback from each state on messages that could be developed further, reveals that multicultural issues, mentoring of young fishers, RF as a family friendly activity and instruction in maximising fish survival could be added to the existing key messages identified in Chapter 3.

¹³ (Interpretation of Table 13: the terms "needed" "expand" and "blanks" are used. "Needed" refers to a greater immediate need, as opposed to "expand", which is growth from an existing base level. The "blanks" reflects either nothing said via our discussions, but not necessarily satisfaction with the current situation. The Table is directive, in that it is identifying gaps in messages, as mentioned by in-state contacts).

Table 13: A summation of the frequency of messages which are believed to need more emphasis in each State (Appendix 4 message tables).

| Messages | NSW | NT | Qld | SA | Tas | Vic. | WA | sum |
|--|--------------|----------------|---------------|-----------------------|--------|-----------------------|---------------|-----|
| Multicultural | expand | expand | | expand | needed | expand | needed | 6 |
| Health benefits of RF | | need | | | | | | |
| | expand | information | expand | expand | | extend | expand | 6 |
| Reducing fishing litter (lines and replace lead sinkers) | expand | expand | | expand | needed | needed | needed | 6 |
| Maximise fish survival- barttrauma include all public | expand | Barotrauma | | expand | | expand | expanding | 5 |
| General fishing and boat Safety | spearfishers | general safety | | general safety | need | general safety | | 5 |
| Mentoring young fishers/future leaders | | expand | needed | needed | need | | need | 5 |
| Special needs anglers | expand | | | expand | | needed | needed | 4 |
| Indigeneous | expand | | | expand | | extend | needed | 4 |
| Family friendly activities | expand | | | expand | | consistency needed | expand | 4 |
| Environmentally friendly gear - more variety needed | expand | | | | needed | expand | expanding | 4 |
| Messaging by social media- facebook, twitter | expand | needed | | consistency needed | | | | 3 |
| certificate of achievement - national? | expand | | | needed? | | | needed? | 3 |
| Rockfishing safety (crock fishing in NT) | | crock safety | expand | | | | expand | 3 |
| Limit catch, don't catch limit | | expand | | needed | | need | • | 3 |
| Community monitoring | | need strategy | need strategy | needed | | | | 3 |
| Fish handling techniques- apply to all public, not just competitions | expand | | | | | | need Fishcare | 2 |
| Underwater safety | expand | | | needed | | | ? | 2 |
| More Accreditation of guides - | expand | | | liceaca | | | need | 2 |
| RF and carbon footprint | | need | need | | | | | |
| | | information | information | | | | | 2 |
| Quality habitats and quality fishing | | | | needed | | | need | 2 |
| Environmental education | | | | expand | | | need? | 2 |
| Knot tying, rigging and and casting | expand | | | | | | | 1 |
| Rewards and taken home materials | expand | | | | | | | 1 |
| Catch and release photos of tournaments | expand | | | | | | | 1 |
| Animal welfare issues | | | | | | need | | 1 |
| Avoid water pollution | | | | | | need | | 1 |

Discussion

In this chapter we have examined the RFE activities and the RFE messages that are currently taking place. The following activity categories are common to all states: Basic fishing clinics; Innovative fishing clinics; Information for fishers; Community action programs and Applied research programs.

Chapter 3 indicated the messages we wish to promote, and chapter 5 evaluates the messages in activities, in particular, those that are current and growing. The best practice for RFE program evaluation has been proposed in Table 14.

Table 14: Best practices for effective program evaluation (Seng and White 2006)

Effective program evaluation:

- is based on program goals and objectives;
- explores and investigates the program's long-term benefits and impacts;
- is a systematic and ongoing process that begins when a program is being planned and carries through implementation;
- encourages the use of multiple and varied assessment methods;
- is used as a learning tool to support program reflection, decision-making and improvement;
- uses national criteria to select, develop and/or revise curriculum materials;
- helps identify program outputs, such as number of participants and participant feedback; and
- explores and investigates the program's short-term learning outcomes.

The best practices for evaluation, as shown in Table 13, link with Figure 2 and the program logic model. In evaluation, the program goals and objective may be clear to those running the program, but are often not written up. This lack of formality means it is likely that structures that provides evidence of long term benefits and impacts may not be designed within the program. Seng and White (2006) recommend a "systematic and ongoing process that begins when a program is being planned and carries through implementation".

Currently the use of "multiple and varied assessment methods" in RFE in Australia is limited. This in turn limits the use of RFE evaluation as "a learning tool to support program reflection, decision-making and improvement". Generally there are few national criteria or curricula in the Australian RFE system. The current system in Australia records outputs, such as numbers of anglers participating in clinics quite well, and also focuses on 'customer' feedback to some extent. However this falls short of fuller investigation of "the program's short-term learning outcomes".

The review finds that the approach to many RFE programs is adequate in producing sound outputs. However it could be improved by applying more evaluation principles to programs from the point of creation to following up after implementation. There also needs to be a place where RFE information and RFE experiences are available to other RFE instructors or program co-ordinators. These could be functions of the proposed national RFE network (to be reported on separately). Table 15 summarises the findings of the evaluation of RFE activities and messages.

| Type of activity | Program evaluation | Message evaluation |
|--------------------|-----------------------------------|---|
| Fishing clinic | Records outputs; | Key functional message good; |
| (basic) | Outcomes need to be clearer; | Higher messages need inclusion; |
| | Needs more consistent content. | More planned consistency in messages; |
| | | Outcomes sought need to be clearer. |
| Innovative fishing | Record outputs; | Key functional messages good; |
| clinic | Outcomes generally known but | Higher messages need inclusion; |
| | could be formally recorded; | More planned consistency in messages; |
| | Sharing of course content could | Measuring the effectiveness of messages |
| | assist other RFE programs. | and sharing "lessons learned" is essential. |
| Information | Outputs achieved; | Focus on communicating basic |
| | Improved appraisal of outcomes | regulations; |
| | required; | Need more nationally consistent |
| | More nationally consistent | approaches to communicating higher |
| | content; | messages; |
| | Develop more consistency with | Message planning and desired outcomes |
| | web and social media. | need to be more formal; |
| | | Needs more consistent content nationally. |
| Community | Outputs vary, but are achieved; | Planned message outputs used; |
| action program | Outcomes are targeted requiring | Outcomes from messages need to be |
| | evidence of achievement; | measured; |
| | More consistent content, with | Have a strong take home message; |
| | sharing between states. | Messages to call for community action; |
| | | Goal of message is behavioural change. |
| Applied research | Outputs achieved; | Planned messages produced; |
| programs | Outcomes need to be specified and | Outcomes from messages need to be |
| | measured; | measured; |
| | More consistent content, with | Have a strong take home message; |
| | sharing between states. | Goal of message is behavioural change. |

Table 15: Evaluation of the different activity program types and messages across RFE in Australia.

The study has identified the popularity of fishing clinics and the growth in innovative fishing clinics. However there is limited available information to evaluate whether the different activities are meeting their intended outcomes. The messages in chapter 3 can be seen identified in some activities, however we have identified very few projects that have measures to support how extensive uptake of messages has been.

6. Success stories and gaps

It is apparent there are considerable resources, including enthusiasm, goodwill and community effort, being applied to RFE in Australia. In this Chapter we identify where RFE has been functioning well identifying examples of success stories, including the use of media. Which media should address which messages? We address this further in this chapter by listing the media used for the identified success stories of Rock Fishing Safety and Released Fish Survival. However, of all RFE campaigns we considered, only the Released Fish Survival campaign was evaluated for penetration of messages using a follow-up survey. Additionally, this is the only campaign that assessed which media were most effective in conveying messages.

We also discuss the difficulties in determining how effective RFE is – in regard to both general messages (e.g. fishing regulations) or specific campaigns (e.g., rock fishing safety). We identify some media effectiveness (e.g., TV wrt 'gently does it' campaign) but also note the importance of the volunteer network in RFE, e.g. wrt fishing clinics.

We also examine where there may be gaps in the current activities and programs. Both successes and gaps can contribute to further strategic development of RFE needs.

6.1 How has the RFE model been working in different activities?

This review has proposed that any good RFE project will have an organisation, promoting key messages through different media to an audience, generally of RFs. In Table 12 we see that activity and program areas such as: *Basic fishing clinics; Innovative fishing clinics; information for fishers; Community action programs and Applied research programs;* have flourished across Australia.

The traditional fishing clinic has been promoted by both government and private sector organisations and has packaged a range of key messages around teaching anglers to fish. The class instruction medium with mentoring has been very successful and the appeal of fishing clinics has been across the RF community teaching primarily new anglers and young people how to fish safely and competently.

Over the years the organisations have also refined the clinic product to target groups of anglers (disabled, dis-advantaged etc) and specialist clinics have been more focussed and targeted. This is a sign of product maturity and meeting the needs of rank and file fishers and sub-groups within the community.

Community action programs have arisen from a missional objective to reduce rock fishing deaths or fishing tackle waste. The issue has had a strong focused message and the community have used a range of media to bring these serious issues to both general and specific more vulnerable groups in the community.

Applied research programs have been when people or organisations take an issue which usually arises from scientific studies and starts to develop new messages for promotion by media and uptake by the RF community.

6.2 Success stories

The approach here is both broad scale and also highlighting specific project initiatives. The review has shown the importance of:

- (a) **Funding for RFE:** The funding raised from RF licences has provided considerable assistance to RFE initiatives in states with a RF licence. States without a RF licence have engaged in much less RFE and have been hindered by government uncertainty.
- (b) **Volunteering:** The sector enjoys a strong level of volunteering representing a large resource for RFE activities such as fishing clinics, attendance at trade shows and Fishcare programs.
- (c) **Mentoring:** The RF sector has a strong mentoring tradition and this linked with volunteering has been a key contributor to RFE success.
- (d) Program logic: These elements seem to be part of what makes RFE initiatives successful. Other elements of success can be seen in the communication program logic model where good RFE projects have clear goals, methods, outputs and outcomes that are evaluated. They also have a culture of improvement and adapting programs from the lesson learned.
- (e) **Building messages to achieve behavioural change:** Successful projects often have simple messages that are direct, memorable and invoke the process of behavioural change among anglers. These "take home messages" are a key part of effective RFE programs.

The following success stories are presented in categories and are examples of significant RFE activities that were brought to our attention in our discussions with the RF community. It is inevitable that this list will not include all the successful initiatives taking place across the country and we encouraged participants at both workshops to recommend successful initiatives. The following are some of the more successful programs.

(i) Basic Fishing Clinics

The general learn-to-fish style clinic, having commenced as long ago as the 1970s, has been adopted in all jurisdictions around Australia. Fishing Clinics have been the main point of angler engagement in many RFE programs. These clinics are nearly always made possible through the voluntary efforts of anglers donating their time and expertise.

Gaps in clinics are seen in lack of formal evaluation of outcomes and a lack of national guidelines on the content of fishing clinics. This includes both consistency in skill instruction, activities undertaken and the types of messages included in the clinic.

(ii) Innovative Fishing clinics

Through time, there has been an increase in the diversity of activities and messages packaged in clinics for different client groups. These include:

- More advanced fishing methods, or specific species targeting (e.g. Fly fishing);
- Adult, seniors and family fishing days;

- Socially disadvantaged kids;
- Youth in trouble (work with police system etc);
- Disabled persons (Fishing 4 Therapy program);
- Rehabilitation (medical/ surgical recovery) clinics e.g. Breast cancer recovery etc); and
- Other clinics.

These clinics have adapted the learn-to-fish clinic for different interest groups. This has been a successful 'product' diversification.

Gaps in these clinics may also be as for the basic clinics above. Fuller recording of approaches taken to different groups, and of outcomes could assist sharing of innovations and of areas that are still unresolved challenges.

(iii) Community Action projects

(a) Fishing and rock safety - Angel rings and other programs

The issue of rock fishing fatalities led to concerted education campaigns and the installation and maintenance of fishing safety "angel rings" adjacent to popular rock fishing locations in NSW. These initiatives were mainly angler-driven.

The NSW Rock Fishing Safety Campaign has been a good 'role model' for targeting messages at specific angler behaviours. It has made use of a wide range of products including the following:

- Media releases: especially in fishing magazines;
- Prominent signage at key danger spots;
- Television (high profile programs), radio;
- Websites and links (www.safewaters.nsw.gov.au/fishing.htm);
- Printed brochures;
- DVDs;
- Information distributed through fishing tackle shops;
- Information to schools;
- Information to families of at-risk angler groups; and
- Alerts of dangerous seas issued through radio and Bureau of Meteorology (BOM).

Importantly, a component of this campaign has been to target anglers from non English speaking backgrounds. Products such as brochures and DVDs have been produced in several key languages - Korean, Chinese and Vietnamese – and provided in kit form for ease of distribution. In Victoria, rock fishing safety courses specifically target the Chinese and other Asian communities (VRFish and Surf Life Saving Victoria).

Bradstreet et al. (2012) reviewed statistics on rock fishing accidents and fatalities in NSW and suggested that the fatality rate had not changed statistically during the 2000s compared with the 1990s. However, there are no baseline data on whether the population of rock anglers has increased

over that time, which is highly likely, in which case, the education campaign is very likely working, and saving lives. Certainly, the use of life jackets by rock anglers has increased and rings are being used (Fishing World 2013).

(b) Tangler bins

There have been several initiatives to make anglers aware of the need to deal with used or tangled fishing lines to minimise the harmful impacts of hooks and line on wildlife, especially water birds. The most prominent of these programs is the TAngler Bin program, promoted by some local Councils and Oceanwatch (funding for which recently ceased).

Gaps in these community action programs above are usually related to the origins of the project and the organisational and funding constraints there can be to extension and adoption nationally.

(iv) Applied Research Programs

Several research programs funded by the FRDC have broken new ground in RFE. This includes Recfishing Research which has had RFE as part of its strategic plan and research mandate. A key gap in this initiative is tendency to evaluate performance by outputs (e.g. number of articles, social media shares, podcasts, interviews).

(a) Released fish survival project

This project, which operated from 2002 to 2006, addressed the issue of maximising the post-release survival of fish being returned to the water by anglers. (The project noted that anglers return fish to the water for a range of reasons, from compliance with bag and size limit regulations to adopting the increasing practice of catch-and-release, and that numbers of fish released were very high). This large-scale FRDC-funded project also fostered considerable field research into released fish survival and clarified and communicated a range of procedures and steps for the safe handling and return of many popular fish species. The following products were all developed by this project to educate anglers on best practices for catch and release:

- A dedicated television campaign, using a high profile presenter;
- Radio interviews with project personnel;
- Copy and editorial in fishing media;
- Comprehensive website and links;
- Brochures, general, specific and including use of 'release weight';
- Video/DVDs widely distributed; and
- Released fish fact sheets (electronic and hard copy).

This project was perhaps unique in that it attempted to assess the success of the communication/education strategy. This is one of the most direct attempts to implement evaluation of the effectiveness of a program (Seng and White 2006). It did so by surveying both the angling public at large and the fishing tackle industry before and after the media campaigns to assess awareness, or 'take-up' of the messages (and to determine if this had had an effect on sales of 'fish-

friendly' fishing equipment) (Pepperell 2004). Fish handling practices were found to have improved as a result of the campaigns, and awareness of the strategy was found to be high among all groups. Importantly, the survey also indicated that anglers had changed their behaviour as a result of the campaigns (Roy Morgan Research 2004). The television advertisement, 'Gently does it', was found to be the most effective means to reach people, with an estimated 36% of recreational fishers recalling seeing it. Also very effective were specific articles in fishing magazines (22%), followed by pamphlets inserted into fishing magazines (14%) and distributed to fishing tackle stores (11%). Specific radio interviews were recalled by 8% of fishers, while DVDs at tackle stores, the internet and distribution of material to fishing clubs were relatively ineffective.

Pepperell also found that "most of the main educative products of the strategy (website, fact sheets and brochures) were being consistently used by managers, communicators and peak body representatives. The exception was the video/DVD which was being moderately used". As noted, television messages had the highest level of recall, followed by fishing magazines. However "Industry regarded the strongest reinforcement of messages regarding released fish survival to have been via print media. Television was considered intermediate while reinforcement of messages by radio was considered to have been relatively poor" (Pepperell 2004).

Gaps in the project may be related to the diversity of fish species nationally and thus the large number of variants in terms of recommended practices and the large number of anglers that could be involved (Pepperell 2004). One project and even a program of a few years, cannot fully meet the RFE required nationally. Feedback also suggests the project has generated interest in the public being exposed to some of the outputs generated by the project.

(b) Animal welfare

There are several emerging projects that respond to the RFE need in the area of the Australian Animal Welfare Strategy (AAWS). For example, the FRDC animal welfare program has funded a trial to review the procedures used by participants in the Victorian Ti Tree Snapper competition and the Victorian Cod Classic competition. The project has completed the first set of competitor surveys to baseline the current understanding of animal welfare concepts. The second phase of the project is about to commence. The project area has the potential to be a successful contribution to this issue. Animal welfare issues and the responses as seen in the "*Iki jime*" project are also notable applied research.

Gaps are evident in the prioritisation of welfare issues for RFE. Currently our identification of messages ranked welfare lowly, but this is not necessarily a correct evaluation. Education on fish welfare issues through programs is an emerging national priority.

(i) Habitat adaptation programs

There is an increasing awareness of the importance of fishery habitat restoration among RF, especially in freshwater fisheries in NSW and Victoria, but also in other States, though this may be by "osmosis", rather than due to a specific communication strategy.

In NSW RTF funding is available for projects that restore, rehabilitate and protect fish habitat through the Habitat Action Program (HAP). These grants, totalling almost \$525,000 per annum, assist recreational anglers, local Councils, environmental and community groups and private landholders to enhance and rehabilitate degraded recreational fish habitat through a range of on-ground works.

The Conservation Action Unit within NSWDPI (Fisheries) also manages the Fish Habitat Network (http://www.fishhabitatnetwork.com.au/) which began in New South Wales in 2009 and has since expanded to include personnel from other States and Territories. This also involves a yearly forum which provides an opportunity for fishers to get together, share their fish habitat stories and hear from people working to rehabilitate aquatic habitat.

In Victoria, VR Fish is working with the Arthur Rylah Institute (ARI) to develop initiatives for habitat improvement across Victoria.

Gaps in habitat awareness are most noticeable among marine recreational fishers. The recovery of river habitat producing better fishing inland is gradually being recognised by fishers, but this does not seem to translate into marine protected areas improving fishing for marine fishers? This is a major RFE gap.

(ii) Other success stories

Fish guiding- This has been an area where the private sector have made in-roads into delivering services to recreational fishers. There are varying degrees of RFE in guiding and in meeting the need to have RF Guiding performed in a professional manner.

There may well be successes in other initiatives to educate and/or communicate with the angling public, but it is difficult to know how successful they are. For example, all State Government Departments post bag and size limit information on their websites, but to our knowledge, the awareness of the angling public regarding this information has never been tested. Similarly, the National Code of Practice for Recreational Fishing is available on different platforms, but the degree of penetration of the Code is not known (notwithstanding that elements of the Code are components of other programs, including Fishcare).

Gaps in fish guiding are historical and structural. Developing fish guiding as a sustainable service industry to meet RFE and instructional needs through the private sector faces impediments such as the involvement of government in funding fishing clinics. There are possible competitive neutrality issues for government in providing these RFE services. The continued development of the national

fish guiding sector may be compromised by the involvement of government in service delivery areas that effectively compete with the private sector. This is undesirable and RFE roles should be clarified and reconciled in a way that benefits the sector most.

Discussion- Which media has been influential in RFE success?

In the case of success stories, which media have been influential? Have different media helped in different ways. And based on this, which media might be most effective in addressing the gaps? The Box below has some observations.

Fishing Clinics: Media releases are sometimes used, but primarily through club-based organizations. Generally not by TV or fishing magazines.

Fishing and Rock safety: Media releases (all media, but main coverage through magazines; TV fishing shows are important here, since safety is generally stressed in segments, and angel rings get some coverage. A range of written and radio media are used to reach non English speaking audiences.

Government websites: How effective are these at disseminating information? Here we note the same problem as any advertising campaign; It is hard or impossible to know without follow-up surveys (unless there have been obvious and clear take up of messages);

Pamphlets and/or DVDs distributed through tackle shops: Again, effectiveness not known, but certainly getting to rank and file. Not 'media' as such, in the normal sense of the word, but DVDs and pamphlets are media, distributed by voluntary labour.

Radio: Alerts of dangerous seas through BOM.

Social media: has not yet been tested as to effectiveness as a vehicle for delivering messages. (At the time of the survey following up the Released Fish Survival campaign, social media platforms were still in their infancy).

The Released fish survival project was a guide to best practice. All media were used. But a follow up survey was done to determine uptake of messages, which incorporated questions on which media were the sources of information. TV was highest, followed by magazines.

In all this, need to keep in mind the two distinct audiences regarding delivery of messages – the fishing public and the general public. Sometimes the messages are similar, but in the case of the general public, the desired messages from the rec sector are to educate with respect to what recreational fishing is, the benefits of rec fishing, the ways in which it is managed, dealing with some myths, plus the codes of practice, survival of released fish, etc.

Conclusion

What have we learned from these success stories? It is easy to recognise that good funding enhances the chances of an effective RFE program as seen through RF licence funding in some states. However there are also common features among these successes, such as passionate advocates, persistence and a long term perspective. The extent of volunteers and tireless workers enjoying their fishing and associated social activities is a large part of the non-financial resources supporting RFE. This is likely gained by example and mentoring has been an important part of this successful RFE culture. However many of these programs came from projects which had clearly defined goals and sought to produces outputs and outcomes that were sufficiently measurable to enable some assessment of program effectiveness to be made. The contribution of the FRDC's project application structure has contributed to this success.

6.3 Gaps

The identification of gaps was developed from the information supplied by those contributing to the review. From the patterns of activity the report identified some significant structural gaps and gaps in programs and activities.

Structural gaps in the sector that impact RFE development are:

- (i) a lack of a clear recreational fishing promotion and marketing planning for the RF sector nationally. The lack of sectoral objectives impacts the overall direction and delivery priorities of RFE. This project is contributing to a more strategic approach to RFE, but would have more direction if sectoral objectives, promotional and marketing priorities were clearer.
- (ii) Fisheries departments being hesitant in promoting recreational fishing as it can increase fishing activity and hence effort, with implications for resource sustainability. Informing anglers is an important function of RFE and is needed to contain RF effort, if deemed desirable.

The following gaps appear from the programs and activities analysis.

(iii) Consistency of content in fishing clinics. The content of educational material being offered through a range of clinics delivered in the community requires a more consistent standard. For example the contents of a basic "Learn to fish course" could be set nationally after drawing on existing courses, materials and confirm what RFE messages should be promoted.

There needs to be additional delivery of "learn to fish courses" on a fee for service basis, enabling private sector, peak bodies and clubs to deliver RFE, reducing the dependence on government. Ideally fisher licence funds could be used for RFE.

The sector could also encourage a "one price to learn to fish" promotion strategy, for delivery by the private sector and clubs, reducing dependence on government.

(iv) Measuring the effectiveness of RFE programs. In many cases, the measure of success of a RFE activity is the numbers that attended and feedback to those who held the program. Client feedback at the time, or subsequently is often not available. Hence outputs tend to be measured instead of outcomes.

We need to determine measures of a program's success through evaluating outcomes achieved. Those who complete programs could fill in a short survey on the spot, or a subsequent web-based survey to inform providers about program effectiveness. RFE Programs need to have more pre-planning of goals and objectives so as outcomes can be measured as an indicator of success.

(v) Communicating higher level messages to recreational fishers

Codes of conduct have been used to translate higher level messages into actions in the RF sector. However the delivery of those messages to recreational fishers is a gap. How can we be more effective in communicating these RFE messages?

Successful projects often have a "one line project message" that is memorable and gets the engagement on actions to achieve the desired behavioural.

(vi) Delivering more messages to groups and changing the emphasis of messages

The review feedback on messages as presented in in Table 12 provided an indication on what additional emphasis on messages could be made. This approach taken indicated contacts in states wanted delivery of all RFE messages to more:

- multicultural fishers;
- special needs fishers;

There was also a need for more:

- mentoring of young fishers and leaders and
- instruction on maintaining general boat and fishing safety remain as priority areas;
- messages to promote the health benefits of RF;
- messages on fishing as a family friendly activity;
- information on maximising fish survival (barotrauma) for <u>all</u> the public;
- information on the carbon footprint of RF; and
- more attention to education on fish welfare issues.

The RF sector also needs to have a clearer promotion and marketing strategy, so that RFE can supplement these priorities. Fishery Departments tend to be reserved in promoting recreational fishing activity, as they regulate its sustainability through the control of fishing effort. The private sector needs to be encouraged to develop and capture incentives in RFE promotion.

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The RF sector needs strategic pathways to inform RFs about sustainability, environment, ethics and respecting the rights others. Informing non fishers is perceived as important to keep RF's "social licence" to fish in the longer term. More consistency in the content for fishing clinics could be achieved through more common content at an agreed national standard. The findings of the Review with strategic implications for RFE are described below.

6.4 Strategic implications

The strategic implications from the Review are reported in Table 16 below. These are presented under three headings; *organisations and roles; national directions and policy; and producing behavioural change.*

Table 16: Issues arising from the Review which have strategic implications.

Organisations and roles

• RFE is dominated by government and there needs to be more emphasis on Private sector involvement;

• There is a need to secure improved pathways to more consistent and sustainable RFE funding; (e.g. introduce RF licences in all states and encourage the private sector to innovate in adding on RFE to commercial promotion).

• Clarify organizational roles in RFE- who does what? An increased awareness of what other organisations are doing is also needed;

• Support fishing clinics – There is a need to implement a more nationally consistent content;

• It is important to promote private sector delivery of fishing clinics and fish guiding services, reducing government involvement in fee for service delivery.

• There is a need to increase sharing of RFE program innovations, developments and experiences nationally (which this project will progress).

National directions and policy

• There is a need to set promotion and marketing priorities for RF nationally, so that RFE can promote the right messages to achieve the goals desired by the sector;

• Communicate RF to the public as a clean healthy family outdoor recreational activity;

• Maintain the "social licence" to RF by reassuring the public of a well managed responsibly behaved sector.

• There would be value in improving the consistency of all RFE messages nationally communicating the higher level RFE messages to RFs. The range of messages include messages on environment, respecting others, welfare and ethics;

• Improve program logic, goals, objectives, inputs, outputs and outcomes with methods for evaluation in RFE projects.

• Develop ways to design and measure program effectiveness and outcomes, not just project outputs.

Producing behavioural change

• Prioritise the behavioural changes we desire in the RF sector and use RFE to address it.

• Identify generic messages and issues which need more specific messages to address behavioural change priorities, linking with sustainability, environment, welfare and ethics objectives.

• Integrate social media into RFE. (This project and the private sector, Government etc will use social media for RFE contact).

• Undertake a focus study of RF target audiences, their motivations, values and psychographic profiling, identifying new refined RFE messages for appropriate audience segments.

• Continue to support the development of RFE leadership, volunteering, mentoring, program logic planning, and message development and crafting to create behavioural change.

These strategic issues have been identified by the Review and will be developed in the Project's Strategy document.

7.0 Discussion and Conclusions

The objective of this review was to "Identify common themes, key messages, target audiences, success stories and gaps" with an outcome of "Clear key sustainable RF educational messages for both recreational fishers and the public". We have found there to be a range of well established messages being provided to recreational fishers and have further sought to identify the RFE message needs.

Common themes

Some of the common themes in RFE arise through the roles and responsibilities of organisations, such as government, peak bodies, private sector and community and the RFE goals and objectives they pursue. Governments use RFE to assist in achieving their legislative responsibilities. Peak bodies and community groups pursue RFE as part of their instructional and RF communication mandate. The private sector either builds RFE into a business (fish guiding or media shows), or adds it as part of another business such as fishing tackle sales or media entertainment.

Resourcing of RFE is a common issue and there is clear evidence that states with RF licences have more regular and sustainable access to funds for RFE programs. Ideally, states without a RF licence should investigate having an RF licence so as to secure RFE programs and activities, as opposed to depending on the cyclical irregularities of funding from central government. RFE is highly dependent on government funding but as well, the private sector needs to be encouraged to provide RFE and thus reduce the sectoral dependence of government.

Another common theme to which the current project can contribute, is the need for consistency in RFE messages. This can mean both consistency in the content of the message and in the repetition and application of a message. RFE programs vary between states and include messages which may also vary. The project identifies that improved national consistency in RFE messages may be assisted by more pre-program planning of program goals and objectives to bring about the desired outputs and outcomes. Programs need to move above counting outputs, which do not say much about messages or their uptake, to measuring outcomes by evaluating program effectiveness and its effect on behavioural change. We need to be able to tell if whether or not the message is getting through to the intended audience.

Key messages

Governments seek to explain fishing regulations to RFs and the community in order to meet their legislative obligations. Often the information is generic and is communicated to a general audience of all RFs and the whole community and is educational in an informative sense.

Key national messages about RF conduct are common components of several national RF policy documents, but some other emerging issues may need more specific messages to be added. We identify a hierarchy in the range of messages being delivered in RFE, with base level messages on instruction and best practice nested below higher level messages in the areas of sustainability,

environment, welfare and ethics. These higher messages are more about how fishers understand the objectives of management, the functioning of the ecosystem, and impacts on the fish, the environment and other persons.

The past decade has seen a rapid development in a diverse range of media that can be used to send messages, including phenomenal growth in social media platforms. It is important to promote the development of private sector media organisations into communicating RFE messages. It is also evident that new technology and complexity of issues and fishers means there are more times when we may need a message to be specific and also be communicated to a given segment of the fisher population (for example, rock fishing safety for fishers from ethnic groups who appear to have been most vulnerable to accidents).

Target audiences

The diversity in RFE audiences can be seen in the increased need for RFE to cater to more specific groups of anglers. The use of generic RFE messages has often assumed the audience is generic. The review indicates that our current understanding of the RFE audience is limited and even after activity studies and attempts to segment RFE audience by social indices, there appears to be a limited understanding of angler motivations and the place of fishing in people's lives and thinking. Research on values, lifestyles and psychographic profiling are being used in the marketing other products and services in the business arena.

The communications technology is now in place to direct more specific messages to given groups of anglers. However this requires information on the motivations and preferences of anglers that can be targeted by messages in the hope of inducing behavioural change. The influence of media is large and current RFE providers can work to improve the link with the media and tools to promote RFE messages.

Success stories and gaps

We see that success in RFE and gaps are often related to institutional history and to key people with leadership attributes and a vision for what is required, or what could be. Resources for RFE include more sustained funding from RF licences in some states. States without a RF licence have engaged in much less RFE and have often been hindered by uncertainty in government.

The sector has been fortunate to have some well informed visionaries that have worked with others enthusiastic about their fishing to develop key RFE projects. Volunteers are a large resource for RFE activities and contribute to the success of fishing clinics, trade shows and Fishcare programs. Likewise the RF sector has a strong mentoring tradition and this linked with volunteering has been a key contributor to RFE success.

Program logic is a key part of what makes RFE programs successful. The communication program logic model means good RFE projects should have clear goals, methods, outputs and outcomes that can be evaluated. Successful projects also have a culture of improvement and adapting programs from the lesson learned.

Successful projects also have a capacity to build "Take home messages" to achieve behavioural change. Simple messages that are direct, memorable and invoke the process of behavioural change among anglers are evident in successful RFE projects.

A gap in the sector, is the lack of a national recreational fishing promotion and marketing plan. This gap impacts the formation of RFE priorities. Fisheries departments are hesitant in promoting recreational fishing as it can increase fishing activity and hence effort, with implications for resource sustainability.

The sector has shown great resourcefulness and resilience in running fishing clinics. However, the content of educational material being offered through a range of clinics delivered in the community requires a more consistent standard. Other gaps appear to be in government being reluctant to step back from provision of "learn to fish courses" which should be given by the private sector on a fee for service basis. This would reduce the sector's dependence on government and free up funds to enable government to enhance other longer term educational programs within their remit.

There are gaps in measuring the effectiveness of RFE programs as outputs tend to be measured instead of outcomes. RFE Programs need to have more pre-planning of goals and objectives so that outcomes can be measured as an indicator of effectiveness and of behavioural change among the target group. This experience should be shared and would enable more outputs to be achieved from the limited funding in the sector.

There is a gap in communicating higher level messages to recreational fishers. Codes of conduct have been used to translate higher level messages into actions for fishers, but there is no clear plan of how RFs are to be educated on these higher values of sustainability, environment, welfare and ethics. This will be an ongoing challenge.

Clear and sustainable RFE messages for both RF and the public.

The sector has had a National Code of Practice for Recreational and Sport Fishing (2009) which outlines best practice areas for the RF sector under 4 themes. In Table 17 the review feedback has included a fifth category, "promoting fishing", which was not in the original CoP document categories (RecFish Australia 2008). Each of the code of conduct items has its associated educational messages.

The 'protecting the environment' and 'respecting the rights of others' headings in the CoP have less educational messages than the range of actions described in the CoP. The addition of 'promoting fishing' reflects the link between promotion and education and also RFE that is increasingly targeting specific angler groups, including monitoring of young fishers and leaders.

Table 17: An alignment of RFE messages from the review with RF areas in the CoP (RecFishAustralia 2008).

| RF Theme | Educational message |
|---------------------------------|---|
| Treating fish humanely | Promote fish welfare best practices in RFE |
| | Extending information on maximising fish survival to all fishers and the public |
| Looking after our fisheries | Learn to fish correctly (use recognised training providers); |
| Protecting the environment | Look after habitat - it will improve your fishery; |
| | Follow fishery regulations; |
| | Take rubbish and line home with you; |
| | Provide RF's with information on the ecological impacts and the carbon footprint of RF. |
| Respecting the rights of others | Following boat and fishing safety guidelines and good practices; |
| | Follow signage and respect property and access of others. |
| Promoting fishing | The health benefits for anyone doing this family friendly activity; |
| | Helping other less advantaged groups to learn to fish (e.g. special needs anglers); |
| | Best practice messages towards specific groups – e.g. multicultural communities; and |
| | Mentoring young fishers and leaders. |

Discussion

In the past RFE has focused on those who fish, but it is evident that communicating RF as a responsible environmental and sustainable activity to the general public is also part of the RFE challenge and will help the RF sector to maintain the social licence to fish with the Australian community.

There has been an increase in the number and types of educational messages that are communicated to and taken up by recreational fishers. There is a need to keep innovating in the way the sector approaches the communication of the higher messages through use of codes of conduct

and a full range of media, social media and other communication avenues. This will require improved networking within the sector to carry the messages to the desired target audiences.

The review identified that there is a need to alter many RFE activities from measuring success by just outputs to more measures of effectiveness and outcomes. This involves re-examining the goals and objectives for programs and not just stopping with outputs, but designing evaluation method to assess the outcomes achieved. Ideally the recognition of lessons learned can improve the educational merits and achievement of many of the sector's RFE programs and activities. This is also seen in the US experience where Seng and White (2006) state that: *"Best Practices suggest that continuous, integral evaluation is the only real measure of program effectiveness. It is the only way to be certain that a program is meeting agency goals and objectives, as well as needs of target audiences. Evaluation is the primary way to demonstrate a program's value to those to whom you are accountable."*

The review identified that some recent projects have been designed with an evaluation component and have achieved national impacts that has been beneficial to the sector. We seek and expect to see a "trickle down" effect in the RFE culture in Australia, so as many of those delivering RFE programs in relative isolation can be made more aware of the need to measure the effectiveness of their efforts.

The higher RFE messages are not generally included in the "hands on" instruction that is happening, but require the inculcation of a new awareness among the rank and file angler about their fishing behaviour and its impact on the environment and their relationship with others in the community. The sector has stated to respond to a range of fish welfare messages that others in the community will push, generating applicable fish handling procedures to meet welfare guidelines.

The sector needs research into the motivational drivers and psychographic characteristics of recreational fishers of all ages and types. This is required if we are to influence the current generation of young RFs with the range of messages required. It is a shift that can be assisted by the increase in communication and the dimensions in messaging available via the internet and social media platforms. The RF sector needs to increase its use of RFE tools to promote higher level message areas of environment, caring for others and various forms of ethics that are inherent in this pastime. RFE is an essential tool to prepare anglers for the changes that fuller community accountability will bring in the future.

Conclusions

The review has found that the national promotional priorities of the RF sector need to be clearer so that RFE can promote the right messages sectoral goals.

RFE is dominated by government and the private sector needs to increase its role. Government underpins RF management due to its legal requirement to manage RF sustainably, providing information as basic education for anglers.

The increase in the range of messages, including higher level messages on environment, respecting others, welfare and ethics is a continuing and growing challenge for government and the RF sector. The social licence of RFs may be impacted by the perception in the public's eyes that RFs are not sufficiently responsible in these aspects of their activity.

RFE needs to enhance its program logic characteristics and be able to learn from others who have undertaken RFE programs that have been able to measure effectiveness of the objectives tested via the program. This information then needs to be shared with other RFE providers nationally.

The RF community in Australia has been successful and resilient in using many funded and voluntary resources to deliver many types of fishing clinics and activities to the general public. The same enthusiasm now needs to be applied to more planning and evaluation of projects and activities that enable behavioural changes to be achieved. This is an ongoing process and will require a more systematic approach to promoting the higher level messages that are required to educate fishers and the general public about this healthy and sustainable outdoor recreational activity.

References

Australian Communications and Media Authority (ACMA) (2012). A new approach for recreational boaters who operate VHF marine radios: Outcomes of the review of VHF marine radio operator qualification arrangements—recreational (non-commercial) vessels, September. The Australian Communications and Media Authority, Canberra.

All Business (2013). http://www.allbusiness.com/glossaries/psychographic-segmentation/4963782-1.html

Baker, E. (2010). More habitat, more fish - a strategy for educating recreational fishers about habitat. A report for The Department of Industry & Investment NSW 2010.

Bradstreet, A. Sherker, S. Brighton, B. Weir, A. Thompson. M. (2012). Research review of rock fishing In New South Wales. Surf Life Saving Australia, Sydney.

Boehm, C. (2013). Charter fishing customer profile survey – phase I. Alabama Gulf Coast Convention & Visitors Bureau netsite.

Fedler, A. J. (2001a). Fishing, boating, and aquatic stewardship education: framework and best practices recommendations. Pages 4–17 in A. J. Fedler, editor. Defining best practices in boating, fishing, and stewardship education. Recreational Boating and Fishing Foundation, Alexandria, Virginia.

Fedler, A. J. (2001b). (Editor) Defining best practices in boating, fishing, and stewardship education. Recreational Boating and Fishing Foundation, Alexandria, Virginia.

Fedler, A. J. Ditton, R.B. (1994). Understanding angler motivations in fisheries management. Fisheries. 19(4): 6-13.

Guy, J. A. (in progress) Review of Recreational Fishing in Australian Schools – Pre and Post National Curriculum. A document prepared for University of Wollongong under the FRDC project 2011/527.

Hardy Smith, P. (in progress) "Australian Animal Welfare Strategy: practical extension, implementation and evaluation of the Aquatic Animal Working Group Fish Welfare overarching principles within the recreational fishing sector" Draft Milestone report of the FRDC funded project 2012/508.

Henry, G. W. and J.M Lyle (2003). The National Recreational and Indigenous Fishing Survey, Fisheries Research and Development Corporation (FRDC) project no. 99/158.

Fishing World (2013). "Angel Rings saving lives", Fishing World Magazine, 02 Apr 2013.

Louv, R. (2008) second edition. Last Child in the Woods: Saving our Children from Nature Deficit Disorder. Algonquin Books.

Kotler, P. (2013). Dr. Philip Kotler Answers Your Questions on Marketing. http://www.kotlermarketing.com/phil questions.shtml

McIlgorm, A. and J. Pepperell (2013). Developing a cost effective state wide expenditure survey method to measure the economic contribution of the recreational fishing sector in NSW in 2012. A report to the NSW Recreational Fishing Trust, NSW Department of Primary Industries, November 2013. Produced by the Australian National Centre for Ocean Resources and Security (ANCORS), University of Wollongong.

FRDC 2011/527, Appendix1: Review of Recreational Fishing Education

McManus, A. W. Hunt, J. Storey, J. White (2011). Identifying the health and well-being benefits of recreational fishing.FRDC Project Number: 2011/217, Published by: Centre of Excellence for Science, Seafood and Health; Curtin Health Innovation Research Institute; Curtin University, December 2011

Merrit, R. (2013). Destination Recreation: A Generational Exploration of Psychographic Characteristics related to Vacation Recreation Activity Preferences. M.S. Recreation and Park Administration Thesis, Faculty of the Department of the Graduate School East Carolina University, May.

OCA (2010) National Outdoor Strategy 2009 – 2012. Outdoor Council of Australia (OCA), March 2010.

Pepperell (2004). Released Fish Survival Survey of Fishing Tackle Industry. Recreational Fisheries Managers & Recreational Fishing Peak Bodies, August 2004. Prepared for Infofish Services by Pepperell Research & Consulting Pty Ltd, 26pp.

Pepperell (2008). Recreational fishing and safety in Australia. A scoping paper Prepared for Recfish Australia by Pepperell Research & Consulting Pty Ltd, April 2008.

Professional Fishing Instructors and Guides Association of Australia PFIGA (2013). Accreditation and membership, The Professional Fishing Instructors and Guides Association. http://fishinginstructors.org.au/gain_accreditation_or_membership.html

Recfish Australia (2008). A National Code of Practice for Recreational and Sport Fishing. An Initiative of Recfish Australia, Canberra.

Recfish Australia (2009). Communication Strategy of the National Code of Practice for Recreational and Sport Fishing. An Initiative of Recfish Australia, Canberra.

Recreational Boating and Fishing Foundation (2003). Reel Tips Newsletter, Recreational Boating and Fishing Foundation (RBFF). Alexandria, Virginia, August.

Recreational Fishing Advisory Committee (RFAC) (2011). Recreational fishing in Australia, 2011 and beyond: a national industry development strategy (RFIDS), Recreational Fishing Advisory Committee.

Recfish Research (2012). Recfish Research Business Plan 2012/13. Recfish Australia, Fisheries Research and Development Corporation and Infofish Australia.

Rose, C. and P. Dade (2013). Value Modes. http://www.campaignstrategy.org/articles/usingvaluemodes.pdf

Roy Morgan Research (2004). Released Fish Survival Follow up Survey Report. Prepared for Infofish Services, July 2004. 89pp.

Seng, P. T. and S. Rushton (2003) (Editors). Best practices workbook for boating, fishing, and aquatic resources stewardship education. Recreational Boating and Fishing Foundation, Alexandria, Virginia.

Seng, P.T and G.M. White (2006). Measures of Aquatic Stewardship from a Fisheries Perspective American Fisheries Society Symposium 55; 137-144.

Seng, P. T., and G. M. White (2007). Measures of aquatic stewardship from a fisheries perspective. Pages 243–255 *in* E. E. Knudsen, D. D. MacDonald, and Y. K. Muirhead, editors. Sustainable management of North American fisheries. American Fisheries Society, Symposium 43, Bethesda, Maryland.

Sparks, M. and M. Munro (2011). FRDC Recreational Fishers Survey -2011. A survey report to the FRDC by Intuitive Solutions, October, p33.

FRDC 2011/527, Appendix1: Review of Recreational Fishing Education

Sutton S.G. (2006). An Assessment of the Social Characteristics of Queensland's Recreational Fishers. CRC Reef Research Centre Technical Report No 65. CRC Reef Research Centre, Townsville.

Timmons, L.S. (2006). Strategic plan for the Division of Sportfish South central region sports fishing and aquatic education program. Alaska Department of Fish and Game, Special publication No. 06-30, Anchorage.

TTS (in progress). Social Media and the Recreational Fishing Sector. Research in progress by Thinktank Social under the FRDC Project 2011/527:A review of recreational fishing education in Australia.

Appendix 1: Recreational fishing in Australia – 2011 and beyond: a national industry development strategy (RFAC 2011).

The following six goals form the basis for the Recreational Fishing Industry development Strategy (RFDS) and its supporting framework of strategies and actions are shown in the following box.

1. Recreational fishing is acknowledged as an important activity that contributes to the health and well being of Australian society.

2. Recreational fishers are respected partners in the stewardship of Australia's aquatic environment, along with government, Indigenous Australians, commercial fishers, conservation groups and the broader community.

3. Recreational fishers have access to a fair and reasonable share of Australia's fish resources.

4. An information base is available at national, state and regional levels on recreational fishing to meet the needs of government and the community.

5. Stewardship of fish and their environment ensures quality and sustainable recreational fishing opportunities into the future.

6. The recreational fishing industry is attractive, vibrant and adaptive, encouraging investment and Participation (RFAC 2011).

The box below shows the strategies associated with Goals 5 and 6.

Goal 5: Stewardship of fish and their environment ensures quality and sustainable recreational fishing opportunities into the future.

Strategy 1 - Encourage recreational fishers to be involved in research, community monitoring and habitat enhancement programs.

Strategy 2 - Encourage recreational fishers to use best practices in all aspects of their fishing activities.

Goal 6: The recreational fishing industry is attractive, vibrant and adaptive, encouraging investment and participation.

Strategy 2 - Promote recreational fishing as a family friendly activity.

Strategy 3 - Develop ways for recreational fishers to respond positively to climate change and promote reduction in carbon emissions from fishing activities.

Strategy 4 - Improve safety in recreational fishing.

Strategy 5 - Promote the role and opportunities for women, children and families in recreational fishing.

Strategy 6 - Promote the cultural heritage value of recreational fishing in Australia.

This then elaborated as:

Fishers taking responsibility

Goal 5: Stewardship of fish and their environment ensures quality and sustainable recreational fishing opportunities into the future.

Strategy 1 - Encourage recreational fishers to be involved in research, community monitoring and habitat enhancement programs.

Actions to address strategy 1

Raise the awareness and involvement of recreational fishing organisations in catchment management and habitat enhancement programs.

Involve recreational fishers in research and monitoring.

Publicise participation and achievements of recreational fishers in these activities.

Strategy 2 - Encourage recreational fishers to use best practices in all aspects of their fishing activities.

Actions to address strategy 2

Target communication of fishing best practice messages at recreational fishers and school children. Promote and monitor the adoption of best practices and their outcomes by recreational fishers. Communicate the message that fishers actively use best practice techniques. Provide a national program to promote participation in recreational fishing incorporating best practices in key messages.

Continue promotion of the development and use of codes of practice in recreational fishing. In conjunction with the tackle trade promote the use of environmentally friendly fishing tackle, e.g. alternatives to lead sinkers, biodegradable fishing line, biodegradable bait bags etc.

Promote best practice activities when running fishing competitions.

Develop a framework for natural resource stewardship programs for implementation by recreational fishing groups.

Promote the accreditation of fishing charter and guide operators through membership of industry groups with high fishing, environmental and safety standards.

A thriving industry

Goal 6: The recreational fishing industry is attractive, vibrant and adaptive, encouraging investment and participation.

Strategy 1

Develop new and innovative fishing opportunities, particularly in urban and regional areas.

Actions to address strategy 1

Encourage the use of water storages and urban and regional ponds for the development of fishing opportunities, e.g. for families and disadvantaged groups.

Communicate the advantages of creating partnerships between business and local government when developing urban fishing opportunities.

Communicate to local government the advantages of creating fish habitats when developing urban landscapes and planning new developments.

Strategy 2

Promote recreational fishing as a family friendly activity.

Actions to address strategy 2

Implement a national program to promote family participation in recreational fishing, i.e.

align and co-ordinate existing state programs, establish a national recreational fishing day. Promote the national uptake of fishing education programs, e.g. 'Get Hooked- It's fun to fish', and fishing safety messages.

Tailor communications and fishing programs to meet the special needs of our multicultural community.

Promote the simplification and consistency of fishing regulations within and between jurisdictions.

Strategy 3 -Develop ways for recreational fishers to respond positively to climate change and promote reduction in carbon emissions from fishing activities.

Actions to address strategy 3

Determine the carbon footprint of recreational fishing activities and actions that can be taken to reduce it.

Develop research projects that examine the impact of climate change on recreational fishing and demonstrate how to adapt to or mitigate change.

Strategy 4

Improve safety in recreational fishing.

Actions to address strategy 4

Continue to promote safety in fishing, especially in those areas considered most dangerous. Roll out a national 'Angel Rings' program to enhance safety of rock and other shore-based fishers. Implement the recommendations from the Recreational Fishing and Safety in Australia report, April 2008.

Strategy 5

Promote the role and opportunities for women, children and families in recreational fishing.

Actions to address strategy 5

Provide opportunities for women, children and families to play a greater role in all aspects of fishing, e.g. 'Kids, come try fishing' days.

Promote positive images of women in recreational fishing.

Strategy 6

Promote the cultural heritage value of recreational fishing in Australia.

Actions to address strategy 6

Hold a national fishing day (see page 18, strategy 2, action 1).

Include information about the culture and heritage aspects of recreational fishing in education and awareness strategies.

Demonstrate how innovations have improved recreational fishing in Australia over time.

Encourage marine and freshwater discovery centres to include information on cultural and historical aspects of recreational fishing.

Develop an interactive web-based exhibition with information on the culture and heritage of recreational fishing.

Appendix 2: An example of RFE in NSW schools.

This section gives an overview of schools programs in NSW. The project has a separate report on RFE in schools.

School Curricula- A NSW example

In NSW, we took a case study approach to determine the extent of RF information within the formal and non-formal (sports/ recreation) education system. This was surprisingly extensive (see table below), but concentrated in the later years of secondary schooling, specifically 4in the:

• Marine and Aquaculture Technology Content Endorsed Course Years 7–10 Syllabus which is part of the Technological and Applied Sciences (TAS) Key Learning Area (KLA) – not Science;

• Marine Studies Content Endorsed Course Stage 6 (Years 11-12) Syllabus;

• Year 11 and 12 students can also do a Vocational Education and Training (VET) Content Endorsed Course (CEC) which is part of the Sport, Fitness and Recreation Training Package (SIS10) - Certificate II in Outdoor Recreation;

• The National Fishing Industry Education Centre (Natfish), part of NSW North Coast TAFE, also delivers a Certificate II and III in Outdoor recreation – fishing;

There was no RF content in any current NSW primary syllabus, however it is possible to adapt a syllabus to suit local needs and meet the Board of Studies outcomes (e.g. NSW Y5 Marine Environment unit).

| NSW SYLLABUS | PLACEMENT | AIM | CONTENT |
|---|--|---|---|
| Marine and Aquaculture Technology (Years 7-10) | Not part of core: Leisure Focus Area Module 18 – Fish Harvesting | Introduces students to the methods used to catch fish. Students required to relate each method to the behaviour and physiology of the animals being caught. | tie different strength knots in fishing lines select the correct hook and bait for the type of fish being sought catch bait and rig a bait net rig a handline or rod and reel catch fish using a line |
| | Module 19 – Manufacturing Fishing Equipment | Introduces assembly techniques for basic fishing tackle made from readily available components and construction of simple items such as sinkers and spinners from common materials. | tie line on a hand spool make spinners from a spoon rig lines for beach and estuary fishing produce a fishing rod from a blank make sinkers using a mould design and produce fish traps and crab traps |

Table 10: Subject areas in the NSW syllabus which have recreational fishing contact.

| Marine Studies ¹ (Years 11-12) | Not part of core: Optional Module 10 - Commercial and Recreational Fishing | Allows students to develop their knowledge of all aspects of commercial and recreational fishing. Also introduces students to the theoretical and practical aspects of catching fish. | What is the current state of our wild fish stocks? What regulations govern the taking of fish? What techniques are used by commercial and recreational fishers? How did indigenous people catch fish? How can humans fish safely? |
|--|--|---|---|
| Sport, Fitness and Recreation VET CEC ² (Years 11-12) | Not part of core: Elective Group I – Fishing Elective Group J – Fishing – tackle and bait | Provides the skills and knowledge for an individual to be competent in performing core skills in outdoor recreation environments and assisting with the conduct of a range of outdoor activities. Applies to those who work in a range of fishing contexts across the recreational fishing industry (assistant fishing tour guides, sports fishermen, retail tackle shop assistants or those involved in fishing). | Group I Catch and handle fish Locate and attract fish Group J Select, catch and use bait Select, rig and use terminal tackle Select, use and maintain fishing tackle outfits Construct and work simple fishing lures |
| NSW North Coast TAFE. | Certificate II and III in Outdoor Recreation – Fishing. These courses are designed to complement the marine studies course | II: prepares you to assist in conducting fishing activities.III: prepares you to safely guide fishing activities in a controlled environment | As above for SIS10 |

¹ Electives that count towards the HSC but **do not** contribute to the Australian Tertiary Admission Rank (ATAR) for University entry. ² Courses within VET CECs count as Board Endorsed unit credit for the HSC but **do not** contribute to ATAR.

Despite the good content available in NSW secondary syllabuses, the current positioning of recreational fishing outside the science curriculum and as either optional or elective modules is now thought to be responsible for its current low academic profile. Also, these activities <u>do not</u> contribute towards an ATAR in NSW, providing little reason for year 12 students, wanting to pursue tertiary education, to study them. There is also a tendency to associate fishing with leisure and/or industry activities which students do not see as a viable or potential career path. This may have contributed to a shortage of students entering university courses and a leadership vacuum in many

primary industry sectors, particularly the fishing industry. Also, wider sustainability, environmental and ethical and community related messages are absent from the content which deals mainly with basic instruction on "How to fish" and more advanced messages involving improving fishing practices safety, gear, proper use of equipment, and knowledge of basic regulations.

Appendix 3: RF Education Activities and programs across Australian states and territories

In this appendix presents profiles of the different types of RFE activity in each Australian jurisdiction.

National activity summary

This is a summary of the RFE activities in each State. There is not an national RFE activity table for, but there are national RFE messages presented in Appendix 3.

National Programs

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|--|--|--|---|--------------------|--|------------------|--|--|
| National Code of Practice (Recfish Australia) | Last updated 2009 | Disseminate key messages to Australian anglers. 14 Principles within four main areas of responsibility, viz: Treating fish humanely, Looking after our fisheries, Protecting the environment, Respecting the rights of others. | The Code is often used by peak bodies and media throughout Australia. | Recfish Australia | Originally funded by Federal Govt. Ongoing website presence. Brochure available. | | | A survey after the launch of revised code in 2009 indicated a high level of awareness among key user groups. |
| Infofish Australia (Released Fish Survival Project. Community programs related to fishing: Tagging, Capreef, Crystal Bowl, Rocky Barra Bounty) | Released Fish Survival national strategy completed 2007, Capreef 2009. Others current. | Supply information on many aspects of recreational fishing | The released fish survival project operated from 2002 to 2007(?) and was national in scope. Generated considerable information on this topic and had a strong educational role. Utilized all media to 'sell' messages | Bill Sawynok | Wide range of sources | | Yes, especially on community monitoring programs | Released fish survival project was a model for national communication/education programs. One of very few such projects to conduct pre and post surveys of awareness and penetration |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|---|------------------------------------|--|--|---|---|------------------|---------------------------|--|
| Fish Habitat Network (FHN) | Since 2009 | Began in New South Wales in 2009 and has since expanded nationally. | Individuals, communities, organisations and government are working together to bring the fish back and ensure aquatic environments and fish communities are healthy, diverse and sustainable for future generations | www.fishhabitatnetwork. com.au/ | NSW Recreation al Fishing Trust, Murray- Darling Basin Authority, Vict. governmen t | | | To harness the skills, experience and projects within each of our organisations to promote and support the involvement of recreational fishers in all aspects of fish habitat management. |
| National Conference | (every 2 years) | Connecting the RF community around current issues | ARFF and government agencies (DAFF, FRDC) | ARFF and http://recfishing2012.com. au/ | | | | National awards for a range of RFE initiatives |
| Oceanwatch Tide to Table Projects | Past projects and current | Mostly aimed at awareness of environment and seafood industry, but also some projects relevant to recreational fishing. | | | | | | E.g. TAngler bins. Crab pot awareness. Connectivity tours for groups learning about the catchment, water quality and other factors that affect seafood habitat and production. |

| Programs/ | Dates | Aim | Involvement - People numbers | Key contact | Resourced | Gross | Voluntary | Success stories |
|---------------------|---------|----------------------|-------------------------------------|------------------|---------------|-----------|--------------|-----------------|
| activities | | | ages etc | people | by? | funding | Contribution | |
| Fishing workshops | 1999 | Participants | NSW Government program | Run by NSW DPI | Fee paid | 2012/13 | Run with | Enjoyable |
| (in both saltwater | to | develop knowledge | Department of Primary Industries | Education | \$40 a child | \$56,090 | assistance | educational |
| and freshwater | current | and understanding | (link below for more information) | Officers based | and run from | (SW | from NSW DPI | experience. |
| locations) | | about: | http://www.dpi.nsw.gov.au/fisheri | at 5 locations | 10am to 2pm. | \$36,310 | Fishcare | |
| | | Fishing rules and | es/recreational/info/workshop | (Wollongbar, | | FW | Volunteers | Positive |
| Each child receives | | regulations | | Swansea, | Community | \$19,780) | | feedback from |
| a quality rod and | | Fishing safely and | Open to general public, but usually | Sydney, Warilla, | Engagement | | | workshops |
| reel, hooksafe, | | responsibly | for children aged between 8 and 14 | Dubbo) | and Special | | | posted on web |
| tackle box, shirt, | | Fish anatomy, | years. | | Needs Fishing | | | site |
| hat and a BBQ | | habitat and fishing | | | Workshops | | | |
| lunch | | skills (baiting, | Workshops generally last no more | | are | | | The trailers |
| | | rigging and casting) | than 5 hours and the number of | | conducted | | | have been |
| Bluey the advisory | | | maximum participants is 30. | | free of | | | very |
| trailer on display | | | | | charge. | | | successful in |
| | | | 5 advisory trailers spread the | | | | | displaying |
| | | | message of responsible fishing. | | | | | |
| | | | | | | | | advisory |
| | | | | | | | | material |
| Fishing For Sport | 2008 | Participants | NSW Government program | Run by NSW DPI | Free | Part of | Run with | Enjoyable |
| (FFS) | to | develop knowledge | Department of Primary Industries | Education | | Fishcare | assistance | educational |
| (in saltwater) | current | and understanding | (link below for more information) | Officers based | Fishcare | budget | from NSW DPI | experience. |
| | | about: | http://www.dpi.nsw.gov.au/fisheri | at 4 coastal | Volunteers | | Fishcare | |
| Fishcare | | Fishing rules and | es/recreational/info/fvp/activities | locations | undertake the | | Volunteers | Positive |
| Volunteers, mentor | | regulations | | (Wollongbar, | sessions and | | | feedback from |
| years 7-10 in | | Fishing safely and | | Swansea, | provide loan | | | schools posted |
| fishing skills and | | responsibly | Done in conjunction with DET | Sydney, | roads, reel | | | on blogs |
| knowledge during | | fishing skills | schools and Head Teacher. | Warilla,) | and tackle. | | | |
| sessions aligned | | (baiting, rigging | Concentrates on years 7-10 | | The school | | | |
| with Sport | | and casting) | | | generally | | | |
| | | | | | provides the | | | |
| | | | | | bait. | | | |

New South Wales (NSW)

| Programs/ activities | Dates | Aim | Involvement - People numbers, ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|---|-----------------------|--|--|--|---|-------------------------------|--|---|
| Bluey School Incursions (in freshwater & saltwater locations) Education Officers & Fishcare Volunteers, visit schools to promote sustainable fishing rules and messages and undertake a 'dry' fishing workshop. | 2010 to current | Advisory trailers form the basis of the session, displaying key messages and are used as a base for running the dry workshop. Participants are taken through Fishing rules, regulations, safely baiting, rigging and casting. | NSW Government program Department of Primary Industries (link below for more information) http://www.dpi.nsw.gov.au/fisheri es/recreational/info/fishcare Done in conjunction with DET schools and Head Teacher. Concentrates on years 7-10 | Run by NSW DPI Education Officers based at 5 locations (Wollongbar, Swansea, Sydney, Warilla & Dubbo,) | Free NSWDPI Staff & Fishcare Volunteers undertake the sessions | Part of Fishcare budget | Run with assistance from NSW DPI Fishcare Volunteers | Enjoyable educational experience. Positive feedback from schools |
| Hooked on Fishing programs Kids' Camps during school holiday periods (usually only summer and spring) | 200? to current | Teach the basics of fishing to a newcomer and to encourage them to continue in the sport. | NSW Government program Department of Sport & Recreation (link below for more information) http://www.dsr.nsw.gov.au/ 12 years and under for 5 day camp. In 2011 run at NSW Sport and Recreation Centres such as Lake Keepit, Broken Bay and Myuna Bay | Program co- ordinators associated with individual rec. centres or through Sport and Recreation, Client Service Centre. | Fee paid \$300-400 (Mon-Friday) includes a fishing fee | | | |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|--|-----------------------|--|--|--|--|------------------|---------------------------|---|
| Fishing for schools | 200? to current | Encourage better links between school and sporting communities, delivered at the school venue and tailored to the school's needs. | People numbers ages etc | See below | Encouraged to Join local club | estimate | contribution | stories |
| School Fishing clinics Will visit schools (Fishing for Schools program) by arrangement all year round | 200? to current | Basics of fishing, competition casting, boat fishing (focusing on boat safety) and sustainable fishing. | NSW Fishing Clubs Association Inc. (link below for more information) http://www.nswfca.com.au/ As arranged, usually for one to three visits. Restricted to groups of no more than 15 unless prior arrangements are made | Margaret Riddel 7 Roto Place, Port Macquarie NSW 2444 Phone: (02) 6584 2728 fishinghastings @ecopost.com. au | Fee paid. Cost depends on availability of instructors | | | |
| Sydney International Boat Show fishing clinic Various well known fishing experts and topics. Kids fishing clinic and Bluey the advisory trailer on display | 2010 to 2012 | To educate and inform visitors about better fishing techniques, the clinic runs non-stop during the show. | Partnership with Boating Industry Association of NSW Ltd <u>http://www.sydneyboatshow.c</u> <u>om.au/activities/fishing-</u> <u>clinic/index.html</u> and Department of Primary Industries (link below for more information) <u>http://www.dpi.nsw.gov.au/fisheri</u> <u>es/recreational/fees/education</u> | Bryan van der Walt, Manager Recreational Fisheries Programs, NSW DPI | NSW Recreational Fishing Trust 2010/11 \$20,000 SW 2011/12 \$30,000 SW | | | Very popular, write –up in numerous fishing magazines <u>http://www.fis</u> <u>hingworld.com</u> <u>.au/news/sydn</u> <u>ey-</u> <u>international-</u> <u>boat-show-</u> <u>now-on</u> |

| Programs/ | Dates | Aim | Involvement - People numbers | Key contact | Resourced | Gross | Voluntary | Success stories |
|----------------------|---------|-----------------------|---------------------------------------|-----------------|-----------------|------------|-----------------|----------------------|
| activities | | | ages etc | people | by? | funding | Contribution | |
| Club Fishing clinics | 2012 | NSWFCA and many | NSW Fishing Clubs Association | Robert Smith | NSW | 2011/12 | | |
| | | of it's affiliated | http://www.nswfca.com.au/ | Pres. NSWFCA | Recreational | \$5,230 | | |
| e.g. Narooma Sport | | clubs run fishing | 3,861 members. | 15 Little St | Fishing Trust | SW to | | |
| and | | clinics from time to | Fishing clinics are advertised on the | Harrington | can fund | Narooma | | |
| Gamefishing Club | | time. | NSWFCA web site. | 2427 | special needs | Sport and | | |
| Inc. runs Fishing | | | | Ph: [02] 6556 | clinics | Gamefishi | | |
| Clinics for kids and | | Designed to ramp | e.g. Narooma Sport and | 0338 | | ng | | |
| special needs. | | up fishing skills and | Gamefishing holds junior, Grey | Mob: 0411 695 | | | | |
| | | even better as an | Power, Camp Quality and Canteen | 282 | | | | |
| | | introduction for | clinic s | E-mail: | | | | |
| | | the kids. | http://www.acr.net.au/~nsgfc/care | president@ | | | | |
| | | | <u>for kids.html</u> | nswfca.com.au | | | | |
| STATE DEPT. | 1999 | To be recognised | Department of Primary Industries | Bryan van der | NSW | 2012/13 | 350 trained & | Commenced in |
| INFORMATION | to | state-wide as an | (link below for more information) | Walt, Manager | Recreational | \$765,200 | accredited | 1999 <i>,</i> in the |
| Fishcare NSW | current | effective volunteer | http://www.dpi.nsw.gov.au/fisheri | Recreational | Fishing Trust - | (SW | Volunteers | Snowy with 7 |
| Trained | | program that | es/recreational/info/fvp | Fisheries | (Salt Water | \$595,200 | across NSW | FCVs, 1 staff |
| Volunteers, Assist | | encourages | | Programs, | (SW) and | FW | -All volunteers | -Today 18 |
| DPI Education | | responsible | Volunteers receive specialised | NSW DPI | Fresh Water | \$170,000) | work within | groups, 350 |
| Officers with, | | attitudes and | school based training from DET and | | (FW) | | local area to | FCVs and eight |
| fishing workshops, | | practices towards | TAFE NSW. | Dee Payne State | contributions) | | reduce costs | staff. |
| school programs, | | the use of our state | | Coordinator, | | | and travel | Volunteers |
| distribution of PR | | fisheries resources, | Security checks include Police, | Community | | | distances | attend on |
| material, catch and | | through education, | Fisheries and Working With | Programs, | | | -In 2006 | average 500 |
| release kits and | | information | Children resulting in a 12 month ID | NSW DPI | | | implemented | events per |
| information on | | collection and | | | | | Leader | year. One of |
| responsible fishing, | | promotion | Central to the success of many of | | | | volunteers | the most |
| boating and food | | | NSW recreational fishing | | | | and | successful |
| safety issues. | | | education programs | | | | recognition | volunteer |
| | | | | | | | program. | programs in NSW. |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|-------------------------|---------|----------------------|--|-----------------------|------------------|------------------|---------------------------|-----------------|
| Get hooked It's | 2008 | To introduce | Department of Primary Industries | Dee Payne, | NSW | 2012/13 | Involves an | Since 2008, |
| fun to fish | to | primary school | (link below for more information) | State | Recreational | \$435,000 | extensive | 259 schools |
| | current | students to | http://www.dpi.nsw.gov.au/fisheri | Coordinator, | Fishing Trust | (SW | network of | and 15,000 |
| Schools program. | | recreational fishing | es/recreational/info/get-hooked | Community | | \$396,000 | dedicated | students |
| Schools invited to | | while practising | | Programs, | Incursion and | FW | local Fishcare | mentored |
| register then | | safe and | Junior fishing code and Board of | Fisheries | excursion | \$39,000) | volunteers | through the |
| receive | | responsible fishing. | Studies syllabus outcomes across | | components, | | | GH program. |
| Teachers Manual, | | | all Key Learning Areas. | Amalia Brohier | are provided | | | Approx.1700 |
| Resource Kit, | | | Limited to schools that can be | Schools | at minimal | | | students |
| interactive DVD. | | | serviced professionally. | Manager, | cost | | | interacted |
| | | | | Recreational | | | | with GH staff |
| Manual has six | | | Also offered a in class visit usually | Fisheries | | | | and volunteers |
| learning codes | | | in July-Sept and can also attend a | Programs, | | | | at external |
| based around the | | | workshop (out of class excursion) | NSW DPI | | | | events across |
| School curriculum. | | | at the end of the year (Oct-Nov) | | | | | NSW. |
| RF Promotion and | 2008 | Working with | Department of Primary Industries | NSW DPI Fishing | NSW | 2012/13 | | Fishing event |
| Event | to | fishing tournament | (links below for more information) | Competition | Recreational | \$144,700 | | code of |
| management | current | organisers and the | http://www.dpi.nsw.gov.au/fisheri | Management | Fishing Trust | (SW | | practice |
| Data collection | | community to | es/recreational/info/event- | Officer | | \$115,760 | | guidelines. |
| (fishing event, | | promote events | management#Introduction | | | FW | | |
| location, waters | | that operate in a | | | | \$28,940) | | |
| fished, no. of | | safe and | | | | | | |
| anglers, species, | | environmentally | http://www.dpi.nsw.gov.au/fisheri | | | | | |
| lengths etc.) | | and socially | es/recreational/info/catch-and- | | | | | |
| Web info. on fish | | responsible way. | <u>release</u> | | | | | |
| handlingtechniques | | | | | | | | |
| max. fish survival | | Catch and keep or | | | | | | |
| barotrauma | | catch and release | | | | | | |
| and improve your | | events. | | | | | | |
| fishing event. | | | | | | | | |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|--|-----------------------|--|--|---|--------------------------------------|--|---------------------------|-----------------|
| Rec Fishing - Information a range of fishing brochures and stickers | 2001 to current | Produced every year to help anglers keep up- to-date on the latest fishing rules and good practices. | Department of Primary Industries (link below for more information) http://www.dpi.nsw.gov.au/fisheri es/recreational/fees/education | Bryan van der Walt, Manager Recreational Fisheries Programs, NSW DPI | NSW Recreational Fishing Trust | 2012/13 SW \$142,500 | | |
| Rec Fishing – Guides -300,000 FW and SW fishing guides produced each year | 2003 to current | To help recreational anglers identify their catch and summarise the fishing rules. | Department of Primary Industries (link below for more information) <u>http://www.dpi.nsw.gov.au/fisheri</u> <u>es/recreational/fees/education</u> | Bryan van der Walt, Manager Recreational Fisheries Programs, NSW DPI | NSW Recreational Fishing Trust | 2012/13 \$140,000 (SW \$100,000 FW \$40,000) | | |
| Rec Fishing - Awareness Raising -Delivered through a range of media outlets (newspaper, magazines, radio, billboards) | 2001 to current | Information on fishing rules to anglers and encourages responsible and sustainable fishing practices at peak fishing periods. | Department of Primary Industries (link below for more information) <u>http://www.dpi.nsw.gov.au/fisheri</u> <u>es/recreational/fees/education</u> | Bryan van der Walt, Manager Recreational Fisheries Programs, NSW DPI | NSW Recreational Fishing Trust | 2012/13 \$50,000 (SW \$35,000 FW \$15,000) | | |
| Rec Fishing – Calendars and Photo Competitions | 2001 to current | Promote angler. fishing and fishing rules. | Department of Primary Industries (link below for more information) http://www.dpi.nsw.gov.au/fisheri es/recreational/fees/education | Bryan van der Walt, Manager Recreational Fisheries Programs, NSW DPI | NSW Recreational Fishing Trust | 2008/09 \$15,000 FW calendar 2011/12 \$19,500 50% SW/FW | | |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|---|-----------------------|--|---|--|--|--|---------------------------|---|
| PARTNERSHIPS | | | | | | | | |
| Rock fishing safety A free rock fishing DVD and multilingual pamphlets available for fishing clubs and community groups Informative videos on-line, web site | 2004 to current | A water safety initiative – provides key rock fishing safety messages. workshops to educate non English speaking anglers | Multiple organisations that include: NSW government http://www.safewaters.nsw.gov.au /index.htm -Recreational Fishing Alliance (RFA), of NSW http://www.rfansw.com.au/ http://www.safefishing.com.au/ -NSW Recreational Fishing Trusts http://www.dpi.nsw.gov.au/fisheri es/recreational/fees/education -Surf Life Saving Australia (SLSA) http://beachsafe.org.au/ | Malcolm Poole Chairman/Presi dent <u>president@rfan</u> <u>sw.com.au</u> Stan Konstantaras - Secretary <u>secretary@rfan</u> <u>sw.com.au</u> | NSW Rec.Fishing Trusts, Surf Life Saving Australia, NSW Sport & Recreation, Australian National Sportfishing Association and the fishing tackle industry. | 2009/10 NSW RF Trust \$74,925 (SW \$41,750 resource folder mailout SW \$33,175 | | Delivers a multilingual education campaign in the ethnic media (Chinese, Vietnamese and Korean). -"Don't put your life on the line" media campaign |
| Spearfishing safety Spearfishing Safety DVD. Informative videos on-line, web site | 2011- 2012 | A water safety initiative - provides key spear fishing safety messages. | Multiple organisations and partnerships:- - NSW Underwater Skindiving and Fisherman's Assn Inc (USFA Inc.) <u>http://www.usfa.com.au/</u> -Recreational Fishing Alliance (RFA), of NSW <u>http://www.rfansw.com.au/</u> <u>http://www.safefishing.com.au/</u> _NSW Recreational Fishing Trusts <u>http://www.dpi.nsw.gov.au/fisheri</u> <u>es/recreational/fees/education</u> -Surf Life Saving Australia (SLSA) <u>http://beachsafe.org.au/</u> | Adrian Wayne | | 2011/12 NSW Rec. Fish. Trust \$34,500 (SW) Distributi on of the Spearfishi ng Safety DVD in NSW | | "Don't put your life on the line" media campaign |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|---------------------------------------|---------|------------------------------|---|-----------------------|------------------------|------------------|---------------------------|----------------------------------|
| Angel rings | 1994 | A water safety | NSW branch of the Australian | Stan | Department | | ANSA | 116 Angel |
| | to | initiative - | National Sportsfishing Association | Konstantaras | of Fisheries | | Volunteers | Rings have |
| Life buoys installed | current | keeps the victim | (ANSA) | National Angel | and Forestry | | installed rings, | been installed |
| at popular ocean | | afloat and away | http://www.angelrings.com.au/ | Ring | and the | | managed | in NSW since |
| rock fishing spots | | from the rocks | http://www.ansansw.com.au/ | Coordinator | Fisheries | | project since | 1994 |
| across NSW. | | until help arrives or | | National Safety | Research and | | 1994. Clubs | |
| | | a rescue can be | FRDC | Officer | Development | | monitor rings | 48 |
| Informative videos | | organised. | http://frdc.com.au/environment/i | | Corporation | | in their area | documented |
| on-line, web site | | | <u>mage-</u> | | for national | | with help of | rescues by |
| | | Also installed on | story/Pages/rock fishings guardia | | roll-out. | | NP Rangers, | Angel Rings in |
| | | wharves, fishing | <u>n angels.aspx</u> | | | | Fisheries | NSW |
| | | platforms and | | | | | Officers, local | Participation in |
| | | along bushwalking | DAFF | | | | SLSA Clubs, | community |
| | | tracks. | Goal 6, Strategy 4 in RFIDS "Roll out | | | | community | education |
| | | | a National Angel Rings program". | | | | groups and | programs |
| Tenelenkine | 2000 | Dee fish live | | O | Facility | | locals. | Circle 2000 have |
| Tangler bins | 2006 | Rec fish line | OceanWatch Australia | OceanWatch | Environ. | | | Since 2006 has collected more |
| Installation of | to | recovery scheme. | partnered with NSW recreational | Australia Ltd. | Trust, NSW | | | than 10 tons of |
| fishing line | current | It was designed as | fishing industry, DPI Fishcare Volunteers, local fishing clubs and | Locked Bag 247 | Rec. Fishing Trust. | | | discarded |
| recycling bins at key recreational | | a practical environmental | bait and tackle shops, South West | Pyrmont | Australian | | | fishing line, all |
| fishing hotspots in | | solution for the | Anglers Association and many local | NSW 2009 | Government; | | | sent for |
| NSW coastal and | | recovery and | councils. | AUSTRALIA | Caring For | | | recycling. |
| inland locations. | | recycling of lost | councils. | AUSTRALIA | Our Country | | | recycling. |
| Also education | | recreational fishing | http://www.oceanwatch.org.au/ou | Ph. (61) 2 9660 | and Burnett | | | |
| /information | | line that litters | r-work/tangler-bin/ | 2262 Fax. (61) 2 | Mary | | | |
| campaign aimed at | | recreational fishing | | 9660 2786 | Regional | | | |
| encouraging the | | hotspots | | Email. | Group. | | | |
| prevention of | | | | ocean@oceanw | 1- | | | |
| fishing litter | | | | atch.org.au | | | | |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|---|--|---|--|---|--|---|---------------------------|-----------------|
| Future Rec. Fishing Leaders Leadership workshop -people development -Travel, accommodation and meal costs covered for successful candidates. | 2008- 2009 2011 to current | To develop the next generation of NSW recreational fishing leaders. | Recreational Fishing Alliance of NSW <u>www.rfansw.com.au/</u> with funding support from the NSW Rec. Fish. Trust <u>http://www.dpi.nsw.gov.au/fisheri</u> <u>es/recreational/fees/education</u> Nominally aged between 25-35 years | Malcolm Poole Chairman/Presi dent <u>president@rfan</u> <u>sw.com.au</u> | NSW Recreational Fishing Trust More recent support from FRDC (People Development Program 2008-2013) | 2008/09 NSW Rec. Fish. Trust \$23,500 SW | | |
| Marine Discovery Centres Centre-based entity and collabo- rative group of marine educators 7 NSW centres with varying messages and rec. fish content | 2005 to current | Utilises hands-on environmental education to inspire and facili- tate changes in vis- itor attitudes and actions, in order to achieve its primary mission of conser- vation of the marine and coastal environment. | Marine Discovery Centres Australia- MDCA http://www.mdca.org.au/ 2 schools (Port Macquarie and Ballina; 1 private (Hastings Point) and;4 Not–for-profit community organisations (Eden, Bondi, Sydney Northern Beaches, Terrigal) | Michael Burke Chair MDCA P: (08) 9203 0342 M: 0437 886 015 <u>michael.burke@</u> <u>fish.wa.gov.au</u> | Some are part of schools, while others are commu- nity– or government- funded. MDCA is sup- ported by FRDC. | | | |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|----------------------------|---------|----------------------|--|-----------------------|------------------|------------------|---------------------------|-----------------|
| PRIVATE SECTOR | | Fishing for the | NSW branch of the Australian | Tony Steiner | | | | Specialist |
| Fishing 4 | | disabled. | National Sportsfishing Association | www.ansansw.c | | | | fishing |
| therapy | | | (ANSA) | om.au | | | | equipment for |
| | | Also part of the | http://www.ansansw.com.au/ | http://www.sw | | | | people with |
| | | carp management | -Centennial Parklands Foundation | eetwateradvent | | | | disabilities |
| | | control program to | https://www.yourparklands.org.au | ures.com.au/ | | | | |
| | | monitor the fish | /volunteers/carp management pu | | | | | Custom built |
| | | within the Parks | <u>blic</u> | | | | | access area for |
| | | waterways. | -For those with medium to mild | | | | | people with |
| | | | Autism, Cerebral Palsy and Down | | | | | disabilities |
| | | | Syndrome in their early teens to | | | | | |
| | | | mid thirties including those with an | | | | | |
| | | | acquired brain injury (ABI) | | | | | |
| Young Guns | | Provide fishing | http://www.younggunsfishing.com. | | | | | |
| Fishing Adventures | | lessons in all | au/index.html | | | | | |
| _ | | aspects of fishing | | | | | | |
| | | for many years are | Young Guns are proud to be | | | | | |
| | | the most | accredited by the Professional | | | | | |
| | | renowned tuition | Fishing Instructors & Guides | | | | | |
| | | providers in | Association (P.F.I.G.A) | | | | | |
| | | Australia. | | | | | | |
| Professional | 1990 | PFIGA Membership | Professional Fishing Instructors & | President/Sec. | | | | The only |
| Fishing Instructors | to | -accreditation for | Guides Association | Steve | | | | recognised |
| & Guides | current | successful | http://fishinginstructors.org.au/ | Williamson | | | | accreditation |
| Association | | applicants, to | | Jindabyne NSW | | | | for the |
| | | communicate the | | M 0408 024 436 | | | | industry in |
| | | quality of business, | | E-mail: | | | | Australia |
| | | expertise, safety | | president@fishi | | | | |
| | | and service to | | nginstructors.or | | | | |
| | | customers | | g.au | | | | |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|--|-----------------------|--|---|--|------------------|------------------|--|--|
| New South Wales Council of Freshwater Anglers | 1958 to current | recognised representative body for the State's freshwater anglers, focusing on fisheries management, conservation and regulatory matters, angler access, angling ethics, animal welfare and politics | New South Wales Council of Freshwater Anglers <u>http://www.freshwateranglers.co</u> <u>m.au/</u> | NSW Council of Freshwater Anglers PO Box 537 Paddington NSW 2021 Australia Email info@freshwate ranglers.com.au | | | An independent, incorporated, not-for-profit organisation completely run by unpaid volunteers | |
| Ledge Care initiative ALBAA built the 'Ledge Care' model alongside Clean Up Australia and Shoalhaven City Council | 2008 to current | politics A shared responsibility and encouraging co- management principles in the areas we anglers deem to be of cultural significance. | Australian Land Based Anglers Association Inc. (ALBAA) <u>http://www.albaa.com.au/projectl</u> <u>edgecare.htm</u> | | | | | has seen a personal investment of over 250 hours by ALBAA members removing more than 750 kilograms of debris from not only rock platforms but surrounding bush land, track fringes and car parks. |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|---|-----------------------|---|--|-----------------------|---|---------------------------|---------------------------|---|
| Cooks River Alliance, including River Keepers projects 8 councils with one vision for a healthy Cooks River | 2011 to current | Our Riverkeeper Service is removing floating litter from the rivers | CMA and city councils Cooks River CMA and City of Canterbury The Cooks River Alliance is a partnership between Ashfield Council, Bankstown City Council, City of Canterbury, City of Sydney, Hurstville City Council, Marrickville Council Rockdale City Council and Strathfield Municipal Council http://cooksriver.org.au/ | | | | | The punt collects up to a tonne of rubbish at a time. This means we're removing a large amount of litter from the River on a regular basis. |
| Fishing for habitat And Habitat action program | 4 years | Funding from the Recreational Fishing Trusts for projects that restore, rehabilitate and protect fish habitat in NSW is available through the Habitat Action Program. | | NSW DPI | Funding from the Recreational Fishing Trusts | Annual grant scheme | Vounteers | Stories of success from fishers eg re- snaging rivers |

Northern Territory

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|---|------------------|--|--|-----------------------------------|-------------------------|------------------|--|---|
| RF clinics | | | | | | | (no's of volunteers) | |
| Kids holiday workshops | 1985- 2008 | Entry level skills for young fishers | 60 kids/year , 10-16 years old | NTF dept RF section | NT Fisheries dept | | | |
| Club fishing clinics | 2004- current | | several 1,000 in last 8 years | Palmerston and Darwin clubs | Fishing Clubs | | 30/event100 in 4 different locations | good feedback from kids and parents |
| Into the Blue | | Junior fishers - stories from the dreamtime | | NT Fisheries education site | | | | |
| Fem fishing class | 2004- 2010 | Schooling females in RF skills | 2 classes of 20= 40 | Julie Fisher | Fee paid | | | |
| State Dept information Pamplets at tackle, boat shops and vistor info shops | | regulations and info form RF | 5,000/ year | NTF dept RF section | NTF dept | | | |
| Signage as education | | Inform on regulations, fish size etc | 2008 -2013 life span | NTF dept RF section | NTF dept | | | |

App. 1-105

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|---|---------------|--|--|------------------------|--|------------------|---------------------------|---|
| Press releases | | On a needs basis and in news paper columns | general public | NTF dept RF section | NTF dept | | | |
| Radio "tales from the tinnie" (sat morning) | | To emphasise key message | general public | NTF dept RF section | NTF dept | | | Well received by publiclisteners are fishers |
| TV segment -3 min Ch 10 | 2012- 2013 | Inform on sustainable fishing practices | general public | NTF dept RF section | External sponsors private and NTF | | | Feedback is from a wider range of people even those outside fishing |
| Information packs | | Inform visitors of rules and regs | 200 sent each year to visitors | NTF dept RF section | NTF dept | | | |
| Charter boats | | Inform catching culture on barotrauma and depletion | | | | | | Annual interview to be appraised |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|-----------------------------|-------|---|--|--|------------------|------------------|---------------------------|-----------------|
| Indigenous programs | | Marine Ranger training and caring for country training | Some involvement in fishing clinics | NTF dept Indigenous development section | | | | |
| Dept use of social media | | Considering app, set up etc. | | | | | | |
| Fishing forums | | Information sharing in the region Minority with strong opinions? | | | | | | |
| Private sector | | | | | | | | |
| Fishing Magazines | | Naffa, Barr and Bass magazines | Some education adverts | Alex Julius | Business | | | |
| Fishing tackle shops | | Links between retailers or new ideas | Word of mouth around town | | | | | |

Queensland

| Programs / activities | Dates | Aim | Involvement- People numbers etc | Key contact people | Resourced by? | Gross funding estimate | Voluntary contribution | Success/Lack of Success Stories |
|---|--|---|---|--------------------------|--|------------------------------|---------------------------|------------------------------------|
| RF clinics | | | | | | | | |
| General fishing clinics | In past, Govt run, in conjunction with FishCare. | General fishing clinics | | | Sunfish took over (election commitment) | | | |
| Angler Education Camps | Sunfish | Train the trainer. Accredited | | | | | | |
| State Dept information | | | | | | | | |
| Fishcare | 1997-2012 (ended late 2012) | Peer education. Regs, many other messages such as environmental awareness, equity, how to release fish etc. | Fishers, general public. 104,000 contacts | No longer running | | | | |
| Pamphlets at tackle, boat shops and vistor info shops | Some? | | | | | | | |
| Signage as education | Some (eg Caulerpa weed) | | | | | | | |

| Programs / activities | Dates | Aim | Involvement- People numbers etc | Key contact people | Resourced by? | Gross funding estimate | Voluntary contribution | Success/Lack of Success Stories |
|--|---------|--|---------------------------------------|--------------------------|------------------|------------------------------|---------------------------|------------------------------------|
| Recreational Fishing Regulations (downloadable). Also included as part of Qld Boating & Fishing Guide | Current | To disseminate detailed information on all regulations, but also endorses National Code of Practice, 'Gently does it' release (infofish), volunteer monitoring programs, equity, support of research, involvement in Suntag, safety, reasons for closed seasons and closed | | | | | | |
| Reef fish identification guide (downloadable) | Current | waters. | | | | | | |

| Programs / activities | Dates | Aim | Involvement- People numbers etc | Key contact people | Resourced by? | Gross funding estimate | Voluntary contribution | Success/Lack of Success Stories |
|--------------------------|---------|---|---------------------------------------|--------------------------|------------------|------------------------------|------------------------|---|
| Press releases | Current | Communication plan, updated every 12 months. Key messages prioritized. Stocking of waterways, New regulations, etc | | | | | | Press releases relating to shark protection program and on entangled whales get great penetration. While not specifically following up on more routine info, feels doesn't get picked up well. Complaints from some media saying they don't get info (when they do). Facebook seen as better penetration to fishers. |
| TV | No | | | | | | | |
| Information packs | | | | | | | | |
| Charter boats | | | | | | | | |
| Indigenous programs | | | | | | | | |
| Dept use of social media | | | | | | | | |
| Mainly facebook | Current | Seen as key tool, Dept is focusing on this to distribute messages to | | | | | | |

| | | anglers | | | | | | |
|-----------------------|-------------------------------------|---------|---------------------------------------|--------------------------|------------------|------------------------------|---------------------------|--|
| | | | | | | | | |
| Programs / activities | Dates | Aim | Involvement- People numbers etc | Key contact people | Resourced by? | Gross funding estimate | Voluntary contribution | Success/Lack of Success Stories |
| Fishing forums | Govt doesn't get involved | | | | | | | |
| Private sector | | | | | | | | |
| Fishing Magazines | Difficult; who to write them? | | | | | | | |
| Fishing tackle shops | Yes | | | | | | | |
| General | | | | | | | | Changed rules on dusky flathead and barramundi. Now, MUCH better fishing success, but no link made by public. In contrast, changes flagged on snapper generated considerable flak, positive aspects not recognised. |

Queensland- Other more widespread activities

| Programs / activities | Dates | Aim | Involvement-People numbers etc | Key contact people | Resourced by? | Gross funding estimate | Voluntary contribution | Success/L ack of Success Stories |
|--|--|--|--|--------------------|---|------------------------------|---------------------------|--|
| TAngler Bins (see NSW review for that State) | 2006- present | To install bins at strategic locations so that anglers can dispose of unwanted or tangled fishing line. To ameliorate the following: Death and injury to fish, birds and other wildlife, Fish habitat degradation, Pollution, Loss of quality rec fishing experience | Vic, NSW, Qld. 200 Bins, 28 Councils, other organizations. In QLD, Fraser Coast and Sunshine Coast Councils. www.oceanwatch.org. au/wp- content/uploads/2010 /02/OW038TAnglerBin PosterA2v6b.pdf | Oceanwatch | In QLD, Burnett Mary Regional Group. NSWDPI Rec Fishing Trusts, Caring for Country, Councils, NSW Environ Trust. | | | Appears to be very successful, although some issues with whose responsibil ity to empty bins (and maintain them) |
| Bluewater Safety Campaign (NSW only) | Launch ed Feb 2013. Two week campai gn | Improve boat operator awareness of the safety equipment and communications requirements when operating offshore. | | | NSW Maritime | | | Example of a short term awareness campaign. Usual messages (but late in holiday /summer season?) |

| Programs / activities | Dates | Aim | Involvement-People numbers etc | Key contact people | Resourced by? | Gross funding estimate | Voluntary contribution | Success/L ack of Success Stories |
|--|--|---|-----------------------------------|---|--|---|---------------------------|--|
| Sunfish Angler Education Activities | | | | | | | | |
| Sunfish Angler Instruction Course | Current , but Govt funding termin ated so looking for other sources . Every two years, but hiatus due to funding issues | Formal certification at different levels. Participants are equipped with all the necessary information on the Sunfish operational framework and legislative obligations for holding local activities for juniors and other target groups. | 10 to 20 each course | Keith Latimer keithlatimer@sunfishql d.com.au | Some funding did come from State Govt, but now ended. Looking at ARRF network to fund | \$10,000 to \$15,000 each course | | There is a big waiting list for these courses so demand is high. |

| Programs / activities | Dates | Aim | Involvement-People numbers etc | Key contact people | Resourced by? | Gross funding estimate | Voluntary contribution | Success/L ack of Success Stories |
|--|---|---|--|--|--|------------------------------|---|---|
| Sunfish Kids' Fishing Days (formerly Lifestyle Kid's Fishing Days) | 30-35 per year | Teach children how to fish, and range of messages including careful release of fish, how to look after the environment etc | Limited to about 30 children each event to allow one on one instruction; less for special disabled children events. | John Crone jpcrone@bigpond.net. au | Was partially funded by Govt but now relying on community groups, Councils and private sponsorship. Prizes donated | | Sunfish, local clubs and stocking groups run these events. Purely voluntary. Instructors must have minimum Level 1 qual from Angler Instruction Course | Has been going for 30 years and is extremely popular |
| Take a Kid Fishing Day | One specific day each year. Venue change s | General family day to promote benefits of fishing. Hand out sample bags with information. | Many hundreds of people attend these days | John Crone jpcrone@bigpond.net. au | Locally funded | | Sunfish members and regional Sunfish branches | Highly successful as indicated by the numbers who attend. Hundreds if not thousands |

| Programs / activities | Dates | Aim | Involvement-People numbers etc | Key contact people | Resourced by? | Gross funding estimate | Voluntary contribution | Success/L ack of Success Stories |
|--------------------------|---|--|---|---------------------|---|------------------------------|---|---|
| Education displays | The major boat shows and fishing expos around the State, various dates | Provide stands and displays at venues where anglers congregate. Distribute printed educational material and encourage involvement with Sunfish and member organizations | Examples of recent venues: Brisbane Boat Show, the Tinnie and Tackle Show, Tin Can Bay Seafood Festival and the Townsville Boat and Camping Expo | Judy Lynne, Sunfish | Sunfish. Freshwater Fishing SAQ also participates. AFTA supplies material for sample bags | | All voluntary, except for EO of Sunfish | Govt Depts not fronting these events now, so Sunfish Stand has become the de facto point of contact for info.on on whole range of areas, including fishing regs, Marine Park boundarie s, VHF radio operation etc. |

South Australia

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary | Success stories |
|--------------------------|--------|---------------------|--|-----------------------|------------------|------------------|----------------|--------------------|
| | | | | | | | Contribution | |
| RF CLINICS, WORKSHOPS | | | | | | | | |
| Fishcare | Starte | 1. keep anglers up | Primary Industries and Regions SA | Ms Toni Cox or | SA | 2012/13 | Volunteer | Enjoyable |
| Volunteer | d1995 | to date with the | (PIRSA) | Hayley | Government | \$176,000 | time and | experience |
| Program | То | rules and | Fisheries & Aquaculture | Donovan | & supported | | expertise | |
| | prese | regulations | GPO Box 1625 | State FISHCARE | by Volunteer | | "To raise the | Multicultural |
| Trained | nt | 2. raise | Adelaide SA 5001 | Volunteer | effort | | community's | language |
| volunteers assist | | community | Ph: 8169 0118 | Coordinator | | | awareness | information |
| PIRSA F&A with | | awareness of the | | | | | & appreciation | |
| school program, | | need to protect | www.pir.sa.gov.au/fishcare | | | | of the need to | 9 teams, over |
| distribution of | | the state's fishing | | | | | protect and | 100 FCVs. |
| education | | resource | | | | | preserve | |
| material and | | 3. make sure | Security checks include National | | | | fisheries | |
| information in | | anglers don't over | Police check (every 3 years) and | | | | resources and | |
| relation to | | fish and there's | Fisheries check. | | | | their habitats | |
| responsible | | enough fish for the | | | | | for future | |
| fishing practices. | | future | Only recreational fishing | | | | generations" | |
| Raising public | | 4. spread the | educational program | | | | -Fishcare | |
| awareness of | | sustainable fishing | | | | | Volunteers are | |
| fisheries | | message | | | | | the education | |
| management | | | | | | | arm of PIRSA | |
| initiatives | | | | | | | Fisheries & | |
| | | | | | | | Aquaculture | |
| STATE DEPT. | | | | | | | | |
| INFORMATION | | | | | | | | |

| School Talks | 2008 to | To raise children's awareness of the | PIRSA | Toni Cox State FISHCARE | Fishcare Volunteer | Funding from | Volunteers speak to year | Over 300 classes spoken |
|-------------------|------------|--------------------------------------|-----------------------------------|----------------------------|-----------------------|-----------------|-----------------------------|----------------------------|
| | prese | need for them to | | Volunteer | effort | Fishcare | 4-5 classes | to in 4 years |
| | nt | protect of fisheries | | Coordinator | chore | Volunteer | 4 5 6103565 | to in 4 years |
| | | resources. | | coordinator | | allocation | | |
| | | | | | | (see | | |
| | | | | | | above) | | |
| General patrol | 1995 | To raise | Primary Industries and Regions SA | Ms Toni Cox or | Fishcare | Funding | | 250 patrol |
| activities/events | to | community | (PIRSA) Fisheries & Aquaculture | Hayley | Volunteer | from | | activities in |
| (e.g. field days, | curre | awareness of the | GPO Box 1625 | Donovan | effort | Fishcare | | 2012/13, |
| country shows, | nt | need to protect | Adelaide SA 5001 | State FISHCARE | | Volunteer | | spoken to over |
| boat/camping | | the state's fishing | Ph: 8169 0118 | Volunteer | | allocation | | 22,000 fishers |
| shows) | | resource | | Coordinator | | (see | | |
| , | | | | | | above) | | |
| Fishing Club | 20+ | Responsible | Primary Industries and Regions SA | Randel | PIRSA | | | |
| presentations | years | fishing | (PIRSA) | Donovan | | | | |
| | | | Fisheries & Aquaculture | Central | | | | |
| | | | GPO Box 1625 | Regional | | | | |
| | | | Adelaide SA 5001 | Manager | | | | |
| | | | Ph: 8169 0118 | | | | | |
| Rec Fishing - | | Information on | Primary Industries and Regions SA | Jo Tsoukalas | PIRSA | | | |
| Awareness | | fishing rules to | (PIRSA) | PIRSA F&A | | | | |
| Raising | | fishers and | Fisheries & Aquaculture | Communication | | | | |
| U | | encourages | GPO Box 1625 | s Manager | | | | |
| Delivered | | responsible and | Adelaide SA 5001 | 0 | | | | |
| through a range | | sustainable fishing | Ph: 8169 0118 | | | | | |
| of media | | practices | | | | | | |
| (newspaper, | | | | | | | | |
| Magazine, radio, | | | | | | | | |
| newsletter) | | | | | | | | |

| Rec Fishing – | 30 + | Information on | Primary Industries and Regions SA | Jo Tsoukalas | PIRSA | | Visual |
|-----------------|-------|---------------------|-----------------------------------|---------------|------------|--|-----------------|
| Awareness | years | fishing rules to | (PIRSA) | PIRSA F&A | Support by | | presence 24/7 |
| Raising | | fishers and | Fisheries & Aquaculture | Communication | FCVs | | |
| | | encourages | GPO Box 1625 | s Manager | | | 210 Rec |
| Delivered | | responsible and | Adelaide SA 5001 | | | | Fishing signs |
| through sign | | sustainable fishing | Ph: 8169 0118 | | | | at popular |
| posting program | | practices | | | | | fishing sites, |
| | | | | | | | 75 Fish |
| | | | | | | | measuring |
| | | | | | | | stations at |
| | | | | | | | Wharves and |
| | | | | | | | jetties |
| | | | | | | | Aquatic |
| | | | | | | | reserves signs, |
| | | | | | | | crabbing (bi- |
| | | | | | | | lingual), Pipi |
| | | | | | | | (bi-lingual), |
| | | | | | | | razor fish, |
| | | | | | | | spear fishing, |
| | | | | | | | bream signs, |
| | | | | | | | Intertidal, |
| | | | | | | | cuttlefish |
| | | | | | | | closure |
| | | | | | | | |
| | | | | | | | |

| Rec Fishing Awareness Raising Fishwatch and SMS Fish numbers | Fishw atch no 1998 SMS Fish - 4 years | Information on fishing rules to fishers Reporting fishing offences | Primary Industries and Regions SA (PIRSA) Fisheries & Aquaculture GPO Box 1625 Adelaide SA 5001 Ph: 8169 0118 | Jo Tsoukalas PIRSA F&A Communication s Manager | PIRSA | | |
|---|--|--|--|---|-------|--|--|
| Rec Fishing Awareness Raising Website/Social media Smart phone app | 2010 to curre nt | Information on fishing rules to fishers and encourages responsible and sustainable fishing practices | Primary Industries and Regions SA (PIRSA) Fisheries & Aquaculture GPO Box 1625 Adelaide SA 5001 Ph: 8169 0118 | Jo Tsoukalas PIRSA F&A Communication s Manager | PIRSA | | Fishcare Facebook page, PIRSA Twitter page, and Fisheries website, monitoring and responding on Strike Hook (online fishing forum) Developing a Smart phone app to be released in Sept 2013. |
| | | | | | | | |

| Rec Fishing – | 25 + | Information on | Primary Industries and Regions SA | Jo Tsoukalas | PIRSA | | |
|--------------------|--------|---------------------|-----------------------------------|---------------|--------------|----------------|----------------|
| Information | years | fishing rules to | (PIRSA) | PIRSA F&A | | | |
| | | fishers and | Fisheries & Aquaculture | Communication | | | |
| A range of fishing | | encourages | GPO Box 1625 | s Manager | | | |
| brochures and | | responsible and | Adelaide SA 5001 | | | | |
| stickers | | sustainable fishing | Ph: 8169 0118 | | | | |
| | | practices. | | | | | |
| | | Produced when | | | | | |
| | | required to keep | | | | | |
| | | fishers up-to-date. | | | | | |
| Rec Fishing – | 1996 | Designed for | Primary Industries and Regions SA | Jo Tsoukalas | PIRSA | | Made for |
| Information | to | species that are | (PIRSA) | PIRSA F&A | | | species – Blue |
| | curre | difficult to | Fisheries & Aquaculture | Communication | | | Swimmer |
| | nt | measure without a | GPO Box 1625 | s Manager | | | Crab, Sand |
| | | specialised tool | Adelaide SA 5001 | | | | Crab, Pipi, |
| | | | Ph: 8169 0118 | | | | Rock Lobster, |
| | | | | | | | Abalone |
| Rec Fishing – | 30+ | To help | Primary Industries and Regions SA | Jo Tsoukalas | PIRSA | | |
| Guides | years | recreational | (PIRSA) | PIRSA F&A | | | |
| | (we | fishers identify | Fisheries & Aquaculture | Communication | | | |
| | have | their catch and | GPO Box 1625 | s Manager | | | |
| | а сору | summarise the | Adelaide SA 5001 | | | | |
| | from | fishing rules | Ph: 8169 0118 | | | | |
| | 1978) | | | | | | |
| SA – Code of | Starte | Responsible | PIRSA | PIRSA | Website link | Version on | Multicultural |
| Practice – based | d?? | fishing | | Contact ?? | | website is the | language |
| on Recfish | То | | | | | 2001 version | information |
| Australia | prese | | | | | and is out of | |
| "National Code of | nt | | | | | date | |
| Practice" | | | | | | | |
| PARTNERSHIPS | | | | | | | |

| Fishers For | Starte | | Fishers For Conservation Inc. | fisherfc@intern | Love our | \$? | Who pays | |
|------------------|--------|------------------|-------------------------------------|-----------------|--------------|----------|-------------|---------------|
| Conservation | d?? | | An Australian based non-profit | ode.on.net | oceans and | | Who manages | Multicultural |
| | То | | incorporated association educating, | Or by mail: | rivers and | | | language |
| | prese | | supporting and representing | Fishers For | understand | | | information |
| | nt ?? | | recreational fishers | Conservation | that | | | |
| | | | | C/O 23 Winns | responsible, | | | |
| | | | | Rd, Blackwood, | sustainable | | | |
| | | | | SA 5051, | fishing is | | | |
| | | | | Australia | important to | | | |
| | | | | | aquatic | | | |
| | | | | | conservation | | | |
| Future Leaders | 2013 | Develop the next | RecFishSA | Gary Flack, | FRDC funded | \$70,000 | | |
| | | generation of | | Executive | project in | | | |
| | | Victoria | | Officer | partnership | | | |
| | | recreational | | RecfishSA | with SA and | | | |
| | | fishing leaders | | | Tas | | | |
| PRIVATE SECTOR | | | | | | | | |
| South Australian | | | Western Youth Centre, 79 Marion | Dennis Gray, | ?? | ?? | ?? | ?? |
| Piscatorial | | | Rd Cowandilla SA 5033 | Tel. 0413 745 | | | | |
| Council Inc. | | | | 960 | | | | |
| | | | wycinc@bigpond.com | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Tasmania

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|---|-------------------------------------|---|---|---|---|------------------|---|--|
| RF CLINICS, WORKSHOPS | | | | | | | | |
| Fishcare Tasmania | Started ?? To present ? | Fishcare Tasmania's mission is to promote ethical and sustainable recreational fishing practices through education and information | Fishcare Tasmania | Rob Green Phone 03 6233 6208 | Encourage Tasmanians to take a more responsible and active role in caring for the aquatic environment through a love or interest in fishing | | Run by volunteers & 3 state regional govt employees | Enjoyable educational experience. +ve feedback on workshops posted on web site -Trailers have been very successful in displaying advisory material |
| Junior Angling in Schools Program | Started ?? To present ? | A number of Tasmanian angling clubs run informal programs for junior anglers and several have negotiated with local landholders to provide a junior angling water in the local area | Young people and support club activities aimed at juniors with resources such as prizes and give-aways | Inland Fisheries staff Start with John Diggle (Director Inland Fishing) Phone (03) 6261-8050 | The Young Anglers Development Inc provides a formal education program for young people interested in fishing. It provides them with a safe and secure fishing venue, and expert advice on all forms of angling. | | Informal program, Inland Fisheries staff, visit schools to talk about trout fishing and range of FW fish subjects. Teaching resources and give-away materials are available | Multicultural language information |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross fundin g | Voluntary Contribution | Success stories |
|---------------------------|---|--|--|--|--|----------------------|--|--------------------|
| Code of Practice | Started April 2009 to present | To promote greater community awareness of good fishing practices and enhance public education. | TARFish | Mark Nikolai Email: info@tarfish.org Website: www.tarfish.org Office: 1300 665 225 Mobile: 0403 868 004 GPO Box 2198, Hobart 7001 | Encourage greater individual responsibility for looking after our fisheries, the environment and respecting the rights of others. | \$25,50 0 | Funded from Fishwise Community Grants Program | |
| Junior Fisher Log Book | Started October 2012 To present | Develop a passion for fishing | TARFish | Mark Nikolai Email: info@tarfish.org Website: www.tarfish.org Office: 1300 665 225 Mobile: 0403 868 004 GPO Box 2198, Hobart 7001 | Junior Fishers, teachers, educators, general community | \$5,000 | Funded from Fishwise Community Grants Program | |
| | | | | | | | | |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross fundin g | Voluntary Contribution | Success stories |
|--|-------------------------------------|---|---|-------------------------------|---|----------------------|--|--|
| Marine Links Kit – A Tasmanian Marine Education Resource | Started ?? To present ? | | Fishcare Coordinators or the Woodbridge Marine Discovery Centre | | Grades 5-8 students Marine Links is a marine and fisheries education resource kit for use by teachers in Tasmanian primary and secondary schools. | | The kit has been developed to align with school curriculums and contains practical marine teaching aids and information. It contains a wide range of hands-on marine teaching material. | Multicultural language information |
| PARTNERSHIPS | | | | | | | | |
| Future Leaders | 2013 | Develop the next generation of recreational fishing leaders in SE Australia | TARFish | Mark Nikolai, CEO, TARFish | FRDC funded project in partnership with Vic SA and Tas | \$70,000 | | |
| STATE GOVT. INFORMATION | | | | | | | | |
| Any information ?? | | | | | | | | |
| PRIVATE SECTOR | | | | | | | | |
| Private Trout Waters | | | | | | | | |
| | | | | | | | | |

Victoria

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|--|---|---|---|--|---|---|--|---|
| RF CLINICS, WORKSHOPS | | | | | | | | |
| Recreational Fishing Clinics | Fisherie s Victoria Started ? Finishe d ? | To provide an opportunity school children to learn about fishing rules, safety, responsibility, habitat and fishing skills | Vic government program. Open to all schools across Victoria. One day workshops Partner with Marine and Freshwater Discovery Centre, Queenscliff | Name: TBA Run by Fisheries Education Unit of Vic DPI. Education Officers provide training at multiple locations across Victoria for school age children and multicultural groups | Government initiative (who pays and how much?) Is it free or is there a fee or contribution by participants | Between Jan and March 2013, 81 schools and 8193 students were provided with education | Run with assistance from the Marine and Freshwater Discovery Centre | 8193 students and an additional 2360 people participated in the education program between Jan and March 2013 |
| Fishcare Victoria Educational workshops | 1999 to present | To provide an opportunity school children to learn about fishing rules, safety, responsibility, habitat and fishing skills | David Cleeland Justin Harzmeyer President, Fishcare Victoria or Fishcare Victoria Secretary, Elysia Gustafson. | Young and new recreational anglers | Free to participants. Grant from RFL Trust fund and from community grants. Supports and promotes responsible and sustainable fishing | \$113,000 for two years Fishcare budget | Understanding the impacts towards any declines in fisheries is paramount to the successful continuation of the education workshops | 3000 participants in Fishright workshops across Victoria. Multicultural language information – improving in this area |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|----------------------------|------------------------|---|---|---|---|------------------|--|--|
| | | | | | practice | | | |
| STATE DEPT. INFORMATION | | | | | | | | |
| "Get Hooked". | Started ? Ended? | Teach participants that fishing is fun | Department of Primary Industries Contact ?? | Education program in south west Victoria | Government sponsored program | Fee ?? | Fishing is Fun | State wide distribution of booklets to schools, Clubs and tackle stores Lack of a multicultural strategy – under development at present |
| Fish for the future | Started ? Ended? | Educate participants to manage our fisheries in a sustainable manner to ensure there are fish for the future | Department of Primary Industries Victoria | Young fishers and students DPI Victoria http://www.dpi.vic.gov .au/fisheries/education -and-training/students http://www.dpi.vic.gov .au/fisheries/education -and-training/teachers | Six tips to make sure that there are fish to catch in the future and that you are fishing safely. 1. Take only what you need 2. Fish with friends 3. You're the solution to | ?? | This site contains a variety of educational materials, details of education programs run by the Marine and Freshwater Discovery Centre in Queenscliff, Fisheries | ?? ?? |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|---|--|---|---|---|--|---|--|--|
| CALD Community – Rock Fishing Safety Course | VRFish Surf Lifesavi ng Victoria | Provide training and instruction on rock fishing safety techniques | VRFish Surf Lifesaving Victoria NSW government and NSW Recreational Fishing Alliance | Russell Conway Russell@vrfish.com.au Surf Lifesaving Victoria Jennifer Roberts | the water pollution 4. Throw the little ones back 5. Don't leave your tackle behind 6. Quality catchments equals quality fish Understandi ng the dangers posed by rock fishing | Over 25 participan ts Engageme nt by Chicago | Contribution Notes and research reports with detailed information about fishing and aquaculture Understand that rock fishing can be dangerous if people are not | Great feedback from participants who have taken the |
| Free rock fishing DVD and multilingual brochures | | | (RFA) of NSW | Chinese community | | Chinese communit y | alert to changes in sea conditions Wear the right gear | message back to their communities. Material and brochures not available in CALD languages |
| Fishing Club managed | Multipl e Clubs | Provide an opportunity for | Many thousands of junior and senior fishers have | Chris Padovani DPI Victoria | Funded by the Victorian | | Local Club members | Great free day for |
| fishing days. | and | Community fishing | experienced the pleasures of | | Recreational | | provide tuition | participants. |
| More than 50 | Associa | clubs and | fishing | All recreational fishers | Fishing | | and assistance | Opportunity |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|---|--------------------------------|---|--|--------------------------------|---|------------------|---|---|
| "Family Fishing Days" conducted by various Fishing Clubs and Fishing related Associations | tions | associations to allow participants to catch a fish. Many are "Catch a carp" days. | | across Victoria | Grants 1. Grants up to \$5,000 2. Must be for recreational fishing education and enhancemen t projects 3. Funds available throughout the year 4. Funds cover food, services, advertising and a small amount of tackle 5. No funds are spent on prizes | | to learn to tie knots, cast correctly, land fish successfully, identify species etc | for Clubs to gain new members. Each event is a separate instance. There is no consistency in the content or message for each day. Some cover animal welfare issues but to varying degrees. |
| Rec Fishing Information Range of brochures on various fish | Started ?? To present | Produced regularly to help fishers knowledge of Victorian fish species | DPI Contact ?? | Fisheries Education Section | ? | ? | ? | ? |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|--|--------------------------------|---|--|----------------------------------|---|---|---------------------------|--|
| species | | | | | | | | |
| Rec Fishing guides 300,000 guides printed annually | Started ?? To present | Produced yearly to assist fishers to know and understand Victorian fishing regulations | DPI Contact ?? | Fisheries Education Section | ? | > | ? | ? |
| Rec fishing calendars | Started ? To present | Produced annually | DPI Contact ?? | Fisheries Victoria | | | | |
| PARTNERSHIPS | | | | | | | | |
| Spear fishing Safety | Started ? To present | Water safety initiative – safety when spear fishing | Victorian Spear Fishing Association Name?? | Matthew Koopman | | Funded from Vic RFL Trust fund | | Delivers safety message for underwater divers |
| Seal the Loop | Started ? To present | Fishing line disposal bins project | Melbourne Zoo | Melbourne Zoo Contact ?? | Funded by Vic RFL Trust fund | | | -Collection point for discarded fishing line. - Difficult to arrange for the collection of line for the bins |
| Future Leaders | 2013 | Develop the next generation of Victoria recreational | VRFish | Russell Conway, Chair, VRFish | FRDC funded project in partnership with SA and | \$70,000 | | |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary | Success stories |
|-------------------------|---------|-------------------|--|--------------------|------------------|------------------|--------------|-----------------|
| | | | | | | | Contribution | - |
| | | fishing leaders | | | Tas | | | |
| Marine | Started | Hands on | Marine and Freshwater | Contact?? | Government | | | |
| Discovery | ? | environmental | Discovery centre, Queenscliff | | funded | | | |
| Centres, | То | education to | | | initiative | | | |
| Queenscliff | present | achieve | | | | | | |
| | | understanding of | | | | | | |
| | | environment and | | | | | | |
| | | ecology | | | | | | |
| PRIVATE | | | | | | | | |
| SECTOR | | | | | | | | |
| Private ponds | ?? | Learn to fish and | Multiple private waters and | Contact?? | | | | |
| Ballarat, | | catch trophy fish | providers | Phil Weigal | | | | |
| Corryong, and | | in private waters | | | | | | |
| other private | | | | | | | | |
| water locations | | | | | | | | |

Western Australia

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|--|--------------------|--|--|--|---|--|---|---|
| RF CLINICS, WORKSHOPS | | | | | | | | |
| Fishing Clinics | Year Round | Fishing clinics | Children aged 10-17 years in the Perth Metropolitan area and Western Australian regional areas | RecfishWest- Matt Gillett | Recfishwest has been successfully running its fishing clinic program for 14 years with support from Healthway and more recently; Woodside Energy Ltd. | Every year the program involves nearly 90 fishing clinics, which in total are attended by around 2,000 children. | Clinics are conducted by 2 experienced Recfishwest fishing clinic instructors and run for approximately 2 hours with a maximum of 30 participants. | A good platform for use in other jurisdictions |
| Family Fishing Fun Day | Once a year | Promote the health and wellbeing benefits to fishing famliies | Recfishwest | Families, particularly with children < 10 years of age. | Fishing is a fun family activity | Inaugural fun day attracted over 300 participan ts. | Future leaders attended | |
| STATE GOVT. | | | | | | | | |
| Marine Waters – A suite of education | Started ? To | | Government of WA http://marinewaters.fish.wa.gov.au Marine WATERs is an ever- | Junior fishers and teachers | | | Australian education curriculum | A huge amount of content |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|--------------------------------------|---------|-------------------------------|--|---|----------------------------|------------------|---------------------------|--|
| resources Recreational fishing | present | Education and information for | expanding suite of education resources including lesson plans, student worksheets, fact sheets, games and presentations all linked to the Australian Curriculum Covers areas such as: Recreational fishing: | All recreational fishers in WA | WA Govt – Department | | certification | available for use by any interested party |
| information brouchures | | fishers | Recreational fishing guides Species identification guides Fish habitat protection areas Fact sheets Research Angler Program (RAP) newsletters Additional fishing information Report series: Fisheries management papers Fisheries occasional publications Fisheries research reports Fisheries research contract reports Sustainability and environment: Aquatic biosecurity Ecologically sustainable development | WA Department of Fisheries <u>http://www.fish</u> <u>.wa.gov.au/Abo</u> <u>ut-</u> <u>Us/Publications</u> /Pages/default. <u>aspx</u> | Department of Fisheries | | | |

| Programs/ activities | Dates | Aim | Involvement - People numbers ages etc | Key contact people | Resourced by? | Gross funding | Voluntary Contribution | Success stories |
|-------------------------------------|-----------------|---|--|---|--|----------------------------------|---|---|
| | | | Integrated fisheries management Marine Stewardship Council State of the Fisheries report | | | | | |
| PARTNERSHIPS | | | | | | | | |
| Future Leaders | 2011 to 2013 | Develop the next generation of WA recreational fishing leaders | Recfishwest | Andrew Rowland RECFishWest | FRDC funded projects | \$70,000 | | |
| NextWave – Future Leaders 2.0 | 2012- 2014 | Develop the next generation of WA recreational fishing leaders | Recfishwest | | Recreatioanl Fishing Licence Money (WA) | 120,000 | | |
| Rock Fishing Safety | 2013 - | Educate fishers on safe rock fishing techniques | Recfishwest WA Department of Fisheries Royal Life Saving Society Department Parks and Wildlife Surf Life Saving Australia (SLSA) Department of Sport and Recreation Department of Fire and Emergency Services | Fishers who participate in rock fishing | General state revenue | \$300,000 over three years | Recfishwest, community volunteers | |
| PRIVATE SECTOR | | | | | | | | |
| Fishing Courses | | Develop knowledge and understanding of fishing techniques | Cast accurately and safely Knowledge of different species physical and behavioural traits Prepare equipment and tackle | Pete Goulding (08) 9490 2512 | | | | Many hundreds of satisfied customers |

| Programs/ | Dates | Aim | Involvement - People numbers ages | Key contact | Resourced | Gross | Voluntary | Success stories |
|------------|-------|-----|--|-------------|-----------|---------|--------------|-----------------|
| activities | | | etc | people | by? | funding | | |
| | | | | | | | Contribution | |
| | | | Knots and rigs | | | | | |
| | | | Presentation of bait or lures | | | | | |
| | | | The benefits and techniques of | | | | | |
| | | | catch and release procedure | | | | | |
| | | | Tides and weather conditions and | | | | | |
| | | | hazards | | | | | |
| | | | *Preservation of relevant ecosystem | | | | | |
| | | | •Legalities of bag limits, closed | | | | | |
| | | | seasons and protected species | | | | | |
| | | | •Clean and prepare a catch for | | | | | |
| | | | consumption | | | | | |

Appendix 4: Comparing RF Educational messages across Australian states and territories

This appendix presents summaries of the RFE messages in each Australian Jurisdiction.

National messages

| source | Main | Principles | Prac | Envi | Wel | Ethi |
|--------|--------------------------|--|------|------|-----|------|
| сос | Treating fish humanely | Quickly and correctly returning unwanted or illegal catch to the water | х | | х | |
| сос | | Quickly and humanely killing fish that are kept for consumption. | х | | х | |
| | Looking after our | Using only appropriate, legal tackle, attending all fishing gear and valuing | | | | |
| сос | fisheries | our catch | х | | | |
| сос | | Taking no more than our immediate needs | х | | | х |
| | Protecting the | Supporting and encouraging activities that preserve, restore and enhance | | | | |
| сос | environment | fisheries and fish habitat | х | х | | |
| | | Understanding and observing all fishing regulations and reporting illegal | | | | |
| сос | | fishing activities | х | | | |
| сос | | Preventing pollution and protecting wildlife by removing rubbish | х | х | х | |
| | | Taking care when boating and anchoring to avoid damage to wildlife and | | | | |
| сос | | habitat | х | х | х | |
| | Respecting the rights | | | | | |
| сос | of others | Using established roads and tracks | х | | | |
| сос | | Reporting environmental damage | х | | | |
| | | | | | | |
| сос | | Avoiding unnecessary interactions with wildlife species and their habitats | х | х | х | |
| сос | | Practising courtesy towards all those who use inland and coastal waters | х | | | |
| | | Obtaining permission from landholders and traditional owners before | | | | |
| сос | | entering land | х | | | |
| сос | | Caring for our own safety and the safety of others when fishing | х | | | |
| | | | | | | |
| | Goal 5 Encourage stewa | rdship of environment and quality and sustRF opps | | | | |
| NIDS | | Encourage RF to be in res, comm monitoring& hab enhancement progs | х | х | | |
| NIDS | | Encourage RF to use best practices | Х | х | х | х |
| | Goal 6 Enc invest and pa | | | | | |
| NIDS | | Develop new innovative fishing opps | | | | |
| NIDS | | Respond +ve to Climate change and reduce carbon footprint | | х | | |
| NIDS | | Improve re fishing safety | х | | | |
| | Other education taking | | | | | |
| others | place in the RF sector | | | | | |
| others | Basics of RF | Learning to fish- by mentoring, teaching to clinics | х | | | |
| others | | Swimming skills, beach and rock safety, safe boat and radio operation | х | | | |
| others | | Getting fishing equipment | х | | | |
| others | | Getting informed about where to fish | х | | | |
| others | | Getting informed about how to fish for different species | х | | | |
| | | Specialist learning clinics - fly fishing, fly tieing etc, Clinics for | | | | |
| others | Segments of RF | disadvantaged groups | | | | |
| others | U U | Practice "catch and release" | х | | | |
| | RF as a leisure or | RF is an outdoor activity that's good for health- demographics -4-10, 10, | | | | |
| others | hobby | 15, 15-20 20-30, 30-40, etc | х | | | |
| others | - | Engages young people with nature and other living animals | x | | | |
| | | RF is associated with other leisure activies - caravaning, camping, and | | | | |
| others | | competes with golf (say) | х | | | |
| | | RF is a motivator for marine and FW tourists visiting fishing locations | | | | t |

NSW

| Program and its messages | FISHING CLINICS AND WORKSHOPS- comments | covered? | Gaps? |
|--|--|---|---|
| Fishing rules and regulations | Always in clinics | Yes | |
| Fishing safety and responsibly | Always in clinics | Yes | |
| Conservation of fish habitats | Always in clinics | Yes | |
| Knot tying, line rigging and baiting casting techniques, | Always in clinics | Yes | Could be expanded through national boat show /outdoor/ lifestyle / adventure network |
| Retrieval of fish and fish handling | Always in clinic | Yes | |
| Special needs, multicultural/ethnic minorities, Indigenous program needs | Not much but starting e.g. Cops and Koori fishing workshop with NSW DPI <u>http://www.youtube.com/watch?v=pzX-</u> <u>gWZh5IQ&feature=youtu.be</u> | Yes but can be expanded significantly | Establish links with local Aboriginal community liaison officers. Large scope for national |
| | More work required | | program |
| Message by social media? | Not much | Just beginning, early days | Can definitely be expanded |
| Family friendly activity - all family can participate | Not much | Minimal | Can definitely be expanded How to quantify this? |
| Health benefits of RF | Not much | Minimal | Can definitely be expanded How to quantify this? |
| Rewards, quality take home materials | Feedback from organisations and individuals always mentioned gear and giveaways. Provide equipment so that socio- economic status does not exclude participation. | Yes, but dependant on funding model | Establish links with tackle industry e.g. Shimano |
| Certificate of achievement | Not always | Some but not all | Could be standardised nationally run through AMSA or NSW FCA |

| Program and its | NSW DPI REC FISH PROGRAMS -Comments | covered? | Gaps? |
|-------------------------------|---|------------|---|
| messages | | | |
| Promote responsible | Major effort each year | Yes | |
| fishing practices | | | |
| Operate in an | Big effort in the last few years with dedicated | Yes | |
| environmentally and | web sites such as | | |
| socially sensitive and | http://www.safefishing.com.au/ | | |
| safe manner. | Large amount of money spent to address water | | |
| | related deaths | | |
| Comply with Fisheries, | Major effort each year | Yes | |
| Maritime and | Dedicated compliance officers | | |
| Environmental | | | |
| Protection regulations | | | |
| Use appropriate fish | With bag and size limits and various fishing | Needs | To include public angler rather than just |
| handling techniques | closures means many anglers, by law, return fish | expanding | competition angler |
| | they have caught to the water. Main factors | | |
| | found to reduce survival being deep hooking, | | |
| | poor handling and live well conditions | | |
| Maximising fish | Initially focussed on fishing tournaments, work | Needs | To include the public angler rather than |
| survival - barotrauma | starting to be done | expanding | just competition angler |
| Environmental friendly | Mainly focused on knotless nets at present | In infancy | The development of environmentally |
| gear | | | friendly tackle (eg alternatives to lead |
| | | | sinkers, biodegradable |
| | | | fishing line). Major research possibility |
| Ideas to improve your | On DPI web site, lots of information | Yes | |
| fishing event | Dedicated Fishing Competition Management Officer | | |
| People development - | Programs now being rolled out | Yes, but | |
| identifying future leaders | FRDC now taking active role in this from 2011 | early days | |

| Program and its | NSW DPI REC FISH PROGRAMS -Comments | covered? | Gaps? |
|---------------------|--|------------|------------------------------------|
| messages | | | |
| Mentoring skills of | Not much | Little | |
| older fishers | | | |
| Awareness raising | 5 advisory trailers spread the message of | Yes | Not all departments can afford the |
| | responsible fishing. | | \$30,000 for a trailer |
| Catch and release | Catch, Photograph and Release" fishing competitions | Emerging | New format for tournaments |
| format | have emerged in recent years | | |
| Catch & Release | Huge amount of information and work done. | Yes | |
| Research | http://recfishingresearch.org/ | | |
| | | | |
| | Over the past 7 years, 31 field based experiments | | |
| | conducted at recreational fishing events | | |
| | throughout NSW as well as 14 aquaria based | | |
| | experiments at various DPI sites, including | | |
| | Grafton, Coffs Harbour and Cronulla. The | | |
| | experiments have identified key factors | | |
| | influencing the survival of 17 finfish and shellfish | | |
| | species commonly released by recreational fishers. | | |
| | Most work now completed | | |
| | http://www.dpi.nsw.gov.au/fisheries/recreationa | | |
| | l/info/catch-and-release/research | | |
| | Intro Catch-and-release/research | | |
| Message by social | Starting to embrace social media – Facebook, | Just | Can definitely be expanded |
| media? | Twitter | beginning, | |
| | | early days | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

| Program and its messages | PARTNERSHIPS -Comments | covered? | Gaps? |
|-----------------------------|---|----------------------------|--|
| Safety - on top of water | Covers rock fishing, angel rings, freshwater fishing, boating. Big effort in the last few years with dedicated web sites such as <u>http://www.safefishing.com.au/</u> <u>Large amount of money spent to address water</u> related deaths | Yes | |
| Safety - underwater | Spearfishing Current identification system (blue and white flag) for divers in the water is not sufficient and should be urgently reviewed. | Urgent action needed | The USFA had made previous representations to the NSW Maritime Authority regarding this issue. |
| Fishing litter | Numerous new initiatives such as DPI working in conjunction with NSW Maritime and local councils to promote clean, safe wharfs in Sydney Harbour. | Emerging | The development of environmentally friendly tackle (eg alternatives to lead sinkers, biodegradable fishing line). Tie in with marine debris surveys which show fishing line is main polluter |
| People development | FRDC taking initiative | Emerging | |
| Environmental education | MDCA is ideal organisation to use as can be rolled out nationally | Emerging | |

Northern Territory

| Program and its messages | PARTNERSHIPS -Comments | covered? | Gaps? |
|---|--|----------|--|
| General safety | Croc. skills, water skills, boating safety | Yes | more emphasis, no boat or fish licence |
| Fishing regulations | general regulations covered | Yes | ok |
| Animal welfare/Humane treatment of fish | pamphlets, clinics, guide info. | Yes | ok |
| Barotrauma and fish handling | significant behaviour change required | Yes | more emphasis, still un met need |
| Limit catch, don't catch limit (minimal take) | significant behaviour change required | Yes | more emphasis |
| Catch and release | general catch and release ethos | Yes | ok |
| Enviro friendly gear | getting fishers to change technology | Yes | ok |
| Multicultural/ethnic minorities | needs further investigation | No | needs strategy |
| Indigenous program needs | basics covered | | |
| Respect for environment (incl. litter etc) | Basic litter and line issues covered | Yes | more emphasis, include in TV shows etc |
| Understanding the fishes environment | basics covered | Yes | ok |
| Respect for others | basics covered | Yes | ok |
| Mentoring young fishers | more work required | Yes | more emphasis, FRDC application future rec fish leaders course |
| Carbon footprint of RF | not mentioned | No | Need basic information |
| Health benefits of RF | general mention | Yes | Need basic information |
| Community monitoring | surveys and discussion papers provide feedback | Yes | needs strategy |
| Message by social media? | Use of Face book site etc? | No | needs strategy |
| Maintaining the social licence to fish? | Strong social licence to support RF in NT | Yes | ok |

Queensland

| PROGRAM – FISHING CLINICS AND WORKSHOPS | | | |
|--|--|------------|-------------------------------|
| Messages | Comments | Covered? | Gaps? |
| Rock fishing safety | Not as much problem as NSW | Yes | Need to do a bit more on this |
| General safety | Qld Transport do this (Boating safety). QF do give advice on handling dangerous species (eg stingrays) | Yes | Need to do more on this |
| Fishing regulations | General regulations covered. Revamping web, making more user-friendly | Yes | ОК |
| Humane treatment of fish | Department links to National Code of Practice | Yes | ОК |
| Limit catch, don't catch limit | Department links to National Code of Practice | Yes | ОК |
| Catch and release | Department links to National Code of Practice | Yes | ОК |
| Environmentally friendly gear | Department links to National Code of Practice | Yes | ОК |
| Respect for environment (incl. litter etc) | Department links to National Code of Practice | Yes | ОК |
| Understanding the fishes environment | Department links to National Code of Practice | Yes | ОК |
| Respect for others | Department links to National Code of Practice | Yes | ОК |
| Mentoring young fishers | purpose of course | Yes | ok? |
| Carbon footprint of RF | not mentioned | unsure | Need basic information |
| Health benefits of RF | general mention | Yes | ok could increase |
| Community monitoring | Angler diary – Keen Angler Program. Fish frame donation (Keen angler program too) | Yes/unsure | need strategy |
| Other messages? | | | |

South Australia

| PROGRAM – | | | |
|--|---|--|---|
| FISHING CLINICS AND WORKSHOPS Messages | Comments | Covered? | Gaps? |
| Fishing rules and regulations | Boat show attendance RecFish SA marine park brochure distributed state wide | Yes | Greater distribution |
| Conservation of fish habitats | Fish Habitat Network | Poorly | Greater awareness and opportunities |
| Knot tying, line rigging and baiting casting techniques, | Some school curriculum | Yes | Availability of skilled teachers to present |
| Retrieval of fish and fish handling | RecFish SA brochure – Handling fish for survival | | |
| Special needs, multicultural/ethnic minorities, Indigenous program needs | Fishing for the disabled – Graham Kerr More indigenous / ethnic input required | Yes but not to a high level | Establish links with Aboriginal communities and school programs |
| Message by social media? | Two active media sites in SA Fish SA and Strike & Hook | Yes but a lot of misleading information being posted | Improvement on information relayed |
| Family friendly activity - all family can participate | Very little | Minimal | Greater coverage Fishing club participation |
| Health benefits of RF | Very little | Minimal | Magazine articles promoting benefits |
| Rewards, quality take home materials | Fishing gear giveaways for participation RecFish SA awards of Excellence | Minimal, often rely on donations | Fishing tackle industry involvement |
| Certificate of achievement | Not aware of any | | |
| GOVERNMENT RECREATIONAL FISHING PROGRAMS | | | |
| Promote responsible fishing practices | Website, Volunteer Program | Yes | Clinics in conjunction with RecFish SA |
| Operate in an environmentally and socially sensitive and safe manner. | | | |

| Messages | Comments | Covered? | Gaps? |
|--|--|-------------------------------------|---|
| Comply with Fisheries, Maritime and Environmental Protection regulations | Website App, Brochures, FISHCARE | | |
| Maximising fish survival - barotrauma | Responsible fishing | | Catch and release workshop |
| Environmental friendly gear | | | |
| Fishing Competitions | | | Policy for data collection etc |
| People development -identifying future leaders | | | Support RecFish SA inb future leaders program |
| Catch and release format | | Limited | Catch and release workshop |
| Message by social media? | StrikeHook Forum PIRSA Site | Yes - Facebook Twitter expansion | Resources to answer questions |
| PROGRAM – PARTNERSHIPS | | | |
| Safety - on top of water | RecFish SA brochure - Safety tips for anglers Magazine articles | Yes | Ongoing, more promotion required |
| Safety - underwater | Not aware of anything in SA for rec fishers | No | Programs, educational brochure |
| Fishing litter | Hook Line & Thinker rubbish disposal Fishing website / magazine article promotion Government promotion | Yes | Ongoing education |
| People development | Very little | No | Future leaders program |
| Environmental education | More awareness in recent times | Yes | More education required |
| PROGRAM – PRIVATE | | | |
| Accreditation | | | |
| Skill development | | | |
| Special needs, multicultural/ethnic minorities, Indigenous program needs | | | |

Tasmania

| PROGRAM – FISHING CLINICS AND WORKSHOPS | | | |
|--|--|----------|-------|
| Messages | Comments | Covered? | Gaps? |
| Fishing rules and regulations | Govt produces Recreational Sea Fishing Guide each year | Yes | |
| Fishing safety and responsibly | Covered in above booklet and Marine and Safety Tasmania publications/tv shows etc. Covered in TARFIsh Code of Practice | Yes | |
| Conservation of fish habitats | Covered in TARFish Code of Practice | Yes | |
| Knot tying, line rigging and baiting casting techniques, | Commercial fishing magazines/ youtube | | |
| Retrieval of fish and fish handling | Covered in Recreational Sea Fishing Guide and TARFish Code of Practice | Yes | |
| Special needs, multicultural/ethnic minorities, Indigenous program needs | Refer Fishwise Coordinator Rob Green | | |
| Message by social media? | TARFish and Fishwise facebook sites | Yes | |
| Family friendly activity - all family can participate | Covered in Recreational Sea Fishing Guide and TARFish Code of Practice | Yes | |
| Health benefits of RF | Covered in Recreational Sea Fishing Guide and TARFish Code of Practice. FRDC Report Identifying the health and well-being benefits of recreational fishing Prof A. McManus, Dr W. Hunt, J. Storey, J. White | Yes | |
| Rewards, quality take home materials | Fishcare Volunteer Program run by govt, refer Rob Green. | Yes | |
| Certificate of achievement | Fishcare Volunteer Program run by govt, refer Rob Green. | Yes | |

| GOVERNMENT RECREATIONAL | | | |
|-------------------------------------|--|----------|-------|
| FISHING PROGRAMS | | | |
| Messages | Comments | Covered? | Gaps? |
| Promote responsible fishing | Covered in Recreational Sea Fishing Guide and TARFish | Yes | |
| practices | Code of Practice | | |
| Operate in an environmentally and | Covered in Recreational Sea Fishing Guide and TARFish | Yes | |
| socially sensitive and safe manner. | Code of Practice | | |
| Comply with Fisheries, Maritime | Covered in Recreational Sea Fishing Guide and TARFish | Yes | |
| and Environmental Protection | Code of Practice | | |
| regulations | | | |
| Use appropriate fish handling | Covered in Recreational Sea Fishing Guide and TARFish | Yes | |
| techniques | Code of Practice, various brochures | | |
| Maximising fish survival - | Recfishing Research brochures | Yes | |
| barotrauma | | | |
| Environmental friendly gear | TARFish Code of Practice, magazines | Yes | |
| Ideas to improve your fishing | Unknown | | Yes |
| event | | | |
| People development -identifying | FRDC programs | Yes | |
| future leaders | | | |
| Mentoring skills of older fishers | Unknown | | Yes |
| Awareness raising | Covered in Recreational Sea Fishing Guide and TARFish | Yes | |
| - | Code of Practice, tv shows, radio segments, facebook & | | |
| | youtube | | |
| | | | |
| Catch and release format | GFAA & Recfishing Research brochures, youtube | Yes | |
| Catch & Release Research | Recfishing Research brochures, magazines | Yes | |
| Message by social media? | Facebook, twitter and youtube, fishing forums | Yes | |

| PARTNERSHIPS | | | |
|--|---|----------|-------|
| Messages | Comments | Covered? | Gaps? |
| Safety - on top of water | Marine and Safety Tasmania publications/tv shows/youtube videos | Yes | |
| Safety - underwater | Unknown | | Yes |
| Fishing litter | Covered in Recreational Sea Fishing Guide and TARFish Code of Practice | Yes | |
| People development | FRDC programs | Yes | |
| Environmental education | Covered in Recreational Sea Fishing Guide and TARFish Code of Practice | Yes | |
| PRIVATE | | | |
| Accreditation | Unknown | | Yes |
| Skill development | Unknown | | Maybe |
| Special needs, multicultural/ethnic minorities, Indigenous program needs | Unknown | | |

Victoria

| PROGRAM – FISHING CLINICS AND WORKSHOPS | | | |
|--|---|------------------------|---|
| Messages | Comments | Covered? | Gaps? |
| Fishing rules and regulations | This area is covered very well by Fisheries Victoria and remains their responsibility. | Yes | None |
| Fishing safety and responsibly | This area is covered as general messages by the responsibility lives with Lifesaving Victoria | Yes | CaLD community Multilingual products More specific programs |
| Conservation of fish habitats | This area is well covered by Fisheries within their ED group and the MFDC. Sustainable fishing messages require and understanding of the whole ecosystem. Parks Victoria als0 play a role in this. | Yes | None |
| Knot tying, line rigging and baiting casting techniques, | Covered by VR Fish and Fishcare | Yes | CaLD community Disadvantaged groups |
| Retrieval of fish and fish handling | Covered by VR Fish and Fishcare and Fisheries Victoria | Yes | more information (hard science) about the reasons for and survival rates |
| Special needs, multicultural/ethnic minorities, Indigenous program needs | This area is covered very well by Fisheries Victoria and remains their responsibility. | Yes but could be built | Remote rural Victoria. Extension of Operation Outreach |
| Message by social media? | This area is covered very well by Fisheries Victoria. Other organisations and partners also have own sites and cross advertising and promoting occurs | Yes | |
| Family friendly activity - all family can participate | This area is covered very well by Fisheries Victoria. It is also promoted well by the RFL funding group being the main source of funding for these activities. Local councils and rec fishing groups are very good at organising these activities | Yes | Yes – multicultural groups. Could promote better to councils (ie possible RFL funding) |
| Health benefits of RF | This area is promoted by Fisheries Victoria throughout a number of their activities | Yes | Disadvantaged youth as an alternative to crime |

| PROGRAM – FISHING CLINICS AND WORKSHOPS | | | |
|--|---|----------|---|
| Messages | Comments | Covered? | Gaps? |
| Rewards, quality take home materials | This area is covered very well by Fisheries Victoria. | Yes | Kids fishing guide |
| Certificate of achievement | | | |
| GOVERNMENT RECREATIONAL FISHING PROGRAMS | | | |
| Promote responsible fishing practices | This area is covered very well by Fisheries Victoria and remains their responsibility. | Yes | Further enhance this program |
| Operate in an environmentally and socially sensitive and safe manner. | This area is covered very well by Fisheries Victoria | Yes | No |
| Comply with Fisheries, Maritime and Environmental Protection regulations | This area is covered very well by Fisheries Victoria in partnership with other agencies | Yes | No |
| Use appropriate fish handling techniques | This area is covered by Fisheries Victoria, recreational groups and volunteer organisations | Yes | |
| Maximising fish survival - barotrauma | This area is starting to be developed by Fisheries Victoria particularly around snapper (deflating swim bladder eg: circle hooks etc) | | Yes – scientific material, recreational equipment |
| Environmental friendly gear | Not appropriate for Fisheries Victoria to manage/develop but can promote the concepts. | Yes | Yes – propose Biodegradable bait bags / reusable bait containers |
| Ideas to improve your fishing event | This is well covered by Fisheries Victoria particularly the RFL group | Yes | No |
| People development -identifying future leaders | Fisheries works with the general community to identify leaders and advocates within each section | Yes | Multicultural - Ambassador program |
| Mentoring skills of older fishers | | | |
| Awareness raising | | | |
| Catch and release format | | | |

| PROGRAM – FISHING CLINICS AND WORKSHOPS | | | |
|--|--|----------|---|
| Messages | Comments | Covered? | Gaps? |
| Catch & Release Research | Promoted and managed well by Fisheries Research branch. | Yes | ? |
| Message by social media? | Managed by the DEPI corporate communications team | Yes | No |
| PROGRAM – PARTNERSHIPS | | | |
| Safety - on top of water | Covered by a number of agencies and groups including Fisheries Victoria. Lead agency is Lifesaving Victoria | Yes | Yes – need more water safety messages |
| Safety - underwater | Not really covered outside of dive course | No | Yes – multicultural Need under water safety day? |
| Fishing litter | Covered generally in by Fisheries Victoria. EPA lead agency. | Yes | Yes because there is still too much litter. |
| People development | Constantly developing staff | Yes | |
| Environmental education | MFDC and Fisheries Education branch cover very well through programs and products | Yes | No |
| PROGRAM – PRIVATE | | Covered? | Gaps? |
| Accreditation | | | |
| Skill development | | | |
| Special needs, multicultural/ethnic minorities, Indigenous program needs | | | |

Western Australia

| PROGRAM – | | | |
|---|--|--------------|--|
| FISHING CLINICS AND WORKSHOPS | | | |
| Messages | Comments | Covered? | Gaps? |
| Fishing rules and regulations | | Y | |
| Fishing safety and responsibly | New rock fishing safety campaign making inroads | Y- commenced | Can expand |
| Conservation of fish habitats | | N | |
| Knot tying, line rigging and baiting casting techniques, | | Y | |
| Retrieval of fish and fish handling | | Y | |
| Special needs, multicultural/ethnic minorities, Indigenous program needs | | N | |
| Message by social media? | Recfishwest uses social media | | |
| Family friendly activity - all family can participate | Recfishwest promotes this, still work to be done | Y - expand | Can expand |
| Health benefits of RF | Recfishwest promotes this, still work to be done | Y - expand | Can expand |
| Rewards, quality take home materials | | Y | |
| Certificate of achievement | | Ν | |
| Promote responsible fishing practices | | N | Need for volunteer program such as Fishcare |
| Operate in an environmentally and socially sensitive and safe manner. | | Unknown | |
| Comply with Fisheries, Maritime and Environmental Protection regulations | | Unknown | |
| Use appropriate fish handling techniques | | Unknown | |
| Maximising fish survival - barotrauma | Increasing | Y | |
| Environmental friendly gear | Increasing | Y | |

| PROGRAM – PARTNERSHIPS | | | |
|--|--------------|----------|-------|
| Messages | Comments | Covered? | Gaps? |
| Ideas to improve your fishing event | | N | |
| People development -identifying future leaders | | Ν | |
| Mentoring skills of older fishers | | Ν | |
| Awareness raising | | N | |
| Catch and release format | | Ν | |
| Catch & Release Research | | Ν | |
| Message by social media? | | Ν | |
| Safety - on top of water | | N | |
| Safety - underwater | | Ν | |
| Fishing litter | Clean marine | Y | |
| People development | | Y | |
| Environmental education | Increasing | Y | |
| Accreditation | | N | |
| Skill development | | Ν | |
| Special needs, multicultural/ethnic minorities, Indigenous program needs | | N | |

Fisheries Research and Development Corporation (FRDC) Project 2011/527.

Appendix 2: A Review of the Use of Social Media by Australian Recreational Fishers.

Social Media and the Recreational Fishing Sector

Initial campaign period: Feb – Oct 2012 Secondary campaign period: Apr – May 2013



Content Summary

- 1. Title
- 2. Content Summary
- 3. Findings Social Media Platform Summary
- 4. Findings Fishing Personas
- 5. Study Approach
- 6. "Talking Stuff" Results
- 7. "Talking Stuff" Summary
- 8. Talking Casting & Lures
- 9. Talking Casting Findings
- 10. Talking Lures Findings
- 11. Talking Jigs
- 12. Talking Jigs Findings
- 13. Talking Baits
- 14. Talking Baits Findings
- 15. "Fishing Types" Results
- 16. "Fishing Types" Summary
- 17. Boat Fishing
- 18. Boat Fishing Findings
- 19. Game Fishing & Recreational Fishing
- 20. Game Fishing Findings
- 21. Recreational Fishing Findings
- 22. Fly Fishing

- 23. Fly Fishing Findings
- 24. "Politics" Results
- 25. "Politics" Summary
- 26. Politics
- 27. Instagram
- 28. Facebook Insights Overview
- 29. Facebook Insights Detail
- 30. Appendix
 - A. Talking Casting
 - B. Talking Lures
 - C. Talking Jigs
 - D. Talking Baits
 - E. Boat Fishing
 - F. Game Fishing
 - G. Recreational Fishing
 - H. Fly Fishing
 - I. Politics
 - J. Facebook Insights
 - K. Instagram

End: Stay Social!

Findings - Social Media Platform Summaries:

Twitter is the domain of the more social media savvy casual. That retail outlets & manufacturers struggle to gain a strong following is a strong indication that the knowledgeable fishers are still yet to take to Twitter in significantly large numbers to match that seen on online forums.

Linked into Twitter, Instagram is a surprising find, with #fishingaustralia a popular hashtag for photos of catches & locations. Although a time-scale can't be drawn, over 2000 photos have been shared under this hashtag.

Online forums are the major locations for the heavy user, the knowledgeable fisher. The very nature of forums allow for close-knit communities to form, with virtually unlimited space to discuss various topics at large. Whilst forums are still a text-heavy format, this does raise the opportunity to utilise a more image-friendly platform such as Facebook. That some of the noted forums are so well established, with strong userbases, this makes the creation of a new forum very difficult & a long-term timeframe.

Facebook is very limited in its reportability for Australia, so the insights are heavily constrained. What has been noted is the lack of significant numbers on many Pages, although engagement levels and photo sharing is relatively strong. Organisations that struggle for followers on Twitter, are doing far better in beginning to build their communities (seemingly on a minimal/non-existent budget) on Facebook. With a well-defined strategy & budget for fan accrual, there is strong potential here, particularly to bring across the new enthusiasts and knowledgeable fishers from both Twitter and online forums.

(03) 9529 3477 54 Porter St, Prahran VIC 3181 info@thinktanksocial.com.au

Findings - Fisher Personas:

Three types of fishers are apparent:

Casual -

Goes fishing from time to time, or joins someone else for the experience. Not consistent, knowledge is highly limited. Often younger age, mix of females and males, predominately on Twitter (sometimes coupled with Instagram).

New enthusiast -

Beginning to get hooked, starting to look into the technical details of fishing (which quickly becomes an overwhelming thing). Found on online forums asking a lot of questions, quite often seemingly simple questions which return with extensive responses from the knowledgeable fishers. Interestingly, most New Enthusiasts tend to not last more than 80-90 posts on forums. Either they reach a level of knowledge which is consistent with their needs, or winter has forced a pause on their new-found interest.

Knowledgeable Fisher -

Heavy forum user. Vast wealth of knowledge which he is keen to share with those who ask questions. "Fisher-speak" is heavy with slang. Only topic which is harder to source from the knowledgeable fisher is specific fishing locations. This golden information is kept for a select few, and there is open surprise (and appreciation) when others (usually new enthusiasts) share a location in their fishing stories/reports.



Study Approach:

Reporting over a 9 month timeframe, the Radian6 social media monitoring platform was used to monitor identified keywords across a spectrum of topics associated with recreational fishing in Australia.

Over 14,400 results were retrieved each month, with key categories reported on that were found to provide the strongest indication of trends and topics of interest.

The timeframe was divided into three-monthly periods, within which the top 3 keyword groups were further analysed for clear trends, major social media channels used, and specific online communities.

"Talking Stuff" Results

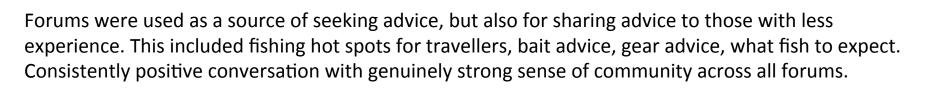
Jigs, Casting, Lines, Hooks, Lures, Baits.

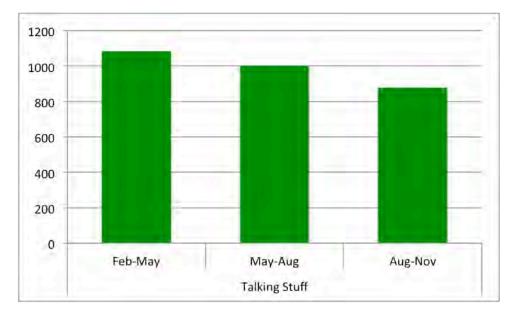
Gradual decrease in level of conversation throughout the year.

Baits and Jigs consistently the primary source of conversation.

Dedicated Online Forums was the primary platforms used.

- Fishraider.com.au
- Ausfish.com.au
- Tacklebox.com.au
- Fishingmonthly.com.au





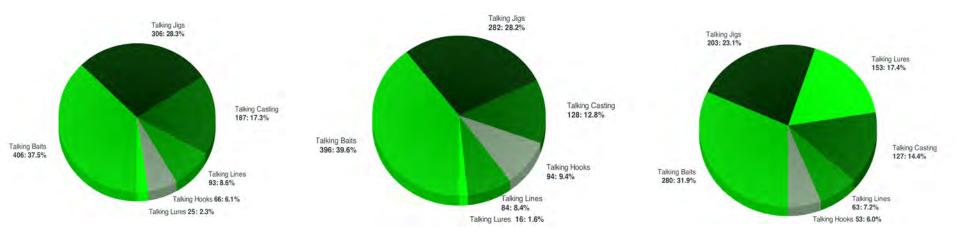
"Talking Stuff" Summary

Feb – May 2012 1083 results

Baits & Jigs most talked about categories – 'jigging' also Sydney slang for skipping school May – Aug 2012 1000 results

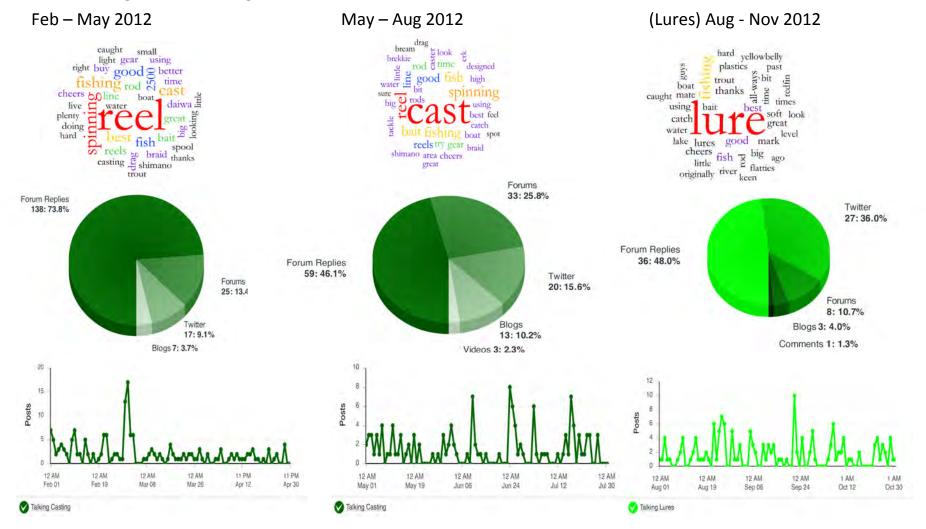
Quieter than previous period Baits & Jigs most talked about categories again. Aug - Nov 2012 879 results

Quietest period of report. Baits & Jigs most talked about categories, as per previous 6 months. Increase in Lure conversation towards end of the year.



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Talking Casting & Lures



Talking Casting

Key Forums:

- Ausfish.com.au
- Fishingmonthly.com.au
- Tacklebox.com.au
- Fishraider.com.au
- Northcoastfishingnsw.com.au
- Overclockers.com.au

Feb – Aug 2012

March 01 – fishraider.com.au forum conversation about 'best 2500 spinning reel' – 40 responses over 3months.

Queries when heading to unfamiliar locations - what gear to pack, hints for spots, what fish to expect, what bait to use

Questions about fishing gear common. Responses about brands were hugely varied, all based on personal opinion and experience; users were definitely not shy.

Basic gear guide very important. Community highly polarised but knowledgeable & willing to offer advice & feedback. Perfect brand advocates. Ripe for monetisation of such communities within earned media channels. High degree of knowledge on forums, even when members doesn't have specific experience of location. Always willing to give advice. Answer with extreme amount of detail is super impressive. Forum members show a vast wealth of knowledge. Always willing to share with new fishers. Often go above and beyond to explain in high levels of detail.

Twitter: A lot of spam/sales tweets. Cast nets mentioned a couple times. Low quantity of genuine tweets. Those rare genuine tweets had minimal detail. A few Instagram photos shared. primarily from females.

Talking Lures

Key Forums:

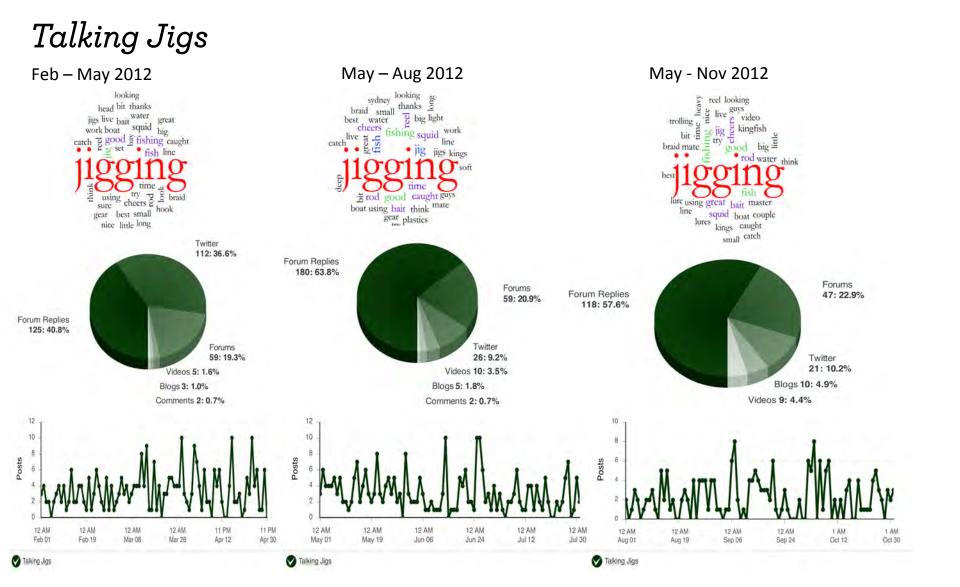
- Ausfish.com.au
- Tacklebox.com.au
- Fishraider.com.au

Aug – Nov 2012

Forums general conversation amongst enthusiasts continues along the same vein as Casting conversation, with questions supported with genuinely helpful responses. User-shared fishing adventures are received incredibly well. There's a genuinely positive feel amongst the forum communities. A real sense of pride in telling the story, and a real interest in reading about others' adventures.

Twitter: Heavily dominated by puppy bait petition. NRL star Robbie Farah tweets about his catch. This is a great example of celebrity status highlighting a recreational fishing activity. Perfect to leverage cross-channel. VicFishing (a Melbourne-based fishing store) is a prominent tweeter, but struggling with only 260 followers.

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Talking Jigs

Key Forums:

- Ausfish.com.au
- Fishingmonthly.com.au
- Tacklebox.com.au
- Fishraider.com.au
- Northcoastfishingnsw.com.au

Feb – Nov 2012

Primary conversation came from questions on how to deal with specific fish. There is no shortage of knowledge, expertise or opinion on the forums, particularly Ausfish.com.au. Equipment-specific information was particularly powerful.

Queries on fish types was relatively common, with a multitude of responses usually 70-80% in agreement on an answer.

Post counts for many users on the Ausfish forum were very high; these are well established forum users responding happily to new members.

New gear queries were responded to with detail and care, largely based off everyone's own preferred fishing styles and experience.

Twitter:

Much more the domain of new enthusiasts with very little detail shared. More excitement & enthusiastic type of conversation in very much the fleeting style that Twitter lends itself to.

Sample size was quite small. Whilst branded tweets dominate, they are predominantly to followerships of 10-15 users.

Fishing World has 2800 followers, one of the more significant industry accounts.

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Talking Baits Feb – May 2012 May – Aug 2012 Aug - Nov 2012 lures long yakkas Buot voor bream set thanks 5 hook better great boat rod baiting caught catching httle guys head ittle time fish caught work lures 2 sh pood point times hook big squid using mate great boat good water little try fish catch g boat 1 . nice work fish _ better o small caught run best using P bit 2 O time area squid try using, / head great baits bit line tank good g fishing right lathead bairs g small point g try big fishing E sure hook fishing at tank best cheers baits head bay baiting small -5 long look of think arca flathead baits baiting bay mullet bay rocks mate looking mate guys flathead bream Forums 79:28.0% Forum Replies 253: 63.9% Forum Replies Forums 233: 57.4% 113:27.8% Forums 88: 22.2% Forum Replies 129: 45.7% Twitter Twitter 57: 20.2% Twitter 31: 7.8% 33:8.1% Blogs 16: 4.0% Blogs 14: 5.0% Blogs 12: 3.0% Videos 5: 1.3% Videos 3: 1.1% Videos 8: 2.0% Comments 7: 1.7% Comments 3: 0.8% 20 25 14 12 20 15 10 Hosts 15 Posts Posts 8 10 5 12 AM 11 PM 11 PM 12 AM 12 AM 12 AM 1 AM 1 AM Feb 01 Feb 19 Mar 08 Mar 26 Apr 12 Apr 30 May 01 May 19 Jun 06 Jun 24 Jul 12 Jul 30 Aug 01 Aug 19 Sep 06 Sep 24 Oct 12 Oct 30 Talking Baits Talking Baits Talking Baits

Talking Baits

Key Forums:

- Ausfish.com.au
- Fishingmonthly.com.au
- Tacklebox.com.au
- Fishraider.com.au

Feb – Nov 2012

Forum conversation dominates across social media. Bait mentions involve far more story-telling than other categories. Responses of support, further "local's" advice & encouragement.

Advice sought after, and readily given, for specific locations. Matchmaking need has been identified. Many fishers who have

moved their life to a new location seek new fishing mates.

Live bait is popular, particularly about where to catch baitfish in specific locations, and what species to expect. Established members are very active in helping and advising new enthusiasts. The support within the online communities is truly impressive.

Twitter: A very quiet platform within this category. 'live bait' is often used colloquially. Not a lot of fishers mentioning bait.

Shimano has a Twitter presence with rich media content, but a very low follower count (264).

iFishTV has an incredibly strong followership (26,000+), which interacts reasonably well with the social media savvy account.

Sept 17/18 Spike – Twitter petition against claimed use of puppies as live bait (Mexico/French Islands issue) Young females have a strong share of the Twitter fishing conversation.

Mulloway Fishing Aus has only 70 followers on Twitter, but a 5,000 strong FB community with good engagement. Shares photos of fisherman with their catch, eliciting good conversation. A strong example of Facebook lending itself more readily to recreational fishing members.

"Fishing Types" Results

Boat, Game, Fly, Saltwater, Deep-sea, Recreational, Freshwater, Spear Fishing

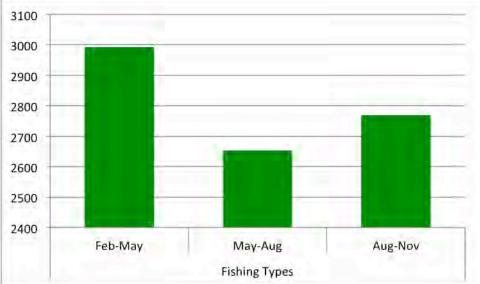
Level of conversation tended to fluctuate with with the warmer seasons.

This was primarily influenced by the dominant 2700 Boating discussions & an increase in political 2600 debates in October.

Twitter was the primary platform used.

Main online forums:

- Fishraider.com.au
- Ausfish.com.au
- Tacklebox.com.au
- Fishingmonthly.com.au



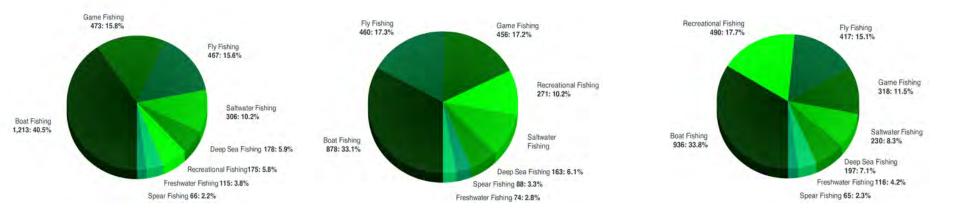
"Fishing Types" Summary

Feb – May 2012 2993 results May – Aug 2012 2652 results

Boat Fishing by far the most popular topic.

Busiest time of the year for conversation, most likely continuing from the warmer months. Whilst many other fishing types maintained a comparable level of conversation, Boat Fishing dropped notably. Aug - Nov 2012 2769 results

Most notable was the lift in conversation surrounding recreational fishing issues, namely political and legal issues that arose over these months.



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Boat Fishing Feb – May 2012 May – Aug 2012 Aug - Nov 2012 sure great to time le shing differe south different 60 couple bay cheers chatter deep beac area boats right a g small g island to boats illegal best to sea of har charter deep beach oking right sea g hard Ē think sca small & work australia great having catch time water | long CICW line using harbour d think little caught buy fish big great work small good trip time long home best long time sale good sri trailer sea fish best vessel looking fish water small big area asylum coast things single bit life good trailer little australia think charter old better australia things using harbour ondine Forum Replies Twitter Twitter 170: 19.4% 629: 67.2% Forum Replies Twitter 517: 58.9% 561: 59.7% 196: 20.9% Blogs 106: 11.3% Blogs Blogs 98:11.2% 70:7.5% Forum Replies 102: 10.9% Forums 46: 5.2% Forums 58: 6.2% Videos 34: 3.9% Forums 36: 3.8% Videos 34: 3.6% Videos 33: 3.5% Images 11: 1.2% Comments 8: 0.9% Comments 23: 2.5% Comments 9: 1.0% Images 7: 0.7% 50 80 70 80 40 70 60 60 50 Posts 30 Posts 40 50 Posts 40 30 30 20 10 20 10 10 ò -0 0 12 AM 12 AM 12 AM 12 AM 12.AM 12 AM 12 AM Feb 01 12 644 12 664 12 AM 11 PM 11 PM Apr 12 12 AM 12 AM 12 AM 12 AM 1 AM Mar 08 Apr 30 May 01 May 19 Jun 06 Jun 24 Jul 12 Juli 30. 1 AM Feb 10 Mar 26 Aug 01 Aug 19 Sep 06 Sep 24 Oct 12 Oct 30 Boat Fishing Boat Fishing Boat Fishing

Boat Fishing

Key Forums:

- Ausfish.com.au
- Fishingmonthly.com.au
- Tacklebox.com.au
- Fishraider.com.au

Feb – Nov 2012

A lot of boats for sale within the forums, heavily skewing the mention counts. Otherwise, topics range from boating vs landbased fishing, decisions about what boat to buy, organising fishing competitions, to licensing requirements for interstate trips. The licensing issue was a glaring anomaly to the usual wealth of knowledge among the forums. Answers were offered, but there was never real clarity on current regulations.

Boat conversation opens up a whole new debate on how fishing has changed compared to 10-15 years ago (physical access to locations, environmental changes, man-made changes affecting fish stocks). Whilst not venturing into a political debate, there is a clear unease about where recreational fishing is headed.

Forums were outnumbered by blogs for the first time (Aug-Nov), though as vast majority were spam-based blgos. Otherwise, blog topics centred around the asylum seeker issue, or an incredible Marlin YouTube video.

1Direction tweets resulted in the first major spike. The boy band was photographed boat fishing on April 9th. The spike on June 28th was a mixture of the Super Trawler debate & an asylum seeker boat in distress. The final major spike was due to asylum seekers again, with a fishing boat found in Australian waters. #Fishing & #boating hashtags were commonly used on Twitter. Boating safety regulation confusion was rife, showing a distinct lack of clarity or understanding of where to find this information. Photos on Twitter were shared by a few fishers. Not a major trend, but promising to see. Conversation in general was quite varied, as was the level of the fishers that tweeted.

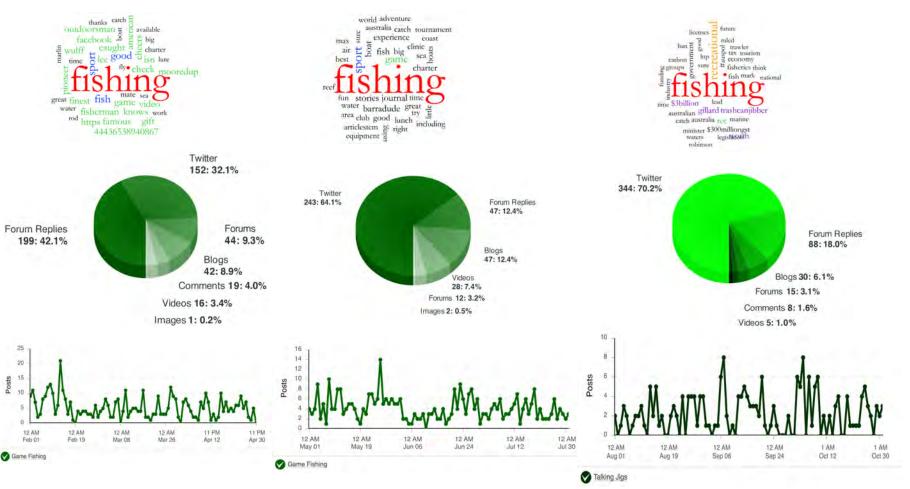
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(Recreational) Aug - Nov 2012

Game Fishing & Recreational Fishing

May – Aug 2012

Feb – May 2012



Game Fishing

Key Forums:

- Ausfish.com.au
- Fishingmonthly.com.au
- Tacklebox.com.au
- Fishraider.com.au
- Northcoastfishingnsw.com.au

Feb – Aug 2012

This topic is very much the domain of the Knowledgeable Fisher, with no obviously beginner-style questions seen. Aligned with that, Forums were once again the primary focus for the community, with competitions commonly shared and discussed. A lot of equipment conversation & selling happening.

Spike on February 13th due to news of a new update for the Lowrance HDS Fish Finder being released. This created a bit of a buzz on the days following the announcement.

Forum conversation centred around swivels and the cost versus quality debate. This was heavily discussed over a prolonged period of time. A prime example of a discussion more for the experienced fisherman, rather than for new enthusiasts.

The Game fishing category was a major source of discussion of NGOs & supporters on the topic of sustainability.

Game fishing and sport fishing is clearly targeted by spam accounts on Twitter, with these dominating the share of voice. Beyond that, experienced fisherman seemingly tended to not be found on Twitter.

Recreational Fishing

Key Forums:

- Ausfish.com.au
- Fishingmonthly.com.au
- Tacklebox.com.au
- Fishraider.com.au

Aug – Nov 2012

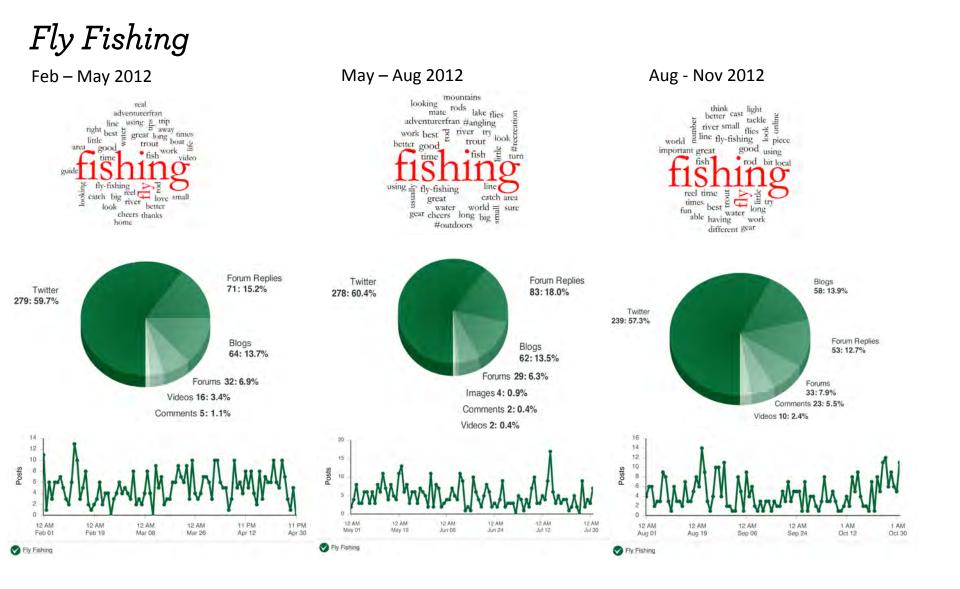
September 12th spike had Twitter ablaze and polarised over proposed legislation to impact on recreational fishers and to primarily stop the Margiris Super Trawler.

Forums increasingly saw a louder political voice towards the end

of the year, as more national issues became topically sensitive for recreational fishing. This wasn't seen on Twitter as much as within forums, showing that it was the knowledgeable fishers who tackled and debated the issues online.

Low levels of usual new enthusiasts/casual fisher tweets, with recreational fishing mentions becoming a highly topical and serious debate, and even more-so becoming blurred/tied into the super trawler debate.

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Fly Fishing

Key Forums:

- Ausfish.com.au
- Fishingmonthly.com.au
- Tacklebox.com.au
- Fishraider.com.au
- Overclockers.com.au

Feb – Nov 2012

Word cloud showed conversation to be highly varied. A number of tourism accounts leverage off fly fishing as a lure for travellers.

Online forums resume the expected detailed & experienced conversation amongst knowledgeable fishers.

There was a lot of questions raised for new-comers to fly fishing, with much confusion about what was an adequate level of equipment to begin with. Beyond this, the experienced fishermen also often shared any new equipment they had purchased.

Forum conversation a continued mixture of new enthusiasts and plenty of support from knowledgeable fishers. The thirst for information and advice is overwhelming throughout the period.

July 15th spike in conversation was due to a post on Tackelbox.com.au from a new enthusiast asking about what fly fishing equipment to purchase. As is now expected, a vast number of knowledgeable opinions were offered..

Twitter for once continued the confusion/apprehension seen on the forums, with a number of tweets from individuals questioning what is needed to get started. There is clearly a strong interest in fly fishing, but not enough clarity or leadership in helping these new enthusiasts.

Random snippets of information, blog sharing, and again photos mainly from female accounts shows that fishing is popular across both genders, just not to the same levels of technical interest.

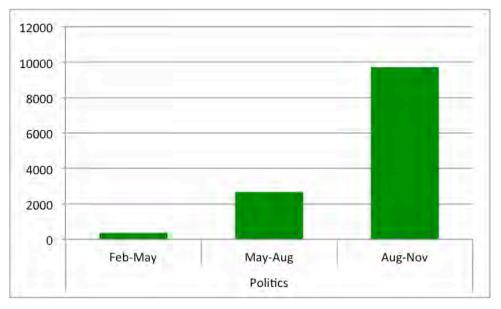
"Politics" Results

Marine Conservation Park, Super Trawler, Margiris, Abel Tasman, Great Barrier Reef, Sustainability.

Level of conversation increased dramatically as the Super Trawler debate, in particular, gained traction.

Marine Park debate increased steadily through August.

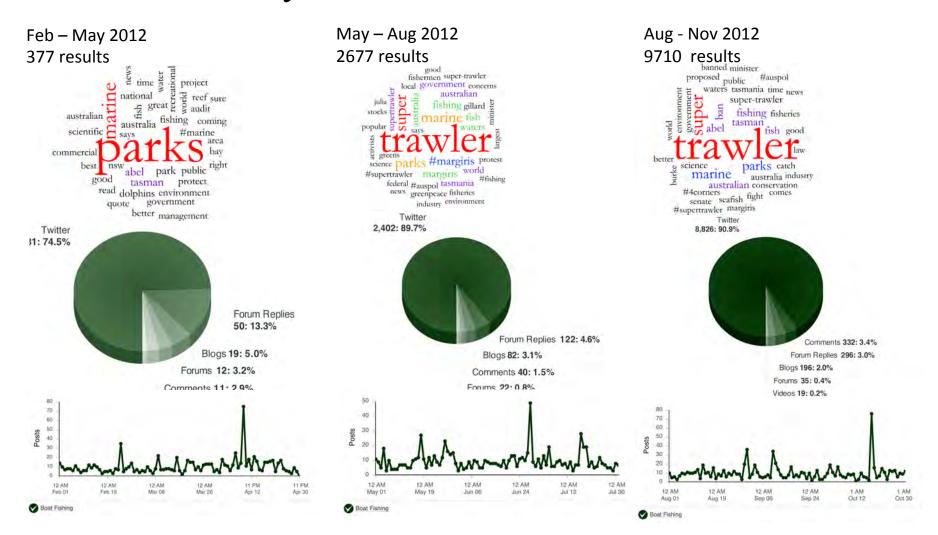
Twitter was the primary platform used across all topics.





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"Politics" Summary



Politics

Key Forums:

- Ausfish.com.au
- Fishingmonthly.com.au
- Tacklebox.com.au
- Fishraider.com.au
- Community.ebay.com.au

Feb – Nov 2012

Twitter Dominated conversation markedly more than any other category, with a steep increase into August and beyond.

A strong unity was seen across the usual online forums, but with a particular awareness of what vested interests there were behind some movements. The complexity of the Super-trawler argument, mixed with that of Marine Conservation Parks seemingly left many wary of who to be aligned with. This was

shared among the forums. There is an acute sense of knowledge on the forums which again is being shared with those not as heavily involved.

On the non-fishing-specific forums, the topic is much more up for debate, with knowledge much lower. This shows a clear lack of mainstream access for deeper insight from trusted fishing bodies.

Debate surrounding Marine Conservation Parks was much more clouded, with a more obvious public division of environmental lobbyists and recreational fishers (and organised bodies).

Twitter showed a more distinct pro-marine park movement, whilst forums were clearly strongly negative about the proposals. The lack of understanding publicly, of the differences between recreational fishing and commercial fishing was the most apparent issue. Any recreational fishing organisations were splintered on local grounds, with little influence or reach online (most were 100-200 followers).



Instagram

Instagram is a heavily used platform by recreational fishers who are keen to show off their latest catch.

The hashtag #fishingaustralia is a well recognised term and this alone has 2223 photos attached to it. From researching the pictures and the users attached to these, we can estimate that the average age using this platform for recreational fishing purposes is between 23 – 45 and predominately male. Many pictures have filters and effects added to these which tells us that the users are technologically savvy and are comfortable using and sharing on this platform. Other users drill down to location eg. #fishingmelbourne #fishingqueensland

Instagram presents many opportunities to connect with recreational fishers whilst also using this user generated content eg. As a web feed or app to entice others to give it a try.

Facebook Insights





Facebook

This document contains five insights for ANCORS outlining the usage of Facebook by the recreational fishing community.

Data for the study was collected from over 300 resources compiled by Julian Pepperell. Resources provided include fishers, clubs, peak bodies, Govt agencies, Rec Fishing industry publications and more.

Investigating each reference individually, Thinktank Social set out to determine the messages, wording, phrases and topics that garner the most engagement from users, specifically with relation to educational topics.

Furthermore, research was conducted to identify the trends across individual bodies that can be pooled together to establish common themes.

This document aims to provide guidance to ANCORS in consolidating a systemic approach to improving the delivery of educational material and teaching within their industry and more broadly.



Insights Overview

Based on this investigation and research conducted, Thinktank Social have identified five top level insights that are characteristic of the recreational fishing community's use of Facebook. These insights are that:

- 1. Fishing is an activity that, to some, is much more than a mere past time. There is a sense that many engage in the activity for something other than an actual catch;
- 2. The recreational fishing social community is one of remarkable positivity and is supportive rather than competitive;
- 3. Engagement on Facebook is [on average across all 300+ resources] above industry standards;
- 4. Educational topic posts have a low to nonexistent frequency; and
- 5. The supportive community may be a key factor in the delivery of educational content.



Insights in Detail

1. Fishing is an activity that, to some, is much more than a mere past time. There is a sense that many engage in the activity for something other than an actual catch;

Whether that is being out on the ocean, sharing a day with friends, or forgetting the rest of civilisation for a few hours, the study concluded that many engage in fishing for something *other* than catching fish.

Yet all involved, either with or without lofty ideals, enjoy fishing.

This obvious statement is important because those involved have a stronger sense of connection to the activity than, say, those in a job network.



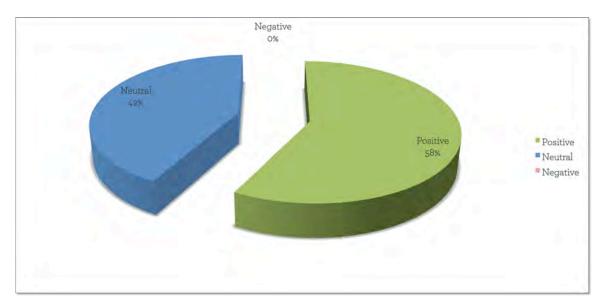
2. The recreational fishing social community is one of remarkable positivity and is supportive rather than competitive;

Not only are most pages positive in tone, but there are no negative pages. The least positive have a completely neutral tone.

This overall positive tone of the community is further exemplified by the engagement on the pages. By far, fishers sharing photos of their catches garner the most engagement.

Members of the community show support by liking these images, writing encouraging comments, and sharing the images on their own pages.

The majority of products shared on these pages are of bait, tackle and lures thought to be most effective for catching fish.



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3. Engagement on Facebook is [on average across all 300+ resources] above industry standards;

Industry standards suggest that engagement levels for a Facebook Page should exceed a minimum 8.5-9% of the total community (Fans/Likes).

To determine engagement, we can use the Facebook 'People Talking About This' metric; the number of unique users who have created a "story" about a page in a seven-day period. On Facebook, stories are items that display in News Feed.

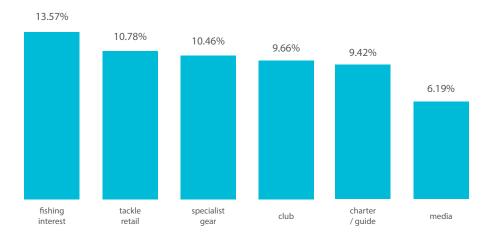
Across all 300+ resources investigated, the average engagement level is above 10%, indicating a highly engaged community.

People Talking About This is the number of unique users who have created a "story" about a page in a seven-day period.

On Facebook, stories are items that display in News Feed.

Users create stories when they:

like a page / post on the page wall like a post / comment on a post / tag the page in a photo share a post / RSVP to a page's event answer a question / mention the page in a post check in at a place / share a check-in deal like a check-in deal / write a recommendation



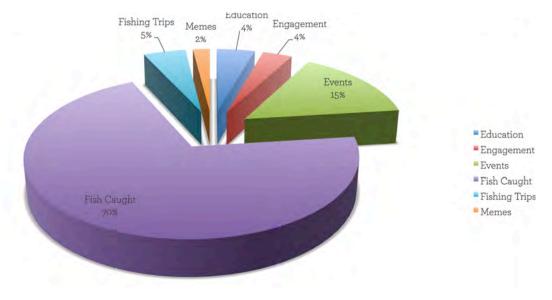


4. Educational topic posts have a low to nonexistent frequency;

As this research project centres around the delivery of educational messages, it is important to note that the investigation highlighted that educational posts have a low to nonexistent frequency and do not solicit high engagement.

Fish Caught garner the most engagement, with Resources (external links posted) and details of fishing ventures following suit.

From this data we can determine that posting educational messages to the community would require finesse.





5. The supportive community may be a key factor in the successful delivery of educational content.

The fact that the online fishing community is a supportive one might be the key to communicating educational messages.

Many argue that the biggest goal for companies on social media is to simply be likable.

This said, ANCORS could establish likability by sharing the successes of the community (who landed an amazing catch, who's manufacturing the safest products) in between its more formal, educational posts.

The educational posts themselves should have an emphasis on what new rules/regulations still allow, rather than having a sole focus on what they do not allow. The educational posts themselves should have an emphasis on what new rules/regulations still allow, rather than having a sole focus on what they do not allow.

Media rich posting would be a suggested delivery method with this community.

There exists a possibility that media rich content could be 'fused' into its educational posts. For example, ANCORS might wish to draw reference that trout are endangered (hypothetical) but show 'Tim' holding a giant tuna, which is still legal to fish, in a post detailing trout regulation (basic example).





Appendix - Talking Casting

| 🗍 9th April 2012 | #1 | 1 |
|---------------------------------|---|---|
| atat100 . | Advice: New rod and reel | |
| 11 | Hi All, | |
| Join Date: Apr 2012 | I have little knowledge about fishing, but starting it up as a hobby with a couple of friends. | |
| Posts: 8 | | |
| Thanks: 0 | I need your advice on purchasing a new rod and reel and willing to spend up to \$300 but would prefer it to be under \$250. I'll be doing mostly saltwater fishing off the pier or on the boat and occasionally freshwater fishing. | sharpay evans |
| Thanked 0 Times in 0 Posts | I listed a few options below but have no clue on all the different types of rods and reels under those ranges, could please provide some advice. Please suggest other rods and reels you feel are better. | @ah0ybella |
| | Thanks | hahaha max teaching Isaac to use a cast net |
| | Rods | < painful instagr.am/p/JjOWhFKqs4/ |
| | Shimano Raider Mexican Fire Shimano Starlo Stix Tournament pro Fishing Rod isabe | Ilalalalala - |
| | Reels Shimano Saros Shimano Aernos Daiwa Legalis | |
| | Penn Affinity Hi all, A mate is hiring a house boat up at Noosa for a weekend in a few weeks timeAs I have never fished there before was wondering if anybody had any tips on what gear to packI normaly throw plastics around for flattys and suchbut seen as we are going to be on the water over night, i thought taking the cast net and having a few nice big live baits swimming around might be worth a shotIf so what can you expect to catch and any places you could recomend would be great (i dont expect for youit to give up your fay spot)but a few ideas would be good, Thanks heaps for any advice, and I hope to let you all know what we get once we are back!! ohh and one more thingIs it worth putting a few crab pots out?? | |
| Reply With Quote | | |
| 29-02-2012 07:09 PM | #2 | |
| Fafnir @ Ausfish Gold Member | Re: Lake Cooroibah house boats | |

The stretch of water between the two lakes holds some decent Jacks. Target them with soft plastics in close to the snags or around submerged structure if you have a reasonably sounder on board. Be definitely worth trying some livies too. SP's should get you plenty of flatties, bream and maybe whiting closer to the mouth. All that being said it's been a while since I fished there and all the rain recently might make going a little Jan tough. Don't crab myself so can't comment on that.

Join Date:

2006 Post Thanks / Like

k teaching Isaac to use a cast net 🧼 painfu

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#11

Appendix - Talking Casting

W

| /hat's the best 2500 spinn | ing reel? Spinning for trout. |
|---|---|
| foolforjesus | |
| | Posted 29 February 2012 - 02:52 PM |
| FLATHEAD | Hi Raiders, |
| Group: MEMBERS Posts: 154 Joined: 09-January 12 Gender: Male Location: Sydnøy | I'm looking to buy a new 2500 spinning reel, for trout fishing, using plastics, hard bodies, celtas & blades. Any suggestions what's the best for quality, performance & dollars. Appreciate your input! Cheers, Chris |
| Hooked up | Posted 29 February 2012 - 10:21 PM |
| MORWONG Bessee Parts: 82 Joines: 20-January 07 | Image: Second |

i was going to suggest the shallow spool model 2500 for the exact reasons stated above, highly precise drag 3kg instead of the usual 7kg on normal spool size with the casting ability of the 2500,

great advice Greg.

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Appendix - Talking Lures

SNAPPER

....... Group: MEMBERS

Posts: 830 Joined: 06-December 08

Gender: Male



Leon Holdsworth GATLO

Follow

@VicFishing Friday is my day off, 8 bass in 90mins. Swapped to salt water, 9 bream in 2 hours #kayak #lure #fishing #GoldCoast

← Reply 13 Retweet ★ Favorite

3:57 PM - 7 Sep 12 - Embed this Tweet



Blades are very effective on flathead, but you might need to up the leader size because they disappear quite easily inside a flatheads mouth.

I find that the most effective fashion to fish blades (taking into consideration your on a sandy bottom) is to cast, let it sink then wind the tension, then raise your rod tip pulling the blade off the sand and up toward you which will cause it to flutter in the water. Once your rod butt is vertical, let the blade sink and wind up the tension (always winding with a bit if bend at your rod tip which spools your braid onto your spool with a bit of resistance which prevents wind knots, trust me) then repeat... This action works with most fish, using this action I've caught soapies, whiting, flathead and snapper.

Keep your colours basic, you could go nuts and buy loads of blades, but I personally think one lighter natrual colour and one darker natrual colour will cover most bases, which you will apply to the environment your fishing. Blades are not so much a visual thing for fish, but a feel thing, the vibrations caused by the blade thru the water are felt in the fishes lateral line arousing the fishes instinct to hunt.

Finally, don't give up, blades are very effective lures, but like any thing else, they have their days, so don't give up.





FAVORITES



12:41 PM - 11 Oct 12 · Details

#1

Appendix - Talking Lures

Landbased Sydney King

gilbey

FLATHEAD

Group: MEMBERS Posts: 137 Joined: 08-June 11 Gender: Male Location: sydney, leichardt Posted 22 October 2012 - 03:39 PM

Sunday moming the alarm went off at 0340am much to the disgust of the lady next to me, we hop in the car and head to our destination. we arrive at 04.45 and its still dark we begin our journey along the rocks. we reach our spot and get baits out by 5.15 just as the first effects of daylight are happening. no immediate action on baitd but as soon as our lures hit the water the fish were biting, frustratingly we kept dropping alot of the fish and so for the first hour besides a few trevally nothing was landed. come 0630 im retrieving my lure at top speed, i feel a take, but it drops i keep reeling and as the lure reaches the surface just in the swash zone boom! big swift fish on! the fish dove immediatly and had a 20-30yard run for the bottoom, uvkily its deep. I work him back up to the surface and whilst doing so the baited float goes off! double hook up! the big salmon on the squid soon make himself clear and somehow evades capture. back to the mystery fish, as it reaches the surfaces it dive once more, screaming line off the reel, as it approaches the bottom, ping!!!the worst feeling ever. thinking i had been done on the rocks i retrieve devistated, and upon inspection we find the fish actually bent out my snap swive!!! ouch, so re rig, without the snap swivel, first cast back in the mix, couple cranks from the depths boom! fish on again, again big runs for the bottom, i just want to see what it is i thought! after a few more tense runs, we see colour....yellow colour...ITS A KING, A KING is screamed, iv been after a king since last summer and yet to get one, my heart is in my mouth as it takes more runs down along the rocky ledge, no no no no, were the onky words from the so sy i was stoked is understatment. I was over the ledge hand the rod to fellow raider Angle, climb down the rock face, onto the ledge to collect my prize....my first ever king, to say i was stoked is understatment. I was over the moon. you know that shaking feeling you get after catching a dream fish, i had that for about half an h

Thanks to fellow raiders Angle and Cobba12 who made the session even better, what a day.

MG-20121021-WA0007.jpg (59.61K)

Number of downloads: 184 MG-20121021-WA0003.jpg (88.93K) Number of downloads: 377 MG-20121021-WA0004.jpg (104.81K) Number of downloads: 526

we went on to catch some bonnies salmon and many trevally, and saw the whales a numerous dolphins. sooo worth getting up early for. if only he missus could understand....

Cheers Raiders

(03) 9529 3477 54 Porter St, Prahran VIC 3181 info@thinktanksocial.com.au

Appendix - Talking Jigs

| 23-04-2012 07:17 PM | |
|---|--|
| ros21 usfish Bronze Member Join Date: Ar 2010 ost Thanks / Like A | reccomened me a jigging combo well im starting to take the yak a bit more of sure and im after a bit more serious stuff. budget arround \$400 but could streach a bit if there is a exelent combo for a bit extra. overseas order would be fine. so far my heavist combo is a 5600 abu with a dawia procaster rod. and a new dawia redback 4000 with a med 10-17lb rod |
| 25-04-2012 05:06 PM | #3 |
| benno_r Ausfish Bronze Member Join Date: C 2010 Location: Maryborough Post Thanks / Like | Re: reccomened me a jigging combo For \$600, this is what I would get: Reel: Daiwa Exceler HD 4500 (\$249) (low speed version of the Saltist spinning reels) Rod: Daiwa Demon Blood 56 PE5/6 (\$299) Line: 300m 50lb Power Pro (\$49) I would have recommended a Saragosa as a reel, but I think they have a design fault which saw me witness the body separate from the reel stem on a very small fish. Saw a lot of Rapala jigging rods back in the shop when I worked in Karratha - very fragile by accounts of the amount we saw broken in 2. What size jigs are you using and what fish are you targeting? Cheers, Ben |
| | 🛱 Reply With Quote |
| 25-04-2012 06:01 PM | #4 |
| gros21 o Ausfish Bronze Member | Re: reccomened me a jigging combo |



Melody Horrill @MelodyHorrill7 12 Apr @Merv1944 what kind of rig and bait are you using?



ote

Mervyn William James @Merv1944



@MelodyHorrill7 .. also a squid jig baited with pilchards/tommies. Took up fishing again a month ago. Love it. Why Whyalla?

🔶 Reply 🔁 Retweet 🌟 Favorite

7:46 PM - 12 Apr 12 - Embed this Tweet



2 gros Ausfi

Post

ok well im cahsing macks and any thing really about 2-3km max off sure i do alot of trolling and stopping when i find some fish for a flick of a slug or try to drop a octojig onto there heads.

Apr Post Thanks / Like

a mate uses salina II combos which he likes so some thing along thos elines

i have a massive sppol of 40lb ower pro here that ill use

Appendix – Talking Jigs

FLATHEAD

Group: MEMBERS Posts: 145 Joined: 20-April 10 Gender: Male

Location: Brisbane Waters

Ап

| nti catfish jew rig? A little floa | 12 |
|--|---|
| Flatboy | #1 |
| FLATHEAD STOLD Group: MEMBERS Posts: 145 Joine: 20-April 10 Gender: Male Location: Brisbane Waters | Posted 23 April 2012 - 04:25 PM Well yesterday I fished the hawkesbury for a few hours and had a lot of trouble with the catfish. I was trying a slightly modified rig to get the bait off the bottom, I don't think it really worked though. I usually just have: braid—leader—running ball or snapper sinker—swivel—leader—hooks But I replaced the sinker with a sliding swivel tied to some lighter line then to my sinker, aiming to get the bait off the bottom a bit, as well as only losing the sinker if it gets snagged. I didn't get snagged so I couldn't test that but I still caught plenty of catfish. What I'm wondering is would it work if I included a small fixed float between the last swivel and the hooks? So the whole thing sinks, then the float pulls the bait leader up away from the bottom until a stopper hits the sinker's swivel. Braid—leader—stopper—-sliding swivel with sinker attached—swivel—fixed float—hooks Would it work??? :unsure: |
| Flatboy | #10 |
| | Posted 24 April 2012 - 08:27 PM |
| | PRED-ATOR, on 24 April 2012 - 05:13 PM, said: also, please be careful when handling catfish. |

dorsal spike is killer dude, ruin your day

Yeah I've managed to avoid them so far. Freaked out on the weekend though because I thought one had got me on the knee... Turned out it was just the hook. :yahoo:

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Appendix - Talking Jigs



Steve Correia

L → Follow

GofishinWA ran a jigging day recently and their photos suggest quite a few small amberjacks, lots of 2kg plus skippy and samsonfish too

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4:15 PM - 20 Aug 12 · Embed this Tweet

 Its a type of Grinner, 100%. I have only caught then off mooloolaba QLD while live baiting for marlin.

Re: New additions

Dby scrote » Wed Jul 18, 2012 4:34 pm

m8 blades are very versitile, you can do any of the techniques you menioned but i usually just jig them near the bottom in water over 12-15ft.

Bud 99% of lures are measured from the tail to the snout "not" including the bib.



Joker

Posts: 2011 Joined: Mon Apr 28, 2008 1:15 pm Location: on the Clarence river

Live every day as if it were your last.!!!!!!!!!

Appendix – Talking Jigs

| shauno555 o | Re: fishing line? | |
|--|---|--|
| Ausfish New Member Join Date: Nov 2011 Post Thanks / Like 🗹 | Ke: fishing liner Hey mate. Personally if you were to be bottom bashing with that reel with the possible troll i would use mono. I don't do a lot of this fishing and most of my gear is set up with braid for jigging. But have one old sealine with 30lb mono on it. Works a treat and is about as heavy as I would go for bashing. But it does come down to personal preference. Braid works fine but is just a little unforgiving. But can also get a lot more line on a reel. In mono that reel will probably fill up with 300m of 30lb. In braid you might get 300m of 80lb. I just think its going to be way to much overkill as I don't think you will put 40kg of pressure on a fish. Whereas with 30lb mono it's going to be a bit more forgiving and a bit more fun. In regards to dialing back the drag to have fun. You don't know what might be on the bite. So I would use the tld as your heavier setup and maybe get yourself a 8-10kg spin outfit loaded with 20lb braid to throw either plastics or drop baits for fun. So in the end it's totally up to you whether you want braid or mono. Hope this helps and I hope I didn't confuse you too much with my ramblings. Cheers Shaun. | |
| | 🖽 Reply With Quote | |
| 07-10-2012 07:27 PM | #3 | |
| Donkeyzmilk a | Re: fishing line? | |
| | thx for the reply shauno , might do as you say and set this one up with mono, use it as my heavier outfit, i always intended on buying a spin out fit , so what you say makes total sense. | |
| - The | pretty easy to spend money in those fishing shops , just want to make sure i get what i need and not go crazy | |
| | FISH | |

G Fishing World

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VIDEO: Jigging for kings & amberjacks dlvr.it/2BH7Jb

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Appendix - Talking Baits

My first Cobia South West Rocks

leatheriacket



WHITING

Group: MEMBERS Posts: 249 Joined: 16-December 08 Location: Sydney

Posted 06 April 2012 - 04:42 PM

Hi Fishraiders.

I was launching my Yak at Ackoona Bay, South West Rocks and helped a local guy get his boat off the beach, who had beached his center consol to park his car. He thanked me and went out around the break wall and I followed him slowly in my yak ... The forcast was for a cloudy day, 5 knot winds and 2 meter swell. There was not a cloud in the sky and when I rounded the break wall there was a stiff 15knot breaze and 4 meter swells!!

The bait spot in front of the Gaol was looking dodgy with breaking waves but I decided to give it a go and rigged my bait jig so I had it at the ready. I cruised in with one eye on the GPS and the other on the swells. I got to the spot and dropped the bait jig, no sooner I saw two swells coming my direction and locked off the bail arm and started peddling towards them. Got over the first and heard the wave breaking behind me, over the second and I was in the clear... Then I realized my bait jig was full :) I pulled it up only to realise it was fulled with dart fish :(

I resigned myself to the fact that that I would be fishing with lures, not live bait. I put a shallow diving Halco on the surface and my favourate deep dive Slimmy Mac Rapala on my downrigger (which I had upgraded the trebles with 3/0 Owner hooks). Then I started to work up and down a bank that rises from 80ft to 50ft...

Then I saw the guy I meet at the boat ramp and decided to get some local knowledge about any other bait grounds, he said he was on top of a school of Yakkas so I went hard to get its head up. At this stage I thought it was a ray or shark but I was going to play the fish to be sure and I paddled forward to plain it up and this worked well - I got it all the way up to the wind on leader until it went straight back to the bottom. I resisted tightning the drag at it took me 8 minites and 5 gaff shots until I landed my first Cobia - 115cm!!! :D

| DIAMONDBACK | | #1 |
|--------------------------------------|---|--|
| | from the rocks ect. Unfortu up with and have a fish. | osford)and work shift work, so plenty of days off. Due to this fact I get out quite a bit and love beach fishing, live baiting the rocks and spinning nately a mate I fish with is soft and very unreliable, so I tend to head out a lot on my own. HenceIm looking for like minded fishos to catch |
| Gender: Male Location: Central Cr | Tracy Fitzgerald . | Harvey Bay barra fishing |
| | | Can anyone help, am new to this and an unsure what lures are the best? Or live bait? Have |

Graeme Bowman @graemebowman

Follow 1-

@ifishty Same here. Just trapped mullet for live bait - should attract nice flattie, pinky, salmon, bream or mulloway in Hobsons Bay & Yarra

A Reply 13 Retweet Travorite

3:22 PM - 7 Feb 12 · Embed this Tweet

#1

Apr 2012 Join Date: Posts: 3 Thanks: 0 Thanked 0 Times in 0 Posts

poppers last weekend and seemed ok, am I on the right track???? sorry, poppers? just starting out and this has what's been suggested.

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Appendix - Talking Baits

| Bronzie | thanks guys i gave it all a try today out at st kilda but the current was much to strong and all it was doing was drifting around poles a getting in the way, i'll hopefully get a better crack at it next time, cheers guys. | |
|---|--|--|
| | | |
| Join Date: Mar 2012 | | |
| Posts: 20 | | |
| Thanks: 2 | | |
| Thanked 2 Times in 2 Posts | | |
| | The second s | |
| and a linear | 🛱 Reply With Quote | |
|] 11th July 2012 | | |
| | | |
| s+j+5 ∘ | | |
| s+j+5∘ | M8 as the fella's said Yakka's,Slimy's etc are great but dont give up and go home if you cant get one,you can use just about anything,the biggest King I seen caught in my time LBG fishing was well over 40kg and taken on one of those little yellow and black long fin trumpeter looking things that swim around jetty pylons and the biggest Jew i saw taken on live baits was taken on a 1.5kg Silver Trev, we were rolling on the rocks laughing when he threw it in but needless to say when the 86lb Jew came up on the end of the gaf the laughing stopped. Just food for thought | |
| S+j+5 o Join Date: Jun 2008 | M8 as the fella's said Yakka's, Slimy's etc are great but dont give up and go home if you cant get one, you can use just about anything, the biggest King I seen caught in my time LBG fishing was well over 40kg and taken on one of those little yellow and black long fin trumpeter looking things that swim around jetty pylons and the biggest Jew i saw taken on live baits was taken on a 1.5kg Sliver Trev, we were rolling on the rocks laughing when he threw it in but needless to say when the 86lb Jew came up on the end of the gaf the laughing stopped. | |
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| Join Date: Jun 2008 Location: Northern NSW | M8 as the fella's said Yakka's, Slimy's etc are great but dont give up and go home if you cant get one, you can use just about anything, the biggest King I seen caught in my time LBG fishing was well over 40kg and taken on one of those little yellow and black long fin trumpeter looking things that swim around jetty pylons and the biggest Jew i saw taken on live baits was taken on a 1.5kg Sliver Trev, we were rolling on the rocks laughing when he threw it in but needless to say when the 86lb Jew came up on the end of the gaf the laughing stopped. | |



ShimanoAustralia

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Hi everyone, check out Paul Burt as he vs us how easy it is to catch your own pait. In this case, beach worms. y/bYG6S

v 🕄 Retweet ★ Favorite



catch beach worms

shows us how to catch your own live beach worms. Beach worms are he best baits you can use and Paul Burt shows how easy it is to get them.

ube @YouTube - Follow





Fresh or live bait is always better than frozen bait. In saying that, I have caught some incredible fish on frozen baits #paulsfishingtip

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Appendix - Talking Baits

Live Bait Rigging

chr42is

MACKEREL

Group: MEMBERS Posts: 26 Joined: 03-March 12 Gender: Male Location: Wingham NSW Posted 30 October 2012 - 08:46 AM

Live Baits Can some one please tell/show me how and where to add a weight to a live bait.

I have tried a Yacca on a paternoster rig but it tangled

Robofish



WHITING -----



lan Keaggy 😒 anKeaggy

1. Follow

Please sign this petition to stop puppies and cats being used as LIVE bait. unreal. RT! causes.com/actions/1679274 via @causes

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Posted 30 October 2012 - 12:53 PM

I just fish a barrel or ball sinker down to a swivel and then have a fluorocarbon trace off that to a circle.

Dave

Sent from my iPhone using Tapatalk





Angler Rhys Nelson: 96cm flatty release northern nsw live bait fb.me/1ku2pLlAo

1-😏 Fo

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8:40 PM - 28 Oct 12 - Embed this Tweet





Keira Gillon @KeiraLuvsBradie

J Follow

Bass Fishing With Live Bait !: Everyone wants to catch that once in a lifetime monster bass, increase your chance ... bit.ly/V9SsLw

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1:14 AM - 18 Oct 12 - Embed this Tweet

Caught some live bait. Chucked it in. Reeled it back in... Big chomp taken out. Musta been a mighty big fish

instagr.am/p/QFGZDbmWHA/

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Angler Rhys Nelson:

96cm flatty release northern nsw live bait

Like · Comment · Share

A 343 people like this

20 shares

View all 37 comments

Jamie Dix solid fish fella, like ya work!! 29 October at 10:37 - Like

David Caulcutt Great work. That big girl is worth 300 000 eggs this season. All with her superior genetics. Well worth the release if only 100 of her offspring make it to maturity from each season. 29 October at 12:07 - Like - ch1

Robert Bennett fuck good torch that 29 October at 15:01 - Like

Glenn Paddick That's some flathead well done

29 October at 22:26 - Like

Scott Tonkin Where was it caught?? Mate 30 October at 14:13 - Like



Appendix - Talking Baits

| Live Bait Rigging | | | |
|--|--|--|--|
| Chr42is | | | |
| MACKEREL ©©© Group: MEMBERS Posts: 26 Joined: 03-March 12 Gender: Male Location: Wingham NSW | Posted 30 October 2012 - 08:46 AM Live Baits Can some one please tell/sh I have tried a Yacca on a paternoster r | now me how and where to add a weight to a live bait. ig but it tangled | |
| | | | ShimanoAustralia |
| | Posted 30 October 2012 - 12:53 PM I just fish a barrel or ball sinker down to Dave | o a swivel and then have a fluorocarbon trace off that to a circle | Hi everyone, check out Paul Burt as he shows us how easy it is to catch your own live bait. In this case, beach worms. ow.ly/bYG6S |
| WHITING eeeeee Group: MEMBERS Posts: 229 Joined: 14-March 10 Gender: Male Location: Sydney | Sent from my iPhone using Tapatalk | Paul Worsteling ▲ ▼ ● Follow Insert Insert Fresh or live bait is always better than frozen bait. In saying that, I have caught some incredible fish on frozen baits #paulsfishingtip • Reply 1 Retweet ★ Favorite | How to catch beach worms Share * More info |
| | | 2 1 RETWEETS RAVORITE E E E E E E E E E E E E E E E E E E | How to catch beach worms Paul Burt shows us how to catch your own live beach worms. Beach worms are one of the best baits you can use and Paul Burt shows how easy it is to get them |

4:17 PM - 1 Jul 12 · Embed this Tweet

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Appendix – Boat Fishing

| | 27-04-2012 07:25 AM | #4 |
|--|--|---|
| 1Dupdates ©1DupdatersWW Liam fishing on the boat. ockerz.com/s/200094468 ▲ Reply 13 Retweet ★ Favorite | finga o Ausfish Addict | Re: Safety overkill |
| | Join Date: Feb 2005 Location: Metropolis known as Warwick Post Thanks / Like | I really don't mind new regulations as I'm usually compliant already BUT I agree. It's getting to the point where you have to check boating and fishing regulation before every trip you make even if it's twice a day. We hear absolutely nothing about changes in regulations until the blitz on the water. I had no idea about the lifejacket sign crap until I read it here. I would have been one paying a fine. I don't want to wear a life jacket all the time though. But it'll come in. All you have to do is listen between the lines to the news reports of the last tragedy. |
| | | Tip from everybody on this place : Fish with a boat or try it on another place. The same problems are called everytime : The Entrance is blocked and it's difficult for fish in the Lake System. And to many people fish to often to small fish to grind them for fishpattys. The combination from both run the fishing possibilitys in the ground. |
| B 1 RETWEETS FAVORITE Main Participation | | I visit also the entrance area and saw a lot of people fishing but nobody goes home with enough fish to make a fishburger. A main impression around the lake system. Weed, mud and rubbish. |
| | | Everybody knows a story about somebody he catched last week or last months big flathead or big whiting on the spot. Who? I don't know. Somebody saw it? No. |
| | | Only the old people told me more or less with a smile there are a lot of storys about fishing in such way 😨 |
| | | When somebody can give me a tip where is still a possibility for fishing without boat around the Lake System |
| | | I got told a great spot is around the water inlet for the power plant. But the power plant company blocked every way with a fence and you need a 4WD to drive through the bush around the fence or must be good per foot to come on this place. |
| | | Where can you go for fish without boat and without 4WD? |
| | | Greetings |

Peter

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Appendix – Boat Fishing





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Margiris is one of only a handfu...



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O TwitPic

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Australia is about to have one of the world's largest fishing vessels enter its

waters. At 142m long, a capacity of 9,500 tonnes and a 600m long net, the FV

The Supertrawler Problem wp.me/p2twLA-

2A Eff off with your monster #fishing boat

The Supertrawler Problem

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Barra fishermen fined & boat confiscated #fishing #angling fb.me/21HQI3jWU

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-;~##={ JAWS: Great White Shark Attacks Australian Fishing Boat: Great White Shark snatches a smaller sh... bit.ly/KMDJfX }=##~;-

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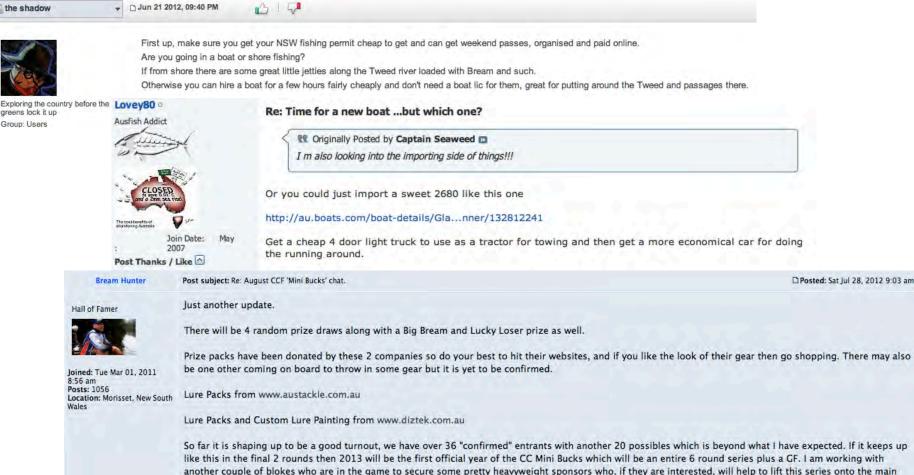
7:28 AM - 26 May 12 - Embed this Tweet



the shadow

greens lock it up

Group: Users



stage of the Australian tournament angling arena! Cheers guys n girls, only a couple of weeks to go!

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Appendix - Boat Fishing

Marlin leaves injured crew in its wake











Read later

Marc from Getaway Fremantle tells me Fishing Boat Harbour has produced some tailor, small bream and some small crabs

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6:24 PM - 31 Oct 12 · Embed this Tweet

SBS News

1- Follow

A group of Sri Lankan #asylum seekers have reportedly seized a fishing boat in order to get to Australia bit.ly/QZLBOE

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3:26 PM - 18 Oct 12 · Embed this Tweet

How To Tie A Grinner Knot: Step-By-Step Video Instructions From Boat Fishing Monthly fishy.at/S3pqaR

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Anglers' Net

RETWEET MAKIN

8:49 AM - 29 Oct 12 · Embed this Tweet

Rachel Hayes

1.

Follo

Follov

Kiss me fishy! #fishing #kissing #boat #straya #amazing #sport instagr.am/p/RXNHGmyBH6/

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Kiss me fishy! #fishing #kissing #boat #straya #amazing #sport

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Appendix - Game Fishing

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| skipzx • | Lowrance HDS Gen1 V4.1 Update available and how to install it | | Coast Sport Fishing Charters just last wee fb.me/1UDE22JjC | |
|--|---|---|--|--|
| Moderator Modera | The new update for the Lowrance HDS Gen1 is Below I've done a quick "how to" video on insta Updating Lowrance HDS Classic Fishfinder/Plott For a full list of features check out: Lowrance V Cheers, Sam | alling it. ters to V4.1.36.68 - YouTube | ← Reply ♣ Retweet ★ Fave Longtail Tuna Fun.wmv Japanese anglers Shunji, Tomo and | d Taka fishing for Long Tail Tuna and Ma er Island using Poppers Stick Baits and S Blue Planet So @Seasaver Sport fishing must bit.ly/HjbcMN |
| D4+05-2012 08:34 AM Noelm © Ausfish Addict | Re: Anyone actually had swivels fail - what quality I guess to be 100% fair, you need to put into persp fine for Bream and whiting (say) on 3KG line, but t silly, so that being said, for "general purpose" fishi | ective what you are fishing for, a chea o use the same quality on 60KG Game ng, I use cheapish swivels (if I use a s | tackle would be wivel at all) but for | 2 David Horton Watermelon_man Oh FFS, Craig Thomson supertrawler to recreat |
| | game fishing, I use only quality swivels, the cost of game fishing. AllDeals Newcastle AllDealsNewcast Awesome 5-Hour Game Fishing Adventure on a Luxury 50ft Vessel Inc. Gourmet Lunch, & ALL Gear! Today Just \$169, N tinyurl.com/742xotk | f a good swivel is only a tiny part of the Natasha Griggs @NatashaGriggsMP This bill gives @tony_burke aldown any fishing boat at any the for #topend who love to rec fiss #supertrawler ← Reply the Retweet ★ Favorite | L- Follow bility to shut ime. Bad news | say this Craig, but you r point by a smidgeon. Reply A Retweet Pavorite Reply A Retweet Pavorite Store PM - 12 Sep 12 - Embed this Tweet Reply to @watermelon_man Political Tragic @politicative |



fair share of catch as it is.I watch them rock fishing off Coogee, horrible sport. Details



Check out this awesome clip taken on Fraser Coast Sport Fishing Charters just last week!!

Tourism Fraser Coast

@FraserCoastQLD

Taka fishing for Long Tail Tuna and Mac Tuna Island using Poppers Stick Baits and Sna...



Sport fishing must change its image bit.ly/HjbcMN









Political Tragic @politicaltragic



12 Sen

Oh FFS, Craig Thomson linking the supertrawler to recreational fishing? Hate to ay this Craig, but you may have missed point by a smidgeon.

@watermelon_man Recreational fishing takse more than its

#2

Appendix - Recreational Fishing

boattart



Posted 23 October 2012 - 10:06 PM

It's time for Barry O'Farrell to show some leadership. He won the unlossable election last time and probably couldn't lose the next one if he tried but the public are sick of his excuses for non action. Here he has a clear cut case of a wrong decision that is within his power to correct. The Upper House enquiry cost taxpayers of NSW dollars that he says are precious. If he can ignore their recommendations then he should have had the courage to come out early and shut it down knowing full well he was going to ignore the recommendations anyway. I know I'm not alone in saying I'm sick of the arrogance shown by politicians at a Federal and State level that can look the public in the eye and say that they know it's not what we voted for but they are going to inflict decisions on us and we are supposed to suck it up and move on. Mr O'Farrell has the chance here to stand up and show he's not just a stereotypical politican and that he can admit when the wrong decision was made and he is prepared to correct it. So Barry show us all now are you a leader or a follower?

E 25-10-2012 09:04 AM

Mike Delisser •







Join Date: Jun : 2006 Post Thanks / Like

Re: Freshwater Stocking Groups meet with Qld Fisheries

R Originally Posted by finga 🔟

Well that sucks doesn't it.

Why weren't Sunfish invited seeing they're our peak representatives?

What's the fine for not having a SIP's license? How do we opt out of the RUF? Gishing Recfishing Research



Hi guys! If you have a question about science relating to recreational fishing that you would like us to... fb.me/25JyV8Ttm

← Reply 1 Retweet ★ Favorite

3:21 PM - 31 Oct 12 · Embed this Tweet



💄 😏 Follow

Because it was a meeting about the future of freshwater stocking and it's funding, the FFSAQ are our peak freshwater stocking group and freshwater fishing club representatives, and are in fact a member group of Sunfish Qld anyway.

I'm not sure of the exact fines but I thought paying for a SIP but not have it on you (failure to produce) was around \$180, and not having a SIP at all (fishing without a SIP) was around \$380.

"There will be no carbon tax under the government I lead." -- PM Ms Gillard, August 16, 2010

"The LNP's Mr Robinson said his party would release details of its fisheries plan as soon as Premier Anna Bligh announced the state election." Red Land Times 28 Nov 2011



Reply 🕄 Retweet 🗙 Favorite

3:53 PM - 30 Oct 12 · Embed this Tweet

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| Appendix – Re | ecreational Fishing | Steph Puls |
|--|--|--|
| Trashcan Jibber 🐱 @trashcanjibber | L → Follow | A quarter of Au fishing? Really? |
| Recreational fishing is worth AU; \$300million GST ready in tourism #Gillard pic.twitter.com/MAI43BLF | to go overseas | 1 Image: Second secon |
| Reply A Retweet Travorite | | Reply to @StephPuls |
| 3:10 PM - 30 Oct 12 - Embed this Tweet | Fisheries Queensland | ChristopherBu @StephPuls I fo |
| | Do you own a boat? The Recreational Use Fee from your boat registration is used only for rec fishing services goo.gl/NUzfo | #4corners Details |
| | ← Reply ▲ Retweet ★ Favorite | |
| | 1 RETWEET | |
| | 12:32 PM - 26 Oct 12 - Embed this Tweet | |
| Trashcan Jibber 🕱 | Sector Follow | Recfishing @RecfishRe |

| A quarter of Australians do recreational fishing? Really?! #4corners | | |
|--|--|--------|
| 1 FAVORITE | | |
| 8:47 PM | - 22 Oct 12 · Embed this Tweet | |
| Reply | lo @StephPuls | |
| | ChristopherBurgess @Chafule @StephPuls I found that statement hard to believe #4corners Details | 22 Oct |





Follow

Hi guys! If you have a question about science relating to recreational fishing that you would like us to ... fb.me/25JyV8Ttm

A Reply 13 Retweet * Favorite

tourism \$\$\$

Tuna bicatch are of greater concern & value

worth tensathousands of recreational fishing

#factoryship Each marlin is potentially

Appendix - Fly Fishing



Cool carp on fly video.

Makes me almost wish we had carp around here almost.



Watch the way he uses his neck to put pressure on the fish while trying to net it with his other hand......and the way he drops the reel into the water for that extra bit of drag. Clever techniques if ya ask me...

Join Date: Dec 2010 Location: Bundaberg Queensland. Fishing Style: Fly, lure, bait.

Anything fishy. Posts: 1,045 Thanks: 564

Thanked 614 Times in 397 Posts

And in the last minute of the video there are 3 of the most unique rods i have ever seen. True works of art.



Discover Tasmania
 @DiscoverTas

1- 9

RT @BrandTasmania: MT Local angler hooks fly fishing title is.gd/wQpIcB #flyfishing #trout #tasmania #tassie



3:26 PM - 23 Mar 12 · Embed this Tweet

14th July 2012 #1 Duffman . **Buying First Fly Fishing Rod:** Hey Guys, Join Date: May 2012 I have always fished using spin gear but recently I have been thinking about learning how to fly fish. I might find someone who can 47 Posts: teach me how to do it but I need to first buy some gear. I was looking online and have found this combo: COMBO - TROUT 6wt OUTFIT - Fly Rods Thanks: 0 *I need someone who knows something about fly fishing to give some advice on purchasing a combo, I will be targeting Trout. I don't believe in buying cheap at the start and then upgrading but believe in purchasing a good one from the start. Is the brand from the link Thanked 2 Times in 2 Posts equivalent to a Shimano or Daiwa in spin gear?

Appendix - Fly Fishing

| FishingInSouthEa | Fly fishing for mullet | | | | | |
|--|---|---|---|---|-----------------|--|
| stAustral • | Hi guys | Sector of the sector | | | han and faither | |
| | | y fishing thing. I've been having very limited success on the trout around Melbourne, although haven't been would like and often bring the spin gear, which is a real mistake given I often go back to what I'm | | | | |
| Location: NT, ACT, VIC | comfortable with way too early. | | | | | |
| Fishing Style: Fly | | | | | | |
| Posts: 118 | interested. Fly fishing for mullet Fishing in South East Australia Chasing them on fly has definitely added a little more interest to humble mullet fishing for me at least | | | | rest to | |
| Thanks: 0 | If you have any tips, send them through :) Natalie VanCoevorden @DJnatawilly | | | villy 22 Oct | | |
| Thanked 68 Times in 45 Posts | in you have any ups, send the | @JoelTobinWhite but i really wan | | nted to come fishing with | | |
| | Cheers Hamish | | you and take you shopping :P no??? Details | | | |
| | | Fly fishing??? Tell me about it? What sorts of fly rods? Flys or lures etc? #fb | | vest. All I know is it protected me from all the fights I instigated at the AP. #thug Details 	A Reply 13 Retweet 	Favorite | | |
| Pignut @Har_Grrl 28 Jul @GeorgieSomerset @peneena @kristy_hunt Oh I'm so jealous! Would love to throw a line in at Noosa today and catch myself a fish for dinner! Details | | Reply 13 Retweet Tavorite | | Josh Amberger ØJoshAmberger | L ▼ Follow | |
| | | @JoelTobinWhite I | | @JoelTobinWhite It was a vest mate pic.twitter.com/i | | |
| - | | | | Reply 13 Retweet 🛊 Favorite | | |
| Grahame Rees @peneena @Han_Grrl Had my in Noosa with Ros m | first Fly fishing lesson y wife the teacher ! | | | | | |
| 🛧 Reply 🛟 Retweet 🗙 Favori | te | | | | | |
| 5/48 PM - 29 Jul 12 · Embed this Tweet | | | | | | |

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Appendix - Politics



jimnicdusty

Fish

Group: MEMBERS Posts: 116 Joined: 03-December 07 Gender: Male Location: bathurst Posted 13 July 2012 - 08:33 AM Hello All

Fishers should beware of emails encouraging them to join the protest against the so called factory trawler in Tasmania via this website:

http://www.community...ler-in-tasmania

If you submit a protest through this site without reading the fine print and un ticking the box you will inadvertently become a member of Get UpI, a radical far left lobby group. This organisation campaigns for lockouts in marine and national parks. GetUpI recently bragged about it's exponentially growing membership on the ABC's The Drum program.

The survey was the initiative Rebecca Hubbard who is an operative of Environment Tasmania (The Conservation Council). Check out the Councils agenda here: http://www.et.org.au/campaigns and Rebecca's involvement here: http://www.et.org.au...ch/node/hubbard

Rather than giving green extremists a leg up, I suggest concerned fishers protest directly to the federal fisheries minister here: joe.ludwig@maff.gov.au

Regards and good fishing Robert Smith BM President NSWFCA Inc

platinum.grit (1) View Listings

Re: The Margiris wants to come fishing Sep 11, 2012 07:34 PM (23 of 30)

a message from Greenpeace:

"This is a significant setback for the European super trawler fleet – however the campaign against destructive fishing needs to continue.

The Margiris is just one fishing vessel that is impacting marine ecosystems globally. The global fishing fleet is catching more fish than nature can sustain. In our region, the Pacific faces the threat of over-sized foreign vessels every day.

Greenpeace will continue its global campaign against overfishing and destructive fishing practices."

12th September 2012



The government has done stuff all it was the concern of the concerned public that did it. Environment Minister Tony Burke is creating all these Marine Parks up North that will be an open invitation to illegal fishing boats now that's another worry . Why dosent the illegal Fishing boats that fish our Coast line capsize or get into strife like the boat peolpe's?. Wally



1. Follow

Bob Irwin shocked Green Zones in marine parks in Australia are a joke!!: youtu.be/Q59ZuZod81w via @youtube

Reply 🕄 Retweet 🛊 Favorite 🚥 More



Playlist Uploaded videos (100 videos)

Bob Irwin shocked Green Zones in marine parks in Australia are a...

Bob Irwin shocked Green Zones in marine parks in Australia are a joke!!,

The A The Islander

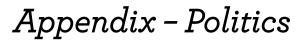
L- Follow

Heavyweights get into the marine parks sanctuary debate. RDA wants study into economic impact for #kangarooisland theislanderonline.com.au

Reply 13 Retweet * Favorite ... More

10:22 PM - 25 Oct 12 · Embed this Tweet

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Follow

@1 CATCH We achieved moratorium on Marine Parks in NSW & other things. Still fighting, too. Lots to do in WA as well, when we're elected.

← Reply 13 Retweet ★ Favorite ••• More

4:58 PM - 25 Oct 12 · Embed this Tweet



at a RETWEET

10:55 AM - 30 Apr 12 · Embed this Tweet



Eollow

RT @AgentsJDA: Majority of Australians support marine parks. Tim Winton on our chance to protect the oceans bit.ly/HKftc9

A Reply 13 Retweet * Favorite ... More



14-04-2012 04:04 PM

Horse o

Ausfish Addict



000 **ABC Drive Victoria** ABC @ABCDriveVIC

Follow

Simon Branigan, from @vnpatweets, says he supports State Goverment's inquiry into marine parks, but that it doesn't go far enough.

A Reply 13 Retweet Travorite ... More

5:13 PM - 23 Apr 12 · Embed this Tweet

Re: What would you do as Fisheries Minister to sustain our fisheries?

Re: What would you do as Fisheries Minister to sustain our fisheries?

I would make the entire east coast a green zone and employ myself and a few mates to do extensive research into fish populations by going fishing a lot. I would purchase Greg Normans vessel "Aussie Rules" to use as my research base and mobile headquarters. I would only "attend" cabinet via conference calls and probably only in the case of bad weather or needing a break from the research side of things Anyone willing to be a research assistant?

Seriously I would:-

1. place a sunset clause on all inshore fishing licences and start buying back commercial licences that have a high impact on the total fishery

2. combine Marine Parks, Water Police, Boating and Fisheries and a State run Coastguard and operate them out of the same bases

3. invest heavily in research into fish populations and investigate farming and other techniques to increase biomas of preferred species

4. build more artificial reefs along the coast

21-04-2012 10:12 AM

Join Date:

Brisbane

2002

Oct

danrvan75 o Ausfish Bronze Member Join Date:

Oct 2007 Post Thanks / Like

To all those going on about rec bycatch have you ever been on a trawler fishing with bottom gear? This style of twawling produces an enormous amount of bycatch. I had the pleasure of stepping onto a moreton bay prawn trawler recently and saw them pull a shot in between mud and st helena. Now there is no question he did catch a majority of prawn, but, the bycatch was amazing. Hundreds of good size whiting, flathead, small nannigai, cod, threadys, jew, squid. All these bycatch fish were all dead after being towed around for 40 minutes and as his license is only for prawn he can only keep upto his rec bag limit of bycatch so most is just thrown overboard. (not wasted, we were being tailed by about 20 dolphins) if his licence allowed him to sell this bycatch would we not be able to remove a commercial whiting licencefrom another operator? and a commercial jew licence? it just seems to me that all these licences cater specifically to one species and all bycatch is to be thrown away?

Appendix – Facebook Insights

52cm flatty on zman grub motor oil from up mooloolaba river



School holidays are almost upon us again. Don't forget to get the kids out for a fish. This young lady landed 6 fish on her own from the beach yesterday afternoon. Very proud she was...



How's the fishing going mate?

I'll keep you posted.....



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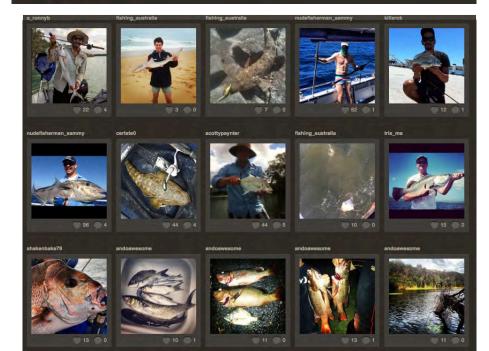
Appendix – Instagram



fishing_australia Follow

Fishing Australia

Sharing fishing photos from all parts of Australia. To have your photo featured tag @fishing_australia









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Thank You and Stay Social!

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54 Porter Street Prahran VIC 3181

Fisheries Research and Development Corporation (FRDC) Project 2011/527.

Appendix 3: Tools for Recreational Fishing Education.

Tools for Recreational Fishing Education

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Pilot study 1: Uptake of social media into the Recreational Fishing education strategy and networking -The electronic wall.

Introduction

A draft social media strategy has been developed out of the results of the RFE review (McIlgorm, 2013), the review into social media use by recreational fishers (TTS 2012) and a draft social media strategy for RFE prepared by Thinktank Social (TTS 2013). The draft strategy identified the potential for developing a national approach to RFE networking and information sharing through social media, to be explored through Pilot Study 1. From these reviews it was recommended that delivery of the pilot study 1 be progressed in a co-ordinated way through a national body.

Discussions with ARFF

The project team met with Allan Hansard, CEO of ARFF in August 2013, to discuss the potential development of a pilot project to be sited within ARFF's website. The ARFF has three cardinal pillars, of which RF Education is one. The alternative was part of the FRDC's Recfish Research website which is outside of the RF peak body structures.

Having the pilot within the ARFF website gives an electronic interface that can benefit RFE providers, but can also be a place for Rec. Fishers and the general population to learn and gain information on RFE issues. The project also discussed the potential to site other tools, such as the teachers digital library, within ARFF's website.

The project investigated the potential structure for a national RFE network with a new approach to networking being facilitated through two workshops:

- Workshop 1 'Recreational fishing and education workshop' held during the RECFISH Australia's National Conference in August 2012.
- The 2nd National RF Education workshop was held in Sydney on 3rd/4th September 2013.

Representatives from government, the private sector, peak bodies and community groups attended the workshop to discuss a draft national education delivery strategy and alternative networking approaches. An informal network, in the form of an email group, was established in 2013 which was made up of all participants in Workshops 1 and 2. These workshops focused on identifying improvements to get the RF message out more effectively through networking.

The electronic wall

The "electronic wall" (EW) is one of the key tools produced by the pilot. Inspired by Origin Energy's <u>www.knowledgeispower.com.au</u>, the Social Network 'Wall' was proposed as a digital tool that would share knowledge - discussing the latest information about recreational fishing in an interesting way; via Social Media.

The technology behind the EW supports 15 social networks (incl. Facebook, Twitter, Google + and LinkedIn) and includes 60 feed options. It gives a single stream for all of your social network updates from nominated sites, and displays it as a network wall.

The EW acts as an information aggregator and is not capable of generating content independently, but rather gathers the most current information from the number of sources designated by the moderator.

The technology is placed onto a website and the website administrator is required to input/sort posts from social media accounts, filters and hash tags (Instagram and Twitter), which are then published on an aggregated, online noticeboard using the aggregating technology. As the EW is a one-way aggregator, it cannot advertise its own presence. To overcome this, a Facebook page could be created to more effectively advertise its presence to the target audience, and facilitate its exposure among the recreational fishing community.

Visitors to the EW are encouraged to become involved in the data stream by using a dedicated hash tag with their Twitter and Instagram posts approved by the moderator. However, a social media account (i.e. Twitter, Facebook etc) is not required for visitors to participate and view posts fed through the EW. For users that do not partake in social media activity frequently, or do not wish to participate on any social media platform, the 'Wall' acts as a safe gateway into the realm of social media without participating. For active social media users, the EW provides easy and immediate access to a number of social media accounts and posts of interest.

The EW aggregates fisheries relevant social media posts from approved social media accounts providing recreational fishers an unprecedented opportunity to browse a much larger range of potentially interesting and relevant information in one venue. Additionally, the EW will be updated on a daily basis by the site moderator, ensuring only the most current and relevant opportunities and information will be presented to visitors.

The wall was produced as a draft product in October, 2014. After initial trials by the team members and some minor alterations we contacted 6 members of the RFE network with links to the website and sought their feedback on the EW which is discussed below.

Electronic wall feedback summary

A range of government and peak body representatives from all over the country gave their feedback regarding the electronic wall.

The electronic wall met with mixed reviews. This may reflect a level of "learning curve" for the EW concept, but also not seeing the immediate utility of the Wall. Some feedback indicated that there was value in aggregating social media accounts relevant to RFE as it provides an up-to-date noticeboard of RFE activities and opportunities. However it was recognised that uptake among RFs would be difficult without making them aware and them having the incentive to access the Wall. We also recognise that maybe those involved in RFE would have greater incentive to use the Wall.

Some other feedback indicated that getting fishers to use the wall may be difficult, given it requires a change to their existing internet and social media use patterns. For example many fishers may find that existing social media and internet search engines already allow them to source specific information of interest to them with little or no effort. The EW is an efficient way to observe output from multiple fishing relevant social media accounts providing fishing information of which some proportion is likely to be "educational". Fishers may need some incentive to break from their usual social media and internet use patterns and visit the wall. After an initial curiosity, the adoption process for the Wall will probably be related to impressions of it's perceived benefit.

Several possibilities were suggested, that might enhance the likelihood of uptake among fishers:

- Publishing of regular summaries of that week's social media feed, or feature articles of interest that could be 'shared' by fishers via their own social media accounts;
- The categorisation of the social media feeds on the wall into categories that fishers were more likely to be interested in, or that were directly related to the National Fishing Education Strategy document developed during this project. (This would also prevent fishers from being swamped by irrelevant social media posts, tweets etc.);
- The inclusion of a 'search' function that would make finding material of interest easier for recreational fishers; and
- The attachment of this wall to government agencies' existing social media releases (e.g. the ones put out regularly in SA).

Despite a general agreement among many reviewers that the wall would be informative, there was some confusion as to how the electronic wall related to the RFE strategies developed as part of this project. A few reviewers requested that this be clarified, and the rationale be published on the 'About Us' page preceding the wall. One reviewer suggested that a page dedicated to links to existing, universal educational materials for recreational fishers should be linked to the wall. The addition of such a page would provide fishers with easy access to codes of practice, safety information etc., and this reviewer felt that it would also enhance the educational capacity of the wall, which at this point in time, appeared more 'informational' than educational.

Some reviewers were concerned about the placement of this resource on the ARFF website. They were concerned this might hamper uptake, as it is unclear how many fishers know of ARFF, and government employees might be hesitant to refer fishers to a resource hosted by an industry "promotional organisation". One reviewer pointed out that the terms of reference for why this wall was hosted on the ARFF website as opposed to any other organisation, should be published on the 'About Us' page for clarity and transparency.

Further, some reviewers felt that there should be clear terms of reference for the selection, inclusion and potentially removal of social media accounts on the wall, and that this too, should be published on the 'About Us' page for clarity and transparency.

A few reviewers also suggested the inclusion of a feedback function that would enable users to A) highlight any new social media accounts the wall would benefit from, and B) Make the moderator aware of any potentially inappropriate materials that needed to be removed. This function has been built into the website, and comments/suggestions can be emailed directly to the moderator directly from the EW.

Discussion

The purpose of the pilot project was to both investigate the potential use of the EW for RFE and also to provide insight into the level of active management the site will require on an ongoing basis.

The pilot illustrates both the potential benefits, but also gives some indications of the costs of management in maintaining and developing the EW in the longer term. Additionally, this project gives the opportunity to gauge the usefulness and value of an EW for Recreational Fishing Education, and also to develop a *modus operandi* for Moderating functions for this kind of technology.

The EW was initially intended as a tool that could be used as an interface for networking between RFE providers and the general public. It was considered, however, that a public website may not always be the best forum for discussion between RFE providers in relation to strategic approaches to RFE or exchanges of RFE resources. Therefore, the purpose of the EW has changed somewhat, and its design reflects this. The EW has been designed to showcase and aggregate opportunities for RFE to the recreational fisher public, allow RFEs with a social media presence to advertise their services/projects etc. RFEs (with and without a social media presence) will also be able to view the activities of other RFEs and be exposed to new informational materials through the EW. In that respect, the EW provides constantly updated materials for RFEs, and also has the potential to stimulate discussion, discourse and collaboration between RFEs. However, facilitating networking and discussion between RFEs is no longer its chief purpose.

Conclusion

The concept of an EW designed to facilitate RFE arose due to the potential for social media to be used as a tool for RFE in an informal environment (as confirmed by Pilot Study 3). This concept has been refined and developed, and the EW's functionality has been designed to benefit recreational fishers and Recreational Fishing Educators alike. A moderating capacity has also been built into the tool, allowing an appointed moderator to filter social media posts on a daily basis before allowing them to be published on the EW, and also, to add any new, relevant social media accounts that might arise.

Visitors are able to search for and find the most current social media posts from a number of social media platforms (i.e. Facebook, Twitter, Instagram) that are relevant to their interests using only the EW. This tool has great potential for fishers and Recreational Fishing Educators looking to update their knowledge, find education materials, engage with/volunteer for research projects and as a means to connect with a group/institution/organisation of interest.

As a pilot, the design, development execution and refinement of the EW as a new tool and infrastructure was a success. The EW tool developed has unprecedented capabilities, however, the measurement of its success as an educational tool is beyond the scope of this project.

References

McIlgorm , A, J. Pepperell, J. Guy and R. Conway (2014). A Review of Recreational Fishing Education in Australia. A report to the Fisheries Research and Development Corporation, FRDC Project 2011/527.

Thinktank Social (2012). Social Media and the Recreational Fishing Sector. Campaign period: Feb – Oct 2012. Thinktank Social, Melbourne.

Thinktank Social (2013). Social Media Strategy. A report prepared for ANCORS, University of Wollongong. Thinktank Social, Melbourne.

Pilot study 2: Development of a 'digital library' for school based RFE.

Introduction

The Review of Recreational Fishing in Australian Schools (Guy 2013) found that in order to encourage uptake of RFE in the classroom teachers need to be 'provided with RF resources that are easily accessible (web) and provide a clear and direct connection to areas of the curriculum' (p123). The review identified a range of useful resources that are available to teachers but indicated that they would benefit from being contained within a single, easily accessible library and delivered through one URL. It subsequently recommended that a pilot study be developed to investigate how to link teachers nationally to RFE resources.

It was determined that Pilot Study 2 should involve the trial of a digital library of RFE resources to assist teachers and other educators to incorporate recreational fishing into school based education. The digital library was conceived of as a tool which teachers in any state could use to access RF teachers materials as well as information on how they could use these materials in their syllabuses. It was therefore envisaged that it would include:

- a) something up front that google may be able to catch to help teachers looking for RF teaching material;
- b) for each state a simple statement of where RF fits in different subject syllabuses; and
- c) access to a library of existing material for each state.

A number of opportunities for developing a 'digital library' were identified, including linking the library to a current peak body portal, such as the Australian Recreational Fishing Foundation (<u>http://www.recreationalfishing.com.au/</u>) which includes education as one its three 'cardinal pillars'. Alternatively popular sites like the Recfishing Research site (<u>http://recfishingresearch.org/</u>) could be used to host the digital library.

The school review highlighted the need for the resources contained within the library to be relevant and interesting, and pointed to a number of exemplars. "Agriculture" was one example of an industry that is now being publicised as 'Healthy Foods in Healthy Environments', which was determined to be a more positive way of looking at food and fibre production in the 21st century (Guy 2013). In addition, a website currently in existence (<u>http://marinewaters.fish.wa.gov.au/</u>) provided an example of the preferred standard for onsite delivery of resource material.

Progress to date

The project PI met with Allan Hansard of ARFF in the first week of August 2013, to discuss the potential development of a pilot project within ARFF, involving the incorporation of the 'digital library' into the ARFF website. Following agreement from ARFF, work commenced on the development of the library in Feb 2014. Social media consultants Thinktank Social (TTS) were engaged to design and implement the pilot, in consultation with Dr Jeff Guy, project team member and lead researcher on the school review. It was resolved that the portal would be developed as part of the 'Education' tab of the ARFF website (see figure 1).



Figure 1: Screenshots of the ARFF website – the digital library or portal will be housed under the 'Education' tab.

The project team resolved that the resources of the digital library would be available to download at no cost, but would require the user to supply contact details first to access them. This would allow for the development of a database of users to assist in the development of a network of RFE providers and the dissemination of future RFE materials.

A key component of the design of the digital library was the identification of a filtering mechanism which would allow teachers to easily find resources of use to them. The development of logical, but generic categories of resources was seen as essential to laying the foundations of the library in a way that would enable the continued growth of the database over time.

The development of the library's filtering mechanism was adapted from the example provided on the Marine Waters website (<u>http://marinewaters.fish.wa.gov.au/</u>). This website was developed by the Western Australian Government in partnership with Woodside Petroleum over a period of two years. It was highlighted in a number of interviews and discussions with teachers, educators and Industry representatives during the review as the best available example of an online resource library relating to marine issues in Australia and an exemplar for delivery of digital resources. It employs the following filtering categories to enable easy access to relevant information for educators:

- Phase of Learning
- WA Curriculum
- Australian Curriculum
- Topics
- Resource Types

The resources to be included in the website were converted into pdf format and coded to allow for easy sorting/searching and retrieval. The resources are on the digital library site as described in Appendix 3.

ARFF library feedback summary

Feedback for this pilot was received from formal educators and members of government agencies and peak bodies. One reviewer was particularly happy about the fact that this portal's usefulness and the materials it contained were being evaluated by formal educators, and those involved in formal education as part of the pilot. Overall, the comments were positive. Many reviewers found the site easy to use, and to contain many useful documents.

However, a few were concerned about uptake difficulties among formal educators. A few of the reviewers highlighted the fact that formal educators are extremely time poor, and unlikely to actively seek out any information that they are not immediately aware of. Publishing the website on the 'Scootle' noticeboard and database alleviate this problem and increase the exposure of educators to this resource, and therefore uptake.

Another problem identified by a formal educator was that many educators are anxious about teaching courses related to recreational fishing, particularly if they themselves are not keen fishers. Many educators are concerned about the potential for injury (e.g. via fish spines, sharp hooks etc.), and food poisoning (from poorly prepared seafood), and therefore, tend to seek the expertise of other educators who are known to them as keen recreational fishers. While the materials provided in this library would no doubt benefit those educators who are also keen fishers, the aforementioned reasons for other educators' potential reluctance to use the provided material had hitherto not been considered. Moreover, this reviewer's comments indicate that widespread uptake and use of the materials should not be expected, and it is far more likely that the materials provided would simply provide more structure to the lesson plans/curriculums that would otherwise be developed by those educators who are keen recreational fishers, and were already looking for ways to incorporate RFE into their teaching.

Comments about the infrastructure of the library included suggestions that the site be preceded with a 'Home page' where teachers could immediately select materials from their home state, or alternatively, have buttons directly linked to each state's resources aligned along the bottom. Also, some of the tags attached to the resources did not appear when they were typed into the search function. It was also suggested that the location of the PDF's available for downloads was not the most intuitive, and that 'additional materials' should be listed as such to reduce confusion and improve ease of use. It was also suggested that a 'read more' function should be added to the results of a document search, allowing teachers to get more information than the title of a document when searching for a topic.

Comments about the descriptions of the content included suggestions that the authors/producers of the materials need to be given more credit in the library, and that each summary should include the document's title, the producer/author, the date of publication, and the size of the PDF to make the information more immediately available to educators. A formal educator also indicated that the links between the curriculum and the intended audiences (i.e. year groups) needed to be made clearer.

In terms of additional content, a few reviewers commented that additional materials could be included that might not have been rigid, structured lesson plans, or curriculums, but still had educational value in the formal education environment. Another reviewer, who is a formal educator, also mentioned that they would like to see materials of multiple media types (e.g. videos, games etc.) included in the library.

Comments about the upkeep and administration of the library included a suggestion that direct links to the resources included in this library would alleviate the need to constantly research and

update/upload the PDF materials included in the library. Another reviewer also suggested that the ARFF library would benefit from management with a national, united approach, where the best available materials are chosen collectively, and new material could be developed with a united vision. The same reviewer added that a national, united approach would ensure consistent messaging and strengthen the recreational sector's reputation as conservationists and stewards of the resource. Several reviewers also remarked upon the fact that this resource was being hosted by ARFF to the exclusion of others and felt that they needed clarification on why that is the case. Several reviewers were uncomfortable with the idea of referring stakeholders/educators to a peak body/promotional organisation's website for educational materials.

Conclusion

The ARFF library was piloted with six reviewers who were formal educators, employees at government agencies, or representatives of recreational fishing peak bodies. Their overall comments were positive, and the library has been adjusted according to many of their suggestions.

Some comments could not be addressed by this project, as they were beyond the scope of the project (for example the appointing of a panel to select new materials for the ARFF library of national relevance and manage the library's content, which could also be a function of the RFE network). The hosting of the library by ARFF's website was negotiated early on in the project. However, should a decision be made to transplant it after the conclusion of this project, we are assured that this is entirely possible.

The ARFF library developed by this project is the only repository of all the formal education materials relevant to recreational fishing developed by agencies and peak bodies from around the nation. This pilot had demonstrated that an infrastructure such as the ARFF library could provide an invaluable resource for formal educators interested in incorporating recreational fishing materials into their curriculums. However, as with all technologies, the question of uptake must be addressed, and it is possible that formal educators will need to be given some level of support or incentive for an infrastructure such as the ARFF library to become widely adopted.

References

- McIlgorm , A, J. Pepperell, J. Guy and R. Conway (2014). A Review of Recreational Fishing Education in Australia. A report to the Fisheries Research and Development Corporation, FRDC Project 2011/527.
- J. Guy (2013) Review of Recreational Fishing and School Education in Australia Pre and Post National Curriculum. A report prepared for the University of Wollongong and the Fisheries Research and Development Corporation (FRDC), November 2013, by the National Marine Science Centre, Southern Cross University.

Pilot study 3: Exploring the value of social media in recreational fishing education campaigns; "Think before release".

Introduction

The review on recreational fishing education (RFE) in Australia determined that social media should be better integrated into RFE in order to produce behavioural change amongst fishers (McIlgorm et al 2014). This is particularly important in efforts to engage fishers in younger age brackets. While the review found that 'lower level' educational messages, such as 'how to fish', and fishing rules and regulations were well catered for amongst current programs, there was a need for greater emphasis on messages that promoted good fishing practices, including animal welfare concerns and respect for other users:

"There is a need to keep innovating in the way the sector approaches the communication of the higher messages through use of codes of conduct and a full range of media, social media and other communication avenues. This will require improved networking within the sector to carry the messages to the desired target audiences.

The higher RFE messages are not generally nested in the "hands on" instruction that is happening, but require the inculcation of a new awareness among the rank and file anglers about their fishing behaviour and its impact on the environment and their relationship with others in the community. The sector has started to respond to a range of fish welfare messages that others in the community will push, for example, generating applicable fish handling procedures to meet welfare guidelines." (McIlgorm et al 2014)

There is, however, limited understanding of the value of social media in producing behavioural change amongst fishers, or of the methods that can be employed to maximise success of these campaigns in driving 'higher order' messages. It was therefore considered important to explore this further through an experimental pilot study which sought to identify the potential successes and challenges of a social media campaign aimed at behavioural change amongst recreational fishers. Given the identified gap in messages about animal welfare and fishing practices, the study focused specifically on reducing the incidence of barotrauma mortality amongst recreationally caught species in the Northern Territory, using social media as the key educational technique. In addition it sought to identify some key steps in developing a successful social media campaign to encourage its use amongst recreational fishing educators throughout the country.

'Think before release' pilot study: "Recasting the approach to the catch and release of deep water reef species"

The last decade has seen the practice of catch and release fishing, becoming adopted by many recreational fishers. However it has also become apparent that many of the tropical reef fish species are not be suited to being caught and released in water deeper than ten metres, due to their inability to adjust to changing pressures as they are brought up from depth. This often results in a range of potentially fatal injuries commonly referred to as barotrauma.

RFs in the Northern Territory currently take reef species, such as Golden snapper and Black jew fish, from water deeper than ten metres and return it, not realising it will likely not recover. Anglers generally release fish for three reasons, they are considered to be too small, they are surplus to requirements or they are not the desired or target species. The RF agencies are concerned that the impacts of barotrauma and low rates of post release survival will deplete reef fish stocks and deplete the quality of recreational fishing in the Territory. This is undesirable for everyone.

Solving this problem is ultimately dependent upon changes in fisher behaviour. Catch-and-release fishing on reefs is not recommended. Instead, once enough reef fish for a feed have been taken, anglers need to learn to either move to shallower water where barotrauma is not an issue or to change their method to target more resilient pelagic sport fish like Barramundi or Trevally.

Note: There are specifically no size limits for reef fish species in the NT as the effectiveness of these limits is reduced when fatally injured fish are being returned to the water.

The objective of the pilot study was to use social media to communicate a less impacting approach to Recreational fishers when fishing for deep water reef species, such as golden snapper.

The proposed picture of reef fishing in deeper water would be a vessel going to a site where the reef is 10 or more metres deep. They would then decide that a reef fish taken will be kept, and move to another fishing site and target alternative species once they had caught enough for a feed. This reduces the impact of catch and release of reef fish in water deeper than ten metres.

The benefits are sustaining the current and future quality of reef fishing for fishers in the Territory. The cost to fishers is adapting their fishing behaviour and being prepared to consider their reef fish impact and "take" when planning their trip.

Education as to the consequences of continuing current catch and release practices for reef species in deeper water is essential. Fishers must realise this is a course of action for sustainable fishing on this set of species. There is no involvement of government regulation in this project, it is examining how social media can educate fishers and facilitate behavioural change in the reef fish angling community.

Methods

A social marketing company 'Thinktank Social' was engaged to assist in the development of the pilot study. The design of the project was iterative and adaptive in response to emerging knowledge. The consultants were engaged to develop an integrated and strategic approach to the question of using social media as an education tool to reduce incidences of barotrauma in reef species in the NT.

A steering committee was formed to guide the project consisting of representatives of Northern Territory (NT) Fisheries, Amateur Fishermen's Association of the Northern Territory (AFANT), UoW and Thinktank Social. This committee formulated the objectives of the study and workshopped appropriate methods for its delivery. They titled the pilot 'Think Before Release' as a reference to a past 'Catch and Release' campaign (spearheaded by well-known fishing celebrity, Rex Hunt).

The pilot project was devised in partnership with AFANT and NT Fisheries, which both have websites and social media capacity. The project involved three main mechanisms for reaching the fishing public.

- Website: <u>http://thinkbeforerelease.com.au/</u>. An independent website was established which was 'supported' (and linked to) AFANT and NT Fisheries. The site was designed to include a social media 'wall' supporting live feeds from Facebook, Instagram, Twitter and YouTube, as well as more 'static' information on fish barotrauma, endorsements from celebrity ambassadors (i.e. Rex Hunt) and contact information of the relevant partners.
- Facebook account <u>Facebook.com/thinkbeforerelease</u>.
- Twitter #thinkbeforerelease

These three tools were monitored over a period of six weeks (March 14 - April 14, 2014). During the trial period a range of strategies were employed to maximise web traffic. Figure 1 illustrates the options available to encourage web traffic. In this case, this project focused primarily on four main techniques.

- 1. **Celebrity endorsement (Rex Hunt):** Rex Hunt is a highly influential figure within the recreational fishing community. He has a large network of industry-related organisations, corporates, friends, fans and the general public that were made accessible by him becoming the 'face' of the campaign. His involvement in the project was seen as critical to adding credibility to the cause and message, particularly given his influence in popularising the 'catch and release' ethic.
- 2. **Social Media Advertising:** The report from Thinktank Social highlighted the fact that RF relevant social media advertising was concentrated on two main platforms:
 - a. <u>Facebook</u>; advertisements were run promoting both the page and content simultaneously in order to gain a new audience.
 - b. <u>YouTube</u>; the site was linked with the NT Fisheries YouTube page where videos of barotrauma injuries and a message from Rex Hunt were uploaded.

The 'Think before Release' campaign therefore used these two platforms most heavily in the interests of maximising exposure.

- 3. Social Media Content / Community Management: It was considered critical to actively manage the social media content, particularly in the infancy stages of the pilot. A 'content calendar' was prepared every two weeks by 'Thinktank' consultants, approved by members of the steering committee and loaded at predetermined times throughout the course of the trial to keep the Facebook site active and engaging.
- 4. **Marketing Collateral**: The Facebook site and website were supported through a simultaneous launch of a Think Before Release #(hashtag) campaign. Facebook, Twitter and Instagram all carried the same hashtag (#thinkbeforerelease) and material from Rex Hunt also promoted the hashtag. This was designed to build recognition for the hashtag so it could subsequently be used on print material as well as all digital content that was released to the public.

Maximising Web Traffic

Search Engine Optimisation

Search engine optimisation (SEO) affects the visibility of a website in a search engine's "natural or un-paid ("organic") search results. The earlier/ higher on the search results page and the more frequently a site appears in the search results list, the more visitors it will receive. Simple SEO fundamentals include: using unique Page Titles on every page and keeping Meta Descriptions under the 160 characters that Google allows in search result pages.

Social Media Targeting

Social Media Targeting is a form of targeted advertising that enables the customised placement of ads and communication activities on Web 2.0 platforms. Social media targeting combines current targeting options (like geo-targeting, behavioural targeting, sociopsychological targeting etc.), to make detailed target group identification possible.

Pay Per click Advertising

Pay Per Click advertising has many pseudonyms: PPC, search engine advertising, SEA, paid search advertising. PPC is a type of online marketing available on the popular search engines (e.g. Bing, Yahoo & Google) where advertisers only pay if their ad is clicked & a visitor arrives at their website. A campaign can be drafted, posted, & generating revenue within 24 hours.

Email Newsletters

A weekly or monthly digest of the best content, latest comments etc. keeps a publication top of mind and brings users back to explore, engage and share. It's also important to have RSS feeds for a site. While RSS is past its heyday, it is still widely used by readers and can be used to syndicate website content into other sites and applications.

Responsive Website Design

As the market share for smartphones continues to increase, it becomes more important to have sites and apps that work well in this medium. A mobile optimised (i.e. responsive) website is an excellent discovery vehicle for your publication through searching and linking as mobile browsers account for 17.4% of all web traffic worldwide.

Affiliates/Relationships

Utilising existing networks and/or relationships within the same industry can add credibility to a new website (and message). Leveraging a credible partner to spread the message can often lead to immediate website traffic and engagement in a new product and/or service as new users trust the existing medium to push relevant information to them.

Celebrity Endorsement

A form of brand or advertising campaign that involves a wellknown person (e.g. Rex Hunt) using their fame to help promote a product or service. Celebrity endorsement can catapult a brand and/or message into the mainstream, and create deep and emotional brand connections.

Media Advertising

This includes TV and radio advertising. Media advertising can es or for direct marketing purposes. If it is driving targeted traffic to

either be for branding purposes or for direct marketing purposes. If it is driving targeted traffic to your website, it would be considered direct marketing.

Print Advertising

Print advertising can include billboards, newspapers, catalogues, mailers, flyers and magazine ads. An optimal combination of images, colours and text in a print ad can help build brand awareness, especially when the same combination is used over and over again in subsequent ads.

Figure 1: Options available to increase web traffic (from Thinktank consultants)

Throughout the six week trial period the 'reach' of the material was monitored using the following metrics:

- website 'hits'/ numbers of people reached;
- user exchanges (i.e. 'talking about this', retweets);
- 'tweets';
- Facebook 'likes', comments and shares; and
- Facebook post clicks.

In addition, interviews were conducted with representatives of AFANT and NT Fisheries to gauge the success of the project in reaching the target fishers. They were asked for any anecdotal accounts of discussions about reducing barotrauma or the social media campaign amongst their encounters with fishers.

Results

Over the course of the six week trial period the Facebook metrics of the Think Before Release Facebook page were monitored closely. During this period, the page generated 1,202 likes and 208 people were 'talking about this'. 'Talking About This' involves sharing, liking or commenting on Think Before Release Facebook posts. 'Talking About This' industry standard percentage of metric is between 10-12% (pers. comm. TTS). The Think Before Release page had a 'Talking about this' metric of 17% of the overall community, indicating the page generated significant interest. The Think Before Release Instagram account attracted 94 followers over the same period. Project contacts in the NT reported positive feedback and engagement with followers.

As indicated in Figure 1, the large majority of the social media community engaged with the Think Before Release Facebook page were young males (96%) between the ages of 25-34 (57%). Despite the focus on NT fishers and fish species the site generated significant interest from across the country, with the largest number of likes coming from Brisbane, Queensland (113 fans), followed by Sydney (86 fans) and Darwin (73 fans).

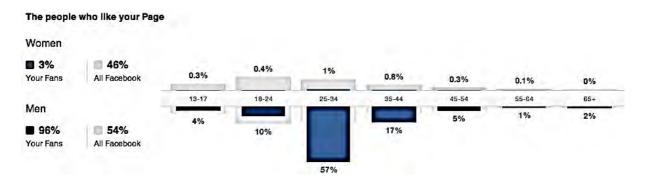


Figure 2: Demographic age frequency profile of Facebook likes (from Thinktank consultants)

The top performing posts from the page reached over 3600 people, with 122 likes, comments and shares on the most popular post (a story about Barramundi and barotrauma).

Conclusion

The results of this pilot clearly demonstrate the potential of social media campaigns to reach recreational fishers, and in particular the younger age brackets of 25-34. This is an age bracket that was highlighted in the review as requiring additional efforts to engage with and promote fishing to. While social media appears to be less successful in reaching other age groups, it does provide a useful platform for transmitting informal learning that takes place between older and younger fishers to a wider range of fishers. There needs be further research to determine the success of using social media for RFE and being able to create behavioural change.

Therefore, while a multi- faceted approach to RFE is needed this pilot demonstrates the value of incorporating social media into education strategies, particularly those aiming to reach a large number of people. The results of this pilot indicate the potential that the Electronic Wall developed as Pilot Study 1, has as an informal education tool for recreational fishers.

References

McIlgorm, A, J. Pepperell, J. Guy and R. Conway (2014). A Review of Recreational Fishing Education in Australia. A report to the Fisheries Research and Development Corporation, FRDC Project 2011/527

Discussion: Recreational Fishing Ed. Forum- a tool for networking?

To facilitate networking among Recreational Fishing Educators, and gather feedback regarding the strategy document, an online forum was commissioned. Fifty-nine individuals who had attended previous workshops, and who came recommended, were expressly invited to join the forum. Nine of the invited members have since joined the forum (not including the administrator and moderator).

A private, password protected internet forum was deemed an appropriate tool for facilitating networking among RFE as it would provide a secure and private venue for discussion about RFE among Recreational Fishing Educators. A forum would also negate the need for expensive physical meetings, or lengthy phone conferences while allowing Recreational Fishing Educators to discuss topics of interest and access/reference older discussions at their own convenience.

The forum was trialled over a period of months beginning in August 2014, using the draft national RFE Strategy as material for the forum to discuss. The forum content was divided into several sections corresponding to the goals, outcomes and strategies outlined in the National Recreational Fishing Education Strategy document. There were also sections for introductions and general discussion.

An email advising of the construction of the forum was sent to all invited individuals before a full invitation was sent, including a link to the forum and the password necessary to access it. The invitations were followed up by a telephone call, and the provision of a forum 'manual' for prospective members.

To facilitate uptake, invited individuals were emailed and telephoned several times with offers of assistance should they require it. Uptake of the forum was fairly minimum, and it was suggested by one of the invited members that it might possibly be ahead of its time.

Discussion on the general use of internet forums

At this point we wish to discuss the general issues with Internet forums. The limitations of having an internet forum include:

- **Potential forum members must know about the forum** and deliberately sign on to participate. Passive exposure is highly unlikely. This problem can be mitigated by using the existing RFE network developed as part of this project to contact as many RF Educators as possible. Forum members will also be actively encouraged to encourage other RF Educators to join. The forum should also encourage discussion about a wide range of topic matters relating to RFE to add further appeal.

- **Limitations of time, or willingness.** Internet forums typically suffer if those signed on to the forum (or who we wish to sign onto the forum), feel they do not have the time or willingness to deliberately sign on, and voluntarily participate in discussions. This might be mitigated in some way through offering incentives to join/participate in the online forum.

- Internet security/capability. Internet forums operate most easily when the forum website is not

hampered by firewalls etc., which are commonly used in the private, commercial and management sectors to guard against computer viruses etc., and to limit staff's abilities to access websites deemed irrelevant to their work. Internet forums also require participants to have easy and consistent internet access for obvious reasons. While access to reliable internet is becoming less of an issue over time (particularly with the proliferation of the use of smart phones), internet security is a harder issue to solve. Ensuring the online RFE forum will be mobile friendly might be one way to make the forum easily available to those whose access is otherwise hampered by their company/agency's firewalls.

- **Computer reliant.** Internet forums require forum members to have a certain level of comfort with software and computers in general. Some RFE members might not feel computers are the most efficient/appropriate way to discuss matters about RFE. Rather than attempt to persuade RF Educators who do not wish to use computers to discuss RFE to do so. Instead it might be more sensible to organise regular physical workshops to ensure as many RF Educators can be part of the network, and engaged in RFE discussions as possible.

Responses to the RecfishEd forum

Most comments from invited members were positive, and indicated that there was a high level of support and interest. A few invited individuals could not see how their experiences were relevant to the proposed strategies and therefore how helpful their contributions would be for the forum. It was explained that any input regarding their own activities with relevance to the strategies or RFE in general, would be greatly appreciated, and was exactly what we were looking for. There is also the possibility that we were asking the invited individuals to volunteer too much of their time, and the uptake and 'learning' of a new tool may have seemed excessive.

Some constructive comments were still made by two forum members about strategies designed to achieve the following goals:

- 1. Promote growth in Recreational Fishing participation, facilitate new anglers to adopt RF as a past-time and promote Recreational Fishing as a sustainable, socially responsible and healthy outdoor activity for all Australians; and
- 2. Develop human capacity to promote motivated and effective delivery of RFE.

Comments about strategy 1.2, designed to achieve goal one, included concerns that consistent messaging would be difficult until common stocks were managed uniformly across the jurisdictions.

There was also the suggestion that there are many other topics that could be addressed in messaging before uniform management of common stocks is achieved i.e.

- Fish handling techniques and catch care
- Fishing safety
- Fishing techniques
- Rationale behind management arrangements (i.e. size and bag limits etc.)
- The interconnectivity of recreational fishing and the environment
- Fishing as a physical activity

Comments about strategy 1.8 included a question about whether Recreational Fisher Education material for schools would be aggregated in one location, who would maintain/administer the resource, and whether there would be any regulation around the content. We feel that the ARFF library Recreational Fisher Education material portal and the electronic wall developed in this project are both tools that could be used to aggregate, update and assess the quality of Recreational Fishery Education materials into the future.

A comment was made regarding the development and execution of professional development for formal educators (i.e. the development and execution of some kind of formal qualification in RFE for formal educators) wishing to increase their understanding of primary industries including fishing. The comment was along the lines of creating a friendly curriculum related resource that would appeal and hold the interest of professional educators. We hope the Electronic Wall and ARFF library resources created as part of this project will be part of this resource and be valuable for the professional development and training of formal educators in Recreational Fisher Education into the future.

Conclusion

Overall the use of the RecfishEd internet forum was a viable and promising infrastructure for discussion on the National Recreational Fishing Education Strategy document. However, the experiences during this project suggest that issues of uptake will need to be addressed if internet forums are to be pursued as a means to facilitate networking among Recreational Fishing Educators.

FRDC 2011/527, Appendix 4: The RFE Social media and Schools strategy

Fisheries Research and Development Corporation (FRDC) Project 2011/527

Appendix 4: The Recreational Fishing Education Social media and Schools strategy.



Recreational Fishing Education Social Media and Schools Strategy

Report to:

Fisheries Research and Development Corporation (FRDC)

Project 2011/527: "Recreational fishing in Australia – 2011 and beyond: a national industry development strategy. National recreational fishing education program. "Establish activities and tools to promote recreational fishing on a national level".

June 2014

A report to FRDC by ANCORS, University of Wollongong, and ThinkTank social.

FRDC 2011/527, Appendix 4: The RFE Social media and Schools strategy

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FRDC 2011/527, Appendix 4: The RFE Social media and Schools strategy

Preface

This report contains two strategies that the project drafted in June 2014 as background to the national RFE strategy presented in Appendix 5. The first is a **Social media strategy** developed in conjunction with Thinktank Social. The second is a **Schools education strategy** developed from the schools study within the current project. This document makes this project material available to the interested reader who has likely seen the **national RFE strategy** document which is one of the main reports produced by FRDC project 2011/527.

The Social Media Strategy

1. Introduction and background

This report follows from a previously developed profile of the use of social media by recreational fishers undertaken in 2012-13 (TTS 2012) and a social media strategy prepared by social media consultants Thinktank Social (TTS) for the project team in 2013 (TTS 2013). These investigations found that social media was heavily used by recreational fishers, however it had very limited use for RFE in the period studied. This report considers how to use social media as a tool in the current national RFE project and proposes a strategy to apply SM to RFE. This strategy has been developed to address the national need for coordination in social media development in RFE and the potential use of social media as a tool in RFE.

At the time of writing, a national RFE strategy was being finalised (McIlgorm et al, 2014a). This strategy was guided by the development of 6 strategic goals, as outlined in Table 1. Where possible this social media strategy has been designed to be incorporated into the greater RFE strategy.

| Promotion | | | | | |
|-------------------|--|--|--|--|--|
| Goal 1: | Promote growth in RF participation, facilitate new anglers to adopt RF as a past-time | | | | |
| | and promote RF as a sustainable, socially responsible and healthy outdoor activity for | | | | |
| | all Australians | | | | |
| Networking and | Networking and support for RFE | | | | |
| Goal 2: | Develop partnership, collaboration and networking among all parties involved in | | | | |
| | delivering the RFE vision. | | | | |
| Capacity building | | | | | |
| Goal 3. | Develop human capacity to promote motivated and effective delivery of RFE. | | | | |
| Goal 4. | Secure funding for RFE programs | | | | |
| Delivery of RFE | | | | | |
| Goal 5. | Develop consistent RFE program structures, standards and messages nationally. | | | | |
| Goal 6. | Develop and promote key RFE messages incorporating appreciation of aquatic life and | | | | |
| | environments, stewardship of fisheries resources, rules and regulations, and best | | | | |
| | practice in ethical, animal welfare and sustainability issues. | | | | |

 Table 1. Strategic goals for RFE (from McIlgorm et al, 2014a)

This document begins by providing a background to social media and its general applications (Section 1). This will assist those readers with less familiarity with social media. It then summarises the findings on the way social media is used by recreational fishers (Section 2). Given the lack of use of social media for RFE, the study proposes a strategy (Section 3) to guide the development of social media in RFE through this study and beyond. These have been developed in order to address relevant strategic goals of the national RFE strategy document.

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1.1 Background to Social Media

1.1.1 Why Social Media?

Social Media has changed the way people connect, discover, and share information:

- Social media is the technology that connects people whether it's to share content or just to chat;
- Social networks, like Facebook, Twitter, LinkedIn, and Pinterest are the places where social interactions happen (discovering & sharing); and
- Social media marketing is the way to use that technology to build relationships, drive repeat business and attract new customers through friends sharing with friends.

Social media can provide a number of opportunities for users to share and communicate ideas and build community engagement through;

- Providing feedback and comment;
- Providing a mechanism to listen to communities;
- Sharing information;
- Fostering community discussion; and
- Delivering support and services.

Specific to RFE, social media provides the potential and opportunity to:

- Enhance knowledge of social media among the RFE community of Australia;
- Engage and excite influencers within the RFE community of Australia;
- Better understand, identify, and engage the RFE community of Australia; and
- Improve cohesive communication between official Fishing bodies and organisations through use of social media and networking befitting RFE.

1.1.2 Characteristics of Social Media

Social media uses web-based technologies to enable users to interact and communicate with each other, sharing ideas, opinions and information. It uses highly accessible technology, and can handle an ever- increasing volume of data and users. Examples of social media include (but are not limited to):

Box 1: available web-based technologies (from TTS 2012)

• **Blogs:** A blog (a contraction of the term 'web log') is a type of website, often maintained by an individual, with regular entries of commentary or news on a particular subject, or descriptions of events, or other material such as graphics or video. The ability for readers to leave comments in an interactive format is an important part of many blogs.

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• **Forums:** An internet forum, or message board, is an online discussion site. Users can post messages and comment on other messages. Other types of social media often incorporate forums, sometimes with their own social conventions and etiquette (or 'netiquette').

• **Photo sharing sites:** A photo sharing site, such as Flickr[®] and Instagram, allows users to upload images and is useful for categorising and organising pictures. They allow other users to comment on them, or re- use them with permission.

• **Social bookmarking:** Social bookmarking is used for saving the address of a website or item of content and adding a tag to allow other users to easily find your research. It is useful for organising and sharing links, and for keeping track of links recommended by others. Delicious[™], Digg[™], and Reddit are popular examples.

• **Social networking websites:** Engaging in a social network service, i.e. a service that builds online communities of people who share interests and/or activities. Facebook and Twitter are examples of social network services which are widely used worldwide.

• Video sharing sites: A video sharing site allows users to upload video clips to be stored on the server, allowing other users to view them. YouTube[™] is a popular example.

• **Virtual worlds:** Virtual worlds such as Second Life[®] are online places where users can create representations of themselves (avatars) and socialise with other residents.

• Wikis: A website which allows users to edit content as a form of crowd sourcing. A common wiki used is Wikipedia.

1.1.3 Target Audiences

The previous review of RFE in Australia identifies existing information on potential RFE audiences and is summarised below as background to this strategy (McIlgorm et al, 2014b). Using information summarised from a range of past RF surveys, Table 2 presents an estimation of recreational fishers numbers relative to the whole population. There are an estimated 30% of the total national population who have fished in the past ten years. This leaves 70% of the general public as non-fishers. An unknown percentage of non-fishers may be open to try RF, and there is also another unknown percentage of the public who either may not approve of RF activity, or have no interest.

In Table 2 the horizontal arrows indicate the degree of exiting and entering between the recreational fishing population and the non-fishing population. The audience that is most likely to require "learn to fish skills" are young, or new fishers, who wish to try, or are taken recreational fishing. This potential "recruitment" audience is a major target of the generic "learn to fish" message. However there is also an unknown potential audience in the general population, a "target market" that may be open to try RF and would require a basic learn to fish course.

In Australia today an estimated 6.9m people¹, have been recreational fishing at some time in their lifetime. The National Recreational and Indigenous Fishing Survey, conducted in 2001, indicated the participation rate in RF in a given year is 20%, that is 4.6m RFs across Australia, of whom 3.25m are adults (Henry and Lyle, 2003). In Table 2, of those that go recreational fishing, approximately 50% are occasional fishers, fishing less than 5 days a year. In contrast, about 10% of RFs fish more often and can be regarded as avid anglers.

¹ 30% of 23m population in 2013, includes children and those under 18 years

Table 2. A conceptualisation of the RFE audience in Australia, estimated from generalised results frompast RF participation, summaries from past surveys (from McIlgorm *et al* 2014b).

| 30% Rec. f | ishers | 70% non fishers in general population | | | |
|--------------------|--------------|---------------------------------------|-------------------------------|--|-------------------|
| | | | | | |
| 1/2 fish less than | 5 days /year | | | | |
| | <> | | | | |
| | | | wn % that m ng to try fisł | | |
| 4/10 fish 6-50 day | s per year | | | | |
| | <> | | | | Unknown % that do |
| 1/10 avid f | ishers | | | | not approve of RF |

Different activity among recreational fishers can be seen in RF survey results given below (Henry and Lyle, 2003):

- Ownership and use of boats, with many recreational fishers not using boats. Within boat use, there are owners of small and large boats, with about 80% of boats being able to be towed by trailer. There are no doubt some safety issues that RFE could communicate specifically to boat owners, if they could be identified;
- Grouping fishers by their annual level of fishing effort is common. According to the national survey, 67% of all fishers nationally fish less than 5 days per annum;
- Fishing location preference (-offshore 4%, coastal 48%, estuaries 35% and freshwater 20%):
- Fishing methods (line fishing 85%, pots nets and traps 7%, diving 1% and bait 4%); and
- Catch by RFs. Fishers target finfish, baitfish, crabs and lobsters, yabbies, cephalopods and molluscs and seek information and RFE to help capture different species.

Fishers can therefore be segmented by these different activities as well as by a wider variety of other attributes including attitudes, motivations, demographics, values and psychographics. For example, does RFE need to be able to communicate a different message to boat owners, the 50% of less frequent anglers, or other sub- groups (e.g. avid anglers, or pot and trappers, or spear fishers only)? Or should some messages be communicated to only more avid anglers?

In the past RFE has often been concerned with generic messages, such as information about regulations, which is required to reach all recreational fishers and the general population which is also an audience for some types of RFE message. However some RFE messages may need to be targeted to a specific segment of the RF community (e.g. safety messages for rock fishers). The rise in digital communication means that potential target groups for RFE messages may become more defined, identifiable and reachable through websites, smart phones and especially social media platforms.

The National Recreational and Indigenous Fishing Survey found that recreational fishing is more popular with males, with over twice as many males (2.28 million) than females (1.08 million) aged 5 or older participating in recreational fishing. By age class, the greatest numbers of recreational fishers were in

the 30-44 age group for both sexes (644,000 males and 320,000 females), although participation rates were highest amongst children in the 5-14 age class (28.1% overall or 33.2 and 22.8% for males and females, respectively) (Henry and Lyle, 2003). From the information provided by the National Recreational and Indigenous Fishing Survey we can confidently identify a demographic of males aged 30-44 as providing the RF community with the greatest opportunity for RFE community growth. This is also an age demographic which is actively engaged in the use of social media.

2. The use of social media by recreational fishers.

An investigation conducted by social media consultant Thinktank Social into social media and the recreational fishing industry found that recreational fishers do actively use social media, however there was very low use of social media in RFE representing a strategic opportunity for the RFE sector. The report found that fishers on social media tend to discuss subjects of interest (such as rigs, baits and gear related topics) and display photos and videos of fishing catches rather than topics relating to RFE (TTS 2012). For example, 70% of the Facebook posts analysed (taken from 304 industry related public Facebook pages) related to catches, with only 4% related to education (TTS 2102).

Among recreational fishers, fishing forums were one of the most heavily used digital tools. Recreational fishers also make use of a range of other tools including Facebook, Instagram and Youtube. Online forum discussions tended to concentrate on the technical aspects of fishing where members sought or gave advice on fishing destinations, bait, gear and target species. The study found that these discussions were overwhelming positive and constructive (TTS 2012).

The low level of engagement with RFE messages, including higher order messages around animal ethics and sustainability, on Facebook and internet forums presents a challenge in incorporating RFE into the social media realm. However the study also revealed an interesting dynamic occurring on online forums which presents opportunities for RFE provision online. The analysis found three 'classes' of recreational fishers engaged in the social media sphere (Box 2), with informal education occurring between knowledgeable fishers and new enthusiasts.

Box 2: Fisher Personas (from TTS 2012)

| Casual |
|------------------------|
| Goes fishing from |
| time to time, or joins |
| someone else for the |
| experience. Not |
| consistent, |
| knowledge is highly |
| limited. Often |
| younger age, mix of |
| females and males, |
| predominantly on |
| Twitter (sometimes |
| coupled with |
| Instagram). |
| |

New enthusiast

Beginning to get hooked, starting to look into the technical details of fishing (which quickly becomes an overwhelming thing). Found on online forums asking a lot of questions, quite often seemingly simple questions which return with extensive responses from the knowledgeable fishers. Interestingly, most New Enthusiasts tend to not last more than 80-90 posts on forums. Either they reach a level of knowledge which is consistent with their needs, or winter has forced a pause on their new-found interest.

Knowledgeable Fisher

Heavy forum user. Vast wealth of knowledge which he is keen to share with those who ask questions. "Fisher-speak" is heavy with slang. Only topic which is harder to source from the knowledgeable fisher is specific fishing locations. This golden information is kept for a select few, and there is open surprise (and appreciation) when others (usually new enthusiasts) share a location in their fishing stories/reports.

These informal avenues of learning provide significant scope for RFE, for example by targeting RFE messages at knowledgeable fishers who will then pass this message onto new enthusiasts and disseminate them through their networks. The 2012 TTS report provided some insight into the way each 'class' of fisher currently uses social media (Table 3). While not a definitive account of the use of SM by recreational fishers it does provide useful information that can guide the development of an RFE strategy.

| Social medium | Casual fisher | New Enthusiast | Knowledgeable fisher |
|--|---------------|----------------|-------------------------|
| Forums (eg Fishraider.com.au Ausfish.com.au) | | G | G |
| Photo-sharing sites eg Instagram #fishingaustralia. | Gamma | Gene | Game |
| Facebook eg Shimano Australia fishing (>90 000 likes) | Game | G | C. |
| Twitter | G | | |
| Video sharing sites eg Youtube (YoufishTV Australia) | | | Grand Barrier |

| Table 3. Current | digital and socia | I media presence | of recreational fishing |
|------------------|--------------------|-------------------|--------------------------|
| | albital alla socia | n niedia presenee | or reer cational horning |

3. Strategic development of social media in RFE.

The initial report of the use of social media in the RF community by TTS (2013) identified two key challenges for strategic development. These challenges directly relate to three of the six strategic goals developed as part of the wider RFE National strategy (Table 4).

| Table 4. Key challenges for the strategic development of social media use in RFE and their relationship |
|---|
| to the national strategic goals for RFE. |

| Key challenges | Related strategic goals |
|---|---|
| No central RFE body to coordinate or guide the | Goal 2. Develop partnership, collaboration and |
| national development of social media in RFE to | networking among all parties involved in delivering |
| assure nationally consistent messages and ongoing | the RFE vision. |
| strategic development. | |
| | Goal 5. Develop consistent RFE program |
| | structures, standards and messages nationally. |
| | |
| A low level of use of SM for RFE, as opposed to | Goal 3. Develop human capacity to promote |
| communication among fishers. A need to provide | motivated and effective delivery of RFE. |
| guidance to those involved in RFE on how social | |
| media can be used as a tool to promote RFE. | |

3.1 Networking and support

The lack of central body to co-ordinate RFE on social media has been recognised as a key challenge to the strategic delivery of consistent RFE messages. In 2013 social media consultants Thinktank Social (TTS) developed a strategy for the use of social media in RFE on behalf of the project team. In this report they proposed the creation of a national body to coordinate RFE in Australia. This led to the project approaching the Australian Recreational Fishing Foundation (ARFF) in May 2013. The ARFF has education as one of its three cardinal roles in recreational fishing (www.recreationalfishing.com.au). As a result of the meeting the project team have been working closely with ARFF to develop the strategies outlined below.

| Goal 2 Develop partnership, collaboration and networking among all parties involved in delivering the RFE vision. | | |
|--|--|--|
| Outcome | Strategy | |
| Social media RFE coordinated and | Establish a single RFE committee under the national representatives peak body structure (ARFF) to co-ordinate RFE networking opportunities, including | |
| supported by a central body and portal. | social media strategies. Enhance networking abilities through a single social media network which assists in information sharing, RFE support and innovation, and provision of | |
| | resources across jurisdictions and sectors (Pilot 1). Collaborate with Recfish Research on RFE social media developments using | |
| | the tools developed in the project pilots. | |

Pilot 1 involves the development of a national 'electronic wall' to enhance and support networking around RFE issues using social media without the need for participants to have a social media presence. This is considered essential in order to bring younger and older generations of fishers together to discuss key points of interest.

3.2 Capacity building

While the potential of social media to enhance RFE efforts is recognised it is also important to acknowledge the limited understanding and use of SM within some sections of the RF community, most likely including those currently delivering RFE. Guidance and training is therefore required for RFE leaders and practitioners so they can make use of the potential of SM while avoiding some of its pitfalls.

| Goal 3 Develop | human capacity to promote motivated and effective delivery of RFE. |
|--------------------|--|
| Outcome | Strategy |
| RFE leaders and | Provide training in incorporating social media into RFE to RFE providers, |
| practitioners | including Government bodies. |
| capable users of | Provide RFE providers guidance into the effective delivery of social media |
| social media as an | campaigns (Pilot 3). |
| RFE and networking | |
| tool. | |

Pilot study three sought to explore the value of social media in disseminating key RFE messages and promoting behavioural change. It is envisaged that the pilot study will be used as a template that any organisation involved in RFE programs can use to promote an RFE issue using social media.

3.3 Delivery

It is in the area of delivery of RFE that arguably SM holds the greatest potential, particularly in its ability to be disseminated quickly, easily and relatively cheaply to large audiences as well as provide targeted messages to sub groups within the RF community.

| Goal 5 Deve | elop consistent RFE program structures, standards and messages across | | |
|---------------------|--|--|--|
| Aust | ralia. | | |
| Objective | Strategy | | |
| Social media used | Establish RFE SM platforms (Twitter, facebook and blog) and develop and | | |
| to engage the RF | implement targeted social media campaigns (as per Table 5). | | |
| community in RFE | Facilitate themed communications and workshops via the web on RFE themes | | |
| in an effective and | of national importance to encourage the exchange of ideas and resources. | | |
| meaningful way | Develop linkages with key RF bloggers and forum moderators to encourage | | |
| | incorporation of RFE messages into existing platforms. | | |
| | Facilitate, encourage and share network information with other technical | | |
| | forums and blogs with different memberships to grow and develop the RFE | | |
| | network. | | |

The development of effective SM strategies is necessarily an iterative process, involving learning about the SM audience and adapting key strategies to suit different sections of the RF community. It is

therefore crucial that any strategy incorporate ongoing monitoring in order to learn what sort of content is engaging, where followers are coming from and how they want to interact on issues relating to RFE.

Table 5 outlines a suggested approach to growing the social media presence of ARFF and the RFE messages they promote. This approach has been adapted from reports prepared by TTS and the review document (McIlgorm *et al* 2014a). While all the platforms listed in Box 1 might be relevant and useful to participate in, it is recommended that efforts be centred on the most effective. Taking into account social media usage statistics and behaviour in Australia, this strategy therefore focuses on the most relevant but widely used social platforms during this initial phase (Facebook, blogs, twitter), with a longer term vision of including other networks after a social media presence is strongly established. Table 5 provides details as to how each of these platforms might be utilised to transmit key messages to the three 'classes' of fishers engaged in the use of social media in Australia. Further details into the recommendations of TTS can also be found in Appendix 1.

| | Casual fisher | New Enthusiast | Knowledgeable fisher |
|--------------|-----------------------|---------------------------|--------------------------|
| Key messages | Broad and general RFE | Improved fishing | Higher order messages |
| | messages (eg info on | practices and techniques, | relating to ethics and |
| | regulations) and RF | higher order messages | sustainability. |
| | promotion. | relating to ethics and | |
| | | sustainability. | |
| Social Media | Twitter and Facebook | Tap into informal | Blogs and fishing videos |
| platform | | learning networks and | linked to and advertised |
| | | relationships and | through forums. |
| | | knowledgeable fishers | Encourage transmission |
| | | through forums and | of key messages through |
| | | facebook. | established informal |
| | | | networks with new |
| | | | enthusiasts. |

Table 5. A suggested approach for the use of social media in reaching key audiences.

4. Conclusion

Social media is currently underutilised in Recreational Fishing Education but holds considerable potential in providing targeted, engaging and interactive messages with recreational fishers in Australia. This strategy identifies key areas of potential for RFE in social media including the use of innovative networking tools and capitalising on existing informal RFE networks in the SM realm. It is important that SM use is co-ordinated and managed through a national entity to ensure consistent messages and a strategic approach to the delivery of RFE, but also to facilitate networking through a central body. The strategies outlined in this document will be used to inform the finalisation of the overall RFE strategy currently in development.

The Schools Strategy

5. Introduction and Background

In 2013 a large scale review was conducted into recreational fishing education (RFE) in the Australian school system by Dr Jeff Guy of the National Marine Science Centre, Southern Cross University (Guy, 2013). The review explored the current and potential inclusion of RFE in state and national curricula and identified a clear pathway for promoting participation and the benefits of fishing as an enjoyable outdoor activity to school-children. It included a range of recommendations designed to enhance the delivery of RFE through the school system. This report outlines the review findings and their role in the development of a national school RFE strategy.

Underlying the recommendations of the school review was a guiding principle that any Recreational Fishing (RF) strategy should aim to lay the **Foundations** in the early years, build **Breadth and Depth** in the middle years and provide **Pathways** for the later years of schooling. It is essential to engage primary school children at a young age and to provide a positive and memorable experience of RF; continue this positive engagement into early high school while ensuring students understand the career potential primary industries (fisheries) offers through tertiary studies in their final years.

RF education must therefore involve a whole school approach that leads (or contributes to) sustained behaviour and skills rather than deliver one-off information activities and events. The former has been the current model for delivery in many schools, focusing on the later years of primary (Y5-6) and recording either the number of schools visited or number of students participating rather than evaluating whether a change in behaviour or pastime occurred, post-delivery.

The key findings of the school review are outlined below and build into the recommendations of the review document. These recommendations were then used to develop the specific strategies to be incorporated into a wider national recreational fishing education and networking strategy, which is currently under development.

6. Findings of the school review

6.1 Relevant pedagogies and contexts for 21st Century Learning:

While the Australian Curriculum describes the scope of what is to be learned the pedagogy is the responsibility of system authorities, school leaders and teachers who make decisions about how best to organise learning, the contexts for learning and the depth of learning that will be pursued for each student in their class.

RF provides an ideal avenue through which students can make connections with the natural world and learn about ecosystems in an authentic learning environment. The pedagogy of '*experiential education*' is learning that occurs through active involvement in what is being studied and values direct experience more highly than abstract knowledge. The constructivist theories of learning are also supported by experiential education strategies also known as learn-by doing, real-world learning, problem-based learning, and child-centred learning.

In the early years of primary schooling, the Australian Curriculum prioritises English and literacy and mathematics and numeracy. With so much time allocated to these in the classroom each day any RF strategy must address outcomes in both these to maximise uptake. This involves learning literacy skills and writing (including posters, persuasive texts, discussion, and research elements) which must also be reinforced and strengthened through learning in other contexts, such as mathematics, science, history and geography. For example an integrated literacy plan for early childhood that utilises counting books also addresses mathematics and numeracy.

In the early years of high school, schooling must be relevant and flexible and take into account personal differences and needs. It must keep young adolescents on a path of continuous learning and prepare them for a world outside of school. At this time students need to be engaged in 'real-life' learning; demonstrating to students how fisheries knowledge they learn in the classroom (e.g. in Science) can be applied in an everyday context. In the final two years of school, choices are informed by previous success and enjoyment. If these previous strategies have been implemented, future options will involve RF as a pathway through school and beyond.

6.2 The importance of SCIENCE and cross-curriculum priorities to the Recreational Fishing Industry Development Strategy (RFIDS)

The current positioning of RF content outside the Science curriculum (like Agriculture) and as either optional or elective modules or with an "Outdoor Education" focus is now thought to be responsible for its current low profile and hence its minimal entry into the schools formal education system. Secondary students currently do not see it as a viable or potential career path with the common perception that it has a negative influence on a students' Australian Tertiary Admission Rank (ATAR), especially in NSW (Guy 2013). Furthermore primary teachers are also lacking the confidence to do fishing activities by themselves and many are unfamiliar with any issues related to fishing, restricting its development. Any RF strategy must therefore work to increase the knowledge and skills of teachers while targeting the Australian Curriculum - Science (Science Understanding (Biological) and Science as a Human Endeavour strands) so that schools make it "core business".

RF is also ideally placed to contribute to two of the three cross-curriculum priorities 1 and 3 respectively, contained in the Australian Curriculum F-10; **Aboriginal and Torres Strait Islander histories and cultures** (national focus) and **Sustainability** (global focus). These cross-curriculum priorities are also part of **global education** that assist learning to be relevant to the lives of students and address the contemporary issues they face. Cross-curriculum priority 1 also has synergies with Goal 6 Strategy 6 (Promote the cultural heritage value of recreational fishing in Australia) of the RFIDSwhile Goal 5 Strategy 2 (Encourage recreational fishers to use best practices in all aspects of their fishing activities) is an important component of sustainability.

6.3 Year groupings and resources

To simplify delivery across the learning spectrum the four Learning Groups and Unifying Ideas of science have been used to underpin the schools strategy, which is condensed in Table 1. Unifying ideas draw together the strands and disciplines of science and are developmental in nature with subsequent ideas building on those for the previous year grouping. In this way, unifying ideas enable students to accumulate knowledge over time for deeper understanding. The table also incorporates the recurring themes in global education. Suitable resources are also identified and assigned to these development groupings, as is Science Understanding (Biological) and Science as a Human Endeavour content.

The Sustainability cross-curriculum priority is explicitly addressed in the Biology curriculum. Biology provides authentic contexts for exploring, investigating and understanding the function and interactions of biotic and abiotic systems across a range of spatial and temporal scales. By investigating the relationships between biological systems and system components, and how systems respond to change, students develop an appreciation for the interconnectedness of the biosphere. Students appreciate that biological science provides the basis for decision making in many areas of society and understand the importance of using science to predict possible effects of human and other activity, and to develop management plans or alternative technologies that minimise these effects and provide for a more sustainable future.

| Development Groupings and Unifying Idea/s Years F-2 (typically from 5 to 8 | Related Global Education Learning Emphases and Curriculum Focus including specific Biological Science Content (Understanding/As a human endeavour) Identity and cultural diversity | Proposed Content and Available Resources Dreamtime stories which illustrate traditional care for country and natural resource |
|--|--|---|
| years old) Exploration and | Exploration (be curious, wonder and ask questions). | management practices (e.g. The Sea Eagle and the Gull Dreamtime story from the Bardi people of North Western Australia) |
| observation leads into the idea of order that involves describing, comparing and sorting. | comparing, sorting and classifying objects and materials living and non-living things needs, structures and growth of organisms changes on earth and the effects on living things. recognise aspects of science in everyday life identify work associated with science in the community care for the environment | Introduction to National Fishing Code of Practice and Junior Fishing Codes (1-3) through colouring in pages Into the Blue – NT Marine and Fisheries Education Kit - Module 1 (early childhood) ACT Aboriginal Natural Resource Management Curriculum Program (Y2) Sustaining River Life. Waterwatch/Murray- Darling Basin (K-6) River Country Spirit Video– Aboriginal perspectives on River Country (You-Tube) Parts of Get HookedIt's Fun to Fish Program – NSW DPI (Y3-6) |
| Years 3–6 (typically from 8 to 12 years old) | Interdependence and globalisation Social justice and human rights Sustainable futures | Y3-4 Integrated literacy plan. In a 2 to 5 week class room activity, students read and discuss key texts that target the issue of sustainability within the marine environment (e.g. Tim |
| The unifying ideas of patterns, systems, cause and effect, and evidence and explanation will be | Recognising questions that can be investigated scientifically and investigating them | Winton's books) Y4-5 National Junior Fishing Code activities |
| developed. | structures and functions of living things life cycles of organisms | Y5-6 School yard "How to fish" activity. Guided instruction using a community based education model (i.e. clubs servicing schools- repeat visits |

Table 1. Four 'Learning Groups' and 'Unifying Ideas' of science which have been used to underpin the schools strategy

| | • living things and the environment | essential to develop skills) |
|---------------------------|---|--|
| | earth's resources and their uses. | |
| | | Into the Blue – NT Marine and Fisheries |
| | consider how science is used in | Education Kit - Module 2 & 3 (middle to |
| | work and leisure | upper primary) |
| | become aware of science-related | Get HookedIt's Fun to Fish Program – |
| | careers | NSW DPI (Y3-6) |
| | recognise the effect of science and technology on our | The Living Murray Story - Murray Darling Basin Authority (Y5-6) |
| | environmentbe aware of the historical nature | Marine WATERS – WA Teacher Education Resources (Y3-6) |
| | of science ideas | GBRMPA "Let's go Fishing!" teaching unit |
| | | (Y6)Sunfish QLD Inc. – Sunfish Angler Education |
| | | Manual (Y4-6) |
| | | Marine Links - TAS Marine Education Resource- Unit 3 - Sustainable Fisheries |
| | | (Y5-6) |
| | | Get HookedIt's Fun to Fish Program - VIC Fishcare (upper primary) |
| | | |
| | | |
| | | (SIPS) Program includes numerous activity ideas for classroom partnerships including |
| | | upper primary (FRDC Final Report |
| | | 2009/328) |
| Years 7–10 | Sustainable futures (balancing the | Y7-8 Cross-curriculum unit combining |
| (typically from 12 to 15 | social, political, economic and | environment, life cycles, fish behaviour, aquatic |
| years old) | environmental aspects of | food chains, habitat use, fishing gear |
| years only | sustainability). | technology, tides and climate/weather. |
| The unifying idea of | sustantasinty). | teelinelegy, thes and elinate, weather |
| sustainability is central | Explaining phenomena involving | Y9-10 Vocational pathways "Fishing/guiding as |
| to the nature of | science and its applications. | a career" and work experience placements |
| dynamic systems which | | |
| have inputs, outputs | cells and living things | Belmont High School Pilot Program, |
| and a variety of internal | the human body | Geelong, VIC Secondary (Y7-10) targeted |
| functions. | • ecosystems | Y7-8 Science, Y9 Maths, Y9 Physical |
| | • theory of evolution and the | Education, Y10 Marine Science and VET |
| | diversity of living things. | Outdoor Education curriculum. |
| | · · · · | |
| | • be aware of contemporary issues | |
| | such as water and its management, | Society and History and VET secondary |
| | climate change, stem cell research, | curriculums. |
| | nanotechnology, gene technology | Marine WATERS – WA Teacher Education |
| | • apply scientific understandings to make responsible, ethical and | Resources (Y7-10) |
| | informed decisions about issues | Sustaining River Life. Waterwatch/Murray- |
| | be aware of the nature of science | Darling Basin (7-10) |
| | and research of Australian | The Living Murray Story - Murray Darling Dasin Authority (VZ 0) |
| | scientists | Basin Authority (Y7-9) |
| | appreciate that science provides | Sunfish QLD Inc. – Sunfish Angler Education |
| | rewarding careers | Manual (7-10) |
| | appreciate the diversity of people | Marine Links - TAS Marine Education |
| | · · · · · | · |

| | who have contributed to, and shaped the development of science. | Resource- Unit 3 - Sustainable Fisheries (Y7-8) |
|--------------------------|---|--|
| Years 11–12 | Disciplines of science | Y11-12 Vocational or university pathways |
| (typically from 15 to 18 | | |
| years old) | Biodiversity and the | Schools career adviser |
| | interconnectedness of life | |
| Opportunities and | Cells and multicellular organisms | |
| pathways for | Heredity and continuity of life | |
| specialisation. | Maintaining the internal | |
| | environment | |

Note: Most resources are concentrated in the late primary and early secondary phases of education.

7. Recommendations of the school review and integration with overall RFE plan

The key findings and recommendations of the school review (Guy, 2013) have been used to develop a range of strategies relevant to the school sector that can be incorporated into the wider strategic plan for RFE in Australia. The draft RFE strategic plan, which is outlined below, has six main goals and 4 priority areas:

- Promotion:
 - Goal 1: Promote growth in RF participation, facilitate new anglers to adopt RF as a pasttime and promote RF as a sustainable, socially responsible and healthy outdoor activity for all Australians
- Networking and support for RFE:
 - Goal 2: Develop partnership, collaboration and networking among all parties involved in delivering the RFE vision.
- Capacity building:
 - o Goal 3. Develop human capacity to promote motivated and effective delivery of RFE.
 - \circ $\,$ Goal 4. Secure funding for RFE programs
- Delivery of RFE
 - o Goal 5. Develop consistent RFE program structures, standards and messages nationally.
 - Goal 6. Develop and promote key RFE messages incorporating appreciation of aquatic life and environments, stewardship of fisheries resources, rules and regulations, and best practice in ethical, animal welfare and sustainability issues.

The strategies relevant to the school sector are outlined in the following sections under each of these goals.

7.1 Promotional strategies

The strategies relating to promotion of RF specifically aim to introduce school aged children to RF as an enjoyable and healthy past-time. This can be achieved by making RFE materials easily accessible to teachers and outlining its relevance to the curriculum.

| | growth in RF participation, facilitate new anglers to adopt RF as a past-time and RF as a sustainable, socially responsible and healthy outdoor activity for all ns |
|--|---|
| Outcome | Strategy |
| Improve availability, access and relevance of RF resources to teachers and school-children. | Encourage uptake by providing RF resources that are easily accessible (on-line) and deliver clear and direct connections to areas of the new national curriculum. Develop a digital library (with filtering) for all RF teaching resources and deliver it through a single URL for ease of access (pilot 2). Design resources for time poor teachers so that multiple outcomes (including across learning areas) can be achieved in the one activity. |
| | Give a new meaning to RF school delivery by placing it in a positive 21st century context so it is seen as relevant, interesting and has a global narrative. This has been done very successfully with "agriculture" which is now being publicised as 'Healthy Foods in Healthy Environments', a positive way of looking at food and fibre production in the 21 st century. |

7.2 Networking and support strategies

Goal 2 involves developing partnerships, collaboration and networking among all parties involved in delivering the RFE vision. Rather than develop a schools network from scratch there are numerous organisations that RF could potentially partner with to take advantage of their established contacts and expertise. These are predominantly marine educators and are most often affiliated with some component of marine science or marine studies. This includes national organisations such as the Marine Discovery Centres Australia (MDCA) and Marine Education Society of Australasia (MESA) and state based associations such as the Marine Teachers Associations of Queensland and NSW (MTAQ and MTANSW).These are all well-established networks that RF could add value to and is the preferred pathway.

An alternate approach, via a much longer route, is to develop a stand-alone network. The first step would be to create a national database of users that could then be targeted. This could be generated from the proposed digital library to be developed through the current peak body portal (i.e. http://www.recreationalfishing.com.au/) or alternatively through the Recfishing research site (http://recfishingresearch.org/). These resources would be free to download but would require the user to supply contact details first to access them, thereby generating the database. This is a more costly and long term investment for RF.

In additional to national or regional networks of RF Educators, it is recommended that local level networks be encouraged through the development of partnerships between local fishing clubs and schools, to enhance community participation in RFE delivery.

| partnership, collaboration and networking among all parties involved in g the RFE vision. |
|--|
| Strategy |
| Develop partnerships with established marine educator groups rather than develop stand alone system. |
| |
| Develop classroom partnerships between the RF industry (local angling clubs, |
| tackle industry, fishing equipment manufacturing) and schools for real-life learning (similar to the SIPS Project) |
| Develop ongoing contact between these organisations via Email, sms, social |
| media, or other technology that taps into the new capabilities of 21st century learning. |
| |

The following organisations offer opportunities for tapping into existing networks of marine educators:

MDCA: are a centre-based entity and collaborative group of marine educators (<u>http://www.mdca.org.au</u>). Some are part of schools, while others are community or governmentfunded and most have RF messages. The majority are situated in NSW (7 centres; 2 schools (Port Macquarie and Ballina), 1 private (Hastings Point) and 4 Not–for-profit community organisations (Eden, Bondi, Sydney Northern Beaches, Terrigal)) with others throughout Australia.

The best funded are the government fisheries centres (Queenscliff Marine and Freshwater Discovery Centre, Victoria and Naturaliste Marine Discovery Centre, Perth, WA) which service around 67,000 people per year. By contrast most of the community not-for-profit centres, such as Eden, Terrigal and Sydney Northern Beaches, have limited resources but are still an important facility for environmental education, although via more traditional means. School based entities have become specialists in delivery and Henley Beach Marine Discovery Centre, Adelaide, (Star of the Sea -Catholic Primary School) has become a leader in kids discovery and education (12,500 visits per year). Woodbridge Marine Discovery Centre (Woodbridge State School), Tasmania (7,000 visits) uses practical learning via their research vessel for fisheries education (hand and long lining), has provided training for Fishcare volunteers and developed links with organisations such as the Oceanwatch/Seafood Industry Partnerships in Schools (SIPS) program. Overall the MDCA network is well managed, provides an excellent framework for networking (FRDC funds a yearly workshop for the MDCs) and are a popular attraction - 120,472 people visit them per year (2012 data, excluding Bondi MDC).

MESA: is a national organisation that brings together people interested in the study and enjoyment of coastal and marine environments (<u>http://www.mesa.edu.au/default.asp</u>.) MESA provides a forum for sharing ideas to facilitate the development of leading environmental education and interpretation programs. MESA also promotes the sustainable use of marine and coastal environments through education and co-ordinates "Seaweek". This is a national initiative conducted annually to focus community awareness, provide information and encourage an appreciation of our marine and coastal environments. Each year a different theme is chosen and RF could easily become the theme.

Other themed events include National Water Week (the Australian Water Association; <u>http://www.awa.asn.au/Home.aspx</u>), World Oceans Day (International Association; <u>http://www.worldoceannetwork.org/</u>) and World Environment Day (United Nations program; <u>http://www.unep.org/wed/</u>) and other Marine Environment Sustainability promotions. All these organisations have programs and networks that RF could engage with.

MTAQ and MTANSW: MTAQ is a not for profit organisation which networks its members to coordinate activities and lobby governments, industry and interested individuals to support marine education in Queensland (<u>http://www.marineteachers.org.au/)</u>. MTAQ has over 400 members including branch representatives from Brisbane North, Wide Bay, Rockhampton and District, Mackay, Townsville and Cape and Torres Straits. The MTANSW has a similar role including curriculum development, the professional development of teachers, mentoring young marine teachers and the production of resources for their students (<u>http://www.marineteachers.com.au/)</u>

In 2013 (42) schools renewed their membership with MTANSW a small percentage of the total of 128 schools offering marine based secondary courses, indicating the potential scope of such organisations for RF. This network could also be expanded to include other states and territories and has an unmet potential.

7.3 Capacity building strategies

The school review found that many schools lacked the expertise, resources and knowledge to effectively conduct RFE. Teachers are often time poor so it was recognised that easy opportunities for accessing information and expertise are required. Related to a lack of access to resources and information was limited confidence amongst teaching staff in conducting RFE. This can be addressed by outsourcing educational activities to appropriately qualified training providers and building relationships between local fishing clubs and teachers.

| Goal 3 Develop | human capacity to promote motivated and effective delivery of RFE. |
|-------------------|---|
| Outcome | Strategy |
| Confidence of | Utilise formal avenues (professional development-teacher training) to increase |
| teachers | understanding of primary industries, including fisheries. The Primary Industry |
| enhanced by | Centre for Science Education (PICSE) provides a two day professional learning |
| improving their | course for teachers through their national activity centres. Many of these also |
| levels of | hold additional single or half day professional learning opportunities |
| knowledge & | throughout the year. |
| understanding of | Utilise informal avenues such as arranging for a RF club to take teachers fishing |
| RF. | on a curriculum day to build closer ongoing links. The idea is to develop a |
| | network of passionate teachers willing to use RF examples in their day to day |
| | teaching. |
| Local fishing | Reduce the role of government in delivering RF education to schools and |
| volunteers and | develop alternative sustainable community pathways. |
| clubs involved in | Strengthen the capacity and professionalism (accreditation) of local angling |
| school based RFE. | clubs (i.e. volunteer anglers) |
| | Use repeat visits from RF industry and volunteer anglers to build depth and |
| | relationships with students and avoid one-off information activities and events. |

| Goal 4 Secure funding for RFE programs | | |
|--|---|--|
| Outcome | Strategy | |
| A sustainable | Solicit funding from private sponsors, such as the tackle retail sector, to off-set | |
| community based | expenses with RF delivery in schools. | |
| education | Develop a well organised regional RF fishing volunteer arrangement so they can | |
| program. | provide low cost servicing of "How to Fish" education to schools (Y5-6) | |

7.4 Delivery strategies

The front line delivery of RFE in schools needs to be professional and consistent. This can be facilitated by building on and linking with the existing curriculum and developing engaging and informative messages.

| Goal 5 Develop consistent RFE program structures, standards and messages across Australia. | | |
|---|---|--|
| Outcome | Strategy | |
| RF content | Re-connect with the pure and applied science underpinning RF and provide this | |
| positioned within | within a contemporary context. | |
| the SCIENCE and | Identify a series of key texts for primary that have RF related messages and/or | |
| cross-curriculum | strong environmental themes such as sustainability (cross-curriculum priority | |
| priorities of the F- 10 Australian | 3). | |
| Curriculum. | Develop an integrated literacy program using these texts. | |
| | Highlight Aboriginal and Torres Strait Islander dreamtime stories, oral histories | |
| | and cultures to connect with early primary (F-Y2) students using a natural | |
| | resources theme (cross-curriculum priority 1). | |

| environm | and promote key RFE messages incorporating appreciation of aquatic life and nents, stewardship of fisheries resources, rules and regulations, and best in ethical, animal welfare and sustainability issues. |
|---|--|
| Outcome | Strategy |
| A Cross-curriculum ecosystems unit for teaching that promotes all key messages. | Utilise connections to other learning areas such English, Mathematics and History to build depth. Frame the unit within the pedagogy of ' <i>experiential education</i> ' Build unit of work around established codes and guidelines such as <i>The</i> <i>National Code of Practice for Recreational and Sport Fishing,</i> Animal welfare guidelines for fishing in schools and junior fishing codes Target upper primary and early secondary and provide lesson plan free for national uptake. |

8. Conclusion

Recreational fishing education in Australia has the capacity to be strongly supported by school based education. The review into school based RFE found considerable scope to refine the RFE messages and delivery methods, including involving local communities and developing partnerships between local schools and nearby fishing clubs and organisation. These strategies that will be refined and incorporated into the national RFE strategic plan.

9. References

- J. Guy (2013) Review of Recreational Fishing and School Education in Australia Pre and Post National Curriculum. A report prepared for the University of Wollongong and the Fisheries Research and Development Corporation (FRDC), November 2013, by the National Marine Science Centre, Southern Cross University.
- Henry, G. W. and J.M Lyle (2003). *The National Recreational and Indigenous Fishing Survey*, Fisheries Research and Development Corporation (FRDC) project no. 99/158.
- McIlgorm , A, J. Pepperell, J. Guy and R. Conway (2014a). A Review of Recreational Fishing Education in Australia. A report to the Fisheries Research and Development Corporation, FRDC Project 2011/527.
- McIlgorm, A., J. Pepperell, J. Guy and R. Conway (2014b). Recreational Fishing Education and Networking Strategy, for the Fisheries Research and Development Corporation (FRDC) Project 2011/527. A discussion paper by ANCORS, University of Wollongong, to the FRDC, Canberra
- Thinktank Social (TTS)(2012). Social Media and the Recreational Fishing Sector. Campaign period: Feb Oct 2012. Thinktank Social, Melbourne.
- TTS (2013). Social Media Strategy. A report prepared for ANCORS, University of Wollongong. Thinktank Social, Melbourne.

Appendix- TTS recommendations for a SM strategy.

The following strategies were then developed and recommended in order to grow the social media presence of ARFF and the RFE messages they promote. TTS recommended a 3 phase approach to the strategy involving learning, optimising and growing and innovating as outlined below.

Phase 1 – Learning:

Phase 1 would involve setting up agreed platforms, and learn what sort of content is engaging, where followers are coming from and how they want to interact with ARFF and monitor results. Based on an analysis of the RF audience by TTS and a review of the social media landscape in Australia the following platforms were recommended for further investigation. While all the platforms listed in Box 1 might be relevant and useful to participate in, it was recommended that efforts be centred on the most effective. Taking into account social media usage statistics and behaviour in Australia, this strategy therefore focuses on the most relevant but widely used social platforms during this initial phase, with a longer term vision of including other networks after a social media presence is strongly established, and only if it will be useful, meaningful and well- executed. The table below provides further details as to how each of these platforms might be utilised.

- 1. Facebook: Over 60% of Australians use Facebook, it's the most popular and influential social network in the country. It will continue to grow. The Recreational Fishing community is highly active on Facebook. It is the place people go to share information and engage with brands and services. It offers the ability to present content in an engaging and dynamic way and leverage the recommendations of friends to drive awareness of RFE. Facebook is undoubtedly the most popular and most used social networking site in Australia it's actually the most accessed website in Australia. It is used by a cross section of age groups, students, tradesmen, white-collar workers, English speakers, non-English speakers. It is almost universal in its appeal in Australia. Australians use Facebook more than any other country in the world. Therefore, there is a greater chance of reaching relevant audiences through Facebook.
- 2. Blogging: Allows the blogger (eg ARFF) to become a credible expert, invites users to participate in the two-way conversation and can encourage feedback on information in order to more effectively deliver further educational material.
- **3.** Twitter: Whilst a long way behind Facebook as the #1 social media platform in Australia, since it's launch in 2006, Twitter has over 500 million registered users worldwide [as of 2012], generating over 340 million tweets daily and handling over 1.6 billion search queries per day. It has a growing user base in Australia (still only around 12%) however it will grow each year. It is a good platform to grow a community of followers and primarily support Facebook and Blog content releases [e.g. educational news, updates, info etc]

PHASE 1: Learning

| What | Facebook – ARFF community page | Blogging – ARFF blog | Twitter – ARFF Twitter account |
|------------|--|--|--|
| Why How | Facebook will allow ARFF to develop and grow an engaged audience who will receive their updates and share content through their newsfeed, allowing them to disseminate to their social networks and spread the ARFF message. Establish basic content and grow over time based on what information the audience is engaging with. | Allows ARFF to be credible Recreational Fishing experts by exploring topics in more detail and facilitates two- way communication via comments. Humanises ARFF and provides insight into what the organisation is doing. Use previously acquired learning from current use of social media by RFs on initial content creation. | Twitter is useful as a support platform for Facebook and Blogging whilst at the same time growing a community of industry followers. |
| | Content areas include: Information (based on current online info) Wall including status updates and commenting Photo gallery including designed profile pics House rules/moderation Events Other pages we like Polls – easy to participate in, quick to set up, and will provide good insight for us Campaigns will sit as tabs within the overall profile area – similar to a microsite. Some content can stay there permanently some will be campaign-specific. Suggested permanent tabs: ARFF Website Recreational fishing FAQs [standard set of questions to be pre- determined and user can to be able to select State or Territory to filter for applicable information] ARFF Blog Instagram Feed [to pull in primary Instagram hash | Invite industry experts and recognisable figures [i.e. Julian Pepperell] to guest blog and provide insights into their area of expertise. Syndicate the blog through our other social channels to drive traffic and talkability. | |

| | | tags used by the Recreational Fishing community] | | | |
|-----------------------|---|--|---|---|---|
| Risks | • | Lack of control over the comments people make. However the site can be moderated in line with house rules and remove posts as required. Some users will not understand the risks involved for themselves, in incriminating themselves online or providing too much personal information over open channels. House rules will caution against this there will be a need to moderate and warn the community when we see a specific example of this behaviour occurring and taking the conversation offline. | • | Lack of control over the comments people make. However the site can be moderated in line with house rules and remove posts as required. Also can include a slight delay (which is acknowledged) to the commenting function to allow time to review the comments before posting. Turn comments off on posts when the conversation has reached its endpoint, or if the conversation breaches house rules or will be unnecessary or harmful to ARFF. Response to negative feedback will need to be in line with a social media participation policy. | Lack of control over the comments people make. However the site can be moderated in line with house rules and remove tweets as required. |
| Guiding Principles | • | In the event of a crisis situation, don't delete posts (that are within house rules – swearing etc will be removed). Tell people that we're listening and that we're formulating a response which will be published through Facebook and through the ARFF website. Ask questions to create comments and likes. This will increase the edgerank (the probability we'll show up in newsfeeds). People are generally more comfortable commenting on content posted than asking or commenting on something themselves. Positive stories and information is more likely to create positive talk therefore build content around this. | | Pose questions at the conclusion of the blog to guide conversation. Choose questions that are appealing to the target audience, that won't be controversial but will add value. In the event of a crisis situation, don't delete posts (that are within house rules – swearing etc will be removed). Tell people that we're listening and that we're formulating a response which will be published through Facebook and through the ARFF website. Write blog posts in accordance with a social media language and style guide. Be open, honest and credible. Be the expert, but don't be authoritative. Blogging gives valuable access to information about the audience that may not have been previously accessible. This access will enable better service delivery. Include links out to articles, definitions, pictures, videos, resources etc. | |

PHASE 2 – Optimising

Phase Two would involve using the outcomes of Phase One to optimise ARFFs social media presence, content and reporting including adding new features or platforms where appropriate, or migrating platforms that aren't performing and monitor results (see below).

| What | Blogger outreach: consider using peer blogs (industry) to review, comment on |
|------|--|
| | or showcase information about the ARFF; use their reach and networks to |
| | spread ARFF messages. |
| Why | ARFF benefits from the increase reach and syndication of these blogs, and the |
| | distribution of a message that doesn't come directly from government, |
| | potentially increasing the ability to engage the audience. |
| How | Bloggers can be used to showcase information or tools from the public |
| | perspective. Work with the chosen blogger/s to define content without |
| | infringing on their creative control of the blog and the process. Be transparent |
| | about the relationship (e.g "ARFF approached me to monitor their information |
| | service and give feedback on how it all works through this blog, because they |
| | want to deliver the best possible service"), which adds weight to the |
| | commitment to be open, honest and transparency. |
| | Use blogs to find out what sort of information people want from a national |
| | fishing body, if there are any gaps in what is being pushed to the community, |
| | and how they can educate our community better. |

PHASE 3: Growing and Innovating

Using outcomes of Phase Two, phase three would involve growing ARFFs social media presence by integrating fully with all communications (internal and external) to become a leading educational resource. Exact details of this phase will need to be developed following completion of phases 1 & 2.

Key Performance Indicators

The success of these strategies would need to be measured using a range of metrics and techniques in order to assess whether adjustments need to be made to the social media strategy. These would need to be developed in consultation with skilled social media practitioners but are likely to include:

- Google Analytics:
 - total site visits, returning visits / where traffic is coming from): in order to measure whether there has been increased visitation to website over set period (eg month on month and over 6 months).
 - Blog views, interactions and syndication: in order to measure the reach and engagement of the audience in new blog posts.
- Facebook Fan Page Likes/ Metrics: in order to measure any growth in new fans and the engagement of existing fans.
- Twitter Followers: in order to measure any growth in new followers and their engagement in particular topics.

Fisheries Research and Development Corporation (FRDC) Project 2011/527.

Appendix 5: The National Recreational Fishing Education Strategy.



National Recreational Fishing Education Strategy

Project 2011/527 RFIDS: National recreational fishing education program - "Establish activities and tools to promote recreational fishing on a national level"

Report January 2016

University of Wollongong



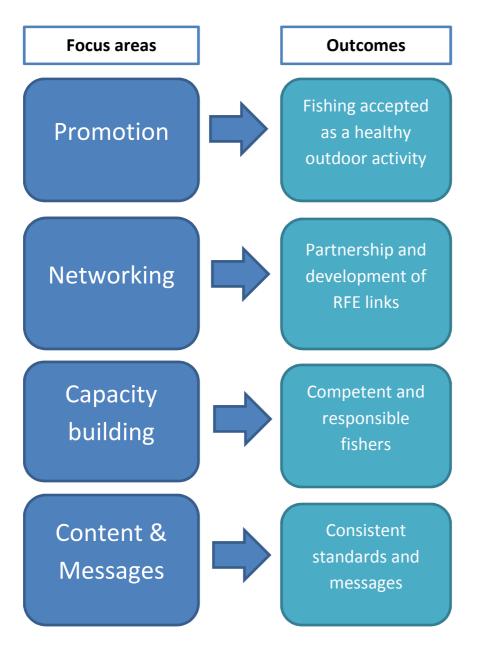
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Executive Summary

The strategies contained within this document have been developed from the outcomes of a review of RFE, a number of workshops and consultation with industry representatives. The strategy document has been developed in order to meet the following vision statement for RFE for the sector:

"A recreational fishing community that resources, supports information giving, guidance and training, demonstrates responsible stewardship and is recognised for implementing best practice in its care of Australia's natural environment and fisheries resources". The Draft National RFE Strategy has developed four focus areas, as illustrated below, to guide the development of goals, outputs and strategies to achieve the vision.



Each of the focus areas has specific goals. There are six strategic goals in total and examples of the types of strategies developed according to each of these goals are outlined below.



A document was developed and circulated to seek feedback from those involved in the RFE sector. There are still details of strategic implementation that will have to be confirmed by different sectors in the secor's policy development process.

1. Background

The process for developing the Recreational Fishing Education Networking Strategy document involved four stages, outlined below:

- 1. A large scale review of Recreational Fishing Education (RFE) activities and messages in Australia (the Review, project Appendix 1);
- 2. A workshop involving relevant organisations from each of the main sectors with a stake in RFE delivery: government, peak bodies, the private sector and the community;
- 3. Development of a draft strategy discussion paper for circulation to workshop participants and other RFE providers; and
- 4. Finalisation and implementation of the strategy.

This paper has been developed from the findings of the review and the workshop deliberations and now includes the feedback comments on the draft circulated in the third stage of this process. The finalisation of the strategy and ongoing implementation is the fourth step and is a process involving this document and the sectoral extension and implementation process after the completion of this project.

Recommendations from the Review

The Review defined recreational fishing education as:

"information giving, guidance and training in recreational fishing, leading to maintaining and enhancing the sustainability of the fish stocks and the enjoyment of others, in the outdoors environment".

The Review identified that there is no specific national RF sectoral promotion strategy. So in developing a RFE strategy those in the workshops were of different opinions as to the degree of inclusion of RF promotion as an educational issue. RFE practitioners from government were less inclined to include promotion in an RFE strategy than those from the RF industry. The workshop discussions emphasised many aspects of RF that, it was felt, should be promoted, recognised, encouraged or developed. These aspects of RF included:

- RF as a sustainable and environmentally responsible past-time;
- RF as a healthy, socially inclusive past-time;
- RF as a potential growth industry and source of employment and economic security; and
- RF as an experiential learning tool capable of enhancing public knowledge and awareness of the importance of habitat, water quality and general environmental health.

These contribute to the vision for what the recreational fishing sector should be when RFE is working well:

"A recreational fishing community that resources, supports and demonstrates responsible stewardship and is recognised for implementing best practice in its care of Australia's natural environment and fisheries resources".

The Review identified issues in the sector that need to be addressed to enable RFE to be more effective nationally. A strategy involves responses to a defined problem or challenges (Rumelt 2011). The Review identified key challenges to be addressed through the sectoral strategy for RFE:

Organisations and roles

• RFE is dominated by government and there needs to be more emphasis on non government private sector involvement;

- Need to secure more consistent and sustainable RFE funding;
- There is a need to clarify organizational roles in RFE- who does what?
- Support fishing clinics by implementing nationally consistent content;

• Promote private sector delivery of fishing clinics and fish guiding services, reducing government involvement in fee for service delivery;

• Increase sharing of RFE program innovations, developments and experiences nationally.

National directions and policy

• Set promotion and marketing priorities for RF nationally, so that RFE can promote the right messages to achieve the goals desired by the sector;

• Communicate RF to the public as a clean healthy family outdoor recreational activity;

• Maintain the "social licence" of RF by reassuring the public of a well managed, responsibly behaved sector;

• Improve the consistency of all RFE messages nationally communicating the higher-level RFE messages to RFs.

• Improve program logic, goals, objectives, inputs, outputs and outcomes with methods for evaluation in RFE projects; and

• Develop project design and measure program effectiveness and outcomes, not just outputs.

Producing behavioural change

• Prioritise the behavioural changes we desire in the RF sector and use RFE to address it.

• Identify generic messages and issues which need more specific messages to address behavioural change priorities, linking with sustainability, environment, welfare and ethics objectives.

- Integrate social media into RFE.
- Focus study of RF target audiences, their motivations, values and psychographic profiling, identifying new refined RFE messages for appropriate audience segments; and

• Support the development of RFE leadership, volunteering, mentoring, program logic planning, and message development and crafting to create behavioural change

State governments currently have RFE strategies for program delivery to anglers and the public, as opposed to a national strategy addressing RFE sectoral challenges.

The **Vision** for RFE is:

"A recreational fishing community that resources, supports information giving, guidance and training, demonstrates responsible stewardship and is recognised for implementing best practice in its care of Australia's natural environment and fisheries resources".

2. Mission

Building on the vision, the mission of all parties involved in recreational fisheries education is to foster an informed and educated recreational fishing community which;

- appreciates the value and importance of maintaining and improving fish resources and fishing opportunities in Australia;
- understands their roles and responsibilities in ensuring these values are protected; and
- practices responsible fishing consistent with sustainable use principles.

In addition, the mission of all parties extends to engaging with the general public to build on and maintain the social licence of RF and promote greater participation in RF from all sectors of the community. Achieving the strategic vision is a shared responsibility, with many different sectors playing an important role. These include:

- Recreational fishing community groups (eg local fishing clubs);
- Recreational fishing peak bodies;
- Private Sector;
- Government Departments and researchers;
- Media; and
- The Education sector (e.g. schools).

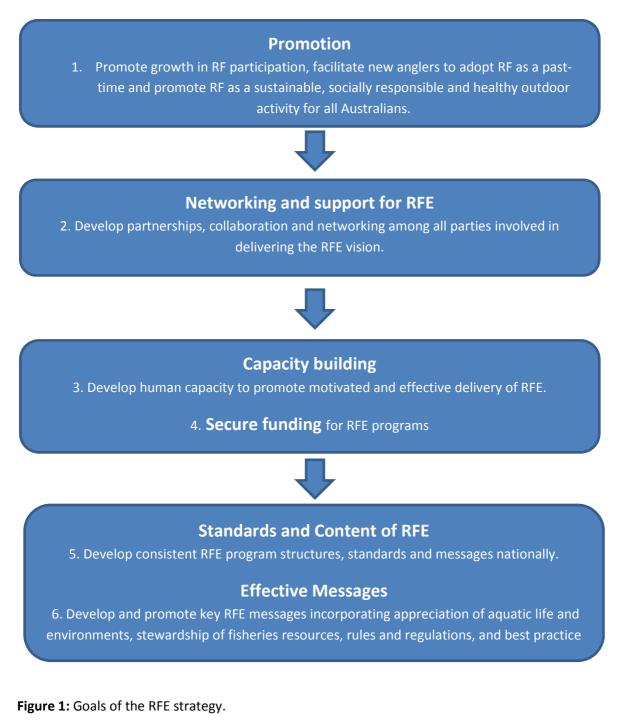
Each sector has a different mission which will assist in the delivery of the vision nationally, and drive specific goals. The mission statements are derived from the workshops, except for the education and media sectors (representatives of which were not present at the workshop) which have been developed from the results of the review document.

Table 1: Mission statements per sector involved in RFE

| Sector | RFE Mission | |
|--------------|---|--|
| RF | • To promote RF to the general public as a sustainable, socially responsible and healthy | |
| Community | outdoor activity enjoyed by many Australians. | |
| | To promote responsible, sustainable fishing practices. | |
| Peak Bodies | To equip recreational fishers to ensure a bright fishing future. | |
| | To promote responsible, sustainable fishing practices. | |
| Private | • To provide professional RFE services to the public. | |
| sector | • To enhance the supply of RFE services and career paths . | |
| Government | • To ensure the general public and fishers understand and are aware of relevant regulations | |
| | relating to RF and general fisheries management. | |
| | To encourage sustainable, ethical, humane and respectful RF practices. | |
| | • To provide learning opportunities for RFE and understanding of aquatic ecosystems. | |
| Media | • To promote RF to the general public as a sustainable, socially responsible and healthy | |
| (fishing and | outdoor activity enjoyed by many Australians. | |
| general) | To develop the skills and techniques of recreational fishers. | |
| | • To inform fishers of regulations, and encourage sustainable, ethical, humane and respectful | |
| | RF practices. | |
| Education | • To provide learning opportunities for RFE to fishers and non fishers and an improved | |
| sector | understanding of aquatic ecosystems. | |
| | • To promote RF to the general public as a sustainable, socially responsible and healthy | |
| | outdoor activity enjoyed by many Australians. | |

3. Goals

Goals have been identified in the context of the overall strategic vision and as a result of the workshop deliberations. They were grouped into six main themes which fall broadly into four categories, or focus areas – promotion of recreational fishing, networking and support for RFE, capacity building and delivery of RFE (Figure 1).



4. Objectives and strategies

The goals outlined above will involve the distribution of responsibilities across the different RFE sectors. All the sectors need to be involved in the promotion of RFE to some extent, however some sectors may have a greater emphasis on capacity building and support for RFE activities as we illustrate in Figure 2. For example, frontline delivery of RFE activities will largely be concentrated on the media, education and private sectors, while community groups, peak bodies and government have important roles to play in capacity development and support for more strategic and targeted service delivery, including the development of key messages. Crucial to the successful delivery of the strategies across all sectors is an effective means of networking and sharing of ideas, resources and support.

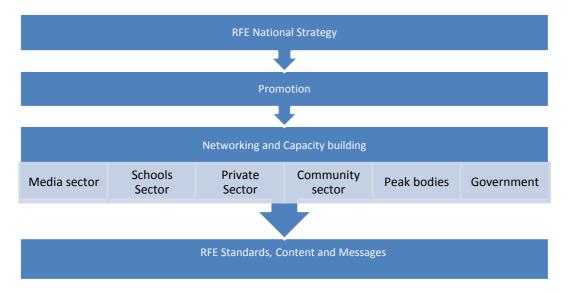


Figure 2: An illustration of the differing components and activities needed to support the National RFE strategy.

The Tables below highlight the objectives and strategies against each of the key goals. They also make suggestions as to which sectors might be most appropriate for the delivery of each strategy. The timeframes for the delivery of each strategy are coded in the following manner:

- P within the life of the current project;
- S Short term, within 6-12 months of completion of the current project; and
- L Long term, within 1-3 years of the completion of the current project.

There are some areas, such as people development, for which the time limits under this strategy are given, but it is recognised there will be areas which require ongoing consideration.

4.1 Promotional strategies

Promotion of RF as a past-time is considered fundamental to keeping the viability of the activity and its supporting industry alive and is therefore considered an overarching goal. Promotion is also required to improve the social licence of recreational fishing amongst the non-fishing population. Promotion must target those members of the community who fish often, or may one day wish to take up fishing as well as the population at large. Promotion also prevents fisher drop-out, by demonstrating that fishing is a positive past time.

| Goal 1 Promote growth in RF participation, facilitate new anglers to adopt RF as a past-time and promote RF as a sustainable, socially responsible and healthy outdoor activity for all Australians | | | |
|--|--|--------------------|-----------|
| Outcome | Strategy | Responsibility | Timeframe |
| RF recognised as a | Strategy 1.1 - Produce messages that help to maintain RF participation | Peak bodies, | S |
| sustainable, socially | levels and make accessing RF information easier for all potential fishers in | private industry, | |
| responsible and healthy | the public. | Government | |
| outdoor activity that has | Strategy 1.2 – Produce messages to the general public which outline | Government, peak | S |
| many community benefits. | regulatory controls on fishing, status of fish stocks, areas of concern and | bodies, media | |
| | RF strategies currently in place to address these. | | |
| | Strategy 1.3 – Promote 'good news' stories aimed at the general public | Peak bodies, | S |
| | about voluntary RF involvement in habitat restoration, research and | community, media, | |
| | monitoring and RFE activities. | Government | |
| | Strategy 1.4 - Conduct research into determining the main health | Universities, peak | L |
| | benefits of RF to promote and the evidence to support claims of benefit. | bodies | |
| | Strategy 1.5 - Develop and implement national RF promotion priorities | Peak bodies, | L |
| | (based on the results of the research outlined above). | private industry, | |
| | | Government | |
| Increasing fishing | Strategy 1.6 - Identify the causes of the reduced level of RF activity for all | Universities, peak | L |
| participation within the | ages and for those under thirty in particular. | bodies, | |
| younger generation. | | Government | |
| | Strategy 1.7 - Develop promotional and marketing strategies | Peak bodies, | L |
| | incorporating media and social media targeting the under 30 age | private industry, | |
| | demographic. | media. | |
| Improve availability, access | Strategy 1.8 - Encourage uptake of RFE within schools by providing RFE | Peak bodies, | Р |
| and relevance of RFE | resources that are easily accessible (on-line) and deliver clear and direct | | |
| resources to teachers and | connections to areas of the new national curriculum. | | |

| school-children. | Strategy 1.9 - Develop a digital library (with filtering) for all RF teaching resources and deliver it through a single URL for ease of access (pilot 2). | Peak bodies | Ρ |
|----------------------------|--|-------------------|---|
| | Strategy 1.10 - Design resources for time poor teachers so that multiple outcomes (including across learning areas) can be achieved in the one activity. | Peak bodies | S |
| | Strategy 1.11 - Give a new meaning to RF school delivery by placing it in a positive 21st century context so it is seen as relevant, interesting and has a global narrative. This has been done very successfully with "agriculture" which is now being publicised as 'Healthy Foods in Healthy Environments', a positive way of looking at food and fibre production in the 21 st century. | Peak bodies | S |
| Make RFE programs more | Strategy 1.12 - Develop RFE programs and opportunities for the disabled | Peak bodies, | S |
| available to disadvantaged | and specific programs for less advantaged groups to learn to fish (e.g. | private industry, | |
| groups. | special needs anglers). | Government | |

The strategies contained above target three broad audiences:

- Potential fishers: in order to maintain the viability of the fishing industry new fishers need to be encouraged to participate in the sport. This might include encouraging participation amongst those interested in fishing who may never have tried it or re-engaging past fishers who's interest may have lapsed. Strategies 1.1, 1.4 and 1.5 aim to introduce potential fishers to the personal benefits of fishing, Strategies 1.6 1.11 seek to encourage uptake of fishing amongst younger generations of potential fishers, including school aged children and Strategy 1.12 seeks to make fishing accessible to all, including those with a disability or from disadvantaged backgrounds.
- The broader community: in order to maintain the social licence of fishing the community as a whole, even those who are ambivalent about fishing, need to be reassured that fishing is a socially responsible and environmentally sustainable activity. Strategies 1.2 1.5 aim to ensure the 'good news' stories relating the social and environmental benefits of fishing responsibly are communicated to the community at large (Section 5.4 contains further details as to how these messages should be developed and tested). Strategy 1.8 seeks to link RFE to the national school curriculum and in doing so provide a broad education to the younger generation of the links between RF and an improved understanding of ecological systems.
- Those opposed to fishing: the specific concerns of those sections of the community that are opposed to recreational fishing need to be addressed. Strategies 1.2 and 1.3 involve developing communications strategies around specific areas of concern such as animal welfare and environmental sustainability in order to influence those who are uncertain about the ethics and morality of recreational fishing, that the RF community is moving towards a healthy, sustainable and ethical future (Section 5.4 contains further details as to how these messages should be developed and tested).

4.2 Networking and support strategies

The effective delivery of all the strategies contained within this document relies on each sector understanding their role and delivering high quality, consistent messages. Networking develops partnerships which are an overarching goal with relevance to every sector. A number of objectives and strategies have been developed to achieve the goal of developing productive working relationships across sectors and jurisdictions, as outlined below.

| Goal 2 Develop partnership, collaboration and networking among all parties involved in delivering the RFE vision. | | | |
|--|---|---------------------|-----------|
| Outcome | Strategy | Responsibility | Timeframe |
| A formal network of RFE | Strategy 2.1- Establish a single RFE committee under the national | Peak bodies, p | Р |
| providers and resources to | representatives peak body structure (ARFF)/Recfish Research to co- | Project team | |
| assist in information sharing, | ordinate RFE networking opportunities. | | |
| and the exchange of ideas | Strategy 2.2- Conduct a regular RFE conference for RFE providers to | Peak bodies; | S |
| and resources. | support existing informal networks and facilitate new connections. | Government; | |
| | | Private sector | |
| | Strategy 2.3- Develop partnerships with established marine educator | Peak bodies, | S |
| | groups such as Marine Discovery Centres Australia (MDCA) and Marine | Education (schools) | |
| | Education Society of Australasia (MESA) and state based associations | | |
| | such as the Marine Teachers Associations of Queensland and NSW | | |
| | (MTAQ and MTANSW). | | |
| A responsive, up to date and | Strategy 2.4 - Enhance networking abilities through a single social media | Peak bodies, | Р |
| adaptive RFE network which | network which assists in information sharing, RFE support and | project team | |
| incorporates and makes use | innovation, and provision of resources across jurisdictions and sectors | | |
| of the benefits of social | (Pilot 1). | | |
| media and internet | Strategy 2.5 - Collaborate with Recfishing Research on RFE social media | Peak bodies | S |
| technologies. | developments using the tools developed in the project pilots. | | |
| | Strategy 2.6 - Trial the use of a closed RFE forum aimed at encouraging | Peak bodies, | Р |
| | collaboration and discussion amongst RFE providers around key strategic | Project team | |
| | themes with the first discussion topic centred on providing feedback on | | |
| | this strategic plan. | | |
| | Strategy 2.7 - Facilitate themed communications and workshops via the | Peak bodies; | S |
| | web on RFE themes of national importance to encourage the exchange of | RFE providers | |
| | ideas and resources, based on the outcomes of the above trial. | | |
| | Strategy 2.8 - Facilitate, encourage and share network information with | Peak bodies | S |

| | other technical forums and blogs with different memberships to grow | | |
|--------------------------|---|---------------------|---|
| | and develop the RFE network. | | |
| RF education delivery | Strategy 2.9 - Develop classroom partnerships between the RF industry | Community, peak | S |
| personalised by using a | (local angling clubs, tackle industry, fishing equipment manufacturing) | bodies, private | |
| community based approach | and schools for real-life learning (similar to the SIPS Project detailed in | sector and | |
| to servicing schools | McIlgorm 2014). | education (schools) | |
| | Strategy 2.10 - Develop ongoing contact between these RF Industry | Community, peak | S |
| | organisations via Email, sms, social media, or other technology that taps | bodies, private | |
| | into the new capabilities of 21st century learning. | sector and | |
| | | education (schools) | |

The strategies outlined above seek to develop networks within sectors (eg. within the school sector) and across different sectors (eg. schools and community groups). They seek to do so in three key ways;

- Human networks: fundamental to the development and maintenance of networks is the creation of personal connections and partnerships and opportunities for these connections to form and grow. Strategies 2.2, 2.3 and 2.9 seek to provide these opportunities within and across the relevant sectors.
- Network enabling tools: in order for a network to be successful it needs to maintain relevance with current topics, provide regular opportunities for interaction and be easy to participate in and maintain. Current web based technologies provide many opportunities to maintain active connections across large geographical areas. Strategies 2.4-2.8 and 2.10 suggest the best ways to make use of the capabilities of these tools.
- Networking themes: once a network is established it is important that it is effective in achieving its desired purpose, ie in addressing the strategic direction of RFE in Australia. Strategies 2.1, 2.6 and 2.7 suggest keys ways in which the network can be guided around key themes to ensure the network stays 'on-task'.

4.3 Capacity building strategies

The review and the workshop clearly highlighted the need for a more strategic and co-ordinated approach to RFE across jurisdictions and community and industry sectors. Developing a professional standard for RFE, in keeping with the strategic vision, would assist in building a secure future for RFE providers. There are two goals relating to RFE capacity building and support – human and financial. A number of outcomes and strategies have been developed for each of these goals and key responsibility for their delivery aligned with the mission statements of each sector, as outlined below.

| Goal 3 Develop human capacity to promote motivated and effective delivery of RFE. | | | |
|--|---|------------------|-----------|
| Outcome | Strategy | Responsibility | Timeframe |
| RFE leaders developed and | Strategy 3.1 - Develop RFE leadership through programs which link | Peak bodies | S |
| supported, including | mentors with RFE schemes for youth and leadership training in | | |
| identification of the next | education. | | |
| generation of leaders in RFE. | Strategy 3.2 - Establish formal networks and support mechanisms to | Peak bodies, | S |
| | assist grass roots community leaders and mentors to share RFE | community | |
| | messages. | | |
| RFE leaders and practitioners | Strategy 3.3 - Provide RFE providers guidance into the effective delivery | Peak bodies, | Р |
| are capable users of social | of social media campaigns (Pilot 3). | media, project | |
| media as an RFE and | | team, Government | |
| networking tool. | Strategy 3.4 - Provide training in incorporating social media into RFE to | Peak bodies, | S |
| | RFE providers, including Government bodies. | media, | |
| | | Government | |
| A variety of volunteer | Strategy 3.5 - Develop and promote volunteer programs, such as citizen | Peak bodies in | S |
| programs are available for | science, habitat rehabilitation and educational programs, which make | partnership with | |
| fisher involvement, which | use of the knowledge, skills and enthusiasm of recreational fishers. | government, | |
| utilise fisher enthusiasm and | | universities or | |
| knowledge and provide | | private sector | |
| meaningful outcomes for | Strategy 3.6 - Link with the ARFF/Fish Habitat Network (FHN)/Ozfish | Peak bodies in | S |
| J. J | Unlimited for joint action with general RFE programs to "grass roots" | partnership with | |
| fishers and the environment. | fishers and the public. | government, | |
| | | universities or | |
| | | private sector | |

| | Strategy 3.7 – Appropriate networks (ARFF/FHN/OzFish) are in place to | Peak bodies in | L |
|-----------------------------|--|---------------------|---|
| | improve extension of messages and developing more understanding of | partnership with | |
| | the need for protection of fish habitat to benefit recreational fishing to | government, | |
| | influence "grass roots" fishers and the public. | universities or | |
| | | private sector | |
| | Strategy 3.8 - Reduce the role of government in delivering RF education | Peak bodies, | L |
| | to schools and develop alternative sustainable community pathways. | community and | |
| | | Education (schools) | |
| | Strategy 3.9 - Strengthen the capacity and professionalism | Peak bodies, | L |
| | (accreditation) of local angling clubs (i.e. volunteer anglers) | community | |
| | Strategy 3.10 - Use repeat visits from RF industry and volunteer anglers | Peak bodies, | L |
| | to build depth and relationships with students and avoid one-off | community and | |
| | information activities and events. | Education (schools) | |
| RFE delivery in schools | Strategy 3.11- Utilise formal avenues (professional development- | Peak Bodies | S |
| enhanced through improved | teacher training) to increase understanding of primary industries, | | |
| levels of knowledge & | including fisheries. The Primary Industry Centre for Science Education | | |
| understanding of RF amongst | (PICSE) provides a two-day professional learning course for teachers | | |
| teachers. | through their national activity centres. Many of these also hold | | |
| | additional single or half day professional learning opportunities | | |
| | throughout the year. Relevant content should be integrated into these | | |
| | courses. | | |
| | Strategy 3.12 - Utilise informal avenues such as arranging for a RF club | Community, peak | S |
| | to take teachers fishing on a curriculum day to build closer ongoing | bodies and | |
| | links. The idea is to develop a network of passionate teachers willing to | education (schools) | |
| | use RF examples in their day-to-day teaching. | | |
| | | | |

Building the capacity of people to deliver effective RFE borrows heavily on the principles laid out in the previous section in relation to establishing and maintaining strong networks. These networks are essential at the broad national scale outlined in Section 5.2 but also at a local and individual level, as highlighted in Strategies 3.1, 3.2, 3.5-3.8 and 3.10. These strategies seek to build leaders within the RF community, establish mentoring relationships and facilitate RFE at a grass roots level through the use of local volunteer networks. Provision of relevant training is also essential to growing the capacity of these engaged in RFE provision (Strategies 3.3, 3.4, 3.11 and 3.12).

| Goal 4 Secure funding for | RFE programs. | | |
|-------------------------------|---|---------------------|-----------|
| Outcome | Strategy | Responsibility | Timeframe |
| RFE sustained through secure, | Strategy 4.1 – Evaluate RFE programs to determine those suitable for | Government/ | S |
| long-term funding sources. | private sector delivery, giving incentives to private sector thus reducing | Private industry | |
| | the need for government funding. | | |
| | Strategy 4.2 – Develop Public-Private Partnership (PPP) arrangements | Government/ | S |
| | between private sector and Government for service delivery of RFE, and | Private industry | |
| | in particular for basic, instructional RFE or skills development training | | |
| | (e.g. fishing clinics). (A PPP approach could use public funds to lever | | |
| | more support from the private sector as seen in WA fishing clinics.) | | |
| | Strategy 4.3 - Solicit funding from private sponsors, such as the tackle | Peak bodies, | S |
| | retail sector, to offset expenses with RF delivery in schools. | community and | |
| | | Education (schools) | |
| | Strategy 4.4 - Develop a well organised regional RF fishing volunteer | Peak bodies, | L |
| | arrangement so they can provide low cost servicing of "How to Fish" | community and | |
| | education to schools (Y5-6). | Education (schools) | |
| | Strategy 4.5 - Investigate the implementation of a RF Licence in states | Peak bodies, and | L |
| | where they do not have one, or locate alternative long term funding | RF community | |
| | sources to sustain RFE. | | |
| The roles of government and | Strategy 4.6 - Create incentives for the private sector to deliver relevant | Government/ | S |
| private sector in delivery of | aspects of RFE (ie. instructional clinics/guiding etc). | private industry | |
| RFE are well defined and | | and peak bodies | |
| complementary. | Strategy 4.7 - Develop a tender process for the delivery of RFE services | Government/ | L |
| | by the private sector, overseen by Government. | private industry | |
| | Strategy 4.8 - Promote and develop the leisure services (e.g. fishing | Private industry/ | L |
| | guides) side of the recreational fishing industry, which has been limited | Government | |
| | to date. | | |

Securing long term funding sources requires clearly defined and understood roles and responsibilities across all sectors to allow for future planning and fundraising. Strategies 4.1 - 4.8 focus heavily on sharing the provision of RFE, and therefore responsibility for their funding, across sectors by engaging more fully with private, community (ie volunteer) and school sectors.

4.4 Delivery strategies

The review document focused on the key messages RFE should deliver to both RFs and the wider public. There are two broad goals relating to RFE delivery, the first relating to the develop of consistent and effective messages and the second aimed at encouraging behavioural change amongst fishers and building the social license of fishing. A number of outcomes and strategies have been developed for each of these goals and key responsibility for their delivery aligned with the mission statements of each sector, as outlined below.

| Goal 5 Develop consist | ent RFE program structures, standards and messages across Australia. | | |
|-------------------------------|---|---------------------|-----------|
| Outcome | Strategy | Responsibility | Timeframe |
| Nationally consistent RFE | Strategy 5.1 - Employ more program structure into RFE program | Government, | S |
| program structures, standards | activities enabling program evaluation. | Peak bodies, | |
| and messages and a strategic, | | RFE providers | |
| co-ordinated approach to | Strategy 5.2 - Adopt consistent RFE program standards based on the | Project team, Peak | P, S |
| their delivery. | Recfish code of practice. (See example in appendix A) | bodies, | |
| | | government, | |
| | | community | |
| | Strategy 5.3 - Refine and develop core RFE messages identified in the | Government, | P, S |
| | project into sector specific RFE strategic plans. | project team, | |
| | | Peak bodies, | |
| | | RFE providers | |
| | Strategy 5.4 - Re-connect with the pure and applied science | Peak body RFE | S |
| | underpinning RF and provide this within a contemporary context by | committee, | |
| | linking with the science and cross-curriculum priorities of the F-10 | (Strategy 2.1), | |
| | Australian Curriculum. | Education (schools) | |
| | Strategy 5.5 - Identify a series of key texts for primary school students | Peak body RFE | S |
| | that have RF related messages and/or strong environmental themes | committee, | |
| | such as sustainability (cross-curriculum priority 3). | Education (schools) | |
| | Strategy 5.6 - Develop an integrated literacy program using these texts. | Peak body RFE | S |
| | | committee, | |
| | | Education (schools) | |
| | Strategy 5.7 - Highlight Aboriginal and Torres Strait Islander dreamtime | Peak body RFE | S |
| | stories, oral histories and cultures to connect with early primary (F-Y2) | committee, | |
| | students using a natural resources theme (cross-curriculum priority 1). | Education (schools) | |

| Professional services in fishing instruction and guiding recognised and delivered in a consistent manner nationally. | Strategy 5.8 - Implement national RFE program standards, such as for fishing clinic content and delivery, which incorporate higher order messages built on the Recfish code of practice. | Government, peak bodies, private industry | S |
|---|--|---|-----|
| | Strategy 5.9 - Develop and implement national evaluation protocols, procedures and reporting requirements for RFE activities, including fishing clinics. | Government, peak bodies, private industry | S |
| | Strategy 5.10 - Implement a national accreditation process for RFE training providers and promote the use of recognised training providers as means of learning to fish correctly. | Government, peak bodies, private industry | L |
| RFE messages packaged and delivered in an interesting, engaging and effective way | Strategy 5.11 - Conduct workshop with RFE providers, recreational fishers and marketing experts to design and propagate influential messages around key themes. | Peak bodies, community, media, Government | S |
| | Strategy 5.12 - Develop a messaging strategy for RFE designed around strategic priorities and target audiences. | Government, peak bodies, community | Р |
| | Strategy 5.13 - Establish RFE social media platforms (Twitter, Facebook and blog) and develop and implement targeted social media campaigns (as per Pilot 3). | Peak bodies | P/S |
| | Strategy 5.14 - Develop linkages with key RF bloggers and forum moderators to encourage incorporation of RFE messages into existing platforms. | Peak bodies | L |

Much of the strategies outlined above involve moving RFE away from basic instructional messages towards higher order messages delivered:

- Consistently: through agreed standards linked with established and respected educational techniques and processes (Strategies 5.1 5.6),
- Professionally: through accreditation and evaluation aimed at continual improvement and adaptation to changing needs (Strategies 5.8-5.10)
- Creatively: through the use of new technologies and innovative techniques aimed at delivering interesting, engaging and effective messages to specifically targeted audiences (Strategies 5.3, 5.7, 5.11-5.14)

| | regulations, and ethical and animal welfare considerations. | | |
|-------------------------------|--|--------------------|---------------|
| Outcome | Strategy | Responsibility | Timeframe |
| RFE recognised as a means of | Strategy 6.1- Advertise and promote RF involvement in volunteer | Media, peak | S |
| building an improved | activities including habitat restoration and scientific monitoring. | bodies, community | |
| community understanding of | Strategy 6.2 - Incorporate basic aquatic biology and fisheries | Schools, | L |
| aquatic ecosystems and the | management principles into RFE activities, including the school syllabus | Government, peak | |
| environment. | program. | bodies, private | |
| | | industry | |
| | Strategy 6.3 - Provide fishers with information on the ecological impacts | Government, peak | L |
| | and the carbon footprint of RF | bodies | |
| Recreational fishers actively | Strategy 6.4 - Incorporate environment and best practice messages into | Media, private | S |
| engaged in sustainable, | fisher 'training', instructional messages and all forms of RF related | industry, schools, | |
| ethical and humane practices | media. | Government | |
| that maintain social license. | | (through | |
| | | standards) | |
| | Strategy 6.5 – Investigate mechanisms for self-assessment or co- | Peak body/ Peak | S, |
| | assessment with third parties (eg. Government) to evaluate levels of | Body RFE | December 2015 |
| | sustainability and compliance with animal welfare codes of practice | committee, | |
| | amongst fishers. | Government | |
| | Strategy 6.6 – Communicate results of assessment process to the | Peak bodies, | L |
| | general public on a regular basis. | Government | |
| | Strategy 6.7 – Identify areas that are deficient and require additional | Peak bodies, | L |
| | RFE efforts, including where segmented messages to different sections | Government | |
| | of the RF community may be beneficial. | | |
| Effective and targeted | Strategy 6.8 – Conduct research into the social values and | Government, | S |
| dissemination of key | psychographics of recreational fishers. | universities, peak | |
| messages to different | | bodies | |
| segments of the RF | Strategy 6.9 – Building on Strategy 6.8, conduct a trial or pilot exercise | Government, | L |
| community according to | evaluating the effectiveness of a segmented approach to RFE | universities, peak | |
| different communication | communication and education based on social values and | bodies | |
| needs. | psychographics. | | |
| | Strategy 6.10 - Develop best practice messages towards specific groups | Government, peak | S |

| | – e.g. multicultural communities | bodies | |
|--------------------------------|--|-----------------|---|
| A cross-curriculum | Strategy 6.11 - Utilise connections to other learning areas such English, | Education | L |
| ecosystems unit developed | Mathematics and History to build depth. | (schools), peak | |
| for teaching that promotes all | | bodies | |
| key messages. | Strategy 6.12 - Frame the unit within the pedagogy of 'experiential | Education | L |
| | education' | (schools), peak | |
| | | bodies | |
| | Strategy 6.13 - Build unit of work around established codes and | Education | L |
| | guidelines such as The National Code of Practice for Recreational and | (schools), peak | |
| | Sport Fishing, Animal welfare guidelines for fishing in schools and junior | bodies | |
| | fishing codes | | |
| | Strategy 6.14 - Target upper primary and early secondary and provide | Education | L |
| | lesson plan free for national uptake. | (schools), peak | |
| | | bodies | |

Strategies around the RFE messages focus on two key target audiences:

- Existing fishers: the aim of the Strategies 6.2-6.4, 6.7-6.14 is to promote behavioural change amongst existing fishers to ensure the messages they receive are effective in encouraging sustainable and ethical fishing practices.
- Wider community: the aim of strategies 6.1, 6.5 and 6.6 is to ensure the public is assured that RF is being monitored and assessed for its level of compliance with best practice principles and that continual improvement is being actively pursued.

The combination of these two types of messaging strategies will assist in maintaining the social licence of RF as well as promote change in areas of greatest need, to ensure that the messages are reflective of the day-to-day reality of RF in Australia.

5. RFE Strategy feedback

A Recreational Fishing Education forum was launched to gather feedback from RF Educators on the RFE Strategy document. Fifty-nine individuals who had attended workshops run as part of this project were invited to comment on the RFE Strategy document through the Recreational Fishing Education forum. Invited individuals included representatives of peak bodies, government agencies and fishing clubs, as well as people from the private sector. The forum was intended to facilitate comments about the Strategy Document, as well as provide a free arena for discussion and networking between Recreational Fishing Educators.

Despite lots of interest and enthusiasm when invited individuals were spoken to over the telephone, there was little uptake and use of the forum. After several weeks of the forum being launched, the invited individuals were called again to gauge their interest, answer any questions they might have had regarding the forum, and solve any difficulties they might have had. Again, most comments were positive, and indicated that there was a high level of support and interest among those who had been invited.

Some consulted individuals were more comfortable offering their feedback over the phone. These individuals indicated that they were very appreciative of the two review documents, and supported the National Strategy Document. A few of these individuals could not however, see how their experiences were relevant to the proposed strategies and therefore had doubts about how helpful their contributions would be for the forum. It was explained that any input regarding their own activities with relevance to the strategies would be greatly appreciated, and was exactly what we were looking for.

An email was sent to all those invited to the forum two months after the forum was launched. This email was intended to gather feedback from those who had not had the time to comment on the forum. The internet forum was less suited to consultations with Recreational Fishing Educators in than expected. Despite a limited contributions to the forum, there still appeared to be some interest in the strategy and the review documents themselves, and these will be distributed by email where possible.

Two forum members offered some very comprehensive comments regarding the National Strategy Document. These comments referred to strategies designed to promote recreational fishing participation, and assist in the development of human capacity to promote motivated and effective delivery of RFE.

The forum members' comments about Strategy 1.2 outlined that while consistent messaging can present difficulties when different jurisdictions manage one common stock using different regulations, there are a range of messages that could still be employed and promoted i.e. fish handling techniques, catch care, fishing safety, fishing techniques, rationale behind size and bag limits, the interconnectivity of recreational fishing and the environment, and fishing as a physical activity.

Comments about Strategy 1.8 involved questions about whether RFE material for schools would be aggregated in one location, who would maintain/administer the resource, and whether there would be any regulation around the content. These questions have been partially addressed through the development of the ARFF library. Two links were also suggested as avenues to publish RFE materials for teachers:

http://www.aussieeducator.org.au/

http://www.primaryindustrieseducation.com

A general comment of support was also made about Strategy 1.12, highlighting the potential benefits of running fishing clinics for war veterans, the disabled and the aged as a means of facilitating participants' connections with their families and the broader community.

One reviewer felt their comments could be better communicated in an email to both the investigators and all those on the initial forum mailing list. These comments suggested that while the National Strategy Document was a good document, it might have tried to address too many issues, making it seem a little inconsistent to this reviewer. For example it was pointed out that cultivating a community of responsible recreational fishers that demonstrate a strong sense of stewardship and best practice may potentially be at odds with the promotion of recreational fisher participation? Two fishery examples were given of the golden snapper of NT and the Murray Cod of NSW, where managing bodies have to deal with pressures on resources with management tools that are at times, at odds with increasing recreational fishing activity. In both these instances, the resources would benefit greatly from RFE aimed at motivating stewardship and the uptake of best practice, but would suffer greatly from increased participation alone. We acknowledge these tensions and the need for case-by-case assessment. The reviewer suggested that despite the fact that 'increasing participation of recreational fishing' was part of the project design, that perhaps, at this point in time, it is not the issue we should be focussing RFE efforts on? Rather, the industry should prioritise RFE efforts towards creating a recreational fishing community that demonstrates responsible stewardship and best practice. Building such a community would likely increase social license for fishers to continue their activities, as well as give a favourable impression to government and industry, which may in turn, increase participation rates without a specific intervention.

Overall, the Strategy Document required little revision, though discussions and feedback with Recreational Fishing Educators identified several strategies that might be problematic to action (e.g. Strategy 1.2 – Produce messages to the general public which outline regulatory controls on fishing, status of fish stocks, areas of concern and RF strategies currently in place to address these.). Additionally, the questions surrounding Strategy 1.8, have been addressed through the development and execution of Pilot Study 2 (i.e. the ARFF library). The ARFF library will be a repository for all Recreational Fishing relevant learning materials developed for formal learning environments, and will be publicised via 'Scootle', a noticeboard and database used to publish and store materials for formal educators around the country.

6. Conclusions

The comprehensive review of RFE in Australia documented the range of RFE activities and programs currently in use, but also identified gaps and areas for future improvement in planning and delivering RFE.

We have therefore developed this draft networking strategy for RFE, seeking to identify what tools might, or should be used to improve RFE and which sectors within the RFE community might deliver which components of the strategy. From consultation with appropriate sectors of the RFE community (Government, peak bodies, industry, media and community) we have identified goals and outcomes, and suggested strategies to achieve these.

The goals, outcomes and strategies were presented for consideration and discussion by the RFE community through the use of an internet forum, and telephone interviews with individual RF Educators. Comments were largely positive, with some constructive criticism/comments about the feasibility of some strategies and how they could be actioned. These have been included in the current version and further consideration of the strategy by industry will likely lead to further development in the extension period following this project.

References

- Guy, J (2013) Review of Recreational Fishing and School Education in Australia Pre and Post National Curriculum. A report prepared for the University of Wollongong and the Fisheries Research and Development Corporation (FRDC), November 2013, by the National Marine Science Centre, Southern Cross University
- McIlgorm , A, J. Pepperell, J. Guy and R. Conway (2014). A Review of Recreational Fishing Education in Australia. A report to the Fisheries Research and Development Corporation, FRDC Project 2011/527.
- Recfish Australia (2008). A National Code of Practice for Recreational and Sport Fishing -. An Initiative of Recfish Australia, Canberra.
- RFAC (2011). Recreational Fishing in Australia 2011 and Beyond: A National Industry Development Strategy. RFIDS, Recreational Fishing Advisory Committee.
- Rumelt, R. (2011) The perils of bad strategy, McKinsey Quarterly June. Http://www.mckinsey.com/insights/strategy/the_perils_of_bad_strategy.
- Seng, P. T. and S. Rushton (2003) (Editors). Best practices workbook for boating, fishing, and aquatic resources stewardship education. Recreational Boating and Fishing Foundation, Alexandria, Virginia.
- Sport NZ (2009) An Outdoor Recreational Strategy 2009-2015. Sport NZ. www.sportnz.org.nz, August.
- Timmons, L.S. (2006). Strategic plan for the Division of Sportfish Southcentral region sportsfishing and aquatic education program. Alaska Department of Fish and Game, Special publication No. 06-30, Anchorage.
- TMF (2010). Best practices Workbook for Boating, Fishing, and Aquatic Resources Stewardship Education. Takemefishing[©], Virginia, USA.
- Ward, S. (2013). Business networking. http://sbinfocanada.about.com/cs/marketing/g/busnetworking.htm

Appendix A: **"Responsible Recreational Fisher"**: A Certification Course for Recreational Fishers

Introduction

Many Australians love fishing. More than 3.5 million Australians fish annually for recreation and sport. This means about one in every five Australians enjoy fishing and half of all Australian households own fishing equipment.

However, with the enjoyment of a natural resource comes responsibility for its sustainability and well being. Recognition of the need for more sustainable fishing practices and an agreed national standard for recreational fishing led to the development of the first national code of practice (COP) for recreational fishing in 1995.

The National Code of Practice for Recreational and Sport Fishing addresses four main areas of fishing responsibility:

- Treating fish humanely
- Looking after our fisheries
- Protecting the environment
- Respecting the rights of others

Aim of Program

The "Responsible Recreational Fisher" program is an educational initiative to allow all Australian recreational fishers (including recreational divers) to develop the understanding, expertise and cultural awareness to engage in recreational fishing in a responsible manner and understand the benefits of recreational fishing to the community.

The program is also aimed at promoting responsible recreational fishing practices and increasing participation in recreational fishing across all age categories and cultural groups in our community.

Recreational fishers have long been custodians of the environment. A better environment provides better habitat and improved natural habitat produces better fishing opportunities.

Undertaking an approved "Responsible Recreational Fisher (RRF)" program gives potential recreational fishers the skills and knowledge necessary to contribute to a responsible, enjoyable and successful fishing experience while enhancing the natural environment through angler driven habitat restoration initiatives.

Face-to-face "Responsible Recreational Fisher" training should be a core achievement of all aspiring recreational fishers who should be required to complete an approved training course within three (3) years (or earlier) of purchasing a recreational fishing licence.

Modules

The "Responsible Recreational Fisher" program should cover a range of topics including:

- Recreational fishing "Code of Practice"
 - Treating fish humanely
 - Looking after our fisheries
 - Protecting the environment
 - Respecting the rights of others
- Handling fish in an effective manner to maximise the opportunity for successful release after capture or improved eating quality if kept for the table
- The qualities that contribute to a person becoming a "Responsible Recreational Fisher"
- Facts about "Responsible Recreational Fishing" techniques and equipment
- Improving the environment through habitat improvement initiatives driven by recreational fishers
- Rules and regulations
- Limit your "bag", don't "bag" your limit Keep only what you need, not all you can catch

An on-line "Refresher Course" should also be developed to allow all members of the public to gain the knowledge to become "Responsible Recreational Fishers"

Program Delivery

- Develop an educational program in conjunction with selected TAFE Colleges to train suitable candidates to deliver the "Responsible Recreational Fisher" training program
- Engage with Recreational Fishing Clubs across Australia to become the agents to teach the "Responsible Recreational Fisher" program
- Create a "Responsible Recreational Fisher" web site where fishers can update their knowledge on an annual basis and complete an online test to assess their knowledge
- Create a "Responsible Recreational Fisher" kids program that can be delivered through angling Clubs and schools
- Provide certificates (paper based or web certificates) to people who complete the face-toface Club course or online course

Advanced "Responsible Recreational Fisher" Training Course

An "Advanced Responsible Recreational Fisher" training course could be developed in partnership with selected TAFE Colleges designed for fishing Association members, angling Club Officials, tackle store owners, school teachers and others who may face a range of challenges and issues related to recreational fishing.

This course will cover topics to help trainers to deal with risk management and compliance issues that may arise. Subject matter experts from state and territory authorities will be provided with appropriate training to answer more technical and difficult questions and topics.

Training Providers

Approved trainers that can deliver the face-to-face "Responsible Recreational Fisher" program.

Compulsory or Voluntary?

"Responsible Recreational Fisher" certification should be mandatory for those engaged in the business of recreational fishing, eg. Charter boat operators, guides, tackle store staff, registered fishing Clubs and Associations and others in the industry. All casual recreational fishers should also complete the course at least once over a three (3) year period and complete an on-line refresher course on a regular basis.

All junior recreational fishers should be provided with free access to a training course to build their knowledge and awareness of responsible fishing techniques.

Code of Practice

The National Code of Practice for Recreational and Sport Fishing is intended for all those who fish recreationally, representatives of recreational fishing organisations, the recreational fishing industry, the fishing media and fisheries communicators. It is an initiative of Recfish Australia and supported by the Australian Government. It is proposed to utilise the Recfish Australia "Code of Practice" for the "Responsible Recreational Fisher" training program.

"Code of Practice" Objectives

- Treating fish humanely
- Looking after our fisheries
- Protecting the environment
- Respecting the rights of others

The four overriding objectives form a framework incorporating fourteen more specific principles.

These "Principles" are:

- 1. Quickly and correctly returning unwanted or illegal catch to the water
- 2. Quickly and humanely killing fish that are kept for consumption
- 3. Using only appropriate, legal tackle, attending all fishing gear and valuing our catch
- 4. Taking no more than our immediate needs
- 5. Supporting and encouraging activities that preserve, restore and enhance fisheries and fish habitat
- 6. Understanding and observing all fishing regulations and reporting illegal fishing activities
- 7. Preventing pollution and protecting wildlife by removing rubbish
- 8. Taking care when boating and anchoring to avoid damage to wildlife and habitat
- 9. Using established roads and tracks
- 10. Reporting environmental damage
- 11. Avoiding unnecessary interactions with wildlife species and their habitats
- 12. Practising courtesy towards all those who use inland and coastal waters
- 13. Obtaining permission from landholders and traditional owners before entering land
- 14. Caring for our own safety and the safety of others when fishing

A Licensed National Certification for Responsible Recreational Fishing

If you complete a "Responsible Recreational Fisher" course, your certification will be valid in all states and territories. The national course should be tailored to cater for specific regulations relevant to state and territory rules.

Outcomes

- 1. Fishers acting in a "Responsible" manner
- 2. Fishers understanding how to look after fish when keeping, tagging or releasing fish
- 3. Fishers thinking about their environmental footprint
- 4. An educated and knowledgeable recreational fishing community

Program Costs and Resources

| The following costs categories are envisaged: | |
|---|---|
| Development of course content, training manuals, training video's | - |
| Development of "Train the Trainer" TAFE module | - |
| Development of "Responsible Recreational Fisher" web site and web app | - |
| Ongoing annual management and administration costs | - |
| Volunteer input by fishing club members and general public (in kind) | - |
| | |

Further details can be obtained from Russell Conway, Recfish Australia.

Fisheries Research and Development Corporation (FRDC) Project 2011/527.

Appendix 6: Review of Recreational Fishing in Australian Schools – Pre and Post National Curriculum.





Review of Recreational Fishing in Australian Schools – Pre and Post National Curriculum

Jeffrey A. Guy

Report prepared for the University of Wollongong and Fisheries Research and Development Corporation, November 2013 (FRDC project 2011/527)



The National Marine Science Centre (NMSC) was conceived as part of Australia's Oceans Policy and constructed with a grant from the Commonwealth Government's Centenary of Federation Fund. The Centre was opened in 2002 as a joint entity of Southern Cross University and the University of New England. In 2010 Southern Cross University became the sole owner of the NMSC and is now a part of the School of Environment, Science and Engineering within Southern Cross University's Faculty of Arts and Sciences. The NMSC is based at Coffs Harbour on the East Australian seaboard.

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Disclaimer

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1.0 Background

National Policy Context

There are two important policy documents that give context to the ongoing national development of recreational fishing (RF) education. *Recreational Fishing in Australia - 2011 and Beyond: A National Industry Development Strategy.* The Recreational Fishing Industry Development Strategy (RFIDS) (available from http://www.daff.gov.au/fisheries/recreational/rfids) is to coordinate the efforts and resources of recreational fishing experience. Education was identified as a priority area and a project ("The National Education Program") was commissioned by the Fisheries Research and Development Corporation (FRDC) in 2012. The National Education Program addresses goal 5 and 6 of the RFIDS, which also contain component strategies (see below).

Goal 5: Stewardship of fish and their environment ensures quality and sustainable RF opportunities into the future (i.e. Fishers taking responsibility)

- Encourage recreational fishers to be involved in research, community monitoring and habitat enhancement programs (Strategy 1)
- Encourage recreational fishers to use best practices in all aspects of their fishing activities (Strategy 2)

Goal 6: The recreational fishing industry is attractive, vibrant and adaptive, encouraging investment and participation (i.e. A thriving industry)

- Promote recreational fishing as a family friendly activity (Strategy 2)
- Improve safety in recreational fishing (Strategy 4)
- Promote the role and opportunities for women, children and families in recreational fishing (Strategy 5)
- Promote the cultural heritage value of recreational fishing in Australia (Strategy 6)

The implementation roles of the strategy extend to:

- State, Territory and Australian governments and their agencies;
- Recreational fishers at the level of peak bodies, associations, clubs and individuals;
- Recreational fishing tackle, boating, tourism, media and other associated industry members and;
- Researchers, investors and other stakeholders.

Secondly, *The National Code of Practice for Recreational and Sport Fishing (Revised Edition)* developed by Recfish Australia (2009). Recfish Australia was formed in 1983 to represent the interests of recreational and sport fishing at a national level. Recognition of the need for more sustainable fishing practices and an agreed national standard for RF led to the development of the first national code of practice (COP) in 1995. The COP underwent a minor review in 2001, and the 2009 document (available from <u>http://recfishaustralia.org.au/</u>) represents the first major review and revision of the Code since then.

It addresses four main areas of fishing responsibility:

• Treating fish humanely

- Looking after our fisheries
- Protecting the environment
- Respecting the rights of others

The four overriding objectives form a framework incorporating fourteen more specific principles:

- Quickly and correctly returning unwanted or illegal catch to the water
- Quickly and humanely killing fish that are kept for consumption.
- Using only appropriate, legal tackle, attending all fishing gear and valuing our catch
- Taking no more than our immediate needs
- Supporting and encouraging activities that preserve, restore and enhance fisheries and fish habitat
- Understanding and observing all fishing regulations and reporting illegal fishing activities
- Preventing pollution and protecting wildlife by removing rubbish
- Taking care when boating and anchoring to avoid damage to wildlife and habitat
- Using established roads and tracks
- Reporting environmental damage
- Avoiding unnecessary interactions with wildlife species and their habitats
- Practising courtesy towards all those who use inland and coastal waters
- Obtaining permission from landholders and traditional owners before entering land
- Caring for our own safety and the safety of others when fishing

Broad National Issues

Two significant national health and leadership issues frame this review.

1) A major health concern in Australia is that the level of physical activity in children and adolescents is decreasing, with electronic media and other sedentary behaviours replacing outdoor activities. The lack of physical activity associated with the replacement of outdoor play with electronic leisure, places children at a greater risk for obesity and related adverse health effects. Research has shown that there is an urgent need to provide outdoor social opportunities and activities for children aged up to five years to encourage habitual healthy behaviours. Furthermore, parental (or adult) encouragement, supervision and participation are essential for long-term behaviour change (McManus et al. 2011).

Recreational fishing is one of the few forms of nature-based recreation that can be enjoyed throughout childhood, adolescence, adulthood and into the senior years. Providing opportunities for fishing at a young age, as a family activity, or as part of a schools education program, is vital to cultivating recreational fishing as an interest for tomorrow's adults. Children that participate in recreational activity with their parents or adult carers are more likely to participate later in life. Successful promotion of fishing to Australian youth can maintain the future of the recreational fishing industry. Concurrently, promoting outdoor recreation throughout life can improve lifelong health for participants (McManus et al. 2011).

2) Australia is currently experiencing a shortage of graduates with primary industry (agriculture, fisheries and forestry) science qualifications to fill research and development roles in industry. The Department of Education, Science and Training (DEST) predicts a 35% gap over the next five years

between industry demand for science professionals and supply from education institutions. There is an urgent need to promote science in schools, and particularly in rural and remote regions of Australia.

However, the current positioning of primary industries, which includes fishing, outside the science curriculum is now thought to be responsible for its current low academic profile (Dodd 2011). At present, prospective students and their mentors do not see primary industries as a potential career path with the common perception that it has a negative influence on a students' Australian Tertiary Admission Rank (ATAR). This this has led to a shortage of students entering university courses and a leadership vacuum in all agriculture sectors, particularly the fishing industry (Prately 2012). A recent Australian Council of Educational Research (ACER) survey also found that teacher understanding (grade 6) of primary industries was poor and weakest in relation to fisheries; 26% of teachers said they were unfamiliar with any issues related to the fishing sector (ACER, 2011).

This has recently been recognised with the formation of two national Research and Development Corporations (RDCs), The Primary Industries Education Foundation (PIEF) and The Primary Industry Centre for Science Education (PICSE). Both provide national leadership and coordination of initiatives to encourage primary industries education in schools (PIEF), and collaboration between universities, their regional communities and local primary industries (PICSE). Both aim to meet a growing industry need for science graduates and provide an excellent framework to include a RF education message that integrate into pre-tertiary science curricula and use practical fisheries examples.

Key Challenges Facing the Industry in the Next 5 Years

Recent FRDC surveys (2011) on the sustainability of the Australian fishing industry and profiling of recreational fishers have identified a significant number of challenges and issues that will confront the industry in the next five years. These include:

- Providing sufficient supply of fish and associated products to meet growing demand through an increased population;
- Managing and solving growing concerns about pollution and water quality issues –both inland and coastal concerns were mentioned;
- Ensuring that over fishing does not create long term sustainability issues –one of the challenges will be demonstrating that reduced bag limits actually work;
- Dealing with safety issues –both on boat and on shore;
- Managing and ensuring the conservation of important fish species;
- Creating tighter controls on commercial fishers to ensure compliance with limits, lower wastage and dealing effectively with international fishers seen to be raiding Australian waters;
- Ensuring there is not over regulation of the industry by Government authorities;
- Ensuring there is compliance with the standards and rule set up from and coming out of the research conducted by the industry.

The surveys also found that the overwhelming majority of regular recreational fishers reported being concerned about the public's perception of the fishing industry. They discussed the need to be alert to an imbalance in the presentation of facts and information about recreational fishers; a number

highlighted instances of where misinformation creates a particularly adverse picture of recreational fishers. This can be partially addressed through managing and influencing public perceptions via the media and by presenting the correct information, facts and evidence. However a more effective and cost-efficient way of promoting participation and the benefits of fishing is to target schools for the following reasons:

- There is the potential to expose every Australian child to the benefits offered by fishing;
- Girls and boys of all abilities, particularly at an age of 5-8, enjoy fishing and can pick up the needed basic skills and knowledge quickly;
- The ethos of aquatic stewardship and the principles of sustainable use, ethical treatment of fish, environment protection and responsible fishing are best introduced at an early age;
- Fishing complements and enhances classroom learning and offers an attractive low-cost outdoor activity;
- The large number of women teachers in primary schools allows the introduction to fishing to include aspects that appeal particularly to girls and are consistent with their preferences later in life;
- The structure of school-based teaching and fishing activities lends itself to the involvement of volunteer anglers which develops ongoing links between schools, clubs and the community, which addresses sustainability.

While the aim is to promote participation and responsible fishing, achieving a basic understanding of fishing throughout the community is beneficial in itself, irrespective of whether or not children go on to fish in later life (Winstanley 2003).

Research Context/Report Structure

In broad terms, the review has two main aims: to investigate why RF has gained minimal entry into the schools formal education system and to recommend how new programs to address this could be developed within the Australian Curriculum framework.

Starting with a general introduction, this report comprises seven chapters. Chapter 2 constitutes the largest single part of the review using information obtained from individual teachers and organisations throughout Australia. NSW is examined in depth (case study) to provide a set of key messages which are then compared to the other states and territories. Chapter 3 examines the structure of the new Australian Curriculum with the aim of identifying relevant areas and subsequent strategies for RF placement, as well as professional development. In the fourth chapter, relevant teaching resources are identified. Chapter 5 draws all the information together to provide an overview with recommendations, including further work. Chapter six acknowledges all those that have contributed to this review while the Gold Coast 2012 and Sydney 2013 workshop presentations are combined in Appendix 1. Appendix 2 contains information about the Marine Discovery Centres Australia.

Project Objectives

- Review and summarise education activities relating to recreational fishing in schools around Australia. Identify common themes, key messages, target audiences, success stories (strengths) and gaps (weaknesses).
- Examine pathways for recreational fishing to be included in the national curriculum including identification of relevant course materials (existing and new) for teaching and learning.

Methodology

The first stage of the review was an in depth study of NSW. It was important to examine in detail the placement, if any, across primary and/or secondary syllabuses as well as the content and general messages. For example in what key learning area was the recreational fishing information cited and did the content deal mainly with basic instruction on "How to fish" or have wider sustainability, environmental and ethical and community related messages? The second part was to compare the main findings of the NSW case study to other states and territories. This would highlight common themes, identify gaps and potential avenues for future work and collaboration.

All this was undertaken by a combination of desktop research (searching syllabus documents from appropriate state or territory statutory bodies using key words such as Fish, Fishing and Fisheries) and telephone/e-mail conversations with primary and secondary teachers, government, peak bodies, clubs and individuals throughout Australia. Where available, teacher associations, such as The Marine teachers Association of NSW and Queensland were also contacted. Contacts were also developed by attending the 2012 Marine Discovery Centre Australia (MDCA) meeting at Terrigal on the NSW Central Coast.

The second stage of the review examines the new Australian curriculum. Here it was necessary to first explore its structure to find where recreational fishing could be strategically positioned. For example many teachers now use elements of the Science curriculum- Environmental Strand/Sustainability to teach marine studies which includes sustainable fishing issues. All documentation was available from the on-line website (<u>http://www.australiancurruculum.edu.au</u>). The final part of the review was to identify relevant material for inclusion into the new national curriculum and to see how much of it addressed goal 5 and 6 of the RFIDS.

References

- AUSTRALIAN COUNCIL FOR EDUCATIONAL RESEARCH (ACER) 2011. Food, Fibre and the Future. Report on surveys of students' and teachers' knowledge and understanding of Primary Industries for the Primary Industries Education Foundation.
- COMMONWEALTH OF AUSTRALIA 2011. Recreational Fishing in Australia 2011 and Beyond: A National Industry Development Strategy. Department of Agriculture, Fisheries and Forestry, Canberra.
- DODD, J. 2011. Sustaining Agriculture in NSW High Schools an assessment of the use of examples from alternative agriculture and investigation into the role of high school agriculture in meeting the future needs of the industry. Master's Thesis - Sustainable Agriculture, Charles Sturt University.
- FISHERIES RESEARCH AND DEVELOPMENT CORPORATION (FRDC) 2011. Recreational Fishers Survey. Report for FRDC by Intuitive Solutions.
- FISHERIES RESEARCH AND DEVELOPMENT CORPORATION (FRDC) 2011. Community perceptions of the sustainability of the fishing industry in Australia. Report for FRDC by Intuitive Solutions.
- MCMANUS, A., HUNT, W., STOREY, J. & WHITE, J. 2011. Identifying the Health and Well-Being Benefits of Recreational Fishing. Curtin University, FRDC Project Number: 2011/217.
- PRATELY, J. E. 2012. Professional Agriculture A case of Supply and Demand. Australian Farm Institute -Occasional Paper No.12.01, 1-8.

RECFISH AUSTRALIA 2009. The National Code of Practice for Recreational and Sport Fishing. Revised Edition. WINSTANLEY FISHERIES MANAGEMENT SERVICES PTY. LTD. 2003. An Investigation into the Sustainability of Elements of the Fishing Participation Initiative. Report prepared for Sport and Recreation Victoria.

2.0 Schooling

Overview of Australian Education System.

The Commonwealth of Australia has 6 states and 2 territories – New South Wales, Queensland, South Australia, Tasmania, Victoria, Western Australia, the Australian Capital Territory and the Northern Territory. School education is compulsory between the ages of 6 and 16 (Year 1 to 10) and comprises 13 years. It includes:

- a preparatory year before Year 1: not compulsory but almost universally undertaken
- primary schooling: 6 or 7 years Years 1-6 or 1-7
- secondary schooling: 5 or 6 years Years 7-12 or 8-12.

There are some small differences in school education between states and territories and these are summarised in Table 1. English is the language of instruction although some schools offer bilingual programs or programs in other languages. Indigenous languages may also be used in some regions, such as the Northern Territory. The school year is from February to December. Most states and territories have 4 terms per year but Tasmania has a 3-term school year. All states and territories provide distance or external school education programs. Both public schools and private schools exist in each state or territory.

Each state has a Vocational Education and Training (VET) or Technical and Further Education (TAFE) system. VET prepares people for work in a career that does not need a university degree. It is possible to access these sectors in the final years of secondary school (years 11-12). Each state manages their system and meets at a national level to coordinate their effort. VET is transferable between all states. Study done in one state gains the same status in another state. Typically, a VET/TAFE course takes two years of study.

| State or Territory | Name of Pre- School Education | Name of First Full-Time Year of School | Primary School | Secondary School (includes Senior Secondary School) |
|--------------------|----------------------------------|--|----------------|--|
| ACT | Preschool | Kindergarten | Years 1-6 | Years 7-12 |
| NSW | Preschool | Kindergarten | Years 1-6 | Years 7-12 |
| NT | Preschool | Transition | Years 1-7 | Years 8-12 |
| QLD | Preschool | Preparatory | Years 1-7 | Years 8-12 |
| SA | Preschool | Reception | Years 1-7 | Years 8-12 |
| TAS | Kindergarten | Preparatory | Years 1-6 | Years 7-12 |
| VIC | Preschool | Preparatory | Years 1-6 | Years 7-12 |
| WA | Kindergarten | Pre-Primary | Years 1-7 | Years 8-12 |

| Table 1. | Table 1. Australian school structure showing small differences between states and territories. Sou | | | | |
|----------|--|--|--|--|--|
| | Melbourne Declaration on Educational Goals for Young Australians (2008) | | | | |

The Australian Government and the Australian states and territories share responsibilities for the administration and financing of education through the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA). Exact arrangements depend on the educational sector and legislative responsibilities. However, each state government manages the school system within their state (Table 2). This means that they provide funds and regulation for their schools. The curriculum taught in each state or school may vary but the learning areas are the same in all. Each state or territory has an independent statutory body responsible (Table 2) for developing the curriculum (including assessment and reporting) although not all states or territories cover Kindergarten to Year 12. For example in the ACT and Tasmania, the Board of Senior Secondary Studies and the TQA, respectively, regulates registration and accreditation of learning areas for years 11 and 12. Online syllabuses that outline essential content for lessons are available from these organisations.

| State or Territory | Regulatory authority | Website |
|-----------------------|---|--|
| ,, | | |
| ACT | Department of Education and Training | http://www.det.act.gov.au/ |
| | K-10 curriculum framework | http://activated.act.edu.au/ectl/design/index.htm |
| | Board of Senior Secondary Studies (BSSS) | http://www.bsss.act.edu.au/ |
| NSW | Department of Education and Training | http://www.schools.nsw.edu.au/ |
| | Board of Studies (BOS NSW) | http://www.boardofstudies.nsw.edu.au/ |
| NT | Department of Education and Training | http://www.det.nt.gov.au/ |
| | Board of Studies (NTBOS) | http://www.education.nt.gov.au |
| QLD | Education Queensland | http://education.qld.gov.au/ |
| | Queensland Studies Authority (QSA) | http://www.qsa.qld.edu.au/ |
| SA | Department of Education and Children's | http://www.decs.sa.gov.au/ |
| | Services SA Curriculum, Standards and Accountability | http://www.sacsa.sa.edu.au/index_fsrc.asp?t=Home |
| | (SACSA) | ······································ |
| | SA Certificate of Education (SACE) | http://www.sace.sa.edu.au/ |
| TAS | Department of Education | http://www.education.tas.gov.au/ |
| | K-10 curriculum framework | https://www.education.tas.gov.au/Students/schools- |
| | | colleges/curriculum/Pages/Tasmanian- |
| | | Curriculum.aspx |
| | The Tasmanian Qualifications Authority (TQA) | http://www.tqa.tas.gov.au/ |
| VIC | Department of Education and Training | http://www.education.vic.gov.au/ |
| | Curriculum and Assessment Authority (VCAA) | http://www.vcaa.vic.edu.au/ |
| WA | Department of Education and Training | http://www.det.wa.edu.au/education/ |
| | School Curriculum and Standards Authority | http://www.curriculum.wa.edu.au/internet/ |

Table 2. Government department websites for each State and Territory including the independent statutory
body responsible for either Kindergarten to Year 10-12 and/or senior secondary syllabuses. Source:
http://www.australianschoolsdirectory.com.au/

Primary School Years

Although attendance at school is not compulsory until a child turns six years of age, most children begin school when they are five. They usually leave primary school after seven years when they are young adolescents, about 12 years of age. It is during the K-6 years that students develop important attitudes towards learning and school. School structures vary; for example, some primary schools keep students until the end of Year 8, and some schools have a separate organization for students in the middle years (Years 5 to 8).

The primary years are important in assisting students to experience and understand their environment and lay the foundations for further learning. What students learn and experience during these years shapes their views of themselves and the world and can affect their later success or failure at school, at work and in their personal lives. Learning is generally organized around learning areas or subjects and are usually taught by a "generalist" teacher.

Secondary School Years

Students enter secondary school at about 12 or 13 years of age and are legally required to remain at school until they are 15. These adolescent years can be difficult for students, parents and teachers as the students in the same year group can be at different stages of physical, social and intellectual development. During these years, young people seek greater independence, continue developing their own identities and beliefs and often make lifelong friendships.

Schooling for adolescents must therefore be relevant and flexible and take into account their personal differences and needs. It must keep them on a path of continuous learning and prepare them for a world outside of school. Students are now encouraged to stay on to Years 11 and 12 and sit for their final year examination such as the Higher School Certificate (HSC) in NSW or progress to TAFE to undertake vocational education and training

(http://www.tradestraininginschools.nsw.edu.au/). In NSW government schools, students are assisted in planning and managing their transitions from school to work or to further education and training through the School to Work program (http://www.schooltowork.com.au/). The central elements of the program are the individual school to work plans developed by students themselves in Years 9 - 12, case managed by their teachers.

The Australian Tertiary Admission Ranking (ATAR) is used by Australian Universities to allocate places to students and ATAR scores vary by course and by university. The ATAR provides a measure of a student's overall academic achievement in relation to that of other students and helps universities rank applicants for selection. Generally, the higher the ATAR, the better chances students have of being accepted into their preferred course. For example an ATAR of 80.00 indicates that a student is in the top 20 per cent of his or her age group. The minimum subject requirements for tertiary entrance in each State or Territory can be viewed at the Australasian Curriculum, Assessment and Certification Authorities (ACACA) website (<u>http://acaca.bos.nsw.edu.au/go/leaving-school/tas/tertiary-entrance-information/</u>.)

NSW as a Case Study - Pre National Curriculum

A case study is a detailed investigation and can be qualitative or quantitative in nature, and often combines elements of both. The defining feature of a case study is its holistic approach—it aims to capture all of the details which are relevant to the purpose of the study, within a real life context. To do this, we have examined both the formal and informal pathways of RF education.

NSW Recreational Fishing Fee and Government Education Programs

When fishing in NSW waters, both freshwater and saltwater, you are required by law to pay a NSW Recreational Fishing Fee and carry a receipt showing the payment of the fee. This applies when spear fishing, hand lining, hand gathering, trapping, bait collecting and prawn netting or when in possession of fishing gear in, on or adjacent to waters. Licence fees are:

- \$6 3 days
- \$12 1 month
- \$30 1 year
- \$75 3 years

By law, all revenue raised by the recreational fishing fee is placed into two Trusts dedicated to recreational fishing - one for Saltwater (SW) and the other for Freshwater (FW) fishing (see http://www.dpi.nsw.gov.au/fisheries/recreational/fees). Since the introduction of the fee in 2001, a wide variety of programs have been funded under the following categories or platforms:

- Recreational fishing enhancement programs
- Recreational fishing education
- Aquatic habitat protection and rehabilitation
- Research on fish and recreational fishing
- Fishing access and facilities
- Enforcement of fishing rules
- Recreational fishing havens

Of particular relevance is the RF Education platform which has 4 Key programs:

1) Fishcare Volunteers: A volunteer program that provides face to face education of anglers to help them understand the fishing rules, promote responsible fishing practices and to play a role in running fishing clinics, educating school children and manning advisory stands at regional fishing shows. There are over 350 Fishcare Volunteers registered in the program across NSW and in 2011/12, volunteers participated in 509 registered events, making 51, 600 contacts and dedicating 17,000 hours of service.

2) Fishing workshops: A series of fishing clinics to teach children and other community groups how to fish and good fishing practices with each participant receiving quality fishing gear and tackle to set them up for fishing after the clinic. In 2011/12, a series of fishing clinics held across the State introduced over 8000 children to fishing.

3) Get hooked...It's fun to fish: This is the primary schools education program to teach school children at an early age how to fish, about the importance of aquatic habitats and to introduce them to safe and responsible fishing practices. This program is discussed in more detail later in the review.

4) Fishing guides, information and awareness raising: Provides a range of fishing brochures, stickers, guides and other informative material to help anglers to keep up-to-date on the latest fishing rules and good practices. Distribution of the material is free of charge to recreational fishers and done by fishing tackle stores, Fishcare Volunteers and Fisheries Officers. 300,000 Freshwater

and saltwater fishing guides are produced each year to help recreational anglers identify their catch and summarise the fishing rules.

Current expenditure for the RF education platform (last 5 years) is given in Table 3. In 2012/13 two programs accounted for over half of the \$2 million budget; Fishcare Volunteers (\$765,200) and Get Hooked (\$435,000). Fishcare is the flagship program of the Trusts, one of the most successful volunteer programs in NSW and central to the success of many of the NSW RF education programs. RF Guides (\$190,000), Information (\$142,500) and Awareness Raising (\$50,000) accounted for \$382,500 in 2012/13.

Table 3. Investment summary for the Recreational fishing education platform 2008-2013. Source: NSWRecreational Fishing Trusts Investment Plan 2008/09 - 2012/13

| YEAR | 2008/2009 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|----------|-------------|-------------|-------------|--------------------|-------------|
| FW Trust | \$304,551 | \$328,690 | \$387,970 | \$383 <i>,</i> 970 | \$392,720 |
| SW Trust | \$1,566,019 | \$1,457,155 | \$1,452,600 | \$1,461,540 | \$1,696,010 |
| TOTAL | \$1,870,570 | \$1,785,845 | \$1,840,570 | \$1,845,510 | \$2,088,730 |

NSW Private Education Programs

Young Guns Fishing Adventures (<u>http://www.younggunsfishing.com.au/</u>) have been operating for over 13 years and provide school excursions/incursions for both primary and high school and elective sports programs for high schools. They also service special needs (Muscular Dystrophy Association, Autism, ADD, Down Syndrome), school holiday programs through vacation care centres, kids fishing birthday parties, private and group beginner through to advanced lessons in fresh/saltwater competencies, casting instruction, exhibitions/demonstrations at outdoor shows, Scouts 1 & 2 fishing badges and High Risk Youth/Juvenile offender outreach programs in conjunction with Juvenile Justice and NSW Police (Figure 1). Young Guns Fishing Adventures currently operate excursions out of 70 sites across Sydney, Newcastle, Gold Coast and Melbourne, starting children at 3 years of age and service all the way through to elderly/wheel chair bound participants.

In 2012, they instructed over 64,000 students in fishing technique, sustainable fishing, life cycles, ecosystems, minimal impacts and many other topics relevant to the science, sport and recreation of fishing Every school holidays they service thousands of children at multiple sites a day.

In NSW, their biggest competitor of clinics for children is NSW Fisheries and the clinics provided by Department of Sport and Recreation supported by NSW Fisheries. Primary schools and high schools often choose to utilise the free offerings of government over private paid clinics; a difficult situation for a commercial or private operation to compete with. Another key issue is the lack of industry and government support of qualifications and PFIGA accreditation. Government departments do not advertise or openly recognise their support for accredited businesses in the fishing education and tourism sector, although it is available.

To address this the Professional Fishing Instructors and Guides Association (PFIGA) accredited members could be allocated an amount from the funding of these clinics to be paid to 'train' the

fishcare volunteers, or alternatively at least one or more professional/qualified fishing instructors paid to be present at these clinics. This would support the private education sector.



Figure 1. Take home gift bags from Young Guns Fishing Adventures. Source: Melanie Young

NSW Clubs and the Peak Bodies

The Recreational Fishing Alliance (RFA) of NSW (<u>http://www.rfansw.com.au/index.html</u>) is the peak representative body made up of member associations listed below. Individuals can also become members of the RFA which is a not-for-profit, volunteer organisation. Their main roles are to represent the interests of anglers in the management of the State's recreational fisheries, promote sustainable fishing practices, encourage the participation of children, secure rights fishing access, encourage recreational anglers to become involved in the well-being of the fishery, promote consultation and communication between government and anglers and promote fishing safety. The RFA does not provide a schools education program.

NSW Fishing Clubs Association (NSW FCA): is the oldest and largest affiliation of fishing clubs in Australia—it has just under 300 member clubs. Most of these are saltwater but some are inland based, and the coastal club members are usually involved in freshwater fishing as well. It has in the past run clinics for schoolkids in the Sydney region but does not do this anymore. Website www.nswfca.com.au

NSW Council of Freshwater Anglers: The peak body for freshwater angling clubs and associations with 28 member organisations. This is only a small volunteer organisation and doesn't have the resources to service schools. Some of the members are involved in the Fishcare Volunteers program

run by NSW Fisheries but they attend events in that capacity, not as representatives of NSW CFA. Website at <u>www.freshwateranglers.com.au</u>

Australian National Sportfishing Association (NSW Branch): ANSA is a large national network of clubs, branches, State and Federal bodies. It has over 200 clubs nationally and is very active in recreational fishing representation at all levels as well as in keeping track of records and other recreational fishing activities. No formal schools education program. Website www.ansansw.com.au

NSW Underwater Skindivers and Fisherman's Association: Devoted to the development, promotion and protection of Spearfishing as an ecologically sustainable method of fishing. No formal schools education program but does service schools when asked (e.g. Ulladulla High) Website http://usfa.com.au/

NSW Schools and Animal Welfare Guidelines

All teachers and students involved in fishing as part of a school activity must adhere to the advice provided in the National Code of Practice (NCOP) for recreational and sport fishing (Figure 2). This advice applies to all schools of the NSW Department of Education and Training, Catholic Education Commission and to those participating schools of the Association of Independent Schools of NSW (See http://www.schools.nsw.edu.au/animalsinschools/.) The NCOP can be found in the background section of this review. Also relevant is *The Australian Animal Welfare Strategy (AAWS)* which has been developed to provide the national and international communities with an appreciation of animal welfare arrangements in Australia and to outline directions for future improvements in the welfare of animals. It was jointly developed by national, state and territory governments, industry and the community and is available from http://www.daff.gov.au/animal-plant-health/welfare/aaws/online

NSW Primary (Years K-6)

Classes are usually organized around grades or years but schools also establish classes combining more than one year or grade within any single class. Student learning is divided into 6 Key Learning Areas (KLAs) each with specific content strands and a proportion of time: English (25-35% of time); Mathematics (20% of time); Creative Arts; Science and Technology; Human Society and its Environment or HSIE; and Personal Development, Health and Physical Education or PDHPE (all 6-10% of time). Much of the teaching time is therefore allocated to literacy and numeracy and this needs to be taken into account when developing RF resources.

Students usually have one teacher who teaches all the KLAs taking into account a number of curriculum related policies and perspectives. Learning is divided into three major stages. Stage 1 relates to Kindergarten to Year 2, Stage 2 relates to students in Years 3 and 4 and Stage 3 relates to students in Years 5 and 6. Embedded in each of the content strands are the objectives of Knowledge and Understanding, Skills and Values and Attitudes with Outcomes related to all objectives and the 3 stages of primary schooling. The assessment of student achievement is based on a variety of evidence gathered over time; it may include what students demonstrate informally in lessons, achievement on structured assessment tasks and information from tests including state-wide testing programs such as the Basic Skills Test student progress is assessed against outcomes specified for



Figure 2. Animal welfare guidelines for fishing in NSW schools can be accessed via the Animals in Schools web site which assists schools in satisfying the requirements of the *Animal Research Act 1985* (NSW) and the Australian code of practice for the care and use of animals for scientific purposes.

each KLA at the various stages of learning most students progress to the next grade at the end of each year. **NSW primary school teachers were not aware of any recreational fishing content in any current NSW syllabus**. However they stressed that it was possible to adapt a syllabus to suit local needs and meet the Board of Studies outcomes (e.g. the Y5 Marine Environment unit). The two most relevant knowledge areas were "Living things" (Science KLA) and "Environments" (HSIE KLA). However the PDHPE KLA had the most topical content strands (to address the lack of physical activity in children) and included "Active Lifestyle, Games & Sports, Interpersonal Relationships, Personal Health Choices and Safe Living" (see Appendix 1). Some primary schools had used the NSW Governments Department of Primary Industries "Get Hooked" (GH) program which is discussed next.

Success stories - Get hooked... It's fun to fish...

Launched in 2008 the NSW GH program encourages children to take an active role in the management of their waterways and fish stocks. Here primary school students are introduced to freshwater and marine fishing, the significance of aquatic life and life-cycles, catch and release skills, and the importance of sustaining a quality fish habitat, while practising safe and responsible fishing behaviours. Schools are invited to register in September each year (Figure 3) and once registered, teachers receive a manual, resource kit, an interactive DVD (see

http://www.youtube.com/watch?v=tvcuOSJ4208). The manual has six learning codes (Figure 4) based around the school curriculum with three of the teaching modules levelled at Stage 2 (Year 3 and 4 students) while the other three are levelled at Stage 3 (Year 5 and 6 students) (Table 4). They are also offered an in class visit (=incursion) usually in July-Sept that can involve a general talk, or a lesson based on the activities and the six codes. They can also attend a workshop (out of class excursion) at the end of the year (Oct-Nov), however the program is limited to schools that can be serviced professionally. Since 2008 a total of 259 schools and 15,000 students have been mentored through GH program. In addition 1,700 students have interacted with GH staff and volunteers at external events across NSW.



Figure 3. Advertising for Get Hooked NSW school program. Source: <u>http://www.dpi.nsw.gov.au/fisheries/recreational/info/get-hooked</u>

Table 4. Junior fishing code and NSW Board of Studies syllabus outcomes across all Key Learning Areas.Source: http://www.dpi.nsw.gov.au/fisheries/recreational/info/get-hooked).

| Junior Fishing Code | NSW Syllabus Outcomes |
|--|--|
| Code 1.Take only what you need | ENS2.5, ENS2.6, LTS2.3, COS2.1, DMS2.2, TS2.2 |
| Code 2.Fish with friends | ENS2.6, LTS2.3, SLS2.13, INS2.3, DMS2.2, TS2.2 |
| Code 3. You're the solution to water pollution | ENS2.6, LTS2.3, INVS2.7, COS2.1, INS2.3, DMS2.2, TS2.2, DRA2.3 |
| Code 4.Throw the little ones back | MS3.1, LTS3.3, INVS3.7 DMS3.8, COS3.1, INS3.3, DMS3.1, TS3.2 |
| Code 5. Don't leave your tackle behind | LTS3.3, INVS3.7, DMS3.8, COS3.1, INS3.3, DMS3.2, TS3.2, DRA3.3 |
| Code 6. Quality catchments equal quality fish | LTS3.3, INVS3.7, COS3.1, INS3.3, DMS3.2, SLS3.13, TS3.2, DRAS3.3 |

Note: All 6 KLA's covered and include: PDHPE (8 outcomes), Science and Technology (5 outcomes), HSIE (2 outcomes), English (2 outcomes), Creative Arts (2 outcomes), Mathematics (1 outcome); 65% of outcomes contained in PDHPE and Science and Technology syllabuses.



Figure 4. The six principles of the Junior Code of Conduct, which was developed from the National Code of Practice for recreational and sport fishing and adopted by the NSW Get Hooked program. Source: http://www.dpi.vic.gov.au/fisheries/education-and-training/fishing-for-kids/family-fishing-guide The "Get Hooked" program has the following core strengths;

- Consistent funding support from the Recreational Fishing Trust and support from the executive
- Local trained and accredited Fishcare Volunteers, which DET has confidence in and students can to
- Strong curriculum links, covering a variety of DET syllabus subjects e.g. HSIE, Maths, English, SAT, PDHPE, Creative Arts
- Incursion and excursion components, which are provided at minimal cost
- Support staff for teachers, to ensure consistent contact. Teachers need to have a means of contacting someone in relation to issues/problems/etc. This has been a comment often supplied willingly by principals/teachers during feedback responses
- Ability to improve, revise and refresh components of the program to ensure program is up to date with technology and trends. Source: Dee McElligott, National Recreational Fishing Conference Workshop, Gold Coast, August 2012.

NSW Junior Secondary (Years 7-10)

NSW has considerable variety in its types of secondary schools. These include co-educational comprehensive, single-sex, academically selective, specialist sports or performing arts, senior and multi-campus colleges, community and central schools and schools for specific purposes. Multi-campus colleges (that include University, TAFE and a Senior College) have been very successful and provide a broader, more appropriate curriculum and learning environment specifically suited to the senior secondary school years.

Most states and territories in Australia are looking at strategies to improve the retention rates of students beyond the legal leaving age, to increase curriculum opportunities beyond the school and are setting targets for increased student retention over a number of years. Many schools have achieved this through introducing broader and more relevant curriculum and more adult learning environments. This is evidenced by the growth of vocational education and training (VET) in schools and also the increase in enrolments in more academically challenging courses. For example, using the TVET pathway, secondary school students can start TAFE Marine Science courses while still at school.

For years 7-10 the NSW BOS provides outcomes-based syllabuses which lead to the School Certificate and prescribes compulsory subjects and their minimum hours of study. The Department sets additional mandatory time requirements for a number of subject areas for government high schools e.g.: in Years 7-10 an additional 100 hours each of English, mathematics and science. There have been significant changes to the curriculum in NSW, including: the introduction of the new HSC in 2000; a new framework for assessing and reporting students' achievement against standards; and the current revisions to Years 7-10 syllabuses.

Recreational fishing content can be found in the **Marine and Aquaculture Technology Content Endorsed Course Years 7–10 Syllabus** (<u>http://www.boardofstudies.nsw.edu.au/syllabus_sc/tech-applied-studies.html</u>) which is part of the Technological and Applied Sciences (TAS) Key Learning Area (KLA). Marine and Aquaculture Technology is an emerging field of study relating to sustainability of marine and related environments and the syllabus contains mandatory core 1 and 2 and a sufficiently broad range of optional modules to enable students to achieve the syllabus outcomes through a course of study reflecting their interests, location and resources. It can be studied as a 100-hour or 200-hour course. In a 100-hour course, students complete Core 1 and any five option modules. In a 200-hour course, students complete Core 1, Core 2 and six option modules additional to those in the first 100 hours. To assist course design the optional modules have been grouped into focus areas (Figure 5).

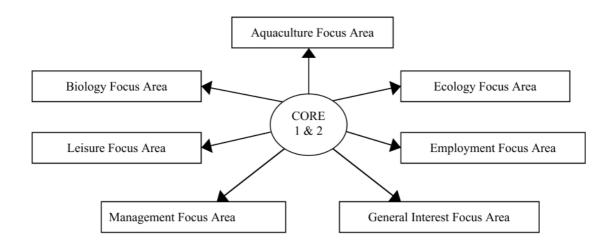


Figure 5. Focus areas in the Marine and Aquaculture Technology Content Endorsed Course Years 7–10 Syllabus. Note recreational fishing is found in the Leisure focus area.

Recreational fishing content is found in the Leisure Focus Area which has 7 modules (15-21), two are significant.

Module 18 – Fish Harvesting, introduces students to the methods used to catch fish. Students are required to relate each method to the behaviour and physiology of the animals being caught.

Module 19 – Manufacturing Fishing Equipment, introduces assembly techniques for basic fishing tackle made from readily available components and construction of simple items such as sinkers and spinners from common materials. Outcomes are given in Table 5.

Table 5. Outcomes (what students learn about and learnt to) in module 18 and 19 from the Marine andAquaculture Technology Content Endorsed Course Years 7–10 Syllabus

| Students learn about: | Students learn to: |
|--|---|
| Module 18 – Fish Harvesting • procedures relating to obtaining an amateur fishing licence • requirements for a professional fishing | Module 18 – Fish Harvesting tie different strength knots in fishing lines select the correct hook for the type of fish being sought |
| licence | select the correct bait for the type of fish being |

| sought catch bait rig a handline or rod and reel catch fish using a line rig a bait net Additional Content use a hand net (scoop or seine) make a simple fish trap identify fish species caught in the local area |
|---|
| |
| Students learn to: |
| Module 19 – Manufacturing Fishing Equipment tie line on a hand spool make spinners from a spoon rig lines for beach and estuary fishing Additional Content produce a fishing rod from a blank make sinkers using a mould design and produce fish traps and crab traps |
| |

Success stories - Fishing For Sport (FFS) in saltwater locations

This has been extremely popular (from 2008 to current) with junior secondary students. Organised by NSW DPI Education Officers based at 4 coastal locations (Wollongbar, Swansea, Sydney, Warilla,) and using NSW DPI Fish Care Volunteers to mentor years 7-10 in fishing skills and knowledge. Fishcare Volunteers undertake the sessions and provide loan roads, reel and tackle while the school generally provides the bait. Fishing rules and regulations, fishing safely and responsibly fishing skills (baiting, rigging and casting) are covered. At John Paul College, a Coffs Harbour catholic secondary school students are required to undertake 9-10 weeks per term of sport; students have many choices that includes fishing (Table 6).

| Sport | Description | Cost (\$) |
|---|---|-------------|
| Basketball | College grounds | No cost |
| Environmental/gardening | College grounds | No cost |
| Futsal (indoor soccer) | College grounds | No cost |
| Multi sports | College grounds | No cost |
| Football games (Oz tag, touch, gridiron, dodge ball) | College grounds | No cost |
| Walking/photography | Students bring own camera, required to cross main roads | No cost |
| Weights | College gym | 2 per week |
| Table Tennis | College grounds | 2 per week |
| Beach Walking/Beach Games | Students catch bus to local beaches | 4 per week |
| Surfing | Students catch bus to local beaches, must have minimum OSSA qualifications to do this sport and must bring their own surfboard to school on the bus | 4 per week |
| Wheelchair Basketball | Students catch bus to venue | 7 per week |
| Fishing | Students catch bus to jetty (port) area - bait provided and some hand reels available, students can bring their own fishing rod | 7 per week |
| Tennis | Students catch bus to venue, racquets provided | 8 per week |
| Zumba/Aerobics | Students catch bus to venue, health club provides instructors | 8 per week |
| Water Polo | Instructors from local water polo club | 8 per week |
| Kegel (9 pin bowling) | Students catch bus to venue | 9 per week |
| Gymnastics | Students catch bus to venue | 10 per week |
| Squash | Students catch bus to venue | 10 per week |
| Ten Pin Bowling | Students catch bus to venue | 10 per week |
| Learn to Surf | Part of surf school instruction. Students must have minimum OSSA qualifications. Boards and rash shirts provided | 11 per week |

Table 6. Sport costs at a coastal catholic high school indicate that fishing is a mid-priced option More expensive options include transport and expert tuition. Source: John Paul College, Coffs Harbour

NSW Senior Secondary (Years 11-12)

For years 11-12 the NSW BOS provides outcomes-based syllabuses and describes the Preliminary and HSC courses to be taught within each subject that may be undertaken as part of the HSC pattern of study. All schools are required to deliver programs of study that comply with the requirements of Board syllabuses, including coverage of all the essential content of the Board's syllabuses, including coverage of all the essential content of the Board's syllabuses. In addition the Department requires government schools to provide a 25 hour personal development course. There have been significant changes to the curriculum in NSW, including: the introduction of the new HSC in 2000.

Recreational fishing content can be found in the Marine Studies Content Endorsed Course Stage 6 Syllabus (http://www.boardofstudies.nsw.edu.au/syllabus hsc/syllabus2000 listm.html) which is comprised of a 30 hour Core, 23 optional modules and an optional personal interest project. After completing the core, schools are able to select from the optional modules to develop programs that respond to student needs and interests. These are electives and while they count towards the HSC they do not contribute to the Australian Tertiary Admission Rank (ATAR) for University entry.

The 30 hour core consists of 5 six hour modules below.

- Marine Safety and First Aid
- The Marine Environment
- Life in the Sea
- Humans in Water
- Marine and Maritime Employment

Of the 23 optional modules, one is particularly relevant (module 10 - Commercial and Recreational Fishing) and outcomes are given in Table 7. There are also many other modules of interest to recreational fishers that include: Dangerous Marine Creatures (module 3); Anatomy and Physiology of Marine Organisms (module 14); Seafood Handling and Processing (module 15); Marine Engineering (module 17); Boating and Seamanship (module 19). Spearfishers would be interested in the Skin Diving and Diving Science (module 16).

| Content Endorsed Course Stage 6 Syllabus. | | | |
|--|--|--|--|
| Students learn about: | Students learn to: | | |
| Optional Module 10: Commercial and Recreational Fishing | Optional Module 10: Commercial and Recreational Fishing | | |
| fish habitats and current state of Australian fish stocks effects of fishing on stocks regulations covering both amateur and professional fishing rules/regulations regarding species, size and bag limits that apply to amateur fishermen the legal restrictions on professional fishing techniques used by amateur and professional fishermen catching bait suitable for at least two species of fish selecting tackle suitable for river and beach fishing rigging lines to catch at least two species of fish scaling, gutting and filletting a fish fishing safety crab or fish trapping safety procedures for fishing from boats, rocks and beaches fishing methods of indigenous people different | locate fish habitats in one coastal or local area identify and discuss the status of stocks of major commercial fish species demonstrate the legal requirements that must be met before a professional licence is granted demonstrate appropriate fishing techniques make some item of tackle, eg spinners, sinkers, feathers, etc make a legal crab or fish trap undertake a practical investigation of the advantages/disadvantages of professional fishing techniques identify the parts of trawl gear and explain their functions interpret a sonar chart locate fishing areas using GPS identify those changes to equipment that have been made to prevent damage to the marine environment or species, eg turtle excluders | | |
| the value of professional fishing to the Australian economy the effects of commercial and recreational fishing on national and global fish stock of | | | |

Table 7. Outcomes (what students learn about and learnt to) in optional module 10 from the Marine StudiesContent Endorsed Course Stage 6 Syllabus.

| major commercial fisheries of Australia | |
|---|----|
| • the technology used by professional fishermen | en |

Vocational Education and Training (VET) Content Endorsed Courses (CECs)

VET CECs provide students with the opportunity to gain industry recognised national vocational qualifications under the Australian Qualifications Framework (AQF) as part of their NSW Higher School Certificate (HSC). Courses within VET CECs count as Board Endorsed unit credit for the HSC but <u>do not</u> contribute towards an Australian Tertiary Admission Rank (ATAR). Stage 6 VET Board Endorsed Courses include a range of different types of courses:

•VET CEC – Content Endorsed Course which may be delivered by School System RTOs, TAFE NSW or private providers

•TVET CEC - TAFE NSW Content Endorsed Course delivered by TAFE NSW only

•LDC – Locally Designed Board Endorsed Course delivered by School System RTOs or private providers

•TVET LDC – TAFE NSW Locally Designed Board Endorsed Course delivered by TAFE NSW only.

The Sport, Fitness and Recreation VET CEC is based on qualifications and units of competency contained in the nationally endorsed **Sport, Fitness and Recreation Training Package (SIS10). Recreational fishing content is found in SIS 20210**

(http://www.boardofstudies.nsw.edu.au/voc_ed/course-description-board-endorsed-courses-2012.html#sport-fitnes-recreation)

The AQF VET qualifications available in the Sport, Fitness and Recreation VET CEC are:

- Certificate II in Community Activities (SIS20110)
- Certificate II in Outdoor Recreation (SIS20210)
- Certificate II in Sport and Recreation (SIS20310)
- Certificate II in Sport Career Oriented Participation (SIS20410)
- Certificate II in Sport Coaching (SIS20510)
- Certificate III in Fitness (SIS30310)2
- Skill Set: Sports Medicine Australia Level 1 Sports Trainer

This qualification provides the skills and knowledge for an individual to be competent in performing core skills in outdoor recreation environments and assisting with the conduct of a range of outdoor activities. Work may be undertaken as part of a team and would be performed under supervision. Work would be undertaken in field locations such as camps or in indoor recreation centres or facilities, in differing environments such as water-based, dry land and mountainous terrains, using a diverse range of equipment.

This unit applies to those who work as assistant guides or guides under supervision in a range of fishing contexts across the recreational fishing industry. This may include those working as assistant fishing tour guides, sports fishermen, retail tackle shop assistants or those involved in fishing. This unit may also apply to outdoor recreation leaders working for outdoor education or adventure providers; volunteer groups; not-for-profit organisations or government agencies.

There are minimum work placement hours for any Sport, Fitness and Recreation HSC course. In a 180 hour course, 35 hours are required while in a 240 hour course, 70 hours are required. Details of units of competency are available in the Sport, Fitness and Recreation Training Package (SIS10) at www.training.gov.au.

Packaging rules

15 units must be completed (5 core and 10 elective units):

Core (5)

- Apply first aid
- Assist in conducting outdoor recreation sessions
- Minimise environmental impact
- Work effectively in sport and recreation environments
- Follow occupational health and safety policies

Electives (10)

Group I – Fishing

- Catch and handle fish
- Locate and attract fish

Group J – Fishing – tackle and bait

- Select, catch and use bait
- Select, rig and use terminal tackle
- Select, use and maintain fishing tackle outfits
- Construct and work simple fishing lures

General electives (most appropriate choices given)

- Maintain sport and recreation equipment for activities
- Provide arrival and departure assistance
- Prepare and present tour commentaries or activities
- Develop and maintain the general and regional knowledge required by guides

NSW North Coast TAFE

The National Fishing Industry Education Centre (Natfish) delivers a **SIS20210 Certificate II Outdoor Recreation – Fishing**: prepares you to assist in conducting fishing activities and a SIS30410 Certificate III Outdoor Recreation – Fishing: prepares you to safely guide fishing activities in a controlled environment (Table 8).



The Certificate III builds on the Certificate II course and simply has more subjects and two more workshops to complete. You can enrol straight into the certificate III course. These courses also complement the marine studies course (see above).

Table 8. Natfish outdoor recreation structure. Source:

http://northcoast.tafensw.edu.au/natfish/Pages/Natfish%20home.aspx

| Certificate II Outdoor Recreation -Fishing | Workshop dates |
|---|---|
| SISXIND101A Work effectively in sport & recreation environments CORE Cert II SISXOHS101A Follow occupational health and safety policies CORE Cert II & III SISOFSH201A Catch and handle fish SISOFSH206A Locate and attract fish | 26 th - 30 th March 2012 |
| HLTFA301B Apply first aid CORE Cert II & III SISOFSH202A Select, catch and use bait SISOFSH203A Select, rig and use terminal tackle SISOFSH204A Select, use and maintain fishing tackle outlits SISXFAC201A Maintain sport & recreation equipment for activities | 7 th – 11 th May 2012 |
| SISOFSH205A Construct and work simple fishing lures | 25 th - 27 th June 2012 |
| SISCOPS201A Minimise environmentel impact CORE Cert II & III SISCOPS304A Plen for minimal environmental impact SISCOPS306A Interpret weather conditions in the field CORE Cert III SISCOPS306A Interpret weather for marine environment SISCOPR301A Avelat in conducting outdoor recreation exercisions CORE Cert II | Covered over all workshops |
| Carifficais III Outdoor Recreation - Carifficais II units plus those below. | |
| SISOFSH315A Demonstrate beach fishing skills SISOFSH312A Demonstrate estuary fishing skills SISXRSK301A Undertake risk analysis of activities CORE Cert III SISXCCS201A Provide customer service CORE Cert III | 25 th - 29 th June 2012 |
| BSBWOR301A Organise personal work priorities and development CORE Cert III SISOODR302A Plan outdoor recreation activities CORE Cert III SISOODR303A Guide outdoor recreation sessions CORE Cert III TAEDEL301A Provide work skill instruction CORE Cert III SISXCAI306A Facilitate groups CORE Cert III SISXCAI306A Facilitate groups CORE Cert III SISXEMR201A Respond to emergency situations CORE Cert III SISOFSH307A Guide fishing trips SISOFSH308A Instruct fishing skills | 13 th – 17 th August 2012 AND 15 th – 19 th October 2012 |

Key Messages from NSW

Primary: The success of the "Get Hooked" government funded program is that it has been designed to link with NSW Board of Studies syllabus outcomes. Teachers are very time poor in the classroom so the more outcomes (including across learning areas) that can be addressed in the one activity, the more likely the uptake. "Get Hooked" targets Stage 2 (Year 3 and 4 students) and Stage 3 (Year 5 and 6 students). There is a gap in delivery for younger Stage 1 children (K-Year 2). At this age children may not have developed the motor skills to learn "how to fish" but can process simple messages about the environment, fishing and sustainability.

In Australian primary schools there has been a revival of school gardens in recent years facilitated by programs such as the Stephanie Alexander Kitchen Garden (SAKG) Program and the Organic School Gardens Program (OSGP). The SAKG Program began in 2001 and is based on a philosophy of engaging children in growing and preparing food to provide positive and memorable food experiences that lead to life-long healthy eating habits

(http://www.kitchengardenfoundation.org.au/). As participants in the Kitchen Garden Program, eight to twelve year-old children spend structured time in a productive veggie garden and homestyle kitchen as part of their everyday school experience. There they learn skills that will last them a lifetime, and discover just how much fun it is to grow and cook their own seasonal vegetables and fruits. They are very popular among teachers.

The Organic School Gardens Curriculum Program (<u>http://www.organicschools.com.au/</u>) is a free education program designed for primary schools to provide lessons and expert information for setting up and maintaining an organic school garden. The site contains detailed notes to assist supervisors, teachers and parents to understand and implement the lessons with their students.

Both these programs serve as excellent models for developing new in-school programs, as they are designed **to engage children at a young age and provide a positive and memorable experience.** Any RF primary school program needs to mirror this.

Secondary: Despite the good coverage and content, the current positioning of RF outside the science curriculum, and as either optional or elective modules, is not enhancing its current low academic profile. At present it is not seen as 'core business' by many schools. Also the Stage 6 Marine Science Content Endorsed Course does not contribute towards an ATAR in NSW, providing little reason for year 12 students, wanting to pursue tertiary education, to study it.

In NSW, Board of Studies (BOS) developed courses (1 to 2 unit value) are the only ones that can be included in the ATAR calculations (see http://www.boardofstudies.nsw.edu.au/syllabus http://www.boardofstudies.nsw.edu.au/syllabus<

If RF was to be included, the syllabus would have to be re-written by the NSW BOS to satisfy *sufficient academic rigour* (i.e. to a Stage 6 Board Developed Course) and a formal BOS examination would need to occur state-wide. Then the Universities Admissions Centre (UAC) which processes

applications for admission to most undergraduate courses at participating institutions (mainly located in NSW and the ACT) would have to agree to list it as a Category B course (see http://www.uac.edu.au/undergraduate/atar/ for list). However, there are examples of board developed courses that are not listed by the UAC and are therefore not included in the ATAR calculation.

There is also a tendency to group RF with leisure/outdoor recreation and commercial/ primary industry activities which students currently do not see as a viable or potential career path. This has led to a shortage of students entering university courses and a leadership vacuum in many primary industry sectors, particularly the fishing industry. Also wider sustainability, environmental and ethical and community related messages are absent from the content which deals mainly with basic instruction on "How to fish" and some more advanced messages involving improving fishing practices, safety, gear, proper use of equipment, and knowledge of basic regulations.

This highlights the need for RF to re-connect with the pure and applied science underpinning it (i.e. fishery biology) and to provide a clear and direct connection to areas of the curriculum. Another necessary step, to address RF current low academic profile in NSW is to change its educational delivery by placing it in a 21st century context. This has been done very successfully with "agriculture" which is now being publicised as 'Healthy Foods in Healthy Environments', a positive way of looking at food and fibre production in the 21st century.

Clubs and peak bodies: Surprising little is done linking schools and fishing clubs in NSW, although many of the members are passionate advocates of RF and likely be Fishcare volunteers. Increasing red tape associated with schools was mentioned by the president of the NSWFCA as a constraint while NSW CFA had no resources to service schools. The NSW RF trust model also works against clubs as the government has its own schools education program and volunteer network and many clubs don't have the resources to compete with this. However, the RF trust does fund individual clubs occasionally (e.g. Narooma Sport and Gamefishing Club Inc. - to hold junior fishing clinics and Camp Quality and CanTeen clinics and the Burringbar Fishing Club - to teach how to fish in a sustainable manner and provide equipment). At present, the NSW fishing club network is an underutilised asset. There may also be future sustainability issues with NSW RF education if links between schools, clubs and the community are not valued and supported.

Other States and Territories - Pre National Curriculum

АСТ

Preschool-Y10

The 2007 ACT Department of Education's curriculum framework, *Every chance to learn*, describes what is essential for ACT students to learn from preschool to year 10 (http://activated.act.edu.au/ectl/). The 25 Essential Learning Achievements (ELA) that make up the curriculum framework are summarised in Figure 6. Key ELAs for RF fall within the Health and Physical Education (ELA 12 and 13) and Science (ELA 19 and 20) content areas, although others such as Mathematics could easily be incorporated. The curriculum framework is also divided into 4 bands of development: Early Childhood (EC - preschool to year 2); Later Childhood (LC - year 3 to year 5); Early Adolescence (EA - year 6 to year 8) and Later Adolescence (LA - year 9 to year 10).

ELA 20 acts for an

future

environmentally

sustainable

understanding

| Technology ELA 25 designs, makes and appraises using technology | | English ELA 8 listens and speaks with purpose and effect ELA 9 reads effectively ELA 10 writes effectively ELA 11 critically interprets and creates texts |
|--|---|--|
| Social sciences ELA 21 understands about Australia and Australians ELA 22 understands and values what it means to be a citizen within a democracy ELA 23 understands world issues and events ELA 24 makes informed choices about money and finance | Interdisciplinary ELA 1 uses a range of strategies to think and learn ELA 2 understands and applies the inquiry process ELA 3 makes considered decisions ELA 4 acts with integrity and regard for others ELA 5 contributes to group effectiveness ELA 6 uses Information and Communication Technologies effectively | Health and physical education ELA 12 takes action to promote health ELA 13 is physically skilled and active ELA 14 manages self and relationships |
| Science ELA 19 understands and applies scientific knowledge | | Languages ELA 15 communicates with intercultural |

Figure 6. Organisation of the Essential Learning Achievements (ELA) in the ACTs *Every chance to learn*. curriculum framework. Source: <u>http://activated.act.edu.au/ectl/framework.htm</u>

Mathematics

ELA 16 understands and

ELA 17 chooses and uses measures ELA 18 recognises and

applies number

represents patterns and relationships

Of particular importance to RF is ELA 20: 'The student acts for an environmentally sustainable future'. Essential content can be found across all bands and could include some of the following as an example:

- 20.EC.1 elements of the natural environment that humans, animals and plants need for survival
- 20.EC.2 different living things in their local environment and some observable relationships between living things and their environment
- 20.LC.6 how protecting the environment requires that people work together as citizens and consumers and participate in appropriate actions as environmental stewards or in other civic action to effect positive change.
- 20.EA.1 concepts of interdependence of living things, habitat and ecosystem
- 20.EA.2 some of the processes by which human activities change natural environments in positive and negative ways (e.g. reducing feral animal populations, tourism, deforestation)

• 20.LA.4 how people's views on the environment influence government policy and nongovernment organisations, and the ways in which governments attempt to address issues of development and sustainability.

A wealth of resources exists for teachers seeking activities for students that address this ELA. Environmental organisations such as Waterwatch, Landcare, the Australian Sustainable Schools Initiative Program in the ACT and the ACT Natural Resource Management Council, among many others, have recently produced education packages that are informative and engaging. Many have components that deal with native fish and pest species such as European Carp and Mosquito Fish. For example *Understanding Canberra's Wetlands*, a curriculum program for the school community of the ACT includes many of these and can be adapted and made suitable for Years 11 and 12 (http://www.sustainableschools.act.gov.au/ data/assets/pdf file/0009/145656/Urban Wetlands book.pdf.) Also Understanding the Land through the Eyes of the Ngunnawal People, A Natural Resource Management Program for ACT schools is available through the sustainable schools site (http://www.sustainableschools.act.gov.au/curriculum)

Senior Secondary

In Years 11 and 12 the Board of Senior Secondary Studies (ACTBSSS) is the statutory authority responsible for the certification of senior secondary school studies in government and non-government schools in the ACT (<u>http://www.bsss.act.edu.au/curriculum/courses</u>). Courses are accredited on the basis that they meet the requirements for the following classifications. A course may meet the requirements for a number of classifications:

A Courses: These courses have been deemed by the Board to be educationally sound and appropriate for students in Years 11 and 12

M Courses: These courses are A courses which have been deemed by the Board as providing appropriate educational experiences for students who satisfy specific disability criteria.

T Courses: These courses have been deemed by the Board to prepare students for higher education **H Courses:** H classification is given to a course that has been designed and accredited by an Australian National University and where successful completion of the course will be recognised towards an undergraduate degree

V Courses: These courses may lead to the award of a Vocational Certificate or Statement of Attainment

R Courses: These courses are appropriate for students in Years 11 and 12 and are usually designed to provide personal development, recreational or community services activities.

C Courses: These courses are accredited vocational education and training programs appropriate for students in Year 11 and 12, which are delivered and assessed by Registered Training Organisations **E Courses:** Are vocational programs registered with the BSSS which lead to a nationally recognised vocational qualification (Certificate or Statement of Attainment) and are delivered by an external Registered Training Organisation.

Type 1 courses are courses which have been developed by a college while Type 2 courses are courses which have been developed by more than one college.

Fish as a resource are referred to and used as a context for teaching (minor content) in the **Biology**, A/T Course, Type 2 which included comparison and contrast of respiratory systems in fish vs. humans and a fish respiratory system dissection. There was also some fishing content in the **Physical Education**, A/M Course, Type 2 engage in 3-5 practical activities such as Ultimate Frisbee, Floor Hockey, Archery, Swimming, Beach Volleyball, Squash, Matt Ball, Ice Skating, Lawn Bowls, Paddle Boating, Fishing, Croquet, Surfing, Snorkelling, Snow skiing and snow boarding

However the main RF content was in the **Outdoor Education**, A/T/V Course, Type 2 under Fishing Sports which is part of the 2011 Health, Outdoor and Physical Education framework and includes:

- 1. Freshwater Fishing
- 2. Saltwater Fishing
- 3. Advanced Angling

A maximum of 2 x 0.5 units from this activity group may count towards a Year 12 Certificate and descriptions of these courses are given below.

1. Freshwater Fishing A Value: 0.5

Teachers should refer to the relevant Outdoor Education mandatory procedures for their school system.

Prerequisites

There are no prerequisites to this unit.

Duplication of Content Rules

Refer to pages 23.

Specific Unit Goals

This A unit should enable students to:

plan for freshwater fishing activity including aspects of personal requirements and environmental conditions

identify and select appropriate equipment and clothing with respect to working order and appropriateness and OHS

identify and apply appropriate OHS to equipment and activities

demonstrate proficiency in freshwater fishing including relevant techniques and skills

demonstrate teamwork skills and communicate effectively in a freshwater fishing context

demonstrate minimum impact conservation ethics all times and in all situations

reflect on the activity and personal performance and identify improvements for future experiences

Content

Participation in three days of field trips involving a range of relevant activities appropriate to the needs, interests and abilities of the group

Planning for freshwater fishing:

- fishing fitness, personal nutritional and hydration requirements
- dealing with weather and environmental conditions
- identification of potential hazards and appropriate safety procedures
- first aid and emergency procedures
- awareness of relevant legislation and any land management policies, procedures and requirements with respect to national parks and recreation reserves, including private land holders

• targeted sport legislative policies and procedures

Equipment and clothing:

- appropriateness to environmental conditions and planed activity
- suitability, fit, comfort and safety
- OHS safe use, packaging, care and maintenance
- manufacturer's specifications
- appropriate tackle requirements for a target species

Technical skills development:

- balance, movement and confidence
- casting, playing and landing fish
- identify river flows and habitats
- knot tying, rod, line and lure set up
- minimisation of risk
- personal safety and safety of others

Environmental issues and minimum impact ideals and practices:

- identification of native and introduced fresh water species and their habitats
- Reflection on planning, process and personal performance

Teaching Strategies

Refer to teaching and learning strategies on page 31.

Assessment

Refer to page 31. Ensure that the correct weighting value is used for assessment of this 0.5 unit.

| Student Capabilities | Goals | Content | Teaching | Assessment |
|---|--------------|--------------|--------------|--------------|
| Creative and critical thinkers | \checkmark | \checkmark | \checkmark | \checkmark |
| Enterprising problem-solvers | \checkmark | ✓ | \checkmark | \checkmark |
| Skilled and empathetic communicators | \checkmark | \checkmark | \checkmark | \checkmark |
| Informed and ethical decision-makers | \checkmark | ✓ | \checkmark | \checkmark |
| Environmentally and culturally aware citizens | \checkmark | \checkmark | \checkmark | \checkmark |
| Confident and capable users of technologies | \checkmark | ✓ | \checkmark | \checkmark |
| Independent and self-managing learners | \checkmark | \checkmark | \checkmark | \checkmark |
| Collaborative team members | ✓ | ✓ | \checkmark | \checkmark |

Specific Unit Resources

Books

Allen, R. 2000. 'Australian Fish and how to catch them,' Lansdowne Publishing, Sydney Bull, J. 'Catching Trout in Australia - Bait, Lure and Fly,' Australian Fishing Network, Vic 'NSW Fishing Atlas,' Penguin Books, Australia

Pollard, J. 1995. 'Complete guide to Australian Fishing,' Book Company International, Sydney

Prayer, K. *'Tie-a-Fly,'* Tackle House Ltd, Taupo, NZ Robson, N. & Scholes, D. *'Tasmanian Angler'* **Websites** <u>www.ausfish.com.au;</u>

www.Fish net.com.au www.sportsfish.com.au

2. Saltwater Fishing A Value: 0.5

Teachers should refer to the relevant Outdoor Education mandatory procedures for their school system.

Prerequisites

There are no prerequisites to this unit.

Duplication of Content Rules

Refer to pages 23.

Specific Unit Goals

This A unit should enable students to:

plan for saltwater fishing activity including aspects of personal requirements and environmental conditions

identify and select appropriate equipment and clothing with respect to working order and appropriateness and OHS

identify and apply appropriate OHS to equipment and activities

demonstrate proficiency in saltwater fishing including relevant techniques and skills

demonstrate teamwork skills and communicate effectively in a saltwater fishing context

demonstrate minimum impact conservation ethics all times and in all situations

reflect on the activity and personal performance and identify improvements for future experiences

Content

- Participation in three days of field trips involving a range of relevant activities appropriate to the needs, interests and abilities of the group
- Planning for saltwater fishing:
- fishing specific fitness, personal nutritional and hydration requirements
- dealing with weather and environmental conditions
- identification of potential hazards and appropriate safety procedures
- first aid and emergency procedures
- awareness of relevant legislation and any land management policies, procedures and requirements with respect to national parks and recreation reserves
- targeted sport legislative policies and procedures

Equipment and clothing:

- appropriateness to environmental conditions and planed activity
- suitability, fit, comfort and safety
- OHS safe use, packaging, care and maintenance
- manufacturer's specifications

Technical skills development:

- balance, movement and confidence balance, movement and confidence
- casting, playing and landing fish
- identify tides and estuarine habitats
- knot tying, rod, line and lure, bait set up
- minimisation of risk
- personal safety and safety of others

Environmental issues and minimum impact ideals and practices:

• Reflection on planning, process and personal performance

Teaching Strategies

Refer to teaching and learning strategies on page 31.

Assessment

Refer to page 31. Ensure that the correct weighting value is used for assessment in this 0.5 unit.

| Student Capabilities | Goals | Content | Teaching | Assessment |
|---|--------------|--------------|--------------|--------------|
| Creative and critical thinkers | \checkmark | \checkmark | ✓ | \checkmark |
| Enterprising problem-solvers | \checkmark | ✓ | ✓ | \checkmark |
| Skilled and empathetic communicators | \checkmark | \checkmark | ✓ | \checkmark |
| Informed and ethical decision-makers | \checkmark | \checkmark | \checkmark | \checkmark |
| Environmentally and culturally aware citizens | \checkmark | \checkmark | ✓ | \checkmark |
| Confident and capable users of technologies | \checkmark | \checkmark | \checkmark | \checkmark |
| Independent and self-managing learners | \checkmark | ✓ | ✓ | \checkmark |
| Collaborative team members | ✓ | ✓ | ✓ | \checkmark |

Specific Unit Resources

Books

Allen, R. 2000. 'Australian Fish and how to catch them,' Lansdowne Publishing, Sydney. Bull, J. 'Catching Trout in Australia - Bait, Lure and Fly,' Australian Fishing Network, Vic. 'NSW Fishing Atlas,' Penguin Books, Australia

Pollard, J. 1995. '*Complete guide to Australian Fishing,*' Book Company International, Sydney Prayer, K. '*Tie-a-Fly*,' Tackle House Ltd, Taupo, NZ

Robson, N. & Scholes, D. 'Tasmanian Angler'

Websites

www.ausfish.com.au www.Fish net.com.au www.sportsfish.com.au

3. Advanced Angling A Value: 0.5

Teachers should refer to ACT Dept of Education and Community Services *Outdoor Adventure Activities - Mandatory Procedures* for **Shore Fishing.**

Prerequisites

Fresh Water Fishing or Salt Water Fishing

Duplication of Content Rules

Refer to pages 23.

Specific Unit Goals

This A unit should enable students to:

build on previous experience to contribute to the planning of an angling program

apply an understanding of the suitability of a range of equipment types relevant to differing conditions and user abilities

understand and develop an aesthetic appreciation of the alpine environment and a sense of place

demonstrate high level proficiency in angling including relevant techniques and skills

take on leadership roles within the program including instruction of other students and modelling of best practice participation

develop a thorough knowledge of key planning requirements

critically reflect and evaluate personal and group outcomes and safe practice and make recommendations

Content

Participation in three days of field trips involving a range of relevant activities appropriate to the needs, interests and abilities of the group

Contribution to group planning for angling:

- angling specific fitness, personal nutritional and hydration requirements
- applying weather and interpretation of data
- risk management processes
- first aid and emergency procedures
- thorough knowledge of relevant legislation and any resort policies, procedures and requirements

Environment:

- environmental issues
- management practices
- responsiveness to place
- Equipment and clothing:
- differentiate suitability of a range of equipment types
- manufacturing processes involved in activity equipment
- technical specifications of equipment
- suitability of equipment for a range of users

Technical skills development:

- fluidity and control in a wide range of terrain and conditions
- lure and bait selection for targeted species
- knots and line skills to compliment lure or bait requirements
- Leadership:
- understanding, appreciating and modelling best practice participation
- promoting inclusion
- assisting with delivery of instruction to beginners
- development of personal leadership style, skills and experience

• contributing to the overall group outcomes of the program Critical reflection:

- group and personal outcomes
- safe practice and risk management
- effective leadership
- •

Teaching Strategies

Refer to teaching and learning strategies on page 31.

Assessment

Refer to page 31. Ensure that the correct weighting value is used for assessment in this 0.5 unit.

| Student Capabilities | Goals | Content | Teaching | Assessment |
|---|--------------|--------------|--------------|--------------|
| Creative and critical thinkers | \checkmark | \checkmark | \checkmark | \checkmark |
| Enterprising problem-solvers | \checkmark | ✓ | \checkmark | \checkmark |
| Skilled and empathetic communicators | \checkmark | \checkmark | \checkmark | \checkmark |
| Informed and ethical decision-makers | \checkmark | ✓ | \checkmark | \checkmark |
| Environmentally and culturally aware citizens | \checkmark | ✓ | ✓ | \checkmark |
| Confident and capable users of technologies | \checkmark | ✓ | \checkmark | \checkmark |
| Independent and self-managing learners | \checkmark | ✓ | ✓ | \checkmark |
| Collaborative team members | ✓ | \checkmark | ✓ | ✓ |

Specific Unit Resources

Books

Allen, R. 2000. 'Australian Fish and how to catch them,' Lansdowne Publishing, Sydney Bull, J. 'Catching Trout in Australia - Bait, Lure and Fly,' Australian Fishing Network, Vic 'NSW Fishing Atlas,' Penguin Books, Australia Pollard, J. 1995. 'Complete guide to Australian Fishing,' Book Company International, Sydney Prayer, K. 'Tie-a-Fly,' Tackle House Ltd, Taupo, NZ Robson, N. & Scholes, D. 'Tasmanian Angler'

Websites

www.ausfish.com.au www.Fish net.com.au www.sportsfish.com.au

Vocational Education and Training (VET) and the ACT

In the ACT VET programs are designed around Training Packages endorsed by specific industry areas. These E courses are written to a curriculum framework and accredited as a vocational program. Students are able to receive dual accreditation towards an Australian Qualifications Framework (AQF) qualification and the ACT Year 12 Certificate. The National Training Information Service website (http://training.gov.au/) lists all Training packages, Qualifications, Accredited courses, Units of competency and Skill sets. The BSS/ACT VET lists SR003 - Outdoor Recreation Industry Training Package on their web site. However this has now been superseded the Sport, Fitness and Recreation Training Package (SIS10) as previously described for NSW and is the same for all states and territories. The ACT Board of Senior Secondary Studies is responsible for ensuring that colleges offering courses leading to a nationally recognised vocational qualification meet relevant quality standards, and that appropriate policies and procedures are in place. To achieve these standards, most ACT secondary colleges offering Years 11 and 12 have become Registered Training Organisations (RTOs). Each college is scoped to deliver different VET programs and further information about specific industry areas can be found by visiting their listing on http://training.gov.au/

| College | RTO Number | College | RTO Number |
|-----------------------------------|------------|-------------------------------|------------|
| the Canberra College | 88008 | St Clare's College | 88009 |
| Melba Copland Secondary School | 88012 | St Francis Xavier College | 88024 |
| Dickson College | 88007 | Daramalan College | 7117 |
| Gungahlin College | 88208 | Erindale College | 88000 |
| Hawker College | 88006 | Lake Ginninderra College | 88005 |
| Lake Tuggeranong College | 88010 | MacKillop Catholic College | 88003 |
| Marist College | 88004 | Merici College | 88011 |
| Narrabundah College | 88013 | St Edmund's College | 88014 |

Table 9. Registered Training Organisations in the ACT. Source. <u>http://www.bsss.act.edu.au/vet_programs</u>

Other Content - Upper Murrumbidgee and ACT Waterwatch

The Waterwatch network (http://www.act.waterwatch.org.au/) is made up of individuals, community groups and school groups who undertake a variety of biological and habitat assessments, including physical and chemical tests to build up a picture of the health of their waterways and catchments. Waterwatch also offers a wide variety of free educational programs which can be tailored to meet the curricular requirements of classes and their teachers and have been used safely and successfully in schools across Australia for many years now. Most importantly, Waterwatch educational programs are designed to lead students from awareness to action in their care for and commitment to the local environment. Many of these programs have a freshwater pest component, which focuses on fishing for Carp in the ACTs rivers and lakes.

For example "The Source Water Education Project" aims to assist teachers in finding, understanding and using the best and most suitable activities for water quality, catchment and conservation education and can be found in the "Our Water". Source Water Protection for the ACT available from http://sactcg.org.au/SACTCG_WWTeachingResources

NT

NTCF T-Y10

Since 2002 the Northern Territory (NT) has had a mandated Curriculum Framework (CF) that identified learning outcomes for all Northern Territory learners from Transition to Year 10. The NTCF describes what learners are expected to achieve and is used to determine what learners have achieved (http://www.education.nt.gov.au/teachers-educators/curriculum-ntbos/ntcf)

The learning areas are:

- 1. Health and Physical Education
- 2. Languages
- 3. Studies Of Society and Environment (SOSE)
 - Enterprise
 - Environment
 - Indigenous Studies
 - Social Systems and Structures (excluding Time, Continuity and Change)
- 4. Technology and Design
- 5. The Arts
- 6. Indigenous Languages and Culture

Of particular importance to RF is the Environment strand in the SOSE Learning Area (Figure 7). This has three elements that can address sustainability issues related to fishing

- Place, Landforms and Features
- Environmental Awareness and Care
- Natural Systems

RF could also be part of the Health and Physical Education learning area which focuses on the multiple dimensions of health and how these influence an individual's development. Strand 3 Participating in Physical Activity and Movement is the most relevant.

The Year 10 curriculum (http://www.education.nt.gov.au/teachers-educators/curriculumntbos/year-10-curriculum) is intended to establish Year 10 as a foundation year for senior secondary. It is the product of aligning the learning outcomes of the NTCF with assessment requirements and achievement standards of the Northern Territory Certificate of Education and Training (NTCET). All Year 10 students will be enrolled in the four core subjects of English or English as a Second Language, Mathematics, Science and Studies of Society and the Environment (SOCE).

The five NTCF strands for Science are condensed to two strands (Table 10). The first strand remains as science as inquiry. The second strand, scientific knowledge, comprises the remaining subject specific strands of life and living, natural and processed materials, energy and change, and earth and beyond. Life and living is the most relevant subject specific strand for fishing. The NTCET is based upon the South Australian Certification of Education (SACE) which is administered by the SACE Board of South Australia and these subjects are discussed in the SA section of the review.

| Year 10 | Year 11 - Stage 1 | Year 12 - Stage 2 |
|-------------------|--|---|
| Extension Science | Biology Chemistry Physics | Biology Chemistry Physics |
| Balance | Gaclogy Nutrition Psychology Scientific Studies | Geology Mutriticen Psychology Scientific Studies |

Table 10. Science Courses and Senior Secondary Pathways. Source: NT BOS Year10 Curriculum

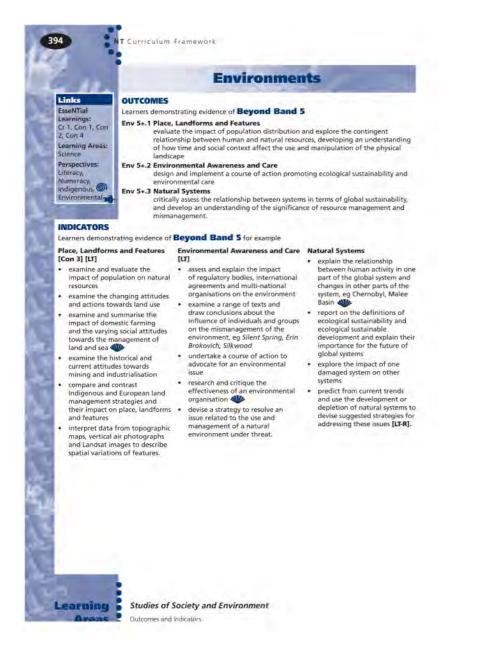


Figure 7.Example of content in the Environment strand of the SOSE Learning Area.

Other Content - NT Government Development Plans and Strategies

Recreational fishing is an important part of the Northern Territory lifestyle, a major tourism Drawcard and a significant contributor to its economy, with wide recognition as a large and growing industry. Recreational fishing survey and fishing tour operator data indicate that more than 35 000 Territory residents and 54 000 visitors fished in the Territory during 2010. It is estimated that at least \$80 million was spent on recreational fishing and fishing tours within the Northern Territory during 2010. Its success and popularity largely depend on the number and size of barramundi available in the NT. Approximately half of all barramundi caught recreationally in Australia come from NT waters.

Because of this importance the NT government (Department of Primary Industry and Fisheries) has developed a number of RF development plans and strategies, conducts surveys and has an annual Fishery Status Report that includes a RF Consultation, Communication and Education section. The RF Development Plan 2012-2022 lists as an action, as part of the Community Stewardship Key Strategic Issue (page 12), to develop a community education program, including in schools. Another key action in the Indigenous Fisheries Development Strategy 2012–2014 is to support the NT's Indigenous marine rangers to deliver fisheries education activities in their communities (Figure 8). The government has also developed information packages for recreational fishers on all aspects of barramundi fishing in the NT which includes information on fishing methods, locations of boat ramps, catch and release practices, as well as a copy of the recreational fishing controls booklet outlining regulations applying to the recreational sector. Presentations are made to schools, community groups and fishing clubs on best practice handling techniques and issues affecting sustainability of the resource. The government run holiday workshops for kids finished in 2008.

| Aurham Territory Lintestyte | Key Strategic Issues | Statistics | Action Plan |
|---|--|--|---|
| RECREATIONAL FISHING DEVELOPMENT PLAN 2012 - 2022 | Community stewardship, ethics, behaviour and safety, especially boating safety | Strategies Ensure public awareness of boating regulations and safe boating practices. | Develop a boating safety swareness program with specific publications and television advertising. Consolidation of government and community reporting lines such as River Watch. Fishwatch and Marine Wildwatch. |
| | | Increase the involvement of recreational fishers in the monitoring of fisheries to enhance their sense of stewardship. | Identify practical means of including fishers in voluntary data collection programs. |
| 1111 | | Ensure fashery controls reflect the contemporary values and attudes of recreational fishers and promote responsible fishing practices. | Develop and promote a voluntary code of conduct for recreational fishing in the Northern Territory. Develop a code of conduct for fishing competitions. |
| Al HAH | | Promote understanding of the reasons for various fishing controls to maximise voluntary compliance. | Ensure regulations remain easily understood and meet management objectives. Develop a community education program, including in schools. Ensure an appropriate penalty regime. |
| | | Identify possible roles for fishing clubs to enhance community stewardship of fishery resources. | Consult with fishing clubs and associations to identify potential ongoing involvement. |
| | | Explore the viability of a voluntary fisheries liaison officer (VFLO) program to educate fishers and collect data. | Consider potential viability of a VFLO program that would also collect recreational fishing data. |
| | | Review the possible need for a code of conduct or specific regulation of annual fishing competitions. | Consult with host clubs and organisations. Encourage tournament organisers to secure national accreditation. |

Indigenous Fisheries Development Strategy 2012–2014

| EPARTMENT | RESOURCES | FISHERIES DIVISION | |
|-----------|-----------|--------------------|--|
| | | | |

| Strategic priorities | Key actions | Major outcomes |
|--|--|---|
| Support the employment of more Aboriginal Territorians in the seafood industry. | Develop programs that address identified areas and activities with high potential and priority for Indigenous employment. Continue to support the Department's Indigenous apprenticeship program. | Increased rates of Indigenous employment in the operation and development of the seafood industry. |
| | Use internships within Fisheries to train future seafood industry leaders from remote communities. Assist community members to receive nationally accredited training in seafood industry leadership. | Aboriginal Territorians actively engaged at all levels of fisheries management. |
| Aquatic resource management | Regularly consult with communities on fisheries management issues. | A fisheries management framework that has greater Indigenous participation at a regional and |
| Involve Aboriginal communities in fisheries management. | Undertake a pilet project to develop a regional Indigencus Fisheries Management Framework. Assist Land Councils and communities establish Sea Country plans, including the development of Indigencus Protected Areas. | Territory level. |
| Protect customary fishing rights. | Review and update the definition of 'customary fishing' in the Fisheries Act. | Customary fishing rights enshrined in the Fisheries Act. |
| Recognise customary management of coastal and marine areas. | Continue to manage and expand the indigenous Community Marine Ranger program. Assist the education of marine rangers on fisheries management, fisheries rules and regulations. Amend the NT Fisheries legislation to enable appropriately trained marine rangers to be more actively involved in Fisheries compliance. | Customary management and traditional knowledge included in fisheries management framework. |
| Support the NT's Indigenous marine rangers. | Support the marine rangers to deliver fisheries education activities in their communities. Engage marine rangers in fisheries research activities where appropriate. Support the delivery of fisheries compliance training to marine rangers. Identify and address barriers to the delivery of high quality reports from the marine rangers. | A high standard of coastal surveillance and reporting by Indigenous people that contributes to improved aquatic resource protection and management. |

Figure 8. Government publications showing importance of RF to NT

The NT Government also provides a small amount of money each year to the peak body (Amateur Fishermen's Association of the NT Inc. or AFANT) which represents recreational fishing interests in the NT, for distribution to NT fishing clubs through their Fishing Clubs Small Grants Program. These fund activities such as junior angler and women's fishing clinics (see http://afant.com.au/about-us/annual-reports/)

QLD

Years 1-9

The Queensland curriculum, assessment and reporting framework (Y1-9) has 5 learning areas:

- The Arts
- HPE
- Languages
- SOSE
- Technology (Figure 9)

RF could be used to teach context in the Studies of Society and Environment (SOSE) learning area (knowledge and understanding), Place and Space Y5, 7, 9 which introduces the issue of sustainability - conserving and protecting environments, and involves decisions about how resources are used and managed. Also within SOSE is Culture and Identity which involves Aboriginal peoples and Torres Strait Islander people's importance of "country" — caretakers of the land and sea; language reflects the importance of land and sea; land and sea use, and stewardship differ in different regions.

Rods and reels are mentioned in Technology (Y3) to show how products impact on everyday lives in different ways e.g. computers, software and mobile phones have simplified everyday activities; products, including fishing boats, rods and reels, help us catch fish; shopping trolleys carry groceries. RF could also be part of the Health and Physical Education (HPE) learning area which focuses on physical activity to promote health and wellbeing (<u>http://www.qsa.qld.edu.au/20735.html</u>)

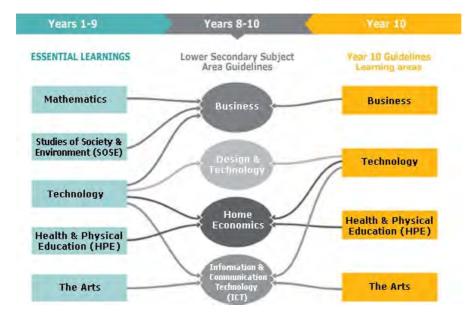


Figure 9. Diagram showing links between the Essential Learnings, Year 10 Guidelines and the Lower Secondary Subject Area Guidelines. Source: <u>http://www.qsa.qld.edu.au/12326.html</u>

Lower Secondary

Recreational fishing content can be found in the **Coast and Marine Education Syllabus Years 8 – 10** (Practices & skills) and is suitable for middle school students

(http://www.qsa.qld.edu.au/20319.html). The subject area is organised into five strands each with four outcomes ranging from levels 4 to 6 and beyond Level 6. These outcome levels typically relate to years of schooling as follows: students demonstrating Level 4 outcomes are at the end of Year 7; students demonstrating Level 5 outcomes are in the middle of Year 9; students demonstrating Level 6 outcomes are at the end of Year 10 (Figure 10). The five strands are: 1. Practices and skills, 2. Industry, 3. Oceanography, 4. Ecology and 5. Conservation. RF is found in the Industry strand and includes: Materials used - equipment, tackle, bait; Retail shops, what they sell, how they are organised; Build a fishing rod, crab pot/dilly; Regulations.

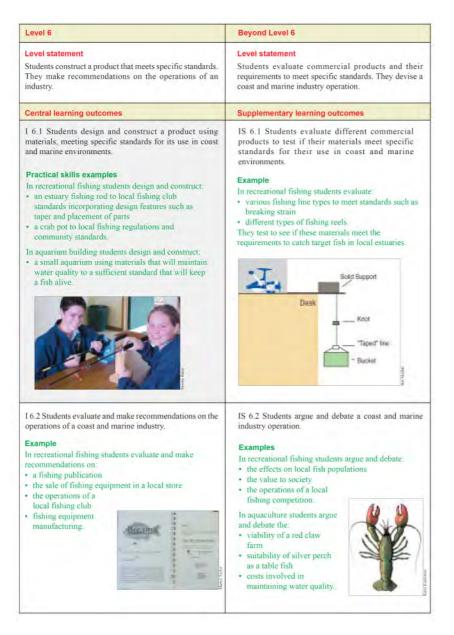


Figure 10.Example of Level 6 outcomes that relate to recreational fishing in the Queensland Coast and Marine Education Syllabus Years 8 – 10. Source: Grant Smith, President, Marine Teachers Association of Queensland.

Senior Secondary

Year 11 & 12, Marine & Aquatic Practices (TAFE pathway) – recreational strand

(<u>http://www.qsa.qld.edu.au/20319.html</u>). There are five core areas of Marine and Aquatic Practices: 1. Safety and Management, 2. Commercial, 3. Environmental, 4. Recreational, 5. Cultural. RF is found in core area 4 (20 hours) and students:

- identify common pieces of fishing equipment
- demonstrate the assembly of a variety of fishing rigs (rods, lines and tackle)
- demonstrate fishing methods
- investigate Indigenous protocols for fishing within local areas
- explain national, state and local regulations relevant to fishing.

Year 11 & 12, Marine Studies (current university pathway) – Elective 7

Marine Studies Senior Syllabus 2004, Amended 2006 has seven core topics that must be included in a course of study: 1. Boating, 2. Navigation, 3. Marine communication, 4. Personal water skills, 5. Oceanography, 6. Marine biology, 7. Managing marine resources. Schools may develop additional topics, and RF, like in NSW is found as an elective.

The elective topics are as follows:

- 1. Recreation and tourism
- 2. Maritime history
- 3. Marine engines
- 4. Marine hazards and rescue
- 5. Aquaculture
- 6. Pollution and local management issues
- 7. Recreational fishing

Elective topic 7: Purpose

Fishing is the most popular recreational activity in Australia. It is also the basis of a tackle/boating/holiday industry contributing significantly to the national economy. A study of recreational fishing enhances skills and understanding of aspects of this sport. It helps students to gain a greater appreciation of problems confronting the marine environment, and enables them to make informed decisions on management issues.

Subject matter

During the course of study, the following subject matter could be developed as learning experiences that incorporate some or all of the general objectives (*Knowledge and understanding, Information processing and reasoning,* and where appropriate, *Skill*).

- 1. bait and bait-gathering
- 2. fisheries regulations
- 3. materials used in rod and reel manufacture
- 4. the properties of fishing rods
- 5. types of reels and their mechanisms
- 6. construction and maintenance of fishing tackle
- 7. terminal tackle
- 8. types and application of various lures
- 9. preparation and cooking of the catch
- 10. freezing and storage methods

- 11. the causes and treatment of ciguatera poisoning
- 12. poisonous species of marine creatures
- 13. investigation of aspects of recreational fishing, e.g. Australian National Sportsfishing Association

Attitudes

During the course of study, students should be encouraged to develop the following attitudes:

1. recognition of the value of wise management of the sea as a finite resource

2. respect for the rights of other users of the marine environment.

Elective topic 7: Recreational fishing that includes:

- 1. bait and bait-gathering
- 2. fisheries regulations
- 3. materials used in rod and reel manufacture
- 4. the properties of fishing rods
- 5. types of reels and their mechanisms
- 6. construction and maintenance of fishing tackle
- 7. terminal tackle
- 8. types and application of various lures
- 9. preparation and cooking of the catch
- 10. freezing and storage methods
- 11. the causes and treatment of ciguatera poisoning
- 12. poisonous species of marine creatures

13. investigation of aspects of recreational fishing, e.g. Australian National Sportsfishing Association

Year 11 & 12, Marine Science (2014 university pathway) – marine research skills

The Marine Science Senior Syllabus 2013 (<u>http://www.qsa.qld.edu.au/20319.html</u>) has a number of key concepts (= four areas of study) that relate to:

- marine biology
- oceanography
- conservation and sustainability
- marine research skills.

The key concepts of *marine biology* relate to the different organisms that live in marine environments and how they interact.

The key concepts of *oceanography* relate to the cycling of water, nutrients and pollution through the world's oceans and how this impacts on climate.

Conservation and sustainability key concepts show the ways that human activities impact on marine environments and how negative impacts can be minimised.

The key concepts of *marine research skills* show how to safely conduct investigations as you explore marine environments from the shore or in the water.

Each area of study consists of three key concepts and associated elaborations (Figure 11). The three key concepts of each area of study are core to Marine Science and are covered once in Year 11 and once in Year 12, prior to verification.

| Areas of study | Key concepts | Elaborations |
|---------------------------------|---|--------------|
| 4 | MB1 Marine environments support an abundance of diverse life, which is classified according to a range of characteristics. | MB1.1–1.6 |
| Marine biology (MB) | MB2 Marine organisms are shaped by their environments and interactions. | MB2.1–2.6 |
| | MB3 The marine environment consists of dynamic and complex relationships between organisms and ecosystems. | MB3.1–3.6 |
| 1 | OC1 The world's oceans and coastlines have many unique geological features. | OC1.1-1.6 |
| Oceanography (OC) | OC2 The world's oceans are involved in the dispersal and cycling of all matter. | OC2.1-2.6 |
| () | OC3 The world's oceans and global climate are inextricably linked. | OC3.1-3.6 |
| | CS1 Human activities can affect the marine environment in a variety of ways. | CS1.1-1.7 |
| Conservation and sustainability | CS2 Sustainable management practices are essential for the protection of marine resources. | CS2.1–2.7 |
| (CS) | Gathering and interpreting scientific CS3 information is necessary to make informed decisions on sustainability. | CS3.1–3.6 |

Figure 11.Marine Science areas of study. Source: http://www.qsa.qld.edu.au/20319.html

Elaborations of relevance to RF include:

CS1.4 - Aquaculture and recreational and commercial fishing place demands on marine ecosystems which must be monitored to ensure sustainable futures (e.g. overfishing, ocean ranching)

CS2.6 -Education of stakeholders is essential to encouraging sustainable management practices (e.g. consumers, recreational and commercial fishers)(Table 11). Water and boat safety are covered in the Marine Research Skills study area.

 Table 11.Conservation and sustainability key concepts and associated elaborations. Source:

 http://www.qsa.qld.edu.au/20319.html

| Area of study | Conservation and sustainability (CS) | | | | | | | | |
|-----------------|--------------------------------------|--|-------|---|-------|---|--|--|--|
| Key concepts | CS1 | Human activities can affect the marine environment in a variety of ways. | CS2 | Sustainable management practices are essential for the protection of marine resources. | CS3 | Gathering and interpreting scientific information is necessary to make informed decisions on sustainability. | | | |
| | CS1.1 | For many cultural groups, marine environments are central to meeting nutritional, recreational and ceremonial needs (e.g. Aboriginal and Torres Strait Islander peoples, international communities). | CS2.1 | Sustainable management practices, economic and ecological, are shaped by the environmental philosophies of stakeholders (e.g. local communities, Aboriginal and Torres Strait Islander peoples). | CS3.1 | Knowledge of the oceans is limited and requires further investigation. | | | |
| | CS1.2 | The economic development of a nation and the value placed on marine environments affects decisions relating to resource management. | CS2.2 | The Exclusive Economic Zone is internationally recognised by the United Nations with each nation being responsible for resource management. | CS3.2 | Methods and devices are used to collect data relating to water quality and population density and distribution (e.g. transect, quadrat, zonation studies). | | | |
| Elaborations | CS1.3 | The marine tourism industry is important to Australia's economy and has potential impacts on marine health, water quality and biodiversity (e.g. habitat destruction, pollution, overuse). | CS2.3 | Recreational and commercial use of marine environments is managed through zoning, legislation, licensing and enforcement to protect the longevity of marine ecosystems. | CS3.3 | Longitudinal studies allow scientists to observe changes occurring in marine environments (e.g. satellite imagery, aerial photography, field research). | | | |
| | CS1.4 | Aquaculture and recreational and commercial fishing place demands on marine ecosystems which must be monitored to ensure sustainable futures (e.g. overfishing, ocean ranching). | CS2.4 | Increases in population density of coastal areas impact on the health of coastal water and should be carefully managed for sustainable outcomes (e.g. loss of mangroves, saltmarshes and seagrasses). | CS3.4 | Research into the effects of human activities and resource management practices should be conducted to evaluate long-term impacts. | | | |
| | CS1.5 | The location of commercial industries affect marine environments due to outputs (e.g. chemical toxicants, nutrients, sediments and petrochemicals). | CS2.5 | Land management practices contribute to the health of marine ecosystems (e.g. siltation, algal blooms, agricultural practices). | CS3.5 | Marine scientists work in a variety of fields that contribute to the sustainability of marine environments (e.g. research, education, policies). | | | |
| | CS1.6 | Legislation aims to reduce the inappropriate utilisation of environments (e.g. Environmental Protection Act 1994, Marine Parks [Moreton Bay] Zoning Plan 2008). | CS2.6 | Education of stakeholders is essential to encouraging sustainable management practices (e.g. consumers, recreational and commercial fishers). | CS3.6 | Decision making involves the consideration of a range of stakeholders views and a range of alternative pathways for action. | | | |
| | CS1.7 | Coastal engineering, including structures built to regulate water or sediment flow, affect currents and marine ecosystems (e.g. rock walls, canal estates). | CS2.7 | Consultation through stakeholder groups guides policies relating to sustainable marine practices (e.g. Local Marine Advisory Committees [LMACs], CoralWatch, Australian Marine Environment Protection Association [AUSMEPA]). | | | | | |

Other Content - Sunfish (QLD) Inc. - Angler Education (AE) "The Schoolfish Program"

In 2001, Sunfish AE Instructors from two Branches of Sunfish (Qld), namely Sunfish South Moreton and the Mackay Regional Branch, started to conduct visits to State public and private schools by invitation to speak to schoolchildren about general aspects of recreational fishing. These visits were usually arranged for one or two hour duration and concentrated largely on responsible fishing attitudes and practices including knowledge of the rules and regulations, environmental and habitat concerns, and care for the catch.

In the Mackay Region hinterland these visits even developed into a co-ordinated tour to a number of schools over a period of a couple of weeks wherein the Sunfish AE Instructor/(s) were accompanied and assisted by officers of the Queensland Boating and Fishing Patrol. The South Moreton Schoolfish visits program was principally coordinated and conducted by a retired couple who were past school teachers.

Over the next few years each of those branches continued to expand their outreach to a point where many schools and thousands of schoolchildren were being exposed to Sunfish AE each year. Also during this time other Sunfish Branches and their AE instructors, as time and other commitments allowed, also entered into providing school visits as, when and where invited.

By 2003, there were a number of schools throughout the State that now sought for and instituted a series of visits, usually on a once weekly basis over a number of weeks. This extension of the total visiting time now permitted for Sunfish AE instructors to expand into also teaching "how to fish" and the series would usually finalise with a practical fishing session on the last visiting day.

Generally, classes in the range from years 4 through to 11 were being afforded instruction.

Another noticeable aspect of the Schoolfish expansion during this time the call for visits to Special Education Units attached to State primary and secondary schools. While at face the instruction was being provided to the children involved, the emphasis was really being placed on training the teachers, teaching assistants and carers of the children that they might continue to further their fishing instruction and experience over time.

Unfortunately, not all Sunfish Branches have been able to provide the Schoolfish experience. Sunfish AE instructors being all volunteers sees most of them at their normal employment during school hours. Furthermore, with no funding provided for the Schoolfish program, those resources required to enable provision of training have also been a limiting factor in a number of locations.

While an absolute number of the schoolchildren, teachers and teaching assistants that have had the experience of the Sunfish Schoolfish program cannot be provided, it would not be unreasonable to say that in the past 12 years somewhere in the vicinity of 100,000 (+) children and many hundreds of teachers and teaching assistants have been involved. By example, Mackay Regional Branch just last year celebrated a 50,000 student milestone. In the best of years over 30 schools would have been visited. However, more recently the average has fallen away to just over 10; again this being largely influenced by the availability of our instructors during school hours. Certain schools are now being catered for not under the Schoolfish program as such, but under other Government funded programs for AE activities conducted by Sunfish (Qld) Inc through its Branches and Member Organizations.

As an example the Mackay Recreational Fishers Alliance Inc. (MRFA), which until recently, operated as Sunfish (Mackay) conduct two different types of junior angler education activities;

1) School Fish – dedicated to schools and community events i.e. annual take a kid fishing day at Shoal Point, and now our junior angler fishing competition in the Pioneer River. This is exclusively sponsored by Reef Marine Mackay, providing a financial contribution \$1500 per annum.

The school fish education program consists of;

- One in a class room typically one hour, matters discussed, personal safety, angler responsibility, bag limits, fish identification, why there are rules and regulation and caring for the environment.
- 2nd. Class school yard activities, knot tying, casting plugs, bait presentation, cast net trowing, looking after rod/reels.
- 3rd Activity typical from 9 am to 2 p.m., on site either at Dunrock, or Shoal Point; bait gathering, fishing, supervisor ratio 1-6 children, normally we have 50 children in attendance.

MRFA is soon to introduce a commercial crabber to our angler education crew, who will demonstrate how to identify, tie, look after, and cook mud crabs, he will also be teaching kids how to identify if crabs are empty/half full etc. The cost to students; High School \$10.00 each, primary students- complimentary.

MRFA normally breaks even on receipts verses costs, budgeting for \$200 worth of prawn bait p.a. and is sponsored by the tackle store provider 100%, and has downgraded to basic rod and reel combo's @ about \$60 each; 60 are maintained in working condition all the time. Our volunteer group have constructed our own purpose built covered trailer, which has the works, chairs, tables, esky's etc. The number of children we have taken fishing via our school fish program would well exceed 7000. At present (2012/13) 340 school children have been taken fishing.

2) Take A kid fishing Days and other public events (Annual Tackle World Kids fishing competition Pioneer River). We have been conducting these for about 12 years, these are fully funded from our new sponsor Tackle World Mackay – costs include 300 sausages/bread/bbq hire/ give ways rods/reels, children registrations are usually around the 200 mark, probably 50% of attendees have participated at least two to three times. Our guests at this event include GBRMPA, Turtle Watch, and normally the MRFA has about 15 to 20 volunteers at the event each year. The feedback we get is unbelievable.

With our kids fishing competition our sponsor donates fishing tackle to the value of \$4000, which consists of 30 rod /reel combinations, and every child wins a prize, our MRFA contribution is in kind – we take care of media releases on the day we have about a dozen volunteers to measure the fish, and conduct data input. These two events (2012/13) had 383 registrations. The Schoolfish program is run entirely by volunteers and relies on private sponsors for its operating costs. The Queensland government is not involved; however, it does contract Sunfish to provide some 33 fishing clinics throughout Queensland.

SA

SACSA Framework

The South Australian Curriculum Standards and Accountability (SACSA) Framework describes the curriculum Key Ideas and Outcomes all Primary and Secondary learners can expect their education to be built on (<u>http://www.sacsa.sa.edu.au/index_fsrc.asp?t=Home</u>.) The curriculum is divided into Early Years (birth to Year 2), Primary Years (Years 3, 4 and 5), Middle Years (Years 6, 7, 8 and 9) and Senior Years (Years 10, 11 and 12). Schools in SA develop programs based on eight Key Learning Areas (KLA) that form the SACSA Framework. The learning areas are: The Arts, Design and Technology, English, Health and Physical Education, Languages, Mathematics, Science, and Society and Environment.

There was mixed content through the KLAs with a fishing net and fish scales used to teach context in the Early and Primary Years of Design and Technology and Science, respectively. By the Middle years fishing was being used in an industry context to examine sustainability issues (Science and Society and Environment), including fishing and hunting rights which extended into the senior years of Society and Environment.

The main RF content was present in the **Health and Physical Education KLA.** Here the aquatics and safety program is used for developing fishing skills with students from upper primary through lower secondary and into senior secondary (years 6 and above). The main aim is to develop a range of aquatic and survival skills that will enable students to continue to enjoy safe use of the water as a recreational and potential employment environment (Figure 12).

| ٦, | Aquatic Activity: FISHING Preamble: The skills, knowledge and competencies considered for each | | | | | |
|---------------------------------|--|----------------------------------|---|-----------------------|--|--|
| ₽ A | shorter or langer some variation in the depth or mastery of skills, knowle | of the fo | Presenter: The skills, knowledge and competencies considered for each of the following levels reflects a "Optical program length" as indicated in the table below. At centres where program length is significantly shorter or longer some writation in the depth or mastery of skills, knowledge and competencies would be expected. | d in the tabl | e below. At centres where progra | n leogth is significantly |
| Unit. | ¹ Develd-Latth <i>Level-Intraduction</i> 14 1. Upper Enumery (years of 7) and a second s | S MOSING | T.Xiel.2. Developing Skills C. E. S. Lorenson Sciences Sciences (Science) | oncomes VSOVS | Level Second and the first sec | L Legrel 9. Senior Secondar A. (Usaja 2. SACI: Stage 2) A. (Senior Secondar) |
| ONIHSIA | Use of Knowledge and Understanding: Including general water safety and environment. wind, water and wave comitions. Environmental Issues. Main and Aquatics resarves. Fishing tules and regulations (incl. size and bag limits). Physical Hazards - unter fishers and community members. Biological hazards - under fishers and community members. Biological hazards - marine recenters, fish inducting, poisonous of novious species. "spines/phkes and techt", safe fish: inanding, poisonous of novious species. "spines/phkes and techt", safe fish: inanding, poisonous of novious species. Personal safety and equipment - Footwaar, sun-säte. Avoid fishing alone, trip planning, danger associated with nock fishing. Benuedents and behaviour expectation of spadems. Basic equipment - rod, recl. line/ingging and knois, hooks, sinkers, hai, lines. Basic equipment - rod, recl. line/ingging and knois, hooks, sinkers, hai, lines. Cell reliance and social skills. Appropriately at al ::mes. Appropriately at al ::mes. Appropriately at all ::mes. Self reliance and social skills. Appropriate leave and social skills. Appropriate leave and social skills. Appropriate leave and exect of equipment. Self reliance and social skills. Appropriate leave and exect of equipment. Self reliance and social skills. Appropriate leave and exect of equipment. Self reliance and social skills. Appropriate leave and social skills. Appropriate leave and social skills. Appropriate leave and social skills. Self reliance and social skills. Appropriate leave the prevention. Appropriate leave superation of fod, isoles. Selfects correct equipment. Selfects correct equipment. | 3.7 4.7 3.4.4.4 3.5,4.5 | Lise of Kuowhedge and Understanding: Incluiting general water safety and environment. As per Lovel 1 plus. As per Lovel 1 plus. Entry/seaub/inver/estnary/beau) suited to personal skill and eventione, linkubang admittication of potential hazards such as slippery suffaces, rouge wares, rissing tudes, scaper routes. Understand appreciation configuration of potentiaries protection or Marine and Aquatics reserves and sacutaries protection or Marine and Aquatics reserves and sacutaries protection or Marine and Aquatics reserves and sacutaries principles. Seletor bar and rug for maget spectures or Nuid- gut, mullet, whiting, carp, tudin ("feshwaren"). Self contrest bail, butley and rug for maget spectures or Nuid- gut, mullet, whiting, carp, tudin ("feshwaren"). Self reliance and and appropriately at all times. Appropriate cust and and appropriately at all times. Appropriate cust and and propertiately at all times. Appropriate cust and are of equipment As per level 1 plus. Performance and Skills development As pet level 1 plus. Casting techniques for offerent tigs – finals. Lines. | | 12.715 10 18 ftts This will is not currently accredited and documented as a general Stage 1 Prectivel. | 12 hrs to 18 hrs This unit is not currently accedited and documented as a Stage 2 Practical |
| | Batting up of a variety of hairs eg. Cockles, worms, pravins. Batting: new ramm, under ann. Batting: new ramm, under ann. Batting: new ramm, under ann. Batting: new ramm, land lines tran different locations e.g. 2000, Beach. Offset. Batting line Batting: and handling fish. Batting: an handling fish. Batting: an handling fish. Batting: an handling fish. | pue 12 | Reading the bottom and likely fish habitare/boatcors. Locaring fish brough other signs eg. Working sea bruts, presence of commerats, pelicans, buil fress. Karos and terminal tackle (attaching sewuls, hooks, floets, lines, sinkers). Batic knots eg. Loop and blood kan Scaling (fiblicing, pergung and codxing cachi, for eating, Collecting, your own bats see. Concios | 4,1,5,1 and 4,2 | | |
| tuohui8 tuomavaidas tavat | Development Record - Primary | | Development Record - Lower Secondary | | | |

| | Aquatics and Water Safety Program [Within the Health and Physical Education (H & PE) Learning Area] |
|-------------------|--|
| | Aquatics Activity: FISHING |
| | |
| | Student Name |
| | AND ADDRESS OF A DECK |
| | and the second of forestary) |
| Evida Nov of | en opsieligening we Level & Davoleping Shilly - Introduction (from squatics activities sequence of learning) Distriktion and subsystemicity, Verlanding general while and which the Shill South States and Shill Shill Shill |
| Units of | Description of the second seco |
| Shie | and the second |
| S. | Identifies or is amone of gov/companyis is baserie - wind and water could form (served) & direction) |
| | CALCULATE OF IN CONTRACT OF A DECISION OF A DECISIONO OF A DECISIONO OF A DECISIONO OF |
| | Chausellast on in many of high-pital houseds - denouves staries catalized |
| | Has knowledge of the role and use of personal safety equipment - PPD's, heimets, wetsuits, sun sate |
| • | Aware of and understands emergency procedures, signals, boundaries, self rescue |
| | Understands the importance of a correct, safe entry & exit from equipment |
| | Is aware and uses basic terminology of the activity |
| Evide (from | nor contributing to Level 2 Developing Statts - Lotreduction - enumics acts of the expansion of description |
| | Weak effectively, as pert of a group or with a headay |
| | Appropriate use and cere of explorment |
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| Zville Ofrican | Antiti way oronang and paragog at or give han can be bench and a paragog at or give any can be bench and a paragog at or give paragog and a star of the star of the star of the star paragog at a star of the star |
| Berla | and the second secon |
| - | Shows an anarches of acceptionserve relay with special relations to bag limits, and lags! fish sizes |
| | Selects the convect equipment for the larget species |
| _ | Demonstrates ante-inaresportation of rod, hooks, have etc. |
| | |
| | Is able to built up a book |
| 4 | Uses operations (selections |
| | Able to be baric kness |
| * | Centre 15 exce. |
| and the state | Can sig up a not. Can identify variant food this appender |
| _ | Description of any of a subparent where fishing and periodes up. |
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| | a second |
| | a start a |
| | and and a set of a set of the training |
| Mari | ing Criteria |
| | ows student is developing the skill level. |
| 77 | Shows student has successfully achieved the skill level |

Figure 12.Content from the SA Health and Physical Education KLA, including evaluation skills, competencies and knowledge sheet. Source: Maureen Tyler, Administration Officer, Port Noarlunga Aquatic Centre and Primary School.

Senior Secondary

Year 10 - 12 students working towards the South Australian Certificate of Education study SACE subjects. There are two stages of the SACE: Stage 1, which usually begins in Year 10, with students studying the Personal Learning Plan, and continues through Year 11. Stage 2, which is usually undertaken in Year 12. All subjects can be found at http://www.sace.sa.edu.au/subjects. Note there is no Marine Science subject in Stage 1 or 2.

Although the SACE **Outdoor Education Course** Stage 1 and 2 did not mention RF specifically it could easily be incorporated into the outdoor activities topic, as teachers, in negotiation with their students, may add other activities, such as RF. The course is a 10-credit and a 20-credit subject consisting of the following four topics:

- Environment and Conservation
- Planning and Management
- Outdoor Activities
- Outdoor Journey.

Outdoor activities listed include:

- bushwalking
- canoeing
- caving
- cycling
- kayaking
- orienteering or rogaining
- rock climbing
- sailboarding
- sailing
- snorkelling
- snow skiing
- surfing.

However, this list of outdoor activities is neither prescriptive nor exhaustive.

VET in the SACE

The SACE is designed to give students increased flexibility, including greater opportunities to have diverse forms of learning and achievement recognised. The SACE enables students to include a significant amount of VET in their SACE studies. These recognition arrangements help students to build coherent pathways in the SACE through VET, and some of the many choices are listed as an example in Table 12

The VET Recognition Register is a useful tool on the SACE website listing more than 200 of the most popular VET qualifications that students may undertake as part of their SACE. The Register shows the SACE level (Stage 1 or 2), and maximum/minimum SACE credits students can earn. It also outlines which courses can be taken in conjunction with apprenticeships and traineeships, and lists each course by industry area (<u>http://www.sace.sa.edu.au/subjects/recognised-learning/recognition-register</u>)

Table 12.The SA VET Module Reference lists all registered VET modules under fishing. Note units associated with the NT Fishing Industry. Source https://apps.sace.sa.edu.au/vetsearch/

| | TAFE SA Module/Unit | | Nominal | |
|---|------------------------|--------------|------------|-------------|
| | of Competency | National | Hours - | |
| Description | Code | Module Code | Supervised | Expiry Date |
| Adjust And Position Fishing Gear | SFIFISH310A | SFIFISH310A | 35 | N/A |
| Apply Deckhand Skills Aboard A Fishing | SFIFISH215A | SFIFISH215A | 40 | N/A |
| Vessel | SHIISHZISA | 5111511215A | 40 | 19/7 |
| Apply Deckhand Skills Aboard A Fishing | SFIFISH215B | SFIFISH215B | 40 | N/A |
| Vessel | 35151302130 | 351513112130 | 40 | N/A |
| Apply Fly Fishing Skills | SISOFSH309A | SISOFSH309A | 10 | N/A |
| Communication In A Fishing Workplace | TCE183 | TCE183 | 10 | 31/12/2006 |
| Construct And Repair Fishing Rods | SISOFSH314A | SISOFSH314A | 15 | N/A |
| Construct And Work Simple Fishing Lures | SISOFSH205A | SISOFSH205A | 25 | N/A |

| CWFA DFSH315A DFSH312A DFSH311A DFSH416A DFSH416A DFSH417A CHA301B CHA301C BSWM LRRB MHBA TAE046 GE051 TAE050 LRTL | SFIFCHA301A SISOFSH315A SISOFSH312A SISOFSH311A SISOFSH416A SISOFSH417A SFIFCHA301B SFIFCHA301C SFIFCHA301C TAE046 TGE051 | 40 15 10 10 15 20 0 40 50 20 12 45 | N/A N/A N/A N/A N/A N/A N/A 31/12/2006 31/12/2006 31/12/2006 |
|---|---|---|---|
| DFSH312A DFSH311A DFSH416A DFSH417A CFSH417A CFSH417A CFSH417A CFSH417A CFSH417A CFSH417A CFSH417A CFSH417A CFSH312A CFSH312A CFSH312A CFSH312A CFSH312A CFSH312A CFSH312A CFSH312A CFSH312A CFSH312A CFSH312A CFSH312A CFSH312A CFSH312A CFSH312A CFSH311A CFSH311A CFSH311A CFSH311A CFSH311A CFSH311A CFSH311A CFSH416A CFSH416A CFSH416A CFSH417A CFS | SISOFSH312A SISOFSH311A SISOFSH416A SISOFSH417A SFIFCHA301B SFIFCHA301C TAE046 | 10 10 15 20 0 40 50 20 12 | N/A N/A N/A N/A N/A 31/12/2006 31/12/2006 |
| DFSH311A DFSH416A DFSH417A CHA301B CHA301C BSWM LRRB MHBA TAE046 GE051 TAE050 LRTL | SISOFSH311A SISOFSH416A SISOFSH417A SFIFCHA301B SFIFCHA301C TAE046 | 10 15 20 0 40 50 20 12 | N/A N/A N/A N/A 31/12/2006 31/12/2006 |
| DFSH416A DFSH417A CHA301B CHA301C BSWM LRRB MHBA TAE046 GE051 TAE050 LRTL | SISOFSH416A SISOFSH417A SFIFCHA301B SFIFCHA301C | 15 20 0 40 50 20 12 | N/A N/A N/A N/A 31/12/2006 31/12/2006 |
| CHA301C CHA301C CHA301C BSWM LRRB MHBA TAE046 GE051 TAE050 LRTL | SISOFSH417A SFIFCHA301B SFIFCHA301C TAE046 | 20 0 40 50 20 12 | N/A N/A N/A 31/12/2006 31/12/2006 |
| CHA301B CHA301C BSWM LRRB MHBA TAE046 GE051 TAE050 LRTL | SFIFCHA301B SFIFCHA301C TAE046 | 0 40 50 20 12 | N/A N/A 31/12/2006 31/12/2006 |
| CHA301C BSWM LRRB MHBA TAE046 TGE051 TAE050 LRTL | SFIFCHA301C | 40 50 20 12 | N/A 31/12/2006 31/12/2006 |
| BSWM LRRB MHBA TAE046 TGE051 TAE050 LRTL | TAE046 | 50 20 12 | 31/12/2006 31/12/2006 |
| LRRB MHBA TAE046 TGE051 TAE050 LRTL | | 20 12 | 31/12/2006 |
| LRRB MHBA TAE046 TGE051 TAE050 LRTL | | 20 12 | 31/12/2006 |
| MHBA TAE046 TGE051 TAE050 LRTL | | 12 | |
| TAE046 TGE051 TAE050 LRTL | | 1 | 131/17/2006 |
| TGE051 TAE050 LRTL | | 45 | |
| TAE050 LRTL | IGE051 | | 31/12/2006 |
| LRTL | | 20 | 31/12/2006 |
| | TAE050 | 60 | 31/12/2006 |
| | | 36 | 31/12/2006 |
| | | | 31/12/2006 |
| | | | 31/12/2006 |
| | | | 31/12/2006 |
| | | 0 | N/A |
| DFSH307A | SISOFSH307A | 20 | N/A |
| TAE049 | TAE049 | 15 | 31/12/2006 |
| DFSH308A | SISOFSH308A | 15 | N/A |
| CWEL | SFIFISH401A | 60 | N/A |
| FISH401B | SFIFISH401B | 0 | N/A |
| FISH401C | SFIFISH401C | 60 | N/A |
| CWEM | SFIFISH402A | 20 | N/A |
| FISH402B | SFIFISH402B | 0 | N/A |
| FISH402C | SFIFISH402C | 20 | N/A |
| DBSV301A | SFIOBSV301A | 0 | N/A |
| DBSV301B | SFIOBSV301B | 40 | N/A |
| LNKX | | 18 | 31/12/2006 |
| CWEZ | SFIFCHA501A | 60 | N/A |
| CHA501B | SFIFCHA501B | 0 | N/A |
| | | | , · |
| CHA501C | SFIFCHA501C | 60 | N/A |
| LPMD | | 4 | 31/12/2006 |
| TSF001 | TSF001 | 2 | 31/12/2006 |
| DNDH | SROFIS005A | 10 | N/A |
| DFSH005A | SROFSH005A | 0 | N/A |
| LRTZ | | 0 | 31/12/2006 |
| DFSH204A | SISOFSH204A | 10 | N/A |
| | LRRC LRRD LPMY DFSH009A DFSH307A TAE049 DFSH308A CWEL FISH401B FISH401B FISH402C DBSV301A DBSV301A DBSV301B LNKX CWEZ CHA501C LPMD TSF001 DNDH DFSH005A LRTZ | LRRCILRRDILRNYIDFSH009ASROFSH009ADFSH307ASISOFSH307ATAE049TAE049DFSH308ASISOFSH308ACWELSFIFISH401AFISH401BSFIFISH401BFISH401CSFIFISH402AFISH402BSFIFISH402AFISH402CSFIFISH402CDBSV301ASFIOBSV301ADBSV301BSFIOBSV301ACWEZSFIFCHA501ACWEZSFIFCHA501ACHA501BSFIFCHA501BCHA501CSFIFCHA501CLPMDTSF001DNDHSROFIS005ALRTZI | LRRC36LRRD36LRRD36LPMY21DFSH009ASROFSH009A0DFSH307ASISOFSH307A20TAE049TAE04915DFSH308ASISOFSH308A15CWELSFIFISH401A60FISH401BSFIFISH401B0FISH401CSFIFISH401C60CWEMSFIFISH402A20FISH402BSFIFISH402A20DFSH308ASFIOBSV301A0DSV301ASFIOBSV301A0DSV301BSFIOBSV301B40LNKX1860CWEZSFIFCHA501A60CWEZSFIFCHA501A60CHA501BSFIFCHA501B0CHA501CSFIFCHA501C60LPMD4TSF001TSF0012DNDHSROFIS005A10DRDHSROFIS005A0LRTZ0 |

| Tie Simple Fishing Flies | SISOFSH310A | SISOFSH310A | 10 | N/A |
|-------------------------------------|-------------|-------------|----|-----|
| Work Orientation (Fishing Industry) | LPMA | | | |

Other Content- PIRSA Fishwatch: The FISHCARE program and school talks

The FISHCARE program, was established in 1994 and is managed by the governments Primary Industries and Regions SA (PIRSA). PIRSA has developed a program where their FISHCARE volunteers speak to Y4-5 (8-10 year olds) about the reasons why we have rules in place for fishing in South Australia.

PIRSA has 1 volunteer in each of the 9 teams who is trained to give school talks. They attend the school with at least one other volunteer who helps them with the fishing pool activity.

The talk is broken up into 3 parts:

- the first discusses what a world without fish would be like and why we have rules, such as size limits, catch limit, closed seasons and closed areas.
- We show fish on a PowerPoint and students use the Size, Bag, Boat & Possession limit brochure to work out what the size limit, bag limit and boat limit is.
- Finally we have fishing game where students need to catch a laminated fish that they think they would be able to keep (if it was real). This also gives us an opportunity to show students how to measure fish and also explain the rules in regards to introduced species.

This program has now been running for 5 years and continues to get good feedback. Over the last 12 months the team has spoken with 34 classes around the state, although figures for the last year are down a long way on the year prior, due to less volunteers being involved. FISHCARE are currently in the process of developing a presentation for clubs which can be presented at their clubrooms with limited resources. Volunteers also attend a number of country shows and school fetes every year where they make a point of speaking with children to explain the rules of fishing in South Australia.

TAS

K-10

There are five K-10 syllabus documents for the Tasmanian Curriculum:

- Health and wellbeing
- The Arts
- Vocational and Applied Learning
- Information and Communication Technologies
- LOTE Languages Other Than English

There was minor reference in the Vocational and Applied Learning K-10 syllabus that included: Create a 'fish weaving' from cane, string and wool; make a fully functioning fish tank while in the Health and Wellbeing K–10 syllabus it is mentioned as part of the Dimensions of health; use a simple graphic organiser to illustrate a physical, emotional or spiritual activity that contributes to feeling well e.g. going out in the park, jogging, walking the dog, fishing.

(https://www.education.tas.gov.au/Students/schools-colleges/curriculum/Pages/Tasmanian-Curriculum.aspx) Many teachers in Tasmania use the "Marine Links" kit from the Woodbridge MDC and from Fishcare Tasmania. This is an educational folder focussing on curriculum areas for Grades 5-8 students. The teaching units include: Marine and Coastal Habitats, Marine Life, Sustainable Fishing, Marine Reserves and Human Influences. This kit is discussed in more detail in section 4 of this review.

Senior Secondary-

In Years 11 and 12, students have access to a wide range of subjects and VET courses offered through the eight senior secondary colleges and TasTAFE. Tasmania has a system of colleges for the final years of school (<u>http://www.academy.tas.edu.au/index.html</u>). For example Newstead College provides education for approximately 700 Year 11 and 12 students on either academic or vocational pathways. Here Students can gain a Tasmanian Certificate of Education (TCE) qualification, a school based apprenticeship or a vocational qualification (VET Certificate). The TQA is the qualifications authority for Tasmania and TQA subjects provide a broad range of learning opportunities which can lead to employment and further education. Senior secondary schools and colleges provide over 100 subjects across the following areas:

- Creative Arts
- English
- Foods and Hospitality
- Health and Wellbeing
- Information Technology
- Languages (LOTE)
- Mathematics
- Mixed Field Programs
- Physical Recreation
- Science and Primary Industries
- Society and Environment (behavioural studies, business and law, history and culture, world and environment)
- Technologies and Trades
- Programs for students with high or additional learning needs

TQA subjects are organised into three levels of difficulty – levels 1, 2 and 3 (with 3 being the most difficult). Level 3 subjects, also known as pre-tertiary subjects can contribute to an ATAR. Students who are on a university pathway would usually study at least one Level 3 subject in Year 11. Level 1 and 2 subjects are non pre-tertiary and do not count towards an ATAR. They can be preliminary or foundation study for a pre-tertiary program (<u>http://www.tqa.tas.gov.au/</u>)

At the moment the colleges are still following the old Tasmanian Curriculum and will transition to the Australian curriculum over the next few years. There are several Year 11 and 12 courses that include Marine Studies and Environmental Education of the Oceans. However the Colleges deal mainly with the pre-tertiary biology and ecology units. These have more emphasis on the biology, chemistry and physics of the oceans and less on the more vocational aspects of fishing and aquaculture training which are covered in the VET courses discussed later.

There was no Marine Science in the list of TQA senior secondary courses. However, in the Life Science course which is part of the Natural & Physical Sciences sector (LSC215109 - TQA 2) three key ideas (1.biodiversity and the interdependence of organisms and resources; 2.structure in relation to function; & 3.continuity, change and biotechnology) may be approached by exploring a theme or

themes of particular interest, e.g. Human Science, Tasmanian Flora and Fauna, Marine Science, Agricultural Science, Forestry, Aquaculture, Biotechnology.

RF was found in the **Physical Recreation Program** - Outdoor Experiences (OXP105113, TQA 1) and Outdoor Education (OXP215113, TQA 2). It was also part of topic E Human-Nature Relationships in Outdoor Leadership (OXP315113, TQA 3) which contributes to the ATAR. Students studying Outdoor Experiences and Outdoor Education undertake two or more or five or more outdoor activities, respectively (Table 13).

 Table 13.Activity types found in the TQA senior secondary Outdoor Experiences and Education

 Courses. Source: http://www.tqa.tas.gov.au/2609;

| Activity Type | Specific Activity |
|------------------------|--|
| Boating and Sailing | Dinghy and catamaran sailingBoard sailing |
| | Keel boats and multi hull |
| | Stand up boarding |
| Day Bushwalking | Day coastal walks |
| | Day alpine walks |
| | Day winter walks |
| Overnight or Multi-day | Coastal walks |
| bush walking/ camping | Alpine walks |
| | Winter walks |
| Camping | Residential and base camps |
| | Coastal camps |
| | Alpine camping |
| | Snow camping |
| Flat-water | Flat water canoeing or kayaking |
| Canoeing/Kayaking | Multiday flat water journey |
| White-water | Up to river grade two water levels |
| Canoeing/Kayaking | Surf kayaking |
| | Multiday canoeing/kayaking |
| Sea Canoeing/Kayaking | Day sea kayaking |
| | Multiday sea kayaking |
| Surfing | Surf swimming |
| | Body boarding |
| | Surfboard riding |
| | Kneeboard riding |
| | Surf/wave ski |
| Caving | Horizontal caving which involves crawling through narrow openings, fording streams and climbing up and down short rock faces |
| | Vertical caving which involves the use of ropes or |
| | ladders to ascend or descend vertical drops known as |
| | 'pitches' |
| Diving | Snorkelling |
| 5 | Free diving |

| Activity Type | Specific Activity | |
|--------------------------|---|--|
| | SCUBA | |
| Fishing | Fishing can take place among rocks, on rivers or in the sea | |
| Cycling | Track cycling Downhill Mountain biking Road Cycling Cycle Touring (multiday) | |
| Orienteering | Orienteering activities local courses challenging courses in bush/wilderness environments geocaching | |
| Rafting | White water rafting Multi-day White water rafting | |
| Rock Climbing – Indoors | Climbing and abseiling on artificial climbing structures Sport climbing/wall climbing Lead climbing | |
| Rock Climbing – Outdoors | Bouldering Top rope climbing Multi-pitch/lead climbing | |
| Abseiling | IndoorsOutdoors | |
| Snow Activities | Downhill skiing Snowboarding Cross country skiing Wilderness or remote area skiing Snow walking/camping | |
| Small Wheel Activities | Skate board Long board Roller skate / blade | |

VET in Tasmania

The majority of vocational education and training is currently delivered by two public VET providers; the Tasmanian Polytechnic and the Tasmanian Skills Institute. As a result of the 2011/12 review into the role and function of Tasmania's public VET providers, a new, single entity will be established called TasTAFE and the new arrangements will take effect from 1 July 2013.

In the VET Y11-12 course subjects there are some Aquaculture (Science and Primary Industries), Boat Handling (Technologies and Trades) and Environmental Sustainability (Environmental Science) courses which cover some aspects of fishing. For example in the Technologies and Trades Courses there is a **Certificate I in Transport Distribution** (Maritime Operations) which provides a pathway to further qualifications at the Australian Maritime College or the Australian Navy and leads to employment in the tourism, aquaculture, fishing and recreation industries. **Introduction to Marine Skills** MEM20305 also provides a pathway to VET maritime for students wishing to make a career in the marine industry.

Other content - Inland Fisheries Service- 2013

Although not a formal program, Inland Fisheries staff, visit schools to talk to young people about trout fishing as well as a range of subjects relating to freshwater fisheries. Teaching resources and give-away materials are available by contacting the Service (<u>http://www.ifs.tas.gov.au/get-involved/angling-community/young-anglers</u>)

Other content - Junior Fisher Log Book- TARfish 2013

TARFish is the government recognised, fully independent peak body which was established to look after the interests of recreational marine fishers in Tasmania. TARFish has produced a Junior Fisher Log Book (see below) which encourages children to record their catches and fish more. The logbook was a project funded by the Tasmanian Governments Fishwise Community Grants Program. The peak body visits school fairs where the 20 page log book is distributed to 6-10 year old school kids. Copies are free and a tackle box is also supplied. This is an informal program where interested schools contact the peak body; most of the delivery to schools is done by Fishcare which is discussed below.

Junior Fisher 09 Book Name: TARFish Looking after the interests of reational marine fisher

Other content - Fishcare Tasmania Education Program 2012/2013

The delivery of the Fishcare Schools Program is aimed at early learning to Year 12 students and is divided between activities directly involving participation with schools and broader community based activities. Adult educational awareness is as a result of their association with children or through other communication strategies. The Fishcare Schools Program is divided into three activities;

1. School Classroom Activities: Students are introduced to the basic principles of sustainability using the marine environment and how fish interrelate to their habitat and basic requirements to survive. To develop an understanding of the various influences humans have on the marine habitat and the effects on fish stocks through extractive use. The Schools Program introduces limitations such as bag, possession and size limits and why they are put in place to protect the fish and to maintain a sustainable resource. Through a basic understanding of fish physiology, students become aware of humane treatment of fish they intend to keep and methods to increase survival of released fish.

These classes are designed to help explore changes to the marine environment and how these changes impact on fish stocks and the sort of measures individuals can take to ensure fish for the future. The content descriptions of the Australian Curriculum, Science Foundation are referred to as a general guide when preparing classes for Foundation to year 10 classes.

2. School Fishing Clinics and Field Excursions: Students are introduced to recreational sea fishing and the basic equipment needed. The course increases their awareness of size limits and measuring fish, and the correct handling methods to improve fish survival on release by using De-hookers and gently releasing the little ones. They are shown practical examples of humane treatment of fish (iki jime) and their preparation for consumption to increase the meat return and reduce fish wastage.

Field excursions enable an onsite investigation of coastal and intertidal habitats and organisms and to determine localised environmental influence on these marine habitats.

3. School Fairs: Fishcare attends school fairs to promote Fishcare activities to the broader school community through the use of the display trailer and the fishing pool. Although our activities may be viewed by organisers as entertainment this has resulted in an increase in demand for us to attend these events. The pool introduces the principles of fish identification to determine size and possession restrictions using entertaining, visual and tactile activities. The trailer provides a colourful platform for the distribution of Guides, rulers and other information specific to recreational fishing.

During 2012-13, Fishcare continued its focus outside the metropolitan areas by building ties to specific schools in each of the regions. These areas are growing communities of enthusiastic recreational fishers with easy access to the coastal areas.

The North West conducted in-school presentations and fishing clinics at Strahan, Rosebery, Stanley, Table Cape and Boat Harbour. The North conducted in-school presentations and fishing clinics at Norwood, Winnaleah, Beauty Point and Georgetown and closer links were developed with Bridport.

The South conducted in-school presentations and fishing clinics at Nubeena, Swansea, Triabunna, Orford, Geeveston, Dover, Kingston, New Norfolk and Margate. The presentations are more often conducted to multiple classes during any one day with the possibility of returning to attend the classes that were not available. The increase in Fishcare presentations to schools has been mostly as a result of these block presentations (Table 14).

A new initiative in the south has been the development of a partnership with the Far South Wilderness Camp where up to 100 students in any one day participate in classroom activities and then put this knowledge to practical experience during fishing clinics.

Table 14.Summary of School Events for the 2012/2013 Fishcare Tasmania Education Program

| Event | Schools | Students | Staff and Volunteer |
|----------------------|---------|----------|---------------------|
| | | | Hours |
| Classroom Activities | 45 | 1337 | 171 |
| Fishing Clinics | 31 | 778 | 404 |
| School Fairs | 20 | 14600 | 340 |
| TOTAL | 96 | 16715 | 915 |

VIC

Victorian Essential Learning Standards (VELS) P-Y10

The Victorian essential learning Standards (VELS) outlined what was essential for all Victorian students to learn during their time at school from Prep to year 10. They provided a set of common state-wide standards which schools used to plan student learning programs, assess student progress and report to parents. The VELS differed from traditional curricula by including knowledge and skills in the areas of physical, social and personal learning. Skills which are transferable across all areas of study such as thinking and communication were also included. The VELS curriculum encouraged a flexible and creative approach to learning. Schools were not required to offer exactly the same programs as each other and not all learning areas will appear as separate subjects on the school's timetable. The VELS provide a guide for schools to design tailor-made programs that consider their students' backgrounds and needs.

The VELS are organised into three connected areas of learning called strands:

- Physical, Personal and Social Learning
- Discipline-based Learning and
- Interdisciplinary Learning (Table 15).

| Table 15.The VELS Structure Source: <u>http://pandora.nla.gov.au/pan/129125/20121206-</u> |
|---|
| 0015/vels.vcaa.vic.edu.au/parents/curriculum.html |

| VELS Level | <u>1</u> | <u>2</u> | <u>3</u> | <u>4</u> | <u>5</u> | <u>6</u> |
|---------------------------|-------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|
| School Level | <u>Prep</u> | <u>Yr 1</u> <u>& 2</u> | <u>Yr 3</u> <u>& 4</u> | <u>Yr 5</u> <u>& 6</u> | <u>Yr 7</u> <u>& 8</u> | <u>Yr 9</u> <u>& 10</u> |
| Physical, Pers | sonal ar | nd Soci | al Lear | ning | | |
| Health and Physical | * | * | * | * | * | * |
| Education | | | | | | |
| Interpersonal Development | * | * | * | * | * | * |
| Personal Learning | | | * | * | * | * |
| Civics and Citizenship | | | * | * | * | * |
| Discipline-based Learning | | | | | | |
| The Arts | * | * | * | * | * | * |
| English | * | * | * | * | * | * |
| The Humanities | | | * | | | |

| - Economics | | | | * | * | * |
|------------------------|----------------------------|---|---|---|---|---|
| - Geography | | | | * | * | * |
| - History | | | | * | * | * |
| Languages Other Than | | | | * | * | * |
| English | | | | | | |
| Mathematics | * | * | * | * | * | * |
| Science | | | * | * | * | * |
| Interdi | Interdisciplinary Learning | | | | | |
| Communication | | | | * | * | * |
| Design, Creativity and | | | * | * | * | * |
| Technology | | | | | | |
| Information and | | * | * | * | * | * |
| Communications | | | | | | |
| Technology | | | | | | |
| Thinking Processes | | | * | * | * | * |

There was no specific reference to RF in any of the VELS domains. However RF could be incorporated easily into the Science Discipline-based Learning Strand- Knowledge and Understanding. The Science Knowledge and Understanding dimension focuses on building student understanding of the overarching conceptual ideas of science. These include understanding the nature of the similarities between, and the diversity of, living things and their sustainable relationships with each other and their environment.

The Foundation to Year 10 Curriculum known as AusVELS (the Australian Curriculum in Victoria) is now being implemented for Victorian government and Catholic schools (from 2013). AusVELS incorporates the Australian Curriculum Foundation to 10 for English, Mathematics, History and Science within the curriculum framework first developed for the Victorian Essential Learning Standards (VELS). For more information see <u>http://ausvels.vcaa.vic.edu.au/</u> Much of the documentation for VELS is now being archived and is not easy to access.

Senior secondary

The Victorian Certificate of Education (VCE) is the certificate that the majority of students in Victoria receive on satisfactory completion of their secondary education. Students planning to go straight into higher education usually do the VCE, which allows them to gain an ATAR. Students can choose from more than 90 studies (subjects) in the VCE while 30 are VCE VET programs (http://www.vcaa.vic.edu.au/Pages/vce/studies/index.aspx).

RF was found in the **Outdoor and Environmental Studies** which offers students a range of pathways, and caters to those who wish to pursue further formal study in areas where interaction with outdoor environments is central, such as natural resource management, nature-based tourism, outdoor leading and guiding, environmental research and policy, education, and agriculture. It is made up of four units.

- Unit 1: Exploring outdoor experiences
- Unit 2: Discovering outdoor environments
- Unit 3: Relationships with outdoor environments
- Unit 4: Sustainable outdoor relationships

RF content was found in:

Unit 1- Exploring outdoor experiences; Complete a reflective journal entry where students describe how they have experienced outdoor environments in their life; students describe one particular environment that is important to them and ways in which they know that environment; for example, if **they enjoy fishing how do they 'know' where to catch the best fish;** journal entries could be recorded on a class or individual blog such as Global Teacher or Global Student;

Unit 3- Relationships with outdoor environments; Students explore a wide variety of the relationships that people have with outdoor environments. While recreation will likely form a large part of the practical experiences, teachers are also encouraged to help students access other forms of experiences, such as visits to farms and logging coupes, conservation and scientific field trips, bird watching **and fishing,** and visits to museums and art galleries.

The Victorian Certificate of Applied Learning (VCAL) is a hands-on option for students in Years 11 and 12. Students who do the VCAL are likely to be interested in going on to training at TAFE, starting an apprenticeship, or getting a job after completing school. VCAL studies select from fully accredited modules that include units from the following four compulsory skill strands:

- Literacy and numeracy
- Industry specific
- Work related
- Personal development

VET and VCE

Students in Years 11 and 12 may choose to complete a VET program as part of their VCE. There are currently more than 30 programs from which students can choose, ranging from hospitality and agriculture to information technology and engineering. Any VET qualification at Certificate II or above can provide credits for VCE. Students are also able to choose School Based Apprenticeships while studying their VCE.

As in the other states and territories RF content is found in the VCE VET Sport and Recreation Program (http://www.vcaa.vic.edu.au/Pages/vet/programs/index.aspx). Specifically SIS20210 Certificate II in Outdoor Recreation with additional units from Certificate III in Sport and Recreation – Surfing/Fishing focus. These programs are for implementation from 2012 and must be used in conjunction with the nationally endorsed SIS10 Sport, Fitness and Recreation Training Package. Students wishing to receive an ATAR contribution for the Units 3 and 4 sequence must undertake scored assessment for the purposes of gaining a study score. This study score can contribute directly to the primary four or as a fifth or sixth study. A student who opts out of scored assessment in the VCE VET Sport and Recreation program will not be eligible for a contribution towards their ATAR.

Other content - The Fishing Participation Initiative and the "Get Hooked" program

In 1999, the incoming Bracks Government announced the \$420,000 Fishing Participation Initiative to be undertaken by Sport and Recreation Victoria (SRV) over the following 3.5 years to improve Victorians' participation, access, enjoyment and opportunities in relation to recreational fishing in the State.

At the time, the three components were:

- Schools Recreational Fishing Program,
- Recreational Fishing Small Grants Scheme, and
- a project generally aimed at improving angler access and participation by members of the community who are under-represented in fishing (since evolved to the Access Feasibility Study, "Willing and Able" volunteer training and the pilot program focused on socially disadvantaged people).

The Schools Recreational Fishing Program was launched in October 2001 and was mainly aimed at Year 6 students in State primary schools. However in some small country schools it has been extended to Year 4 and in one secondary college it was offered at Year 8. Students of a range of ages at two special schools have also participated. The goal of this Program was to increase participation by school-age children in recreational fishing.

The objectives were to:

- provide children with the basic skills of angling;
- introduce the concepts of habitat protection, sustainable fishing and consideration of others;
- introduce children to fishing as an enjoyable outdoor activity;
- foster ongoing links between schools, students and local angling clubs leading to continual recruitment of children as fishers and as club members.

In addition to these objectives, school principals, teachers and volunteer anglers involved in the program indicated a wide range of objectives, expectations and desired outcomes. These ranged from a general attraction to something that sounded interesting, to some quite clear objectives, such as to:

- introduce students to the importance of environmental responsibility, sustainable fishing, humane handling of fish and respect for other outdoor users;
- help students to master the basic skills of tying knots, making terminal rigs, bait hooks, handling rods and reels, casting and retrieving lines;
- provide the many children who have never fished with a positive introduction to this recreation;
- expand students' knowledge of the range of healthy outdoor activities available to them;
- increase the number of children taking up fishing as a recreational activity;
- provide students who do not excel in academic and sporting areas to participate successfully in a non-competitive atmosphere;
- help combat boredom and anti-social behaviour;
- increase membership of or inclination to join angling clubs;
- encourage family fishing activities.

Other benefits included:

• positive reinforcement of classroom learning;

- active participation and enjoyment by students with learning and behavioural problems and a range of disabilities;
- high levels of keenness and aptitude shown by girls;
- socialisation benefits excellent interactions between volunteer anglers and students;
- richly rewarding activity for participating angler volunteers;
- a good balance between learning and practising skills;
- basic knowledge of fishing regulations and the reasoning behind them;
- new generation of better informed and more considerate anglers;
- preparation for making personal choices in relation to animal rights, sustainability, biodiversity and other environmental issues.

The key elements of the project included scheduling of sessions, liaison with schools and local angler groups, provision of work books, delivery and collection of rods and reels, assistance in presentation of the program and evaluation.

School and club participants involved in the delivery of the Schools Program were provided with work books and received support from SRV officers. The officers' teaching backgrounds, passion for fishing and rapport with students were identified as key factors in the Program's success.

All participants also agreed on the essential contribution made by the teachers' and students' work books developed by SRV and based on the "Get hooked …" kit. All agreed on the importance of having access to a set uniform and well maintained fishing rods and reels suited to the Year 5 and 6 students. The 1.7m Shimano Spectrum rods and matching spinning reels purchased by SRV were well suited to children at this level. DPI's main expectation was that the Program would help to promote the uptake of the "Get Hooked … It's fun to fish National Junior Fishing Codes Education Kit" in schools. Apart from providing some initial advice on the make-up of the Initiative, DPI's main ongoing contribution to this program came through the provision of the education kits and supporting information products. SRV's program was successful in helping to raise awareness of the "Get Hooked …" program among schools and clubs and filled the gap between classroom delivery of the code and teaching basic fishing skills.

However, during this 2-year trial there was no detailed consideration of volunteer training and accreditation, risk management and public liability issues and other elements of a comprehensive ongoing program. Nor, were participants given details of the range of agencies, support groups and training and funding programs that exist to support State Sporting Associations and similar volunteer-based community bodies in Victoria. For more information see the 2003 Winstanley report.

In 2004 Fishcare Victoria adopted the ownership and administration of the School's Recreational Fishing Program to enable its continued delivery through trained teams of volunteer presenters representing Fishcare groups and angling clubs. The Victorian Fishcare Program then adopted the program to continue its availability to Victorian schools. This is now delivered under the 'Fish Right Workshops', funded through the RF license funds (2011-13). Volunteers passed the target of delivering 300 workshops, due for completion in late 2013 (Table16) and since 2011 have engaged with over 4, 744 children.

Table 16. Summary of Fish Right Workshops over the last 3 years. Source: Fishcare Victoria Inc., Annual Report,2012-2013.

| | 2010-11 | 2011-12 | 2012-13 | Total |
|-----------|---------|---------|---------|-------|
| Workshops | 202 | 486 | 334 | 1022 |
| Contacts | 4242 | 5070 | 6635 | 15947 |
| Volunteer | 1578 | 2368 | 1350 | 5296 |
| Hours | | | | |

WA

Curriculum Framework K-10

We found no reference to RF in the WA Curriculum Framework (K-10 Syllabuses - <u>http://www.scsa.wa.edu.au/internet/Years_K10/Curriculum_Resources</u>) that cover the 5 learning areas of Health and Physical Education, Languages, Society and the Environment, Technology and Enterprise and The Arts and the 3 phases of schooling (Early and middle childhood and early adolescence). However, the topic can be used as content to teach the outcomes.

Senior Secondary

In the Western Australian Certificate of Education (WACE) courses of study (Y11-12) provide multiple pathways to university, training organisations and employment. All courses typically consist of units at three or four stages, each with its own syllabus. Students start with units appropriate to their stage of development. Generally:

- university-bound students would study a program of Stage 2 and Stage 3 course units over their senior secondary years. In their final year, most of the course units would be at Stage 3.
- students who may be headed to TAFE and further education and training or the workforce would typically take a mixture of Stage 1 and Stage 2 course units in Year 11 and 12. Some may study all Stage 1 course units. This might include completing full qualifications through VET industry specific courses.
- students with special needs study Preliminary Stage course units and possibly some Stage 1 course units

Fisheries as a resource are referred to and used as a context for teaching in the Biological Sciences, Earth and Environmental Science and Geography courses of study which all count towards university entrance scores.

RF is referred to in the Year 11-12 Marine and Maritime Studies syllabus

(http://www.scsa.wa.edu.au/internet/Senior_Secondary/Courses/WACE_Courses). The course is divided into three content areas: 1. Marine, 2. Maritime, 3. Concepts and Skills. There is a specific focus on the fishing industry and tourism in the Marine section (Environmental and Resources Management). Each unit is defined with a particular focus and a selection of learning contexts through which the specific unit content can be taught and learnt. The cognitive difficulty of the content increases with each stage.

Unit 1 introduces students to marine ecosystems, ocean tides and how to conduct various water tests. Western Australian recreational and commercial fishing issues and solutions are examined.

Unit 3 examines the importance of plankton and coral communities in the marine environment. Major resource management issues affecting Australia's marine environment, including pollution, water quality and over-fishing, are investigated. Students who wish to pursue tertiary education pathways will complete the Stage 3 external examination in their final year of school.

There is also some minor content in the **Outdoor Education** Syllabus under "Environmental Management"

- traditional and present-day environmental management techniques and strategies
- firestick farming / controlled burns (fire management strategies)
- fish traps/fishing restrictions and/or permits

VET in WA

In WA, the Training Accreditation Council (TAC) is responsible for quality assurance and recognition processes for RTOs and for the accreditation of courses. For RTOs in partnership with WA schools, but with scope not limited to WA, the quality assurance is regulated under the National VET regulator through the Australian Skills Quality Authority (ASQA). All school RTOs are subject to the same audit processes by TAC as other training providers involved in VET in schools delivery and assessment.

Other content - Recfishwest, WA Fishing Clinic Programs 2012

Recfishwest is the recognised peak recreational fishing body in WA. They provide an advocacy, consultative and advisory service to the Western Australian Government on behalf of WA's recreational fishers. Recfishwest conducted a total of 80 clinics with more than 1,800 participants during 2012/2013. A total of 23 metropolitan clinics, 27 community clinics and 30 regional fishing clinics were conducted.

Recfishwest has been running its fishing clinic program for 14 years with support from Healthway promoting the "SunSmart" message and in recent years through the Commonwealth Recreational Fishing Community Grants Program promoting the "Addicted to Fishing Not Drugs" message. The Recfishwest Fishing Clinics have a broad aim of promoting responsible fishing practices and correct fish handling techniques. The clinics promote the "Fish Today for Tomorrow" message, encouraging people to fish in a sustainable manner. This program addresses many aspects of recreational fishing including basic fishing skills, the use of appropriate equipment, the reasons behind fishing rules, correct fish handling techniques and fishing safety.

In addition to teaching the basics of safe and ethical angling to children and youth, the program combines mentoring and positive life skills within a conservation and education package.

The objectives of the program are to:

- Encourage fishing as a healthy outdoor family activity
- Promote the importance of sustainability of natural resources
- Promote good health and environmental practices within the fishing community
- Promote the enjoyment of the recreational fishing experience and good fishing practices
- Increase the use of sun protection measures used by recreational and sport fishers for the
- prevention of skin cancer in adults

• Promote fishing as an activity at which youths can excel to better self-esteem

During each clinic instructors highlight the appropriate SunSmart behaviour. Each fishing clinic promotes the need for a conservative approach to fishing consistent with the 'Fish today for Tomorrow' message. The children are encouraged to practice "catch and release" and good handling techniques are demonstrated. Almost all fish are released during the Recfishwest clinics. Clinics are usually conducted by two experienced Recfishwest fishing clinic instructors and run for approximately two hours with a maximum of 30 participants.

Metropolitan Schools: There were 23 clinics and a total of 476 participants with locations of clinics at the AQWA Jetty, Woodman Point, Point Walter, Point Peron and Rottnest Island. Metropolitan schools included primary, high, colleges and academies which are all listed in (http://www.recfishwest.org.au/images/PDF/annual-reports/Recfishwest_2013_Annual_report.pdf)

Northern Tour: Recfishwest visted the North West of Western Australian during May and June. Regional towns visited in 2013 were Carnarvon, Exmouth, Karratha, Wickham, Port Hedland, Broome, Derby, as well the Dampier Peninsula community of Beagle Bay. The Northern Tour fishing program included 723 participants and 32 clinics. For more information on the tours, including a southern tour see <u>http://www.recfishwest.org.au/fishing-clinics/tours.html</u>

Other content – Department of Fisheries WA

The government schools and community education programs operate throughout metropolitan and regional Western Australia and at the Naturaliste Marine Discovery Centre (NMDC) at Hillarys Boat Harbour. For further information see <u>http://www.fish.wa.gov.au/Education-and-</u>

<u>Partnerships/Education/Pages/default.aspx</u>. The NMDC and Marine WATERS (Western Australian Teacher Education Resources) site is discussed in more detail later in the teaching resources section (Chapter 4) of the review and in Appendix 2.

Relevance of Findings to Other States and Territories'

The Education System

Primary: Nationally there was an absence of RF content in primary curriculums, although we did find some minor reference to it in the Tasmanian Health and Wellbeing K–10 syllabus Curriculum that involved illustrating a physical, emotional or spiritual activity that contributes to feeling well e.g. fishing. However, in nearly all situations its presence or absence in schools depended on individual teacher's interest (passion) and their skill set.

Subsequent discussions indicated that many primary teachers are lacking the confidence to do fishing activities by themselves and any future activity would need to strongly focus on educating the teachers more than the students, so that the teachers would be confident/capable of doing the instructing themselves. This represents the current paradigm of RF education in primary schools, that it only involves basic instruction on "How to fish". It also reflects the generalist capabilities of many primary school teachers, and in this context, it would be more sensible to utilise volunteer anglers and fishing club enthusiasts to service schools. The added advantage is that this also develops ongoing links between schools, clubs and the community. Teachers could then concentrate on the many other aspects of RF that include wider sustainability, environmental and ethical messages.

Early Secondary: Only a few states (NSW, QLD, SA, TAS) had curriculum documents for this stage of learning (Table 17). Queensland had very good RF content in the Coast and Marine Education Syllabus Years 8 – 10 while Tasmania used a Marine Links Kit focusing on curriculum areas for Grades 5-8 students. RF was part of the Sustainable Fisheries (Unit 3) from this kit. See http://www.dpiw.tas.gov.au/inter.nsf/Attachments/SWIS-8JG3PP?open. SA had excellent practical content contained in the Outdoor Education (Fishing Sports Area) which is part of the Health, Outdoor and Physical Education framework while the ACT had developed specific curriculum programs dealing with natural resource management.

Senior Secondary: RF content was most often found in two key areas 1) the Marine Science/Studies syllabus (QLD, NSW, WA) and/or 2) the Outdoor Education/Physical Recreation syllabus (ACT, NT, SA, VIC, TAS, WA) syllabuses for years 11-12 (Table 17). Fisheries as a resource is referred to and used as a context for teaching in many other subjects such as the Biological Sciences, Earth and Environmental Science and Geography courses of study.

In Western Australia this was the Year 11-12 Marine and Maritime Studies syllabus (<u>http://www.scsa.wa.edu.au/internet/Senior_Secondary/Courses/WACE_Courses</u>). The course is divided into a number of stages (1-3) depending on whether the student wants to pursue a more applied or tertiary education pathway. Minor content was found also in the Outdoor Education Syllabus.

This approach was also used by Queensland that had numerous pathways including one for university (Year 11 - 12, Marine and Aquatic Practices (TAFE pathway) – recreational strand; Year 11 - 12, Marine Studies (current university pathway) – Elective 7; Year 11 and 12, Marine Science (2014 university pathway) – marine research skills). In the Marine Science Senior Syllabus 2013 <u>http://www.qsa.qld.edu.au/20319.html</u> RF was included in the conservation and sustainability key concepts area that included elaborations for management (including legislation) of resources for a sustainable future. This was by far the most comprehensive and well-designed syllabus. By contrast NSW did not offer any such flexibility (Table 17).

In Victoria Marine Science does not follow on to VCE after Year 10 but is part of the VCE VET Sport and Recreation Program, specifically SIS20210 Certificate II in Outdoor Recreation with additional units from Certificate III in Sport and Recreation – Surfing/Fishing focus <u>http://www.vcaa.vic.edu.au/Pages/vet/programs/sportrecreation/sportrec.aspx</u>. Students wishing to receive an ATAR contribution for the Units 3 and 4 sequence must undertake scored assessment for the purposes of gaining a study score. A student who opts out of scored assessment in the VCE VET Sport and Recreation program will not be eligible for a contribution towards their ATAR.

This was also the case in South Australia where RF/fishing was a major part of the VET system. The SACE enables students to include a significant amount of VET in their SACE studies. This was the most comprehensive, nationally, with content varying from Beach, Estuary, Freshwater Fishing Skills, Guiding, Plan and Manage Charter Trips, NT Fishing Industry, Fishing Gear and Technology (see https://apps.sace.sa.edu.au/vetsearch/VetSearch.jsp?searchFor=fishing&searchIn=any&sortBy=nam e&reset=false). However, there was no marine science subject in Stage 1 or 2 of the South Australian Certificate of Education (SACE) - Years 10 to 12 http://www.sace.sa.edu.au/subjects. The Northern Territory Certificate of Education and Training (NTCET) qualification is based upon the South Australian Certification of Education (SACE) and we have assumed much of the programming is the same.

In Tasmania there is a college system for Years 11 and 12– they are not part of the High School network. Colleges are still following the old Tasmanian Curriculum and deal mainly with the pretertiary biology and ecology units. These have more emphasis on the biology, chemistry and physics of the oceans and less on the more vocational aspects of fishing and aquaculture training which are covered in the VET courses. <u>http://www.education.tas.gov.au/parents_carers/schools-</u> <u>colleges/Pages/Years-11-and-12.aspx</u> . However, RF was part of their Physical Recreation Program in Y11-12 (Table 17).

National: the VET Training Package relevant to RF was part of the Sport, Fitness and Recreation Training Package (SIS10) –Certificate II in Outdoor Recreation (SIS20210).

| Table 17. Summary of RF content within | school adjucational frame work | (curriculum and cyllabus documents) |
|--|--------------------------------|-------------------------------------|
| Table 17. Summary of KF concent within | School educational frame work | (curriculum and synabus documents) |

| State or Territory | Main RF Content Areas | Senior Secondary pathways (Y11-12) |
|-----------------------|---|--|
| ACT | 1. Every chance to learn curriculum framework, particularly ELA 20 (environmentally sustainable future) - preschool to Y10 2. Outdoor Education (Fishing Sports Area) which is part of the Health, Outdoor and Physical Education framework – Y11 to 12 | No Marine Studies but Outdoor Education pathway |
| NSW | Science (Living things) and HSIE (Environments) KLAs, most appropriate - K to Y6 Marine and Aquaculture Technology Syllabus part of the TAS KLA - Y7 to 10. Marine Studies Stage 6 Syllabus-Y11 to 12 | Yes, Marine Studies but elective, no pathway to university, exam and board endorsed course focus. |
| NT | Environment strand in the SOSE Learning Area, NTCF - Transition to Year 10. The NTCET Y11-12 is based upon the South Australian Certification of Education (SACE) and is likely to be included under Outdoor Education | No, Marine Studies follows SA likely to have Outdoor Education pathway |
| QLD | Y1 - 9 SOSE and Technology learning area most appropriate Y8 -10 Coast and Marine Education Syllabus Y11-12 Marine and Aquatic Practices (TAFE pathway), recreational strand Marine Science (2014 university pathway) – marine research skills). | Yes, Marine Studies and multiple pathways to TAFE and University, very flexible. |
| SA | 1.Health and Physical Education KLA (Aquatics and Safety with Fishing Skills)- Y7 upwards 2. SACE Outdoor Education Y11-12 Stage 1 and 2. SACE also enables students to include significant amount of VET in their final year studies- multiple courses under fishing | No, Marine Studies, more focussed on TAFE pathway also has Outdoor Education pathway |
| TAS | Marine Links kit Unit 3 Y5-8 TQA Y11-12 Physical Recreation Program - Outdoor Education, Experiences and Leadership courses. | No Marine Studies but Physical Recreation pathway |
| VIC | 1. VELS Science Discipline-based Learning Strand Y3-10 2. VCE Y11-12 Outdoor and Environmental Studies | No Marine Studies but Outdoor and Environmental Studies pathway |
| WA | K-10 Syllabuses - possible Y11-12 Outdoor Education Syllabus -minor content Y11-12 Marine and Maritime Studies syllabus | Yes, Marine Studies number of pathways, flexible, including Outdoor Education |

| NATIONAL | 1. VET Sport, Fitness and Recreation Training Package | Varies from state and |
|----------|---|-----------------------|
| | (SIS10) - SIS 20210 | territory, see |
| | | ACACA website |

Note: In all Y11-12 pathways to university this requires selecting the most academic or challenging strands in each course.

Delivery to Schools

Most states and territories have a volunteer organisation or program that assists in delivery of educational material to schools or to the general public. In the ACT Waterwatch is well known as are the Fishcare volunteers who help deliver the "Get Hooked" primary schools education program. Volunteers are therefore central to the success of many government education platforms (Table 18). While this is a great resource, availability of volunteers can vary from year to year. This has been the experience in SA where numbers have dropped significantly and may be a future trend as the population ages. Some states are lucky enough to have a government public education facility (e.g. VIC and WA have a Marine Discovery Centre) which schools can visit and most have an education officer, state or volunteer co-ordinator (Table18).

RFL Trusts

The main advantage of having a RFL trust is that all money raised has to be spent on RF. NSW collects almost twice that of other states and territories while VIC and WA are roughly the same (\$6-7 million). TAS has less as there is only an inland fishing license (\$1.6 million) but has a saltwater gear fee which SA also has (Table 18). There are no licenses required to fish in the ACT, SA or NT.

Queensland does not have a RF trust but does have two charges that directly impact on RF. These are the Recreational User Fee (RUF), formerly titled as the Private Pleasure Vessel Levy (PPV), and the Stocked Impoundment Permit (SIP). The SIP was established under a research development trust arrangement (25% administration: 75% towards stocking freshwater impoundments). In contrast the PPV/RUF is collected initially by the Department of Transport (to cover provision and maintenance of boat ramps, navigations aids etc.) as part of the registration process before being passed into the governments consolidated revenue. Once in consolidated revenue the funds do not have to be allocation or spent directly on RF, as is the case of the RF trusts. Because of this arrangement the Queensland RF schools education program has relied on a "grass roots approach" using volunteers and the peak body to co-ordinate it (Table 18).

In contrast, the NSW Department of Primary Industries allocates some \$1.2 million towards its Fishcare Volunteers (\$765,200) and Get Hooked primary schools education program (\$435,000). Ironically this has led to QLD establishing a more sustainable network using clubs than NSW, where little money is invested in the peak body or club network. Some states and territories are more inclusive, providing funding support (consolidated revenue or the RFL) to peak bodies (QLD, WA) or clubs (VIC, NT) to do the grass roots community work. Many see WA as having the best framework as the peak body is actively involved with government and the roles are clearly articulated and funded, albeit that this involves private industry (e.g. Woodside). Once contentious issue with the larger trusts is the amount of money spent on government salaries, especially the high level of oncosts to service them. Many question whether this is a core function of the trusts.

| State or Territory | Main Organisational Body and Structure | Funding and Main Delivery Mechanism |
|-----------------------|--|---|
| ACT | Government has minor role | No RFL |
| | http://www.environment.act.gov.au/ | |
| | Environment and Sustainable Development Directorate | Waterwatch network services schools which focuses on fishing for Carp in the ACTs rivers and lakes. |
| NSW | Government has major role (NSW | Largest Recreational Fishing Licence (RFL) fees |
| | Department of Primary Industries | collected over \$14 million annually. |
| | http://www.dpi.nsw.gov.au/fisheries/recre | In 2012/13 2 programs accounted for over half of |
| | ational | the \$2 million budget - Fishcare Volunteers (\$765,200) and Get Hooked (\$435,000). |
| | Manager Recreational Fisheries Programs. | |
| | State Coordinator – Community Programs. | Fishcare Volunteers are central to the success of |
| | Schools Manager, Recreational Fishing. Schools Facilitator, Recreational Fishing. | government education platform - assist teachers with in-class activities and fishing practical |
| | NSW DPI Fisheries Education Officers in 4 | workshops. Education officers also involved. |
| | locations | |
| | | Very little funding to clubs or peak body to conduct |
| | Peak body has no major education role in schools. | fishing events or "how to fish". Numerous MDC deliver varied content to school visits |
| | | |
| NT | Government has major role (Department of | No general RFL however permits are required to |
| | Primary Industry and Fisheries (DPIF) | enter Aboriginal Land and may also be required for |
| | http://www.nt.gov.au/d/Fisheries/index.cf | access to tidal waters overlying Aboriginal land for |
| | <u>m?header=Recreational%20Fishing</u> | fishing purposes |
| | Recreational Fishing Education Officer | The NT Government provides small amount of |
| | | money to peak body (AFANT) for Fishing Clubs |
| | Minor involvement of peak body | Small Grants Program. |
| QLD | Peak body –Sunfish Queensland Inc., has | No RFL however money collected (around \$4 |
| | main role. | million annually) by Department of Transport |
| | http://www.sunfishqld.com.au/ | through RUF/ PPV and passes into consolidated revenue |
| | Only one paid position, Sunfish (QLD) Inc. | |
| | Executive Officer | Sunfish contracted by government to conduct some |
| | Suffere from look of funding although | 33 clinics through QLD. |
| | Suffers from lack of funding although government subcontracts to peak body | Schoolfish program run by Sunfish volunteers. |
| | Soverment subcontracts to peak body | Some clubs in QLD run their own program with |
| | | support from private (tackle) industry e.g. MacKay |
| | | (MRFA). |
| SA | Government has minor role (Primary | No general RFL however some fishing gear (e.g. |
| | Industries and Regions SA (PIRSA)) | Rock lobster pots) requires a license. |
| | http://www.pir.sa.gov.au/fisheries/recreati | The FISHCARE volunteers program services schools |
| | onal fishing | mainly about compliance |
| | State Volunteer Coordinator, Fisheries | Henley Beach MDC is leader in primary schools |
| | Operations, PIRSA | discovery and education |
| ТАС | Covernment has main role | No general DEL for colturator however some fishing |
| TAS | Government has main role | No general RFL for saltwater however some fishing |

Table 18. Main organisational structure and funding involved in delivery of RF education into Australian schools

| VIC | (Department of Primary Industries, Parks, Water and Environment) Fisheries Management Officer (Recreational Fisheries) http://www.dpipwe.tas.gov.au/inter.nsf/W ebPages/SWIS-8UA22U?open Fishcare Southern, Northern Region, Northwest/West Coast Coordinators Minor involvement of peak body Government has major role (Department of Environment and Primary Industries) http://www.dpi.vic.gov.au/fisheries/about- fishcares/fiching.grapts.program/your | gear (e.g. Rock lobster pots) requires one. However a licence to fish for salmonids in inland waters is required. Revenue from angling license sales in 2011-2012 was \$1.63 million annually. Woodbridge MDC has multiple roles in schools education and training/workshops for Fishcare volunteers, well-resourced and hub for schools in southern Tasmania Govt. schools program delivered by Fishcare volunteers but no role in enforcing fisheries laws. RFL Trust Account allocates \$6.9 million annually (2012-2013) to projects that will directly improve recreational fishing in Victoria |
|-----|---|---|
| | fisheries/fishing-grants-program/your- licence-fees-at-work-2012-13 State Coordinator, Fishcare Victoria Government website provides contact information on Angling Clubs and Associations of Victoria Clubs have a major education role through funding from RFL | Govt. schools program delivered through public education facility- Queenscliff MDC and Fisheries officers. Main delivery to schools through Fishcare volunteers "Get hooked"/ "Fish Right Workshops" to promote sustainable and responsible fishing practices to junior anglers. RF license provided \$113,500 in 2012-13 to conduct 450 'Fish Right' workshops. RFL Trust through Small Events Recreational Fishing Grants Program provides funds to clubs to deliver grass roots fishing clinics. |
| WA | Government (Department of Fisheries) has major role.http://www.fish.wa.gov.au/Fishing-and- Aquaculture/Recreational- Fishing/Supporting-Recreational- Fishing/Pages/default.aspxManager, Community and Education.Northern, Southern and Indian Ocean Territories Community Education OfficersPeak body also has a major education role in schools.Seen as most desirable framework by other states and territories | Recreational fishers contribute about \$6m annually through licence fees, by law all spent on recreational fishing. Govt. schools program delivered through public education facility- Naturaliste MDC, marine education resources website (<u>Marine WATERs</u>) and supported by Community Education Officers Government works closely with peak body (Recfishwest) which delivers "how to fish clinics" to metropolitan and regional schools. Govt. injects \$1 million through peak body to fund community- driven projects aimed at enhancing recreational fishing Support from private industries such as Woodside |

3.0 The New Australian Curriculum

The Australian Curriculum, Assessment and Reporting Authority (ACARA) is responsible for the development of Australia's national curriculum from Kindergarten to Year 12, starting with the learning areas of English, Mathematics, Science and History, for implementation from 2011. As a second phase of work, national curriculum will be developed in Languages, Geography and the Arts. The ACARA website http://www.acara.edu.au/home_page.html provides background information and an additional Foundation to Year 12 resource site, developed in collaboration with Education Services Australia (http://www.australiancurriculum.edu.au/) allows online exploration and filtering of the key learning areas.

The Australian Curriculum is published online (Figure 13) to provide maximum flexibility in how the curriculum can be accessed and organised. The curriculum may be viewed by learning area, by multiple year levels, or by year level across learning areas, and may be downloaded and printed in those views. The curriculum development work of ACARA has been guided by the Melbourne Declaration on Educational Goals for Young Australians, adopted by the Ministerial Council in December 2008.

There are two key components to the Australian Curriculum website:

Foundation to Year 10 (F-10): providing access to curriculum for learning areas or subjects; information about the general capabilities including continua for each capability; and information about the cross-curriculum priorities. The Australian Curriculum calls the year before year 1 Foundation, however some states and territories will continue to call this year Kindergarten.

Senior secondary (Year 11 and 12): providing access to curriculum for senior secondary subjects.

Although ACARA has developed the Australian Curriculum, education authorities in each state and territory have responsibility for its implementation and for supporting schools and teachers. Because of this the roll out has not been universal with NSW one of the last states to agree to a time schedule.

Structure

The Australian Curriculum F-10

This has been published for English, Mathematics, Science and History (Figure 14). Curriculum for these years is being developed for Geography, Languages, The Arts, Health and Physical Education, Technologies, Economics and Business and Civics and Citizenship and will be published progressively. The F-10 Australian Curriculum pays explicit attention to how seven general capabilities and three cross-curriculum priorities contribute to, and can be developed through, teaching in each learning area.

The 7 general capabilities are:

- literacy
- numeracy
- Information and Communications Technology (ICT) competence
- critical and creative thinking
- ethical behaviour

- personal and social competence
- intercultural understanding

The first three will have continua developed to assist teachers with their planning and to align with national testing. The curriculum also gives special attention to three priorities: one national, regional and global priority. These will immerse students in learning beyond their local context. These three themes are already reflected in much current teaching. While not every learning area is able to address these equally, it is expected that where opportunity allows, reference to these three themes can and should be made explicit.

The three cross-curriculum priorities are:

1. Aboriginal and Torres Strait Islander histories and cultures, to ensure that all young Australians are given the opportunity to gain a deeper understanding and appreciation of Aboriginal and Torres Strait Islander histories and cultures, their significance for Australia and the impact these have had and continue to have on our world. This is a **national** focus.

2. Asia and Australia's engagement with Asia, to reflect the importance of young people knowing about Asia and Australia's engagement with Asia. As young people learn about and develop a better understanding of the countries and cultures of the region, they appreciate the economic, political and cultural interconnections that Australia has with the Asia region. This is a **regional** focus.

3. Sustainability, to develop in young people an appreciation of the need for more sustainable patterns of living, and to build capacities for thinking, valuing and acting necessary to create a more sustainable future. This is a **global** focus.

These cross-curriculum priorities are also part of **global education** that assist learning to be relevant to the lives of students and address the contemporary issues they face (Table 19).

| Australian Curriculum cross- curriculum priorities | Related global education learning emphases | Content | |
|--|---|--|--|
| Aboriginal and Torres Strait Islander histories and cultures | Interdependence and globalisation Identity and cultural diversity Social justice and human rights | Minority groups throughout the world | |
| Asia and Australia's engagement with Asia | Identity and cultural diversity Social justice and human rights | Equitable and peaceful relations with countries around the world | |
| Sustainability | Sustainable futures | Balancing the social, political, economic and environmental aspects of sustainability. | |

 Table 19.The learning emphases which reflect recurring themes in global education. Source:

 <u>http://www.globaleducation.edu.au/global-education/what-is-global-ed.html</u>



Figure 13.Screenshot of the Australian Curriculum web site showing F-10 and Senior Secondary Curriculum menus. Source http://www.australiancurriculum.edu.au/

| | ustralian URRICULUM | Search accara Automica Automic | | |
|---------|------------------------|--|---|----------------|
| Home | F-10 Curriculum | Senior Secondary Curriculum | Student Diversity + | Print/Download |
| | Overview | | | |
| | Learning Areas | General Capabilities | Cross-curriculum priorities | Year Level |
| Sci | English | General Capabilities Overview | Cross-curriculum priorities Overview | Foundation |
| 001 | Mathematics | Literacy | | Year 1 |
| Ration | Science | Numeracy | Aboriginal and Torres Strait Islander histories and cultures | Year 2 |
| Filters | History | Information and Communication Technology (ICT) capability | Asia and Australia's engagement with Asia Sustainability | Year 3 |
| | | | | Year 4 |
| | | Critical and creative thinking | Sustainability | Year 5 |
| View | | Personal and social capability | | Year 6 |
| | | Ethical understanding | | Year 7 |
| | | Intercultural understanding | | Year 8 |
| Found | | | | Year 9 |
| Found | | | | Year 10 |
| Founda | | | | Year 10A |

Figure 14.Screenshot of the Australian Curriculum web site showing F-10 Curriculum menu. Source http://www.australiancurriculum.edu.au/

Another important aspect is **Connections to other learning areas.** For example learning in science involves the use of knowledge and skills learnt in other areas, particularly in English (learning literacy skills), mathematics and history.

More specifically, the structure of the curriculum for each learning area is:

- **Rationale** explaining the place and purpose of the learning area in the school curriculum and how it contributes to meeting the goals of the 2008 Melbourne Declaration.
- **Aims** identifying the major learning that students will be able to demonstrate as a result of learning from the curriculum.
- **Organisation** providing an overview of how the curriculum in the learning areas will be organised K 12.
- Content descriptions specifying what teachers are expected to teach. They include the knowledge, skills and understanding for each learning area as students progress through schooling. Examples that illustrate each content description can be found in elaborations. These are provided for teachers who may need further information to better understand the content description.
- Achievement standards describing the quality of learning (the depth of understanding, extent of knowledge and sophistication of skill) typically expected of students as they progress through schooling. Students who achieve the standard are well prepared to progress to the next level.

The Senior Secondary Australian Curriculum

This has been published for English, Mathematics, Science and Humanities and Social Sciences for Years 11 to 12 (Figure 15). The senior secondary Australian Curriculum for English, Mathematics and Science has been organised into four units. The last two units are cognitively more challenging than the first two units. Each unit is designed to be taught in about half a 'school year' of senior secondary studies (approximately 50–60 hours duration including assessment and examinations). However, the senior secondary units have also been designed so that they may be studied singly, in pairs (that is, year-long), or as four units over two years. The Humanities and Social Sciences contains Ancient and Modern History

Emphasis

In the early years of schooling, priority is given to literacy and numeracy development. The foundation for literacy is built primarily in English and the foundation for numeracy in mathematics. However these must be reinforced and strengthened through learning in other contexts, including science, history and geography.

In the upper primary years and the first years of lower secondary schooling, the Australian Curriculum continues to prioritise English and literacy and mathematics and numeracy, while also providing opportunities for students to deepen their learning in particular areas according to their interests and needs. In Years 7–8 the focus is in creating greater opportunities for students to choose learning pathways that build individual needs and interests in secondary schooling.

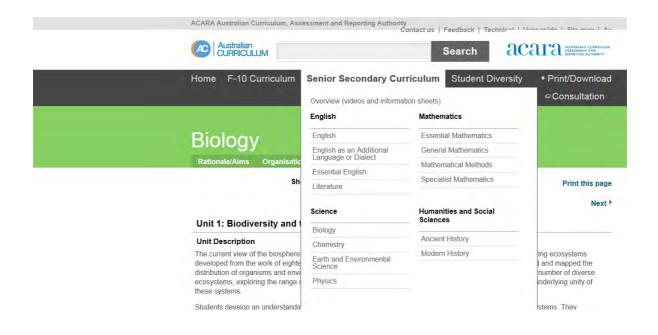


Figure 15.Screenshot of the Australian Curriculum web site showing Senior Secondary Curriculum menu. Source <u>http://www.australiancurriculum.edu.au/</u>

The design of the Australian Curriculum for Years 9 and 10 recognises that many students commence senior secondary pathways and programs, including vocational pathways, in these years. The curriculum is designed to provide increased opportunities for students to make choices about learning pathways and to deepen their understanding in each learning area. It is based on the assumption that school and/or curriculum authorities will provide learning opportunities in English, mathematics, science, history, and health and physical education for all students and will also provide learning opportunities from other learning areas and in vocational education, including National Trade Cadetships. In Years 9 and 10, there is flexibility for students to undertake more specialised learning pathways that ensure all students are fully engaged and prepared to continue learning into the senior secondary years.

The senior secondary curriculum provides students with increased opportunities to make choices about pathways through school and beyond. These choices are informed by previous success and enjoyment, future options for training, learning or employment, and the setting in which the learning is to occur. Many young people in this age range have already been in part-time employment or will take up part-time jobs while undertaking their senior secondary schooling. The senior school curriculum offers more opportunities for specialisation in learning, including within the regular school program and through accredited vocational education and training

Its Implementation in NSW and in other States and Territories

Through 2011 and 2012, the Board of Studies NSW developed new K–10 syllabuses for English, Mathematics, Science (incorporating Science and Technology K–6) and History that incorporate agreed Australian Curriculum content given in (<u>http://www.australiancurriculum.edu.au/</u>). In 2012 and 2013 NSW schools will continue to use the existing NSW K–12 syllabuses (Table 20). Implementation of the new syllabuses will occur in three phases. Phase 1 includes English, Mathematics, Science and History. Phase 2 comprises Geography, Languages and the Arts. Details about Phase 3 are to be determined. The Board advises all schools to continue to use the existing NSW K-12 syllabuses for 2012 and will allow for the professional learning aspects of implementation to occur in 2013. The curriculum will move to the classroom teaching phase from 2014 (http://syllabus.bos.nsw.edu.au/).

 Table 20.Timeframe for NSW schools to implement the Australian curriculum. Source:

 http://www.boardofstudies.nsw.edu.au/australian-curriculum/

| Kindergarten – Y | lear 6 |
|------------------|---|
| 2011–2012 | Syllabus and support material developed by December 2012 Sectors plan implementation support |
| 2013 | Familiarisation and planning |
| 2014 | English – start teaching Mathematics – optional to start teaching Science and Technology – optional to start teaching |
| 2015 | Mathematics – start teaching Science and Technology – start teaching History – optional to start teaching |
| 2016 | History – start teaching |
| Years 7–10 | |
| 2011–2012 | Syllabus and support material developed by December 2012 Sectors plan implementation support |
| 2013 | Familiarisation and planning |
| 2014 | • Years 7 and 9: English, Mathematics, Science and History – start teaching |
| 2015 | • Years 8 and 10: English, Mathematics, Science and History – start teaching |

In some states and territories the implementation is more advanced, as in Victoria where the past VELS has been combined with the new Australian curriculum (Figure 16). The Curriculum into the classroom (C2C) project is the strategy employed by Education Queensland to support its schools with the implementation of the Australian Curriculum and to assist them to meet its goal for state schooling of one vision, one curriculum, one platform, different ways.

The Australian Curriculum in Victoria

Download the Curriculum -

Welcome to AusVELS

Curriculum updates

viewed on the curriculum version page.

AusVELS is the Foundation to Year 10 curriculum that provides a single, coherent and comprehensive set of prescribed content and common achievement standards, which schools use to plan student learning programs, assess student progress and report to parents.

AusVELS incorporates the Australian Curriculum F-10 for English, Mathematics, History and Science within the curriculum framework first developed for the Victorian Essential Learning Standards (VELS). AusVELS uses an eleven level structure to reflect the design of the new Australian Curriculum whilst retaining Victorian priorities and approaches to teaching and learning.

Details of changes made to the AusVELS curriculum can be

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Resources and Support

The VCAA F-10 website provides curriculum planning, teaching and assessment resources to support the transition to the Australian Curriculum in Victoria (AusVELS).



Figure 16.Screenshot of the AusVELS web site showing the new curriculum. Source: <u>http://ausvels.vcaa.vic.edu.au/</u>

Relevant KLAs - Science - An inquiry approach

One of the key learning areas for RF is science. In the Australian Curriculum Science has three interrelated strands:

- Science Understanding
- Science as a Human Endeavour
- Science Inquiry Skills

The main strands that can be targeted are Science Understanding (Biological) and Science as a Human Endeavour (Figure 17). In addition six overarching ideas support the coherence and developmental sequence of science knowledge within and across year levels. The overarching ideas frame the development of concepts in the Science Understanding strand, support key aspects of the Science Inquiry Skills strand and contribute to developing students' appreciation of the nature of science. These 6 overarching ideas are:

- patterns, order and organisation
- form and function
- stability and change
- systems
- scale and measurement
- matter and energy

Science Understanding

Science understanding is evident when a person selects and integrates appropriate science knowledge to explain and predict phenomena, and applies that knowledge to new situations. Science knowledge refers to facts, concepts, principles, laws, theories and models that have been established by scientists over time.

The Science Understanding strand comprises four sub-strands

- **Biological sciences:** concerned with understanding living things
- **Chemical sciences**: concerned with understanding the composition and behaviour of substances.
- **Earth and space sciences**: concerned with Earth's dynamic structure and its place in the cosmos.
- **Physical sciences**: concerned with understanding the nature of forces and motion, and matter and energy

Science as a Human Endeavour

This strand highlights the development of science as a unique way of knowing and doing, and the role of science in contemporary decision making and problem solving. There are two sub-strands:

- Nature and development of science: develops an appreciation of the unique nature of science and scientific knowledge, including how current knowledge has developed over time through the actions of many people.
- Use and influence of science: explores how science knowledge and applications affect peoples' lives, including their work, and how science is influenced by society and can be used to inform decisions and actions.

Science Inquiry Skills

Science inquiry involves identifying and posing questions; planning, conducting and reflecting on investigations; processing, analysing and interpreting evidence; and communicating findings. This strand is concerned with evaluating claims, investigating ideas, solving problems, drawing valid conclusions and developing evidence-based arguments. In science investigations, collection and analysis of data and evidence play a major role. This can involve collecting or extracting information and reorganising data in the form of tables, graphs, flow charts, diagrams, prose, keys, spreadsheets and databases. There are five sub-strands:

- **Questioning and predicting**: Identifying and constructing questions, proposing hypotheses and suggesting possible outcomes.
- **Planning and conducting**: Making decisions regarding how to investigate or solve a problem and carrying out an investigation, including the collection of data.
- **Processing and analysing data and information**: Representing data in meaningful and useful ways; identifying trends, patterns and relationships in data, and using this evidence to justify conclusions.
- **Evaluating**: Considering the quality of available evidence and the merit or significance of a claim, proposition or conclusion with reference to that evidence.
- **Communicating**: Conveying information or ideas to others through appropriate representations, text types and modes.

1

| Content description | Elaborations | | |
|--|--|--------------------------------|--|
| People use science in their daily lives, including when caring for their environment and living things | considering how science is used in activities such as coor fishing, transport, sport, medicine and caring for plants ar considering that technologies used by Aboriginal and Tor Islander people require an understanding of how material used to make tools and weapons, musical instruments, cl cosmetics and artworks exploring how musical instruments can be used to product sounds comparing how different light sources are used in daily lift identifying ways that science knowledge is used in the can local environment such as animal habitats, and suggesting to parks and gardens to better meet the needs of native and the suggesting to parks and gardens to better meet the needs of native and the suggesting to parks and gardens to better meet the needs of native and the suggesting to parks and gardens to better meet the needs of native and the suggesting to parks and gardens to better meet the needs of native and the suggesting to parks and gardens to be the suggesting to parks and gardens t | | |
| Code ACSHE022 ScOT catalogue terms Technology ; Environmental management ; Lifestyles | General capabilities | Cross-curriculum priorities | |
| URL http://www.australiancurriculum.edu.au/Elemer | Resources hts/ACSHE022 | | |

Science / Year 1 / Science as a Human Endeavour / Use and influence of science

Science / Year 8 / Science Understanding / Biological sciences

| Content description | Elaborations | | | | | |
|--|--|--|--|--|--|--|
| Multi-cellular organisms contain systems of organs that carry out specialised functions | identifying the organs and overall function of a system of a multicellular organism in supporting the life processes | | | | | |
| that enable them to survive and reproduce | describing the structure of each organ in a system and relating its function to the overall function of the system | | | | | |
| | examining the specialised cells and tissues involved in structure and function of particular organs | | | | | |
| | comparing similar systems in different organisms such as digestive systems in herbivores and carnivores, respiratory systems in fish and mammals | | | | | |
| | distinguishing between asexual and sexual reproduction | | | | | |
| | comparing reproductive systems of organisms | | | | | |
| Code | General capabilities Cross-curriculum | | | | | |
| ACSSU150 ScOT catalogue terms | Critical and creative thinking | | | | | |
| Plant structure and function ; Body systems | Resources | | | | | |
| URL http://www.australiancurriculum.edu.au/Elemer | | | | | | |

Figure 17.Examples of Science as a Human Endeavour and Science Understanding content taken from the Australian Curriculum website. Source <u>http://www.australiancurriculum.edu.au/</u>

The 4 Learning Groups and Unifying Ideas

Unifying ideas draw together the strands and disciplines of science and are developmental in nature with subsequent ideas building on those for the previous year grouping. In this way, unifying ideas enable students to accumulate knowledge over time for deeper understanding. For example, order and change are necessary ideas to understand systems. Understanding systems provides the basis for appreciating the nature of equilibrium and interdependence. These are summarised in Table 21 which provides the structure for later placement of RF strategies within the Australian curriculum.

Table 21.The four learning groups and unifying ideas. Source: Shape of the Australian Curriculum: Science2009.

| School years | Age groupings | Curriculum focus | Unifying ideas | Biological Science Content relevant to RF (understanding/as a human endeavour) |
|-----------------|--|---|---|--|
| F-2 | Typically 5 to 8 years of age | Awareness of self and the local world | Explore, be curious, wonder and ask questions. Observation leads into the idea of order that involves describing, comparing and sorting. | comparing, sorting and classifying objects and materials living and non-living things needs, structures and growth of organisms changes on earth and the effects on living things. recognise aspects of science in everyday life identify work associated with science in the community care for the environment |
| 3-6 | Typically 8 to 12 years of age | Recognising questions that can be investigated scientifically and investigating them | Develop ideas about science that relate to their life and living. Within these, the unifying ideas of patterns, systems, cause and effect, and evidence and explanation will be developed. | structures and functions of living things life cycles of organisms living things and the environment earth's resources and their uses. consider how science is used in work and leisure become aware of science-related careers recognise the effect of science and technology on our environment be aware of the historical nature of science ideas. |
| 7–10 | Typically 12 to 15 years of age | Explaining phenomena involving science and its applications. | The unifying idea of sustainability is central to the nature of dynamic systems. A system has inputs, outputs and a variety of internal functions. The interaction of these inputs, functions and outputs determines the degree to which any system can sustain itself. The inputs include resources that may be | cells and living things the human body ecosystems theory of evolution and the diversity of living things. be aware of contemporary issues such as water and its management, climate change, stem cell research, nanotechnology, gene technology apply scientific understandings to make responsible, ethical and informed decisions about issues be aware of the nature of science and |

| | | | renewable or non- renewable | research of Australian scientists appreciate that science provides rewarding careers appreciate the diversity of people who have contributed to, and shaped the development of, science. |
|--------|--|---------------------------|--|---|
| 11-12: | Typically from 15 to 18 years of age | Disciplines of science | Opportunities and pathways for specialisation. Including within the school program and through accredited vocational education and training | Biodiversity and the interconnectedness of life Cells and multicellular organisms Heredity and continuity of life Maintaining the internal environment Scientific knowledge can be used to develop and evaluate projected economic, social and environmental impacts and to design action for sustainability. Scientific knowledge can enable scientists to offer reliable explanations and make reliable predictions. |

Connections to Other Learning Areas.

Teachers are very time poor in the classroom so the more outcomes (including across learning areas such as English, mathematics and history) that can be addressed in any one activity, the more likely the uptake. Likewise if one can integrate the messages into a literacy programme, there are even better chances of it being utilised as so much time has to be spent on literacy and numeracy in the classroom each day. Any writing (including posters, persuasive texts, discussion, research elements) that can be included will also address outcomes in the Literacy strand (learning literacy skills) within the English curriculum.

The English curriculum is built around the three interrelated strands of Language, Literature and Literacy. The range of literary texts for Foundation to Year 10 comprises Australian literature, including the oral narrative traditions of Aboriginal and Torres Strait Islander peoples, as well as the contemporary literature of these two cultural groups, and classic and contemporary world literature, including texts from and about Asia.

Key texts would have a background message of marine sustainability but could also include other messages related to the marine environment. At present this is centred on the reading and comprehension of the books 'Blueback' and 'The Deep', written by Western Australian author Tim Winton but could also include classics such as 'The Old Man and the Sea' by Ernest Hemingway. Other texts that have a strong environmental theme include: The World that we Want, Kim Michelle Toft ; One Less Fish, Kim Michelle Toft and Alan Sheather; Salmon Forest, David Suzuki and Sarah Ellis; Leo the Littlest Seahorse, Margaret Wild and Terry Denton; The Rainbow Fish Series, Marcus Pfister Herbert and J. Alison James. Many of the above books target the early years of learning and involve counting, which addresses mathematics and numeracy.

Relevant pedagogies for 21st Century Learning

While ACARA was given the mandate to write the content of the Australian Curriculum the pedagogy is the responsibility of system authorities, school leaders and teachers. The Australian Curriculum describes the scope of what is to be learned, but it is teachers in classrooms who will make decisions

about how best to organise learning, the contexts for learning and the depth of learning that will be pursued for each child in their class. RF provides an avenue through which students can make connections with the natural world and learn about ecosystems in an authentic learning environment. The pedagogy of 'experiential education' is learning that occurs through active involvement in what is being studied and values direct experience more highly than abstract knowledge. The constructivist theories of learning are also supported by experiential education strategies also known as learn-by doing, real-world learning, problem-based learning, and childcentred learning.

However, one can argue that these pedagogies ignore the capacity for schooling to now take place in both a physical and virtual learning space. Much has now been made of a new 21st century pedagogy. In less than five years we have seen the web morph from being a place to access information to being a network of social interaction. Its sites are all about people and communities as well as content and publishing; they encourage communication.

In keeping with this sort of thinking, specific questions arise, such as how can RF fully utilise the emerging relational technologies and social software in enriching these pedagogies and in facilitating the acquisition of new knowledge and skills? And how can the curriculum be most appropriately conceptualised and organised so as to tap into new capacities?

The framework would be based on constructivist theories of learning which view the learner as active in the process of taking in information and building knowledge and understanding; in other words, of constructing their own learning. The Framework's Key Ideas and Outcomes provide the basis for constructivist approaches to teaching and learning which build on learners' prior knowledge and experience and engage them in purposeful, contextualised, challenging and inherently interesting learning activities.

To achieve the stated aims of the Australian science curriculum it is proposed that there needs to be less emphasis on a transmission model of pedagogy and more emphasis on a model of student engagement and inquiry. The driving force of the transmission model is teacher explanation whereas the learning engine for inquiry is based on teacher questions and discussion. Teacher explanation is still important but it should be seen as one skill in a broad repertoire of teaching skills.

A balanced and engaging approach to teaching science will typically involve context, exploration, explanation and application. Wherever appropriate, students should be actively involved in the science concepts being taught. This requires a context or point of relevance by which students can make sense of the ideas to be learnt. The context may vary depending on the students, school or location. Having set the scene, the teacher provides science activities by which students can explore the ideas, using language the students are familiar with. Using this exploration and experience as a basis, the teacher introduces the science concepts and science terms in a way that has meaning to students. With these explanations and science language, the teacher then provides activities through which students can apply the science concepts to new situations.

Digital Resources Supporting the Australian Curriculum

The digital resources available to teachers nationally include:

- interactive, multimedia resources
- audio, photo and video resources that result from partnerships with national private and public cultural and collection agencies
- open-ended tools for teachers and students to create learning resources

- interactive assessment resources
- work samples
- collections of curriculum resources
- teacher ideas and units of work.

Scootle is a 'one stop shop' that provides teachers with access to more than 20,000 digital curriculum resources in the National Digital Learning Resources Network which is managed by Education Services Australia (ESA). All Catholic and Independent schools and Government schools in the Australian Capital Territory, Northern Territory, South Australia, Tasmania, Western Australia and Victoria can access Scootle. Teachers in New South Wales and Queensland government schools currently access the national digital curriculum resources via their own state-wide e-learning environments. These states will provide Scootle access to their teachers in the near future. Faculty and students at Australian universities and TAFEs and members of licensed professional associations can also access Scootle.

The content is indexed using the subject headings of the Schools Online Thesaurus, an agreed Australian vocabulary of curriculum topics and terms. Search results can be viewed on timelines and Google maps, providing new ways for teachers to discover relevant resources, and also to construct challenging learning experiences for students.

Teachers can browse the Australian Curriculum at the content descriptions and elaborations level (Figure 18). The matching digital resources are quality assured and include activities for students, teacher support materials and interactive assessment resources. There are one or more digital resources to support all content descriptions for the published Australian Curriculum for English, mathematics, science and history. Resources are being progressively released to support the Australian Curriculum for geography, the arts and languages.

Teachers can use Scootle to create personalised learning paths containing digital curriculum resources organised into a learning sequence targeted to individual students, student groups or particular learning purposes. These resources are easily selected and can be annotated with teachers' comments and descriptions. Teachers can add learning paths to a searchable bank of resources that educators can access, select, repurpose and adapt for their own context. Teachers can browse through or search learning paths by keyword, title or year level. Teachers can create collaborative learning paths that students can access within secure collaborative workspaces where they can:

- use secure chat facilities
- upload their own digital materials
- gather digital curriculum content from Scootle and add this to the space

• create a wiki-like response to teacher questions by adding their own text, re-ordering and editing

the existing material in the space and posing their own questions and comments

• receive individual and group feedback from the teacher.

| cootle | | | | Search Advanced search |
|--|--|-------|--|--------------------------------------|
| me Find by Aust | ralian Curriculum A to Z | Lea | arning paths Improve (| Community |
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| Year 3 🗹 Year 9 Year 4 🖉 Year 10 | Earth and space sciences | Ð | | Processing and analysing ® |
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| ICT capability Critical and creative thinking Litical behaviour | Physical sciences Year 2 Content Descriptions | | | |

Figure 18.Screenshot of Scootle science resources that match the Australian Curriculum content descriptions. Source: <u>https://www.scootle.edu.au/</u>

Strategies for placement in the Australian Curriculum

The placement of the following broad strategies is based on the 4 Learning/Development Groups and Unifying Ideas given in Table 21.

Primary (F-Y2) - Explore, be curious, wonder and ask questions.

Young children have an intrinsic curiosity about their immediate world. Asking questions leads to speculation and the testing of ideas. Exploratory, purposeful play is a central feature of their investigations. In this stage of schooling students' explorations are precursors to more structured inquiry in later years. They use the senses to observe and gather information, describing, making comparisons, sorting and classifying to create an order that is meaningful. They observe and explore changes that vary in their rate and magnitude and begin to describe relationships in the world around them. Students' questions and ideas about the world become increasingly purposeful. They are encouraged to develop explanatory ideas and test them through further exploration.

Through an investigation of contexts that draw on Aboriginal and Torres Strait Islander histories and cultures (cross-curriculum priority 1) students could investigate the importance of Aboriginal and Torres Strait Islander Peoples' knowledge in developing a richer understanding of the Australian environment. Students could develop an appreciation of the unique Australian biota and its

interactions, the impacts of Aboriginal and Torres Strait Islander Peoples on their environments and the ways in which the Australian landscape has changed over tens of thousands of years. They could examine the ways in which Aboriginal and Torres Strait Islander knowledge of ecosystems has developed over time and the spiritual significance of Country/Place. Furthermore, there are available resources for early childhood learners that connect with these issues, often illustrating the influence people can have upon natural resources when used unwisely.

On a more simplistic level all young learners enjoy colouring in, crosswords, cut and paste activities such as the Bait Bucket exercises and the fishing safety crossword in "Get Hooked". There are numerous activities and resources for this age group.

Primary (Y3-Y6)- Develop ideas about science that relate to their life and living.

During these years students can develop ideas about science that relate to their lives, answer questions, and solve mysteries of particular interest to their age group.

A good example of this is the "Seafood Industry Partnerships in Schools" (SIPS) program which involves creating educational partnerships between the seafood industry and educators of children from K to year 10 ("real-world learning"). Students learn about

- where seafood comes from and how it gets to their plate.
- different types of fishing and aquaculture operating in their local area, and how these are carried out
- Australia's fishing resources and how these are managed, including what the industry is doing to ensure sustainability
- type of careers available in the seafood industry.

There are two streams to the program; "Adopt a Fishing Boat" and "Adopt a Marine Farm". It's envisaged that the program will be a collaborative effort between the fishing industry and educators, whereby a class adopts a commercial working fishing boat, or a marine farm and the skipper/marine farmer adopts the class.

By partnering with a class, fishermen and marine farmers help to educate students about the marine environment, complexities of marine resource utilisation, and the daily life of a commercial fisherman or marine farmer. Partnerships can be tailored to suit the needs and interests of different groups. For example, a class may be learning about life cycles, so a visit to an oyster farm to see the oysters at various stages of growth and development would be useful. Or you may be teaching about sustainability, and want a fisherman to visit your class to talk about how local fishing resources are managed. Partnerships can last from one day to an entire school year.

Many of the activity ideas for classroom partnerships as well as a code of conduct used in the SIPS can be easily adopted for RF (see Final Report FRDC Project Number 2009/328). For example: The Catch Data Activity for Upper Primary and Secondary involving Mathematics-Numeracy and Science.

The fisherman sends information about catch to the class via phone, email or text message. Catch information might include fish type, weight and/or numbers, average size and information about

how the fish were caught. Teachers and fishermen should decide the information to be communicated back to the class prior to commencing this activity (this can be done in consultation with students). Students can fill out a daily/weekly log book based on the information provided by the fisherman. The class can calculate total catch and other parameters. Catch information can be cross-referenced with fishing location.

Follow up ideas:

- Primary classes can use the information provided by the class fisherman for numerical problem solving.
- Research the information fisheries scientists and managers require to assess the health of fish stocks and make management decisions.
- Investigate market prices (for example, per kilo of fish) locally and for exported fish, and the costs associated with commercial fishing.
- Invite the class fisherman or marine farmer into the classroom to discuss catch rates, gear effectiveness, market prices and expenses, and sustainability.

The Australian Curriculum continues to prioritise English and literacy at this age and an integrated literacy program can be also be used to address science outcomes. For example, using Tim Wintons books (Blueback and The Deep) in a 2 to 5 week literacy plan, students read and discuss the book and understand the issue of sustainably within the marine environment (Figure 19).

Secondary (Y7-10)- Sustainability

In the early years of high school, schooling must be relevant and flexible and take into account personal differences and needs. It must keep young adolescents on a path of continuous learning and prepare them for a world outside of school. At this time students need to be engaged in 'real-life' learning; demonstrating to students how fisheries knowledge they learn in the classroom (e.g. in Science) can be applied in an everyday context.

A RF cross-curriculum unit combining environment, life cycles, fish behaviour, aquatic food chains, habitat use, fishing gear technology, tides and climate/weather would be ideal. It also gives teachers the opportunity to addresses multiple outcomes, can be applied across coastal, estuarine and freshwater river systems while influencing the level of physical activity in children and adolescents (Broad National Issue 1).

The Sustainability cross-curriculum priority is explicitly addressed in the Biology curriculum (Figure 20). Biology provides authentic contexts for exploring, investigating and understanding the function and interactions of biotic and abiotic systems across a range of spatial and temporal scales. By investigating the relationships between biological systems and system components, and how systems respond to change, students develop an appreciation for the interconnectedness of the biosphere. Students appreciate that biological science provides the basis for decision making in many areas of society and understand the importance of using science to predict possible effects of human and other activity, and to develop management plans or alternative technologies that minimise these effects and provide for a more sustainable future.

| _ | HUMANS - Huma | ans & the Marine I | Environment | _ |
|--|--|--|---|---|
| Topics | Bluebac | k | | |
| Commercial fishing Human impacts Research Sustainability Threatened species Recreational fishing | an integrated li | ooks 'Blueback' a | he program consi | ists of reading and |
| Phase of Learning Late 3-6, 7-10 | 2. LINKS TO C | | AUSTRALIAN CUR | 91/11 II.V |
| Site (Location) Classroom Internet Library Activities & Duration 1. Reading Comprehension | Learning Area English Socitey and Environment | Outcome Reading Writing Listening & Speaking Viewing Active Otizenship Resources | Strand ENGJSH Language Literature Literaty | Sub-strand Expressing and Developing Ideas Text Structure & Organisation Examining Literature Interpreting, Analysing, Evaluating Creating Texts |
| 2. <u>Writing</u> 3. <u>Debate</u> 4. <u>Research Report</u> The activities in this lesson plan have been designed to be carried out over a period of 2 – 5 weeks Materials | Understand how Understand how Have knowledge | nding of the elemen language influences language influences and understanding o | how we read a text the way we feel ab of persuasive writin | out a text g |
| Class set of Blueback by Tim Winton Copies of Blueback with different book covers (there are at least six different covers to this book) | 4. TEACHER BA The activities in this Book blurb – Blue | back: | ORMATION mied out over a two | to five week literacy program. |
| Copy of The Deep by Tim Winton Student Worksheets | helps his mother ea and most beautiful When Abel's mothe | ch day and loves to fish he has ever seer r is approached by d | dive. One day he m n. levelopers, she deci | eets Blueback, the biggest des she must do something |
| Character Compare Venn Diagram Exposition Template Graniser | Longboat Bay in tin Book Blurb – The L Alice's family lives b smooth, dark water misses out. She's af water turns from gr | ne? Deep: ny the sea. Every day . They look like a bur raid of the deep. She | they run down to th inch of dolphins leap is afraid of what mi can't see the botto | his mother save Blueback and he jetty and jump into the bing and laughing. But Alice ight be down there where the m. Then, one day some new |

Figure 19.Example of a lesson plan that uses a 2 to 5 week literacy plan to address numerous topics including RF. Source: Carina Gemignani, Community Education Officer, Department of Fisheries, Western Australia (http://marinewaters.fish.wa.gov.au)

App. 6-94

Secondary (Y11-12)-Opportunities and pathways for specialisation

In the final two years of school, choices are informed by previous success and enjoyment. If these previous strategies have been implemented, future options will involve RF as a pathway through school and beyond (Broad National Issue 2).

Professional development

As mentioned earlier in the review a recent Australian Council of Educational Research survey found that teacher understanding (grade 6) of primary industries was poor and weakest in relation to fisheries with many teachers unfamiliar with any issues related to the fishing sector. So how can teachers develop the knowledge and understanding needed to pass along to their students? Resources, as well as professional development opportunities, using the national Research and Development Corporations (RDCs) network is one avenue. This includes the Primary Industries Education Foundation (PIEF) which aims to improve teachers' levels of knowledge about primary industries issues, including fisheries, thereby increasing their confidence in presenting these issues to their students.

The Primary Industry Centre for Science Education (PICSE) is another national program, delivered through regional and urban Activity Centres often partnered with a University or Industry, which aims to address some of the issues around the shortage of skilled graduates and the successful transition of science students into tertiary science courses. Each PICSE Activity Centre delivers a two day professional learning course for teachers. As this year's theme is "The 2050 Challenge" each Activity Centre's Teacher PL will be focusing on the local scientific research and industry development in that region that will develop our future in food and fibre security through to 2050. Many Activity Centres also hold additional single or half day professional learning opportunities throughout the year (<u>http://www.picse.net/HUB/TPD.htm</u>)

4.0 Available Teaching Resources and Web Sites

These are split into two resource groups based roughly on what environment the RF is taking place in. Some of the information is general in nature, often associated with sustainability while the more specific deals directly with RF issues.

Marine-Estuarine Environments

Into the Blue – NT Marine and Fisheries Education Kit (early childhood – upper primary)

The Fisheries Group of BIRD (Department of Business, Industry and Resource Development, Northern Territory) have produced an educational package for primary students focusing on the marine environment (Figure 21). The kit was developed by former MESA NT Rep Rebecca Solah; its aim is to increase students understanding of marine habitats and the responsibility that everyone shares in ensuring that it remains in good health. Fisheries Group staff also worked closely with the the Northern Territory Department of Education and Training (DEET) staff to ensure the modules were appropriate and useful for Northern Territory schools.

| | MANAGEMENT - | Marine Management | | |
|---|--|---|---|--|
| Topics | Fishing | for the Futu | ire | |
| Recreational Fishing Fisheries Management | | | | |
| Marine Science | 1. OVERVIEW | | | |
| Phase of Learning | Students will explore the management of recreational fisheries in Western Australia and interpret local rules and regulations using Department of | | | |
| Late 3-6, 7-10 | | cations and website. | regulations using | Department of |
| Site (location) | instances parent | | | |
| Classroom and Internet | 2. LINKS TO C | | | |
| Activities & Duration | CURRICULUM FRAMEW | | AUSTRALIAN CURRICULUM | |
| 1. <u>Bioregions</u> – 30 minutes | Learning Area | Outcome | Strand | Sub-strand |
| 2. <u>Recreational Species</u> | Science | Investigating Communicating Scientifically | SCIENCE | N.L. of Con- |
| Profile - 1 hour | | Science in Daily Life | Science as a Human Endeavour Use and Infl Science Inquiry Skills Planning an Processing a and Informa Evaluating Communical ENGLISH Literacy Interpreting Greating Fee MATHEMATICS Statistics & Probability Data Repres | Biological Sciences Use and Influence of Science |
| Fishing Log Sheet 60 to 90 minutes | | Acting Responsibly Science in Society | | Planning and Conducting Processing and Analysing Data and Information Evaluating Communicating |
| 4. Fish for the Future Quiz | Society & Environment | Life and Living Investigation, Communication and | | |
| – 30 minutes | | Participation Active Gitzenship | | |
| Materials | English | Viewing | | Interpreting, Analysing, Evaluating |
| Species identification | | Reading Writing | | |
| guide Recreational fishing | Mathematics | Working Mathematically | | Data Representation and Interpretation |
| guide | | Number Measurement | | |
| Western Australian map or atlas | Technology | Chance and Data Technology Process | | |
| Colour pencils | it said by | Information | | |
| Student Worksheets | | | | |
| 1. Western Australia's | 3. OBJECTIVES | 6 | | |
| Fisheries Bioregions | Students will: | | | |
| 2. Fish Profile | Be able to identify | local recreationally impor | tant fish species. | |
| 3a. Fishing Log Sheet 3b. Fish Catch – Northern | | nt types of fisheries mana | - | |
| Western Australia | Describe the need for a 'Fish for the future' philosophy. | | | |
| 3c. Fish Catch – Southern Western Australia | 4. TEACHER BACKGROUND INFORMATION | | | |
| 4a. <u>Category Limits -</u> West Coast | Western Australia's fisheries management strategies have one primary goal – Fish for the future. This means ensuring our fisheries are ecologically sustainable. | | | |
| 4b. <u>Category Limits</u> | into account the in | e part of an integrated ap npact of fishing by recreat | tional, commercial an | d indigenous sectors - |
| 5. Fish for the Future Ouiz | | of other human activities | | |
| | improved fishing to | ies are threatened by pop echnology. A high particip shers to access previously | pation rate, due to th | e low cost of equipmen |

Figure 20.Example of a lesson plan that deals with science and the global cross-curriculum priority of sustainability. Source: Carina Gemignani, Community Education Officer, Department of Fisheries, Western Australia (http://marinewaters.fish.wa.gov.au).



Figure 21.Cover of "Into the Blue –Marine and Fisheries Education Kit". Source: Marine Education Society of Australasia <u>http://www.mesa.edu.au/friends/nt/default.asp</u>

A number of Northern Territory schools, including Karama Primary, Nakara Primary, Nightcliff Primary, Humpty Doo Primary and St Francis of Assisi, were involved in the construction and trial stages of the kit during 2002. The result is three education modules spanning three primary school bands (levels of development).

The modules use three keys texts to focus its messages.

Module 1 (for early childhood learners, Band 1) uses the Sea Eagle and the Gull Dreamtime story from the Bardi people of North Western Australia. The story illustrates the influence people can have upon natural resources when used unwisely (Figure 22).

Module 2 (for middle primary learners, Band 2) uses the book The Treacherous Travels of Tasman Turtle by Simon McLean. The story follows Tasman's travels through the ocean and the challenges he has to overcome along the way.

Module 3 (for upper primary learners, Band 3) uses the book Blueback by Tim Winton. The story centres around the life of the character Abel, from his childhood in a small fishing village to his life as a marine biologist.

Marine Education Society of Australasia (MESA)

MESA is a national organisation that brings together people interested in the study and enjoyment of coastal and marine environments (<u>http://www.mesa.edu.au/default.asp</u>.) MESA provides a forum for sharing ideas to facilitate the development of leading environmental education and interpretation programs. MESA also promotes the sustainable use of marine and coastal environments through education.

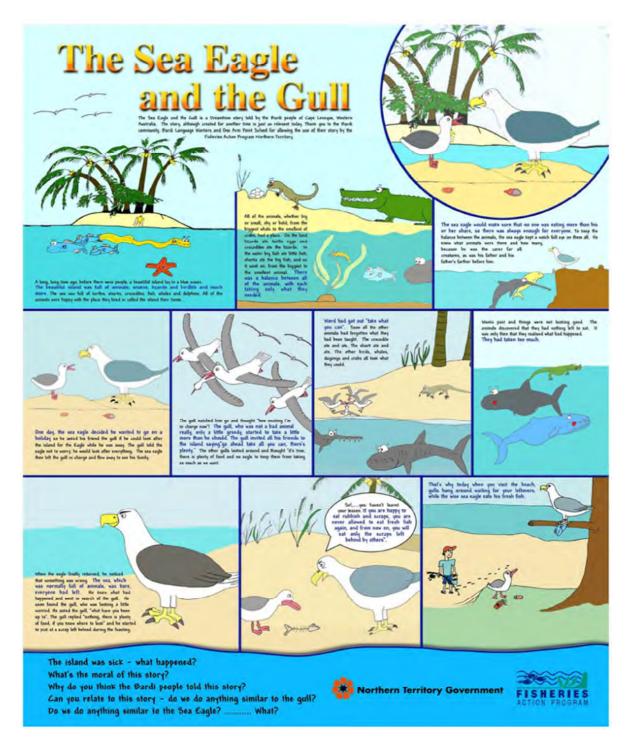


Figure 22.Poster of The Sea Eagle and the Gull Dreamtime story from the Bardi people of North Western Australia. Source: <u>http://www.mesa.edu.au/friends/nt/Poster.jpg</u>

Seaweek is a national initiative conducted annually to focus community awareness, provide information and encourage an appreciation of our marine and coastal environments. Each year a different theme is chosen. For example the theme for Seaweek 2013 was 'Sustainable Seas'. The theme provides a focus for students in schools and for communities to inform and inspire them about the diversity of our marine and coastal environments and how, through good management and individual action, we can all contribute towards the sustainability of these environments.

This site has a wide range of resources and information about many topics related to Marine and Coastal Environments. These include some of the following.

Vic Marine Ed Resource Guide: This resource guide was produced in 2000 by Cheryl Linford for the COMETS Project. It lists resources by 17 categories. Whilst developed for Victorian teachers, much of it would be useful to Marine Educators throughout Australia

Putting a Toe in the Water: A Teachers' Guide to Getting Started with Coastal and Marine Studies in Tasmania. This forty page book (released June 2002) contains practical activities, ideas and worksheets for teachers interested in integrating coastal and marine studies into their teaching. Whilst developed for Tasmanian teachers, much of it would be useful to Marine Educators throughout Australia.

Coasts and Marine Schools Project: This is a comprehensive Professional Development program for the development of skills and strategies for including marine education programs in school curricula. The 15 modules and the supporting materials, including Black Line Masters and a Field Activities Guide, are designed to promote inclusion of coastal and marine content in school programs from Kindergarten to Year 12 and incorporates currently available teaching materials and resources.

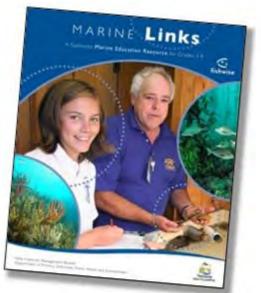
Marine Links - TAS Marine Education Resource (Y 5-8)

Marine Links is a joint initiative of the Department of Primary Industries, Parks, Water and Environment, the Department of Education and the Woodbridge Marine Discovery Centre. This kit was originally developed and prepared by Jennifer Pratt from the Department of Education with input from Wild Fisheries Management Branch staff and the Woodbridge Marine Discovery Centre staff. A revised edition has been developed by staff of the Recreational Fisheries Section of the Wild Fisheries Management Branch with input from the original author, Ros Asten and Pam Elliott from the Woodbridge Marine Discovery Centre and Northern Fishcare Volunteer Alan Ekert.

Marine Links is a marine and fisheries education resource kit for use by teachers in Tasmanian primary and secondary schools. The kit has been developed to align with school curriculums and contains practical marine teaching aids and information.

The kit contains a wide range of hands-on marine teaching material including:

- marine textbooks
- fish display posters



- pamphlets, maps, fisheries awareness brochures
- a set of model fishing gear including lobster pots/rings, nets and setlines
- moulds of recreational fish species
- classroom exercises

The Marine Links Kit is available to borrow from <u>Fishcare Coordinators</u> or the <u>Woodbridge Marine</u> <u>Discovery Centre</u>. The components of the kit can be borrowed for independent use by teachers or used in conjunction with the <u>Fishcare Schools Program</u>. Teachers will gain the maximum benefit from the Marine Links kit by working in partnership with experienced Fishcare Volunteers. Also available is a brochure on marine and fisheries education resources for Tasmanian schools including an introduction to the <u>Fishcare Schools Program</u> and lesson guides followed by <u>Fishcare Volunteers</u> when supporting teachers using the *Marine Links* Kit. Links to these are given below.

Marine Links Fishcare Volunteer Lesson Guides Marine Education Resources for Schools Brochure



The *Marine Links* Kit also contains an education folder focusing on curriculum areas for Grades 5-8 students. There are 5 teaching units which are:

Unit 1 - Marine and Coastal Habitats Unit 2 - Marine Life Unit 3 - Sustainable Fisheries Unit 4 - Marine Reserves Unit 5 - Human Influences

RF content is found in Unit 3- Sustainable Fisheries which has been designed for students to investigate recreational and commercial fishing in Tasmanian waters and the role they can play in the conservation of fish stocks and their habitats. Students will develop an increased awareness of individual responsibility for sustainable recreational fishing, an appreciation of the diversity of recreational fishing activities, and the economic importance of the commercial wild fishery to Tasmania." This can be downloaded from http://www.dpiw.tas.gov.au/inter.nsf/Attachments/SWIS-8JG3PP?open

Marine Discovery Centres Australia (MDCA)

The Marine Discovery Centres Australia (MDCA) are a centre-based entity and collaborative group of marine educators. Some are part of schools, while others are community or government-funded and most have RF messages (see Appendix). The majority are situated in NSW (7 centres; 2 schools (Port Macquarie and Ballina), 1 private (Hastings Point) and 4 Not–for-profit community organisations (Eden, Bondi, Sydney Northern Beaches, Terrigal)) with others throughout Australia (see http://www.mdca.org.au/ for locations).

The best funded are the government fisheries centres (Queenscliff Marine and Freshwater Discovery Centre, Victoria and Naturaliste Marine Discovery Centre, Perth, WA) which service around 67,000 people per year and provide education programs that all have higher level sustainable fishery messages delivered via the latest devices (Interactive touch screens and iPad applications). These always include compliance (RF rules and regulations) but also involve more sophisticated stories, such as the science behind management, catchment care and community interaction with the aquatic environment, to connect with the public.

The Queenscliff Marine and Freshwater Discovery Centre also has an outreach program that targets festivals and ethnic community events to promote sustainable fishing. The Naturaliste Marine Discovery Centre, Perth, has an excellent on-line marine education curriculum resources site (http://marinewaters.fish.wa.gov.au/) that includes recreational fishing lesson plans.

By contrast most of the community not-for-profit centres, such as Eden, Terrigal and Sydney Northern Beaches, have limited resources and cannot rely on sophisticated technology, such as Interactive touch screens, to engage and educate visitors. However, they are still an important facility for environmental education, although via more traditional methods (e.g. static displays and hand-outs of RF rules and regulations). School based entities have become specialists in delivery and Henley Beach Marine Discovery Centre, Adelaide, (Star of the Sea -Catholic Primary School) has become a leader in kids discovery and education (12,500 visits per year). The school has developed sophisticated interactive touch or joystick screen models (Figure 23) for learning about recreational fishing and sustainability (e.g. Good Fishing Practices, Gone Fishing and Fish Forever models).

Woodbridge Marine Discovery Centre (Woodbridge State School), Tasmania (7,000 visits) uses practical learning via their research vessel for fisheries education (hand and long lining), has provided training for Fishcare volunteers and developed links with organisations such as the Oceanwatch/Seafood Industry Partnerships in Schools (SIPS) program (http://education.tas.edu.au/woodbridge/mdc/default.aspx.)

Overall the MDCA network is well managed, provides an excellent framework for networking (FRDC funds a yearly workshop for the MDCs) and are a popular attraction - 120,472 people visit them per year (2012 data, excluding Bondi MDC).



Brian, John and Jenny checking the fish



Patty 'testing' our new model

Our Gone Fishing model

features a joystick/rod used to catch various fish and crabs as they swim across the screen. At the end of the fishing, the



screen shows how many of each species were caught and how many were too small.

This model was supported by the Federal Government's Recreational Fishing Community Grants Program.

Video - Gone Fishing Model 📾



Our Good Fishing Practices model features a touchscreen involving 6 types of bait and 6 creatures. Visitors need to make the correct choice of bait



to discover how they can catch these species. Further information highlighlights biofouling, introduced species and increasing survival rates and more.

Video - Good Fishing Practices Model 🖷

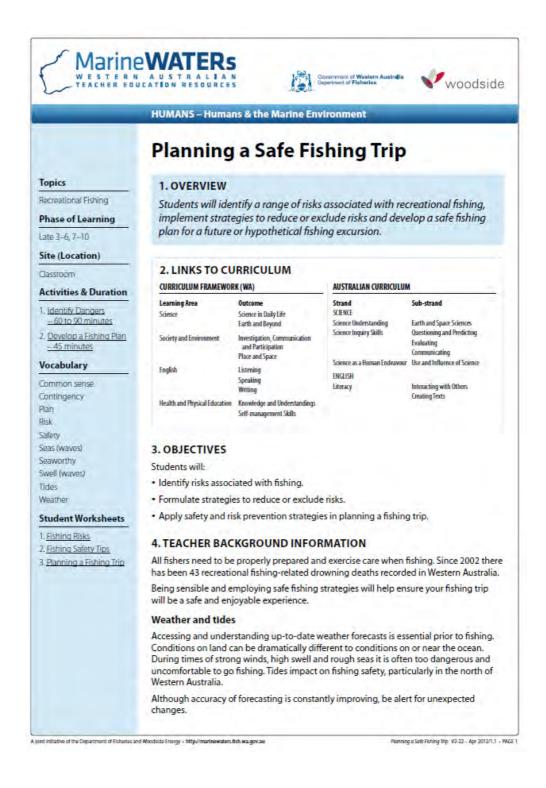
Figure 23.Screenshot of RF models created at Henley Beach Marine Discovery Centre, Adelaide, (Star of the Sea -Catholic Primary School). Source: <u>http://www.marinediscoverycentre.com.au/Marine_Discovery/models/Models.html</u>

Marine WATERS - WA Teacher Education Resources (Y 3-6, 7-10)

The aim of the Marine WATERs is to provide a range of experiences that will develop knowledge, awareness, skills and attitudes that lead to individual behaviours consistent with living with our marine environment in a sustainable manner. Marine WATERs provides teachers and students with the opportunity to participate in both field-based and classroom teaching-learning programs. These will give students the knowledge and skills that will enable them to make better decisions about what they do and the impact they have on the coastal and marine environment. http://marinewaters.fish.wa.gov.au/wp-content/uploads/What-is-Marine-WATERs.pdf

The lesson plans available on Marine WATERs give students the tools to address outcomes across the Western Australian curriculum framework and new Australian curriculum. Furthermore, by modifying the activities, teachers may be able to address additional learning area outcomes or they may be able to adapt them for use by students at an earlier or later phase of development. Teachers

can also adapt activities to suit a particular topic they are exploring or to link them to alternative themes they are investigating with students. There are a large number of resources with three lesson plans related to RF including: Planning a Safe Fishing Trip; Hook Line and Sinker (Figure 24) and Fishing for the Future (http://marinewaters.fish.wa.gov.au/).



| TEACHER EDU | CATEON RESOURC | | | woodsid |
|--|---|---------------------------------|--|---|
| _ | HUMANS - Hum | ans & the Marine | Environment | |
| Topics | Hook, Li | ne and S | inker | |
| Recreational Fishing | Hook, Line and Sinker | | | |
| Human Impacts Sustainability | 1. OVERVIEW | | | |
| | | | ing of the social and ea | conomic henefits of |
| Phase of Learning | | | unity, and learn how to | |
| Late 3-6, 7-10 | | | shing and caring for th | |
| Site | | | earn recreational fishir | |
| Classroom | how to cast, ba | iit up a hook and s | afely remove hooks fro | m tish. |
| Oval Fishing location | | | | |
| | 2. LINKS TO C | URRICULUM | | |
| Activities & Duration | CURRICULUM FRAMEW | ORK (WA) | AUSTRALIAN CURRICULUM | 4 |
| 1. Fishing Stories – 1 hour | Learning Area | Outcome | Strand | Sub-strand |
| 2. Fishing Ethics – 1 hour | Science Technology & Enterprise | Acting Responsibly Materials | SCIENCE Science as a Human Endeavour | Use and Influence of Science |
| 3. Make a Fish Friendly Fishing Rig – 45 minutes | English | Writing | ENGLISH | |
| 4. Casting Practice on Oval | | Speaking Listening | Language | Language for Interaction Expressing and Developing Ideas |
| <u>- 30 minutes</u> | Mathematics | Measurement | Literature | Creating Literature Interacting with Others |
| Fishing Olympics. 2 hours | Society & Environment | Active Citizenship | Literacy MATHEMATICS | interacting with others |
| Materials | | | Number and Algebra | Number and Place Value |
| | | | Measurement and Geometry Statistics and Probability | Using units of Measurement Data Representation and |
| Large illustrations of fishing knots and fishing | | | | Interpretation |
| rigs • Sunscreen/hats | 3. OBJECTIVES | | | |
| Fishing rods/reels | Students will: | | | |
| Buckets and ice-cream containers | | le of the Department | t of Fisheries in managing | our fish stocks and |
| Small snap lock bags | aquatic resource | | contrainer in managing | ee, nan atoena und |
| Assortment of tackle – hooks, sinkers, swivels, | Comprehend the social and economic value of recreational fishing the community. | | | |
| leader | Learn and apply best practices in recreational fishing. | | | |
| Fish ruler sticker Life Saver Ring | Learn and put int | to practice correct fis | hing techniques and skill | 5. |
| Knife and cutting board Pliers | 4 TEACHER BA | | ORMATION | |
| Fishing bait | | | lians enjoy recreational fis | hing each year |
| Rags Pens and paper | Thousands more h | ave an impact on the | e marine environment. Wit | th this number |
| Student Worksheets | increasing annually greater importance | | of fish stocks and their hab | oitats is taking on |
| | | | evelopment and tourism, | improved fishing and |
| 1. My Fishing Story 2. Fishing Code of | fish storage techno | ology, a low participa | tion cost and the opening | of access via 4WD |
| Z. Fishing code of | vehicles to areas previously protected by their remoteness, all place an enormous pressure on our aquatic resources. | | | |

Figure 24.Examples of lesson plans dealing with RF. Source: Carina Gemignani, Community Education Officer, Department of Fisheries, Western Australia (<u>http://marinewaters.fish.wa.gov.au</u>).

Sunfish QLD Inc. - Sunfish Angler Education Manual (CD)

Sunfish QLD was formed in 1993 out of the Queensland Sport and Recreational Fishing Council (QSRFC) which had been operational for some 20 years (<u>http://www.sunfishqld.com.au/#</u>). Representing all recreational anglers as well as members, Sunfish QLD is the state's peak recreational fishing group and consults all the major statewide fishing organizations. Sunfish have a professionally developed and (voluntarily) run Angler Education Program (Figure 25) including professional quality instruction for junior anglers and an Education Manual for School curriculum use. This education manual consists of 3 units comprising a total of 28 lessons that provide detailed lesson objectives, materials and content including classroom procedures (Table 22).

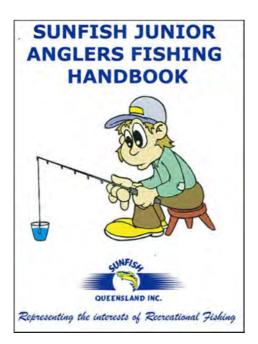


Figure 25.Sunfish provides extensive literature including a Junior Anglers Fishing Handbook and the Queensland Code of Practice for Recreational and Sport Fishing

| Unit | Lesson | Title | No. of |
|-----------------------|--------|---|--------|
| | No. | | Pages |
| I- A Fishing Primer | 1 | The Evolution and History of Fishing | 10 |
| | 2 | How to Catch a Fish | 8 |
| | 3 | Aquatic Communities - Where to Fish | 11 |
| | 4 | Hooking, Playing and Releasing Fish | 10 |
| | 5 | The Care, Preparation and Cooking of the Catch | 10 |
| | 6 | Personal Fishing Safety | 8 |
| | 7 | Shore (Land Based) Fishing | 9 |
| II- Becoming a Better | 8 | Tackle Types- Threadlines and Sidecasts | 10 |
| Angler | | | |
| | 9 | Tackle Types - Baitcasters, Multipliers, Game Reels | 11 |
| | | and Fly Tackle | |
| | 10 | Basic Tackle, Baits, Lines, Knots and Hooks | 9 |
| | 11 | Lures | 9 |
| | 12 | Tackle Maintenance and Related Activities | 7 |
| | 13 | Lure Making and Related Activities | 7 |
| | 14 | Locating Fish | 8 |
| | 15 | Presentation Techniques and Special Tackle | 10 |
| | 16 | Fishing From Boats | 8 |

Table 22.Summary of content in the Sunfish Angler Education Manual. Source: Judy Lynne, Executive Officer,Sunfish Queensland Inc. Angler Education Manual, Edition 1, Feb 2001

| | 17 | Boat and Water Safety | 10 |
|--|----|--|----|
| III – Understanding Fish | 18 | Fish Biology | |
| and their Environments | | | |
| | 19 | Fish Behaviour | 7 |
| | 20 | Fish Reproduction and Growth | 10 |
| | 21 | Fish Senses | 12 |
| | 22 | Food Chains and Ecology | 10 |
| | 23 | Aquatic Communities – Examples and Adaptions | 15 |
| | 24 | Water as Environment | 13 |
| III – Water Resources for | 25 | Aquatic Information and Management | |
| our Future | | | |
| | 26 | Fisheries Management | 10 |
| | 27 | Fisheries Conservation | 9 |
| | 28 | Fishing Ethics and Your Personal Commitment | 11 |
| Legislation Appendix Queensland Government Agend | | Queensland Government Agencies Legislative | 21 |
| | | Responsibilities and Management Arrangements | |
| Glossary | | | 9 |
| Appendix C | | Graphics to supplement the Lessons | 2 |

Get Hooked ... It's Fun to Fish Program - VIC Fishcare

Fishcare groups currently use the "Get Hooked" Booklet as a guide when delivering workshops to schools and holiday programs. This Presenter's Guide is accompanied by a Student Workbook which contains instructional information on basic fishing skills, and introduces young people to the formal regulations that govern recreational fishing practices in this state (Figure 26). It also enables students to recognise popular species of fish that are targeted by anglers, and identifies techniques that should be used to catch them. These resources are updated each year to reflect changes in compliance.

The program consists of four 90-100 minute sessions. The first three sessions are school based and include practical activities such as tying knots and rigs, assembling rods and reels, and casting. Information is also provided on identifying common species, fishing regulations, safety and environmental issues. The fourth session will be held at a local waterway, to provide students with an opportunity to implement their newly acquired fishing skills. There will generally be a space of one week between each session, however this is negotiable and schools may elect to have the program delivered across two days (either in the same or consecutive weeks).

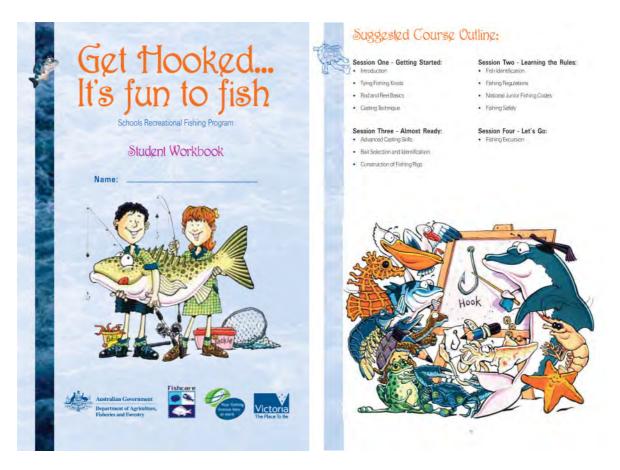


Figure 26.Get Hooked reference material. Source: <u>http://www.fishcare.org.au/Pages/Resources.aspx?Category=Get%20Hooked%20Program</u>

Get Hooked ... It's Fun to Fish Program - NSW DPI (CD)

The CD contains the Junior Fishing Code which has been broken into six modules that can be taught in schools or in the field by teachers. The contents of the CD are given below.

• Who will use this education kit?

What's in the tackle box?......3-5

- The tackle box
- Baiting the hook...Getting started
- Helpful fishing gear

Fishy activities ... Junior Fishing Codes

Code 1 'Take only what you need' - Primary Level : Years 3/46-11

- Junior Fishing Code 1 Specific Learning Outcomes and Syllabus links.
- Background notes: how many fish is enough?, food chains, translocation, harvesting of bait, how we can help our fish
- Fishy activities: 'The old fisherman', 'Feeding frenzy role play game', 'How many is enough activity'
- Evaluation activity: 'Wilbur the wise fish'

• Suggested follow-up class activities for teachers

Code 2 'Fish with friends' - Primary Level : Years 3/412-18

- Junior Fishing Code 2 Specific Learning Outcomes and Syllabus links.
- Background notes: 'Why fish with a friend?', 'Who is a safe fishing friend?', safety, dangers
- Fishy activities: 'The tale of Tom/Tara', 'Tom's banner', 'To fish or not to fish'
- Evaluation activity: 'Ball of string'
- Suggested follow-up class activities for teachers

Code 3 'You're the solution to water pollution' - Primary Level: Years 3/4.....19-27

- Junior Fishing Code 3 Specific Learning Outcomes and Syllabus links.
- Background notes: Pollution, stormwater, our home, our school, our farm, how we can help
- Fishy activities: 'That's a funny looking fish!', 'Call a fish emergency', 'Safe ways to dispose of rubbish'
- Evaluation activity: 'Fish friend or foe', 'Fish Friend poster'
- Suggested follow-up class activities for teachers
- Fishy activities (alternative program): 'Thats a funny looking fish'
- Suggested follow-up class activities for teachers (alternative program)

- Junior Fishing Code 4 Specific Learning Outcomes and Syllabus links.
- Background notes: 'Why do we need juvenile fish?', 'Juvenile fish habitat', 'How we can help our juvenile fish?'
- Fishy activities: 'A tale of two junior fishers', 'A fishing we will go', 'The great line-up game', 'Ways to return undersized fish safely (fishing skills)'
- Evaluation activity: 'My fishing practices'
- Suggested follow-up class activities for teachers

- Junior Fishing Code 5 Specific Learning Outcomes and Syllabus links.
- Background notes: Tackle dangers, how we can help
- Fishy activities: 'The old shell', 'A watery journey', 'Don't leave your tackle behind',
- Evaluation activity: 'Don't leave your tackle behind', 'Fishy survival game'
- Suggested follow-up class activities for teachers

Code 6 'Quality catchments equals quality fish' - Primary Level: Years5/6......43-51

- Junior Fishing Code 6 Specific Learning Outcomes and Syllabus links.
- Background notes: Catchments, critical habitat, erosion, how we can help
- Fishy activities: 'Sam's tale', 'Sight unseen'
- Evaluation activity: 'Moving house'
- Suggested follow-up class activities for teachers
- Fishy activities (alternative program): 'Water sleuths'
- Evaluation activity: 'Aquatic heads'
- Suggested follow-up class activities for teachers

Appendicies

- 1. Glossary of terms
- 2. Syllabus Learning Outcomes
- 3. Keys to successful presentations
- 4. Essential care considerations for field trips

5. Junior Recreational Fishing Passport template

- 6. Activity Sheets (Codes 1-6).
- 7. Enlarged graphic of 'Tom'
- 8. Enlarged graphic of 'Wilbur the Wise Fish whiteboard'

9. a) Government and non-government contacts for information, posters, publications and programs.

- b) Teaching and learning resources ie books, posters, publications, videos, CDs etc.
- c) References
- 10. Feedback form

Activity Sheets

Code 1: 'Fun with food webs' - Follow up activity sheets Code 2: 'To fish or not to fish?' - Fishy activity sheets Code 3: 'Fish friend or foe' - Follow up activity sheets Code 4: 'Fishy Find-A-Word' - Follow up activity sheet Code 5: 'A water journey' - Fishy activity sheets 'Don't leave your tackle behind' - Evaluation activity Code 6: 'Water Mini-Beasts' - Fishy activity sheet (Alternative 2) 'Aqua Heads' - Evaluation Activity sheet 'Catchment Report' - Follow-up Activity sheets

Species information posters

Dusky flathead Eastern Australian salmon Luderick Mulloway **River garfish** Sand whiting Sea mullet Silver trevally Snapper Tailor Yellowfin bream Yellowtail kingfish Australian bass Brown trout European carp Murray Cod

GBRMPA QLD Reef Guardian program - "Let's go Fishing!" (Y6 Science)

The Great Barrier Reef Marine Park Authority (GBRMPA) Reef Guardian stewardship program began with schools in 2003 to encourage the community to take action for a healthier Reef. The Reef Guardian Schools initiative currently has 293 schools, over 114,900 students and 7280 teachers involved in building the Reef's resilience. A key objective of the Reef Guardian Schools program is to create awareness, understanding and appreciation for the Reef and its connected ecosystems. This fosters stewardship and promotes a community culture of custodianship for Reef protection. It empowers students and gives them a sense of involvement in the bigger picture and encourages them to make a positive difference. Students team up with others in their community to actively participate in activities aimed at improving catchments, water quality, sustainability, and Reef

Great Barrier Reel Marine Park Authority

health. This includes environmental and sustainability projects within their classrooms, their school grounds and local areas such as native habitat re-vegetation, cleaning up beaches and recycling. Schools and teachers involved in the program have access to annual activities and education resources to assist with delivering curriculum on the Great Barrier Reef.

The Teaching Units (http://www.gbrmpa.gov.au/our-partners/reef-guardians/reef-guardianschools/science-teaching-units) have been developed from the Key Focus Areas of the Great Barrier Reef Outlook Report 2009 and are linked to the Australian Science Curriculum. The units encourage students, teachers and their communities to follow the main aim of Reef Guardians — to be stewards of the environment. The Lets Go Fishing module targets Year 6 science students (Figure 27).

Year 6 Unit Overview — Let's go Fishing!

| School name | Unit title | Duration of unit |
|--|--|-------------------------------------|
| | Let's go Fishing! | Approximately five weeks |
| Unit outline | | |
| | urriculum Focus - Recognising questions that can be investigated | |
| Students investigate the gro | wth and survival of different fish species and make links betwe | en human impacts and fish survival. |
| Students develop an unders | tanding of: | |
| | h, their characteristics and breeding cycles | |
| The survival needs | and the second | |
| Fish survival is affered | ted by the health of their habitat | |
| | unity decisions affect fish habitats | |
| Sustainable fishing | practices | |
| Inquiry questions for the uni | E | |
| How do fish move? | Swim? Function? | |
| · What are their survi | val needs? | |
| What happens when | n their habitats are polluted or modified? | |
| · What role do we pla | y in this? | |
| Otherstand Scientification | le fishing practices and why are they important in our area? | |

Year 6 Achievement Standard - By the end of Year 6 students plan investigations to answer questions relating to simple cause-and-effect relationships. When carrying out investigations, they collect relevant data and apply the concept of a fair test. They reflect on the processes that they have used and demonstrate an awareness of science inquiry methods in their work. They represent data and knowledge using introductory scientific language and graphical representations.

Students suggest explanations for observable changes and they predict the effect of environmental changes on living things. They compare different types of change in materials. They describe how developments in science have affected peoples' lives and identify examples where scientific knowledge is used in decision making.

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Year & Science - Ker's go Fishing! Version 0.2

Figure 27. Overview GBRMPA RF science teaching unit. Source:

http://www.gbrmpa.gov.au/ data/assets/pdf file/0007/28159/Year-6-Science-Lets-Go-Fishing-Version-0.2.pdf

Belmont High School Pilot Program, Geelong, VIC Secondary (Y7-10)

This two year pilot program aimed to integrate RF into the Victorian Educational Curriculum. The project "A New and Innovative Program Integrating Recreational Fishing into the Victorian Educational Curriculum at Belmont High School" was funded by the Victorian Government from the 2009-10 Recreational Fishing Grant Program (RFGP) - Education, Information & Training. Belmont High School is one of the largest co-ed public schools in Geelong and has an enrolment of over 1200 students from years 7 to 12.

The project involved water testing, fishing trips, and ecology as well as instructing the students on safe, responsible and sustainable recreational fishing practices. The students were advised about

what sort of post-secondary school courses and careers there are in the fishing industry. The kids attended the Marine Discovery Centre, angling clubs, Water Police, Charter Boat operators, as well, and the school was considering establishing an angling club for those kids keen to continue fishing. The school developed a module that is available to other schools, so any suitably interested teachers can introduce RF into their schools should they wish to.

A brief summary of the project was supplied by Gary McLachlan of Belmont High School. Gary was able to integrate RF into the Year 7 - 11 Science, Maths, Physical Education and Outdoor Education curriculum over the two year trial which included:

- Y7 Science unit "In Our Backyard" which covered ecology of the Barwon River. He worked with Corangamite Waterwatch staff and school staff in school activities followed by an excursion to the river where a Fishing Clinic was done as well as water quality testing.
- Y8 Science- he carried out Fishing activities in the unit "Too Precious to Lose" which has a Marine theme based around the Barwon Estuary.
- BHS International Students Program Gary worked with Victoria Police to organise a Fishing Charter where the students learned about Sustainable Seafood and Safe Fishing Practices. Compliance issues and the need for regulations were discussed. A Police Officer attended.
- Y9 Physical Education 2 large groups of 26 students completed a unit called "Recreational Fishing as a Leisure Activity" over 6 weeks. Activities included excursions to the Barwon River where some Carp and Redfin were caught. Valuable lessons on fishing techniques were learnt. Also the need to follow safety precautions when using kayaks was explained.
- Y9 Maths lessons on Gear Ratios, the use of Friction in drag systems etc were carried out and when all of the students completed a Maths Worksheet satisfactorily Gary did a Seafood cookup for them.
- Y10 Marine Science more fishing activities were carried out in Gary's Y10 Marine Science class particularly in the area of Safe handling of fish as well as the significance of the Fishing Regulations Handbook. Other schools such as St Joseph's College are keen to develop similar activities in Science and VCAL (Vic. Certificate of Applied Learning)
- VET Outdoor Recreation for the last 5 years Gary has run a 4-5 week Fishing
 Program for VET Outdoor Recreation (Certificate II). This was selected from a range
 of units within the "Specialization Cluster" because of Gary's expertise and
 availability. The teacher initially lacked the confidence to run this unit himself but at
 some point in the future would like to do so. Topics included : SISOFSH201A Catch
 and Handle Fish, Select, Catch and Use Bait (Figure 28). This part of the curriculum
 has plenty of potential and Gary would be happy to share his knowledge and
 contacts with teachers from other schools who might be considering the inclusion of
 this unit in their program.

The main lesson of the pilot program was that the teachers were too reliant on the project leader to come into their classes and do the instructing, as opposed to the teachers also learning and being comfortable to teach RF matters themselves. This is important as any future proposal of this kind would need to strongly focus on educating the teachers more than the students, so that the teachers would be confident/capable of doing the instructing themselves. As such the expansion of the pilot program into an on-going recurrent theme would need much more teacher input and direction.

| | VCE OUTDOOR RECREATION | | | |
|--|--|--|--|--|
| FISHING MODULE | | | | |
| SISOFSH201A CATCH and HANDLE FISH | | | | |
| ELEMENT PERFORMANCE CRITERIA | | | | |
| Prepare for fishing activity | 1.1 Conduct pre-activity research to determine relevant information on various species of fish. | | | |
| | OUTCOME - Successful completion of Wrasse Research Assignment. | | | |
| | TEACHER SIGNATURE | | | |
| | 1.5 Determine the range of fishing tackle required to catch fish on the reef system. | | | |
| | OUTCOME - Successfully tie a Paternoster rig and operate the drag system on the reel. | | | |
| | TEACHER SIGNATURE | | | |
| 2. Apply methods to catch fish | 2.1 Identify different methods used to catch fish using rod and reel, handlines and nets. | | | |
| | OUTCOME - Use the Fishing Regulations Handbook to answer the Question sheet on the legal use of Fishing Equipment. | | | |
| | TEACHER SIGNATURE | | | |
| 3. Handle Fish | 3.1 Identify and handle dangerous species of fish in a manner that reduces risk to self and others. | | | |
| | OUTCOME – After observing the teacher fillet and dissect the fish, complete the Fish Anatomy Diagram and identity the dangers involved. | | | |
| | TEACHER SIGNATURE | | | |
| | | | | |

Figure 28.Example of worksheet used in Belmont High School Pilot Program. Source: Gary McLachlan, Belmont High School, Geelong, VIC

Freshwater - Inland River Environments

The Living Murray Story - Murray Darling Basin Authority (education@MDBA)



This is a collection of lesson plans and worksheets to bring the Murray River and the Murray–Darling Basin to life in the classroom.

The Living Murray Story is a recent chapter in the history of managing the Murray River. It is an attempt to restore the health of the Murray River by returning water to the environment and building water management structures to deliver water to the Murray's wetlands, floodplains and forests. There are obvious and significant economic advantages to the recreational fishing and tourism industries through having healthy fish populations and healthy rivers; In addition, recreational fishing is still a popular activity throughout the Basin.

The Living Murray Story is also a people story, about the many who have worked to make the vision of the program a reality. The lesson plans and worksheets have been designed so that they can be used with or without a copy of The Living Murray Story at hand. They are linked to the Australian curriculum and are designed for use by teachers of years 4 to 10 Geography, History, Science or Mathematics.

Individual lesson plans and worksheets can be accessed from the 11 content areas below (<u>http://www.mdba.gov.au/what-we-do/education/teachers/lesson-plans-and-worksheets/tlm-teacher-supplement)</u>

1. Structures on the Murray River

Download [PDF] [word] Subject: Geography, History, Science Years: 5-8 2. Plants and animals of the Basin Download [PDF] [word] Subject: Science Years: 5-8 3. Aboriginal nations in the Murray–Darling Basin Download [PDF] [word] Subject: Geography, History, Science Years: 4-8 4. A brief history of water use Download [PDF] [word] Subject: Geography, History, Science Years: 5-8 5. What are the Murray River icon sites? Download [PDF] [word] Subject: Geography, Science Years 5-8 6. Murray River icon sites Download [PDF] [word] Subject: Geography, Science Years: 5-8 7. Managing our water – structures that make it work Download [PDF] [word] Subject: Geography, Science Years: 5-8 8. Murray River icon sites – Hattah Lakes Download [PDF] [word] Subject: Geography, Science Years: 5-8 9. Getting water to icon sites Download [PDF] [word] Subject: Geography, Science Years: 6-8 **10.** Graphs and tables in the Basin Download [PDF] [word] Subject: Science, Mathematics Years: 6-9 11. Acidification and acid sulfate soils Download [PDF] [word] Subject: Geography, Science Years: 6-9

Sustaining River Life. Curriculum and Activities Guide – Waterwatch/Murray-Darling Basin

Sustaining River Life, developed by T. Rucosky Noakes in 2010, is the main management, sustainability and environmental education package, developed for school children of all ages in a freshwater- inland river environment (Figure 29). It came about through collaboration between three Murray-Darling Basin river reach projects: the Namoi and Upper Murrumbidgee Demonstration Reach projects and the Macquarie RiverSmart initiative involving RiverSmart Australia and the Central West Catchment Management Authority. The Murray-Darling Basin Authority, through its Native Fish Strategy, then supported the initiative to make it Basin-wide. Its goal is to help students develop awareness, knowledge, skills and commitment to river health.

Sustaining River Life has been designed to be an instructional resource for educators who care about natural resources and the environment - beginning with the recognition that healthy waterways are vital to both people and wildlife. The activities found in Sustaining River Life are intended for use in field settings however, classroom adaptations have been included for most lesson outlines. The instructional materials are designed to support the academic standards appropriate for years K-12 in the Australian Capital Territory, New South Wales, Queensland, Victoria and South Australia. Each activity is cross-referenced to the Essential Learning Achievements, Key Learning Areas or whatever similar terminologies are used in the respective States or the ACT.

The activities are easily adaptable to meet the learning requirements for academic disciplines ranging from science, social studies, technology, the arts, English and mathematics, as well as having a strong focus on interdisciplinary achievements. Educators may choose one or numerous Sustaining River Life activities to teach a concept or a skill. The activities may be integrated into existing courses of study, or the entire set of activities may serve as the basis for a specific course.

Each lesson provides both a primary and secondary pathway. While the lessons are designed to be held in a field setting at the educator's local river, stream or wetland, in-classroom adaptations have also been provided. The package contains re-enforcing activities appropriate for seatwork or homework.

Once the Sustaining River Life program was available, NFS team members would direct teachers and schools to the program, as well as provide them with additional resources to support delivery of particular lesson plans. There were also examples of NFS team members undertaking Sustaining River Life activities with schools during Native Fish Awareness Weeks in 2010 and 2011.

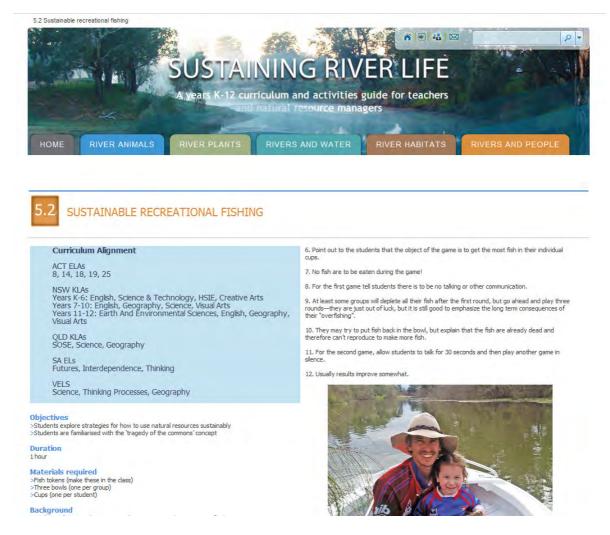


Figure 29.Screenshot of RF component of the Sustaining River Life educational package. Source <u>http://www.sustainingriverlife.org.au/</u>

Native Fish Strategy (NFS) - Murray Darling Basin Authority

The Native Fish Strategy seeks to increase the native fish population back to 60% of their estimated pre-European settlement levels over a 50-year period. Many factors have contributed to the deterioration of fish habitat and native fish populations. These include significant changes to water flow, thermal pollution and the introduction of alien fish species. Experts estimate present levels of native fish communities in the Basin to be 10 per cent of the pre-European settlement level which is not sustainable in the long-term. Six driving actions seek to achieve this Strategy's thirteen objectives through management, research and investigation, and community engagement interventions (Figure 30).

The Native Fish Strategy places great emphasis on promoting community education, awareness raising and engagement so that the threats to river health can be addressed by a broader community effort; not simply by government agencies and departments. One of the concepts encouraged through the Native Fish Strategy is that of 'demonstration reaches'; stretches of river where actions taken in a coordinated way show the ecosystem progressively rehabilitated to support the return of native fish and with them the range of other wildlife and community assets.

There are also a large number of resources related to inland RF, especially Murray Cod which can be found at <u>http://www.mdba.gov.au/what-we-do/mon-eval-reporting/native-fish/archived-native-fish</u>. There are also separate projects which are part of the overall NFS: the Australian River Restoration Centre (ARRC) "True Tales of the Trout Cod" <u>http://arrc.com.au/portfolio/true-tales-of-the-trout-cod/</u> and "The Talking Fish" project which focuses on collecting oral histories from 12 reaches within the Murray-Darling Basin

http://www.dpi.nsw.gov.au/fisheries/habitat/publications/historical-accounts/talking-fish-in-themurray-darling-basin as well as native fish websites that have resource material http://www.finterest.com.au/resource-library/. The NSW Freshwater Fishing Guide (and other states or territories guides) are a good resource with sections on responsible fishing. http://www.dpi.nsw.gov.au/ data/assets/pdf_file/0013/202351/NSW-FWG-2013-old.pdf

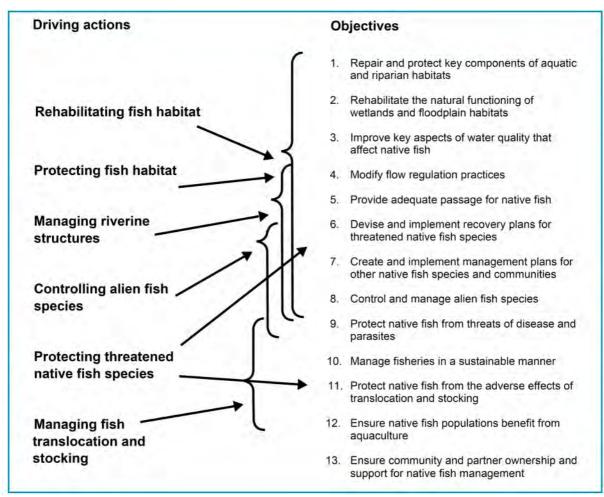


Figure 30.The Native Fish Strategy. Source: <u>http://www.mdba.gov.au/sites/default/files/archived/native-</u>fish/NFS-for-the-MDB-2003-2013.pdf

Aboriginal cultures linked to sustainability -River Country Spirit Ceremony

Today Aboriginal peoples along the Murray--Darling rivers in South-Eastern Australia say their river is sick and their country is dying. Ngarrindjeri Elder, Major Sumner, brought people together to dance

and heal the spirit of the river for the River Country Spirit Ceremony. Together they journey from Murra Murra to the Murray Mouth. Along the way they tell their stories about their river country. http://www.youtube.com/watch?v=23GqrRfyVNqIo

The approach of Traditional Owners to caring for the natural landscape, including water, can be expressed in the words of Ngarrindjeri elder Tom Trevorrow: "our traditional management plan was don't be greedy, don't take any more than you need and respect everything around you. That's the management plan—it's such a simple management plan, but so hard for people to carry out."

Several versions of the Ngurunderi Dreaming have been recorded over the last 150 years, reflecting the emphases which different Ngarrindjeri groups placed (and still place today) on their local sections of this Dreaming. Like all the other versions of the Dreaming however, this account stresses the over-arching importance of Ngurunderi as law-giver and as the main shaper of the distinctive landscape in which the Ngarrindjeri people still live today.

Suitability of Resources to Address Goal 5 and 6 of the RFIDS

Each of the strategies associated with Goal 5 and 6 of the RFIDS has a number of related actions (listed from 1-9 below). The suitability (or lack) of resources to addresses each of these is discussed at the end of each strategy and summarised in Table 23.

Goal 5 Strategy 1: Encourage recreational fishers to be involved in research, community monitoring and habitat enhancement programs.

- 1 Raise the awareness and involvement of recreational fishing organisations in catchment management and habitat enhancement programs.
- 2 Involve recreational fishers in research and monitoring.
- 3 Publicise participation and achievements of recreational fishers in these activities.

This strategy **is well resourced**, especially for catchment management and habitat enhancement programs. They are mainly found as part of the Native Fish Strategy (NFS) – Murray Darling Basin Authority - Fish Habitat Management, The Living Murray Story as well as lesson plans in Part 4 River Habitats of the Sustaining River Life. Curriculum and Activities Guide. There is also the Fish Habitat Network, http://www.fishhabitatnetwork.com.au/ which is co-ordinated through the Department of Primary Industries Conservation Action Unit with multiple organisations and partnerships http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers. Recfishing Research http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers. Recfishing Research http://www.dpi.nsw.gov.au/fisheries/habitat/rehabilitating/fishers. Recfishing Research http://recfishingresearch.org/ also highlights participation and achievements of recreational fishers as does the Fish Habitat Network. This is a major strength area and much of the information has already been adapted or is suitable for school delivery.

Goal 5 Strategy 2: Encourage recreational fishers to use best practices in all aspects of their fishing activities.

- 1 Target communication of fishing best practice messages at recreational fishers and school children.
- 2 Promote and monitor the adoption of best practices and their outcomes by recreational fishers.
- 3 Communicate the message that fishers actively use best practice techniques.
- 4 Provide a national program to promote participation in recreational fishing incorporating best practices in key messages.
- 5 Continue promotion of the development and use of codes of practice in recreational fishing.
- 6 In conjunction with the tackle trade promote the use of environmentally friendly fishing tackle, e.g. alternatives to lead sinkers, biodegradable fishing line, biodegradable bait bags etc.
- 7 Promote best practice activities when running fishing competitions.
- 8 Develop a framework for natural resource stewardship programs for implementation by recreational fishing groups.
- 9 Promote the accreditation of fishing charter and guide operators through membership of industry groups with high fishing, environmental and safety standards.

This strategy is **also well resourced**, the NSW "Get Hooked" program has a Junior Fishing Code and VIC "Get Hooked ... It's fun to fish a Junior Code of Conduct. The Sunfish Angler Education Manual also has material and there is The National Code of Practice for Recreational and Sport Fishing (Revised Edition) developed by Recfish Australia (2009) as well as a Queensland Code of Practice. There is also a Fishing event code of practice guidelines (primefacts 920) available from http://www.dpi.nsw.gov.au/fisheries/recreational/publications/recreational-fishing-codes-of-practice/cop-events. Much of this has already been adapted for school delivery.

There is also a RF line recovery scheme, designed as a practical environmental solution for the recovery and recycling of lost recreational fishing line that litters recreational fishing hotspots. OceanWatch Australia http://www.oceanwatch.org.au/our-work/tangler-bin/ has an education/information campaign and has partnered with NSW recreational fishing industry, DPI Fishcare Volunteers, local fishing clubs and bait and tackle shops, South West Anglers Association and many local councils. The Australian Land Based Anglers Association Inc. (ALBAA) http://www.albaa.com.au/projectledgecare.htm has a 'Ledge Care' model built alongside Clean Up Australia and Shoalhaven City Council that encourages co-management principles. However, more needs to be done to promote environmentally friendly fishing tackle.

Goal 6 Strategy 2: Promote recreational fishing as a family friendly activity

- 1 Implement a national program to promote family participation in recreational fishing, i.e.
 - align and co-ordinate existing state programs
 - establish a national recreational fishing day.
- 2 Promote the national uptake of fishing education programs, e.g. 'Get Hooked- It's fun to fish', and fishing safety messages.
- 3 Tailor communications and fishing programs to meet the special needs of our multicultural community.

4 Promote the simplification and consistency of fishing regulations within and between jurisdictions.

This strategy is **well resourced in some areas** (fishing safety and regulations for example) but there is no national recreational fishing day. Sunfish QLD has established a "Take A kid fishing Days" but this is not seen in other states or territories. More than 50 "Family Fishing Days" conducted by various Fishing Clubs and Fishing related Associations are funded by the Victorian Recreational Fishing Grants Committee – Small Grants Initiative Grants up to \$5,000

There is great scope (growth area) for expanding the family friendly activity of RF nationally, however this may be problematic implementing as many states and territories have different funding arrangements/models (trust/no trust) and agendas and would have to agree to a centralised model or way to implement this. This would require a co-ordinated approach, which is currently not a strength of the industry. Despite this comment there is evidence of co-operation, especially with rock fishing safety and angel rings, which has been delivered very successfully through the national and state peak bodies.

Goal 6 Strategy 4: Improve safety in recreational fishing.

- 1 Continue to promote safety in fishing, especially in those areas considered most dangerous.
- 2 Roll out a national 'Angel Rings' program to enhance safety of rock and other shore-based fishers.
- 3 Implement the recommendations from the Recreational Fishing and Safety in Australia report, April 2008.

Many of the safety issues contained in this strategy have been **well covered and resourced** through multiple organisations and partnerships such as the NSW government <u>http://www.safewaters.nsw.gov.au/index.htm,</u> the Recreational Fishing Alliance (RFA) <u>http://www.rfansw.com.au/ http://www.safefishing.com.au/,</u> the NSW Recreational Fishing Trusts <u>http://www.dpi.nsw.gov.au/fisheries/recreational/fees/education,</u> Surf Life Saving Australia (SLSA) <u>http://beachsafe.org.au/</u>, the Underwater Skindiving and Fisherman's Association Inc (USFA Inc.) <u>http://www.usfa.com.au/</u> and the Australian National Sportsfishing Association (ANSA) <u>http://www.ansansw.com.au/</u>

Water safety initiatives include key rock fishing and spear fishing safety messages delivered through a multilingual education campaign in the ethnic media (Chinese, Vietnamese and Korean) - "Don't put your life on the line". A free rock fishing DVD and multilingual pamphlets are also available for fishing clubs and community groups. There are also informative videos on-line and dedicated web sites, such as <u>http://www.angelrings.com.au/</u> which identifies life buoys installed at popular ocean rock fishing spots including wharves, fishing platforms and along bushwalking tracks. Much of this information can be easily adapted for school delivery, if it hasn't already, and is a major strength area. **Goal 6 Strategy 5:** Promote the role and opportunities for women, children and families in recreational fishing.

- 1. Provide opportunities for women, children and families to play a greater role in all aspects of fishing, e.g. 'Kids, come try fishing' days.
- 2. Promote positive images of women in recreational fishing.

In contrast to the safety messages that are well covered this is a **weak area**. However this has been recognised and is currently being addressed through the FRDC (People Development Program 2008-2013) and the Future Recreational Fishing Leaders through the Fishing Alliance of NSW http://www.rfansw.com.au/ with funding support from the NSW RF Trust. Also the NT peak body (AFANT) provides funding to clubs to provide clinics and awareness programs for juniors and women. This is a growth area.

Goal 6 Strategy 6: Promote the cultural heritage value of recreational fishing in Australia.

- 1 Hold a national fishing day
- 2 Include information about the culture and heritage aspects of recreational fishing in education and awareness strategies.
- 3 Demonstrate how innovations have improved recreational fishing in Australia over time.
- 4 Encourage marine and freshwater discovery centres to include information on cultural and historical aspects of recreational fishing.
- 5 Develop an interactive web-based exhibition with information on the culture and heritage of recreational fishing.

This is **a weak area** despite there being ample resources available, such as The Eagle and the Gull Dreamtime story from the Bardi people of North Western Australia, Understanding *the Land through the Eyes of the Ngunnawal People*, A Natural Resource Management Program for ACT schools and the River Country Spirit Ceremony. This strategy is not being delivered to any great extent in schools or through public education facilities, which is surprising as it one of the three cross-curriculum priorities (national focus) of the Australian Curriculum; Aboriginal and Torres Strait Islander histories and cultures. Furthermore, these stories are an ideal teaching resource to introduce the global idea of sustainability. This point was made to the MDCA network at their annual meeting on the NSW Central Coast in 2012. This is a growth area. Table 23.Suitability of resources to address Goals 5 and 6 of the RFIDS National Education Program. Note that three of the six areas are rated as weak and require further development.

| RFIDS National Education Program | Core Area Description | Current Position or Ranking | Reason/Comment |
|-------------------------------------|---|---|---|
| Goal 5 Strategy 1 | Involvement in research, monitoring and habitat enhancement projects | Very strong | Multiple organisations and national approach; also well-funded from RFL |
| Goal 5 Strategy 2 | Best practice | Strong and rapidly evolving (e.g. Ikijime website) | Strong government direction through established network (national, local, CMAs); especially animal welfare |
| Goal 6 Strategy 2 | Family friendly activities | Weak | Lack of bi-partisianship approach; money raised from RFL needs to be re-directed to community/grass roots. |
| Goal 6 Strategy 4 | Safety | Very strong | Multiple organisations and national approach with a multilingual education campaign in the ethnic media. |
| Goal 6 Strategy 5 | Women, children and families | Weak | Poor linkages at present, need well developed network involving schools, clubs and the community. |
| Goal 6 Strategy 6 | Cultural heritage | Weak | Resources available but low priority. Likely to improve with Australian Curriculum national priority area |

5.0 Synthesis and Recommendations

Guiding principle

Developing a whole school approach to RF education

Any RF approach must lay the Foundations in the early years, Build Breadth and Depth in the middle years and provide Pathways for the later years.

Recommendation 1: Engage primary school children at a young age and provide a positive and memorable experience of RF.

Recommendation 2: Continue this positive engagement into early high school while ensuring students understand the career potential fisheries offers through tertiary studies in their final years.

Educational resources and training

Availability, access and relevance

To encourage uptake teachers need to be provided with RF resources that are easily accessible (web) and provide a clear and direct connection to areas of the curriculum. Many of these have been identified in section 4 of this review but need to be uploaded into a single library and delivered through one URL.

Recommendation 3: A pilot study to investigate how to link teachers nationally to RF resources be undertaken. This could be developed through the current peak body portal (i.e. http://www.arff.com.au/) or alternatively through the Recfishing research site (http://recfishingresearch.org/) and would involve net site development.

It is also essential that these resources are seen as relevant and interesting and have a global narrative. This has been done very successfully with "agriculture" which is now being publicised as 'Healthy Foods in Healthy Environments', a positive way of looking at food and fibre production in the 21st century

Recommendation 4: Give a new meaning to RF school delivery by placing it in a positive 21st century context. For example, Ethical, Sustainable, Passionate, RF Ticks all the boxes. These can be built into the structure of the website.

Professional development-Teacher training

Discussions with teachers indicate they are lacking the confidence to do fishing activities by themselves and any future activity would need to strongly focus on educating the teachers more than the students, so that the teachers would be confident/capable of doing the instructing themselves.

Recommendation 5: Build the confidence of teachers, informally, by arranging for a RF club to take teachers fishing on a curriculum day to build closer ongoing links.

Furthermore, teacher understanding of primary industries is also poor and weakest in relation to fisheries. Many teachers were unfamiliar with any issues related to the fishing sector.

Recommendation 6: Build the confidence of teachers, formally, by improving their levels of knowledge about primary industries, especially fisheries.

Each Primary Industry Centre for Science Education (PICSE) Activity Centre delivers a two day professional learning course for teachers. PICSE currently operates through nine university based activity centres and uses its own teachers or Science Education Officers to target teacher professional development in practical industry settings.

What and how to teach in the Australian curriculum

Relevant pedagogies for 21st Century Learning

The constructivist theories of learning are supported by experiential education strategies such as learn-by doing, real-world learning, problem-based learning, and child-centred learning. The challenge here is how can RF fully utilise the emerging relational technologies and social software in enriching these pedagogies and in facilitating the acquisition of new knowledge and skills? And how can the curriculum be most appropriately conceptualised and organised so as to tap into new capacities? 21st century pedagogy is about people and communities as well as content and publishing; they encourage communication, which in turn expands the physical and virtual learning space.

Recommendation 7: That classroom partnerships between the RF industry (local angling clubs, tackle industry, fishing equipment manufacturing) and schools be developed. This real-life learning could involve a class adopting a local fishing club, a recreational fishing boat, or a large tackle store similar to the Seafood Industry Partnerships in Schools program.

All these activities develop positive attitudes and encourage students towards high school courses and careers in the industry. Ongoing contact between these organisations via Email, sms, social media, or other technology taps into the new capabilities of 21st century learning.

The importance of SCIENCE

The current positioning of RF outside the science curriculum is now thought to be responsible for its current low profile and hence its minimal entry into the schools formal education system. At present students do not see it as a viable or potential career path with the common perception that it has a negative influence on a students' ATAR, especially in NSW. Any RF strategy must target the Science curriculum, especially the strands Science Understanding (Biological) and Science as a Human Endeavour.

Recommendation 8: RF needs to re-connect with the pure and applied science underpinning it and provide this within a contemporary context. This will address its current low academic profile (especially in NSW) and provide a clear and direct connection to areas of the curriculum. By incorporating current fisheries research and its human application students will be motivated and engaged.

Literacy and mathematics

The Australian Curriculum continues to prioritise English and literacy and mathematics and numeracy in the early years of schooling and any primary school RF education strategy needs to address this through an integrated literacy program.

Recommendation 9: Identify a series of key texts for primary (F-Y6) schools that have RF related messages and/or strong environmental themes. Many texts that target the early years of learning involve counting, which addresses mathematics and numeracy.

Connections to other learning areas

Another important aspect of the Australian Curriculum is Connections to other Learning Areas. Here learning in science involves the use of knowledge and skills learnt in other areas, particularly in English, mathematics, history and geography.

Recommendation 10: Develop a cross-curriculum unit (Y7-10) combining environment, life cycles, fish behaviour, aquatic food chains, habitat use, fishing gear technology, tides and climate/weather. Future work would evaluate the success of this unit through a pilot study in secondary schools.

This is a major strength of RF as it provides an avenue through which students can make connections with the natural world and learn about ecosystems in an authentic learning environment.

The cross –curriculum priorities

The F-10 Australian Curriculum also pays explicit attention to how 3 cross-curriculum priorities contribute to, and can be developed through teaching in each learning area. We have identified that the first priority area (Aboriginal and Torres Strait Islander histories and cultures) feeds directly into goal 6, strategy 6 (Promote the cultural heritage value of recreational fishing in Australia) of the RFIDS.

Recommendation 11: Use Aboriginal and Torres Strait Islander dreamtime stories, oral histories and cultures to connect with early primary (F-Y2) students using a natural resources theme.

For example the Sea Eagle and the Gull Dreamtime story from the Bardi people of North Western Australia illustrates the influence people can have upon natural resources when used unwisely. This also addresses cross-curriculum priority 3.

Recommendation 12: That teachers continue to target the Science strand (Biological Sub-strand; Science Understanding and Science as a Human Endeavour) - Sustainability using a Marine Studies/Science unit which includes sustainable fishing issues.

A sustainable and professional framework

The role of government and other stakeholders in RF school programs

Government (primary industries and fisheries) in some of the larger states has become overextended supplying services and filling roles that it was not designed to do and needs to return to its core functions.

Recommendation 13: That government concentrates is efforts on Research, Management and Compliance and retreat from in schools education, especially "how to fish". This would limit schools education to compliance issues which could be serviced by Fisheries Officers.

An integrated "grass roots" approach to servicing schools

The success of RF education, now and in the future, lies in developing and maintaining linkages between schools, clubs (and peak bodies), industry and the community. This will ensure that programs are not reliant on government (or on minimal government support) and are more selfsufficient. Furthermore if ongoing links between schools and clubs is met, it should be possible for teachers, parents and anglers to meet the schools own needs for repeat sessions. This aim here is to develop a series of local independently-operated activities based on schools working in conjunction with local anglers.

Recommendation 14: That local clubs or peak bodies (i.e. volunteer anglers) provide low cost servicing of "how to fish" education to schools. This would including knot tying, line rigging and baiting, casting techniques, retrieval of fish and fish handling. Queensland's Sunfish Angler Education Program shows how a similar program can be operated on a large scale at a modest cost, using a well organised regional recreational fishing volunteer arrangement. Recfishwest, the WA peak body is funded through the RFL to provide a series of clinics to teach schoolkids how to fish.

It is also important that clubs have follow-up sessions, either with schools or as separate clinics. Clubs could also offer free 1-year junior memberships to local students to encourage continuing participation at the completion of their school program.

Recommendation 15: That local clubs or volunteer organisations solicit funding from private sponsors, such as the tackle retail sector, to off-set expenses with RF delivery in schools. It is essential that the private industry be included as part of the RF community and without their support many community fishing events would not occur. This would involve bait and rod and reel packages.

Recommendation 16: That government investigate restructuring or prioritising their RFL (or other) funding categories or platforms to include the RF community more.

Victoria has a Small Events Recreational Fishing Grants Program that ultimately builds the capacity of clubs to service the community as well as schools. All states and territories need to investigate ways to develop and strengthen their club network, however, in those that do not have a well-established club scene, such as Tasmania, the peak body could build this service.

Trained professionals servicing schools

Principals and teachers need to be convinced that any outside organisation that provides a service at their school have some sort of accreditation, understand risk management and public liability issues and be professional.

Recommendation 17: That accreditation for teaching "how to fish" in schools be investigated (pricing and minimal standards) through the PFIGA. This will ensure that school children are taught by trained professionals and being taught the correct fishing technique. Many government organisations for example do not require Fishcare volunteers to have any knowledge or experience in fishing.

Recommendation 18: For an easier transition local clubs or volunteer organisations appoint a "schools education officer" initially for accreditation by the PFIGA. This develops ongoing links and provides a point of contact within the community.

6.0 Acknowledgements

NSW:

Edwina McCoy, NSW Board of Studies Liaison Officer, North Coast; Denise Cameron, St Augustines Primary School, Coffs Harbour; Greg Hawkins, John Paul College, Coffs Harbour; Robert Smith, President, NSW Fishing Clubs Association Inc.; Malcolm Poole - Chairman/President RFA; Warren Bridge, Newman Senior Technical College, Port Macquarie; Sheree Epe, Sapphire Coast Marine Discovery Centre, Eden; Jane Smith, Central Coast Marine Discovery Centre, Terrigal; Toni Wilson, Senior Community Educator, The Coastal Environment Centre (CEC), Northern Beaches, Sydney; Kerrie Trees, Hastings Point Marine Environments Field Study and Resource Centre; Melanie Young, Young Guns Fishing Adventures; Steve Williamson, PFIGA; Dee Payne, State Coordinator – Community Programs, NSW Department Primary Industries, Fisheries; Bryan van der Walt, Manager Recreational Fisheries Programs, NSW Department Primary Industries, Fisheries; Liz Baker, Fisheries NSW

ACT

Martin Lind, Waterwatch Coordinator, Southern ACT Catchment Group; Janna Randell Murray-Darling Basin Authority.

QLD

Randall Owens, Manager, Reef Guardian programs, GBRMPA; Judy Lynne Executive Officer Sunfish (Qld) Inc:, Keith Latimer Director of Angler Education, Sunfish (Qld) Inc: Grant Smith, Marine Teachers Association of Queensland – President; Tim Hillie, Tagai Marine Discovery Centre; Matt Barwick, RecFishing Research; Stefan and William Sawynok, Infofish Australia; Ben Diggles, Digfish services.

VIC

Dave Cleeland, State Co-ordinator, Fishcare Victoria; Philip Armato and Julie Murphy, Queenscliff Marine and Freshwater Discovery Centre; Samantha Strong, Fish Care Victoria; Gary McLachlan, Belmont High School; Russell Conway, Recfish Australia.

SA

Toni Cox, State Volunteer Coordinator, Fisheries Operations, PIRSA; Maureen Tyler Aquatics, Port Noarlunga (Port Noarlunga Primary School); Tim Hoile, Henley Beach Marine Discovery Centre, Adelaide.

TAS

Rod Pearn ,Principal Fisheries Management Officer (Recreational Fisheries), Hobart; Claire Blichfeldt, Secondary Teacher, Marine Discovery Centre, Woodbridge School; Mark Nikolai, TARfish, Hobart Tasmania; Andrew Walsh and Pam Elliot, Woodbridge Marine Discovery Centre.

WA

Michael Burke, Manager, Community and Education, WA Fisheries, Chair MDCA; Carina Gemignani, Community Education Officer, Department of Fisheries; Andrew Rowland and Matthew Gillett, Recfishwest.

NT

Kane Dysart ,Recreational Fishing Education Officer , Department of Primary Industry and Fisheries; Craig Ingram, AFANT.

7.0 Appendices

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A new way to think

Schools and Recreational Fishing

RFIDS: "Establish activities and tools to promote recreational fishing on a national level".

Supported by funding from the FRDC on behalf of the Australian Government.

BSc(Hons)(UNSW), MAqua(Deakin), GradDipEd(CSU), PhD(UNE) Dr Jeff Guy, National Marine Science Centre, Coffs Harbour

www.scu.edu.au

National Recreational Fishing Conference, Gold Coast, August 2012





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School of Environment, Science and Engineering

Main interests: Biodiversity, Ecological Interactions, Aquaculture and Sustainable Fisheries.



NSW DPI

- Fisheries Conservation Technology Unit (Paul Butcher – Sunday 1.30-1.50pm)
- Manager Recreational Fisheries Programs (Bryan van der Walt –Sunday 9.40-10am)
 - Angling Facilities Manager (Mel Bradbury)
 PhD student Toby Diddocke Fisheries higlogy or
- PhD student Toby Piddocke Fisheries biology and movements of mangrove jack





(Where do we find rec fishing content in teaching?) **Todays presentation**

- **NSW AS A CASE STUDY**
- Primary
- Secondary
- TAFE
- I. Formal pathways
- Curriculum and the syllabus
 - II. Informal pathways
 - Sport
- **Curriculum** refers to the subjects that are studied or prescribed for study 0
- Syllabus refers to the program or outline of a course of study (specific ways to teach the curriculum)

Acknowledgements: Denise Cameron St Augustines Primary and Greg Hawkins John Paul College, Coffs Harbour.



6 KLA's each with specific content strands and a proportion of time I. Primary school syllabuses







,

- Communications Information &
 - Living Things m.
 - Physical 4.
- **Products & Services** Phenomena ю. Ю
 - The Earth and its 6-10% of time) Surroundings



- Svllabu
- **Active Lifestyle** ;-
- Games & Sports Dance 5. т. т
 - Growth & 4
- Development Gymnastics

Social Systems

4.

& Structures

Environments

Continuity Change &

Cultures

5 m. time)

Interpersonal ю. Ю

(6-10% of time)

- **Personal Health** Relationships
- Choices
 - Safe Living .





- Visual Arts 2. Music ...

Patterns & Algebra

Number

.. 5 .

Talking & Listening Reading 3. Writing (25-35% of

;

- 3. Drama
- Dance

Measurement

4.

ы. С

Data

5.

- (6-10% of time)
 - Space & Geometry (20% of time)

Embedded in each of the content strands are the objectives of *Knowledge and Understanding, Skills* and Values and Attitudes with Outcomes related to all objectives and the 3 stages of primary schooling: Stage 1 (YK-2); Stage 2 (Y2-4); Stage 3 (Y4-6) * Southern Cross

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Primary school syllabuses NSW DPI schools education program "Get Hooked"



| Junior Fishing Code | Syllabus Outcomes |
|--|--|
| Code 1.Take only what you need | ENS2.5, ENS2.6, LTS2.3, COS2.1, DMS2.2, TS2.2 |
| Code 2.Fish with friends | ENS2.6, LTS2.3, SLS2.13, INS2.3, DMS2.2, TS2.2 |
| Code 3. You're the solution to water pollution | ENS2.6, LTS2.3, INVS2.7, COS2.1, INS2.3, DMS2.2, TS2.2, DRA2.3 |
| Code 4.Throw the little ones back | MS3.1, LTS3.3, INVS3.7 DMS3.8, COS3.1, INS3.3, DMS3.1, TS3.2 |
| Code 5. Don't leave your tackle behind | LTS3.3, INVS3.7, DMS3.8, COS3.1, INS3.3, DMS3.2, TS3.2, DRA3.3 |
| Code 6. Quality catchments equal quality fish | LTS3.3, INVS3.7, COS3.1, INS3.3, DMS3.2, SLS3.13, TS3.2, DRAS3.3 |

<u>All 6 KLA's covered and include: PDHPE (8 outcomes), Science and Technology</u> (5 outcomes), HSIE (2 outcomes), English (2 outcomes), Creative Arts (2 outcomes), Mathematics (1 outcome).



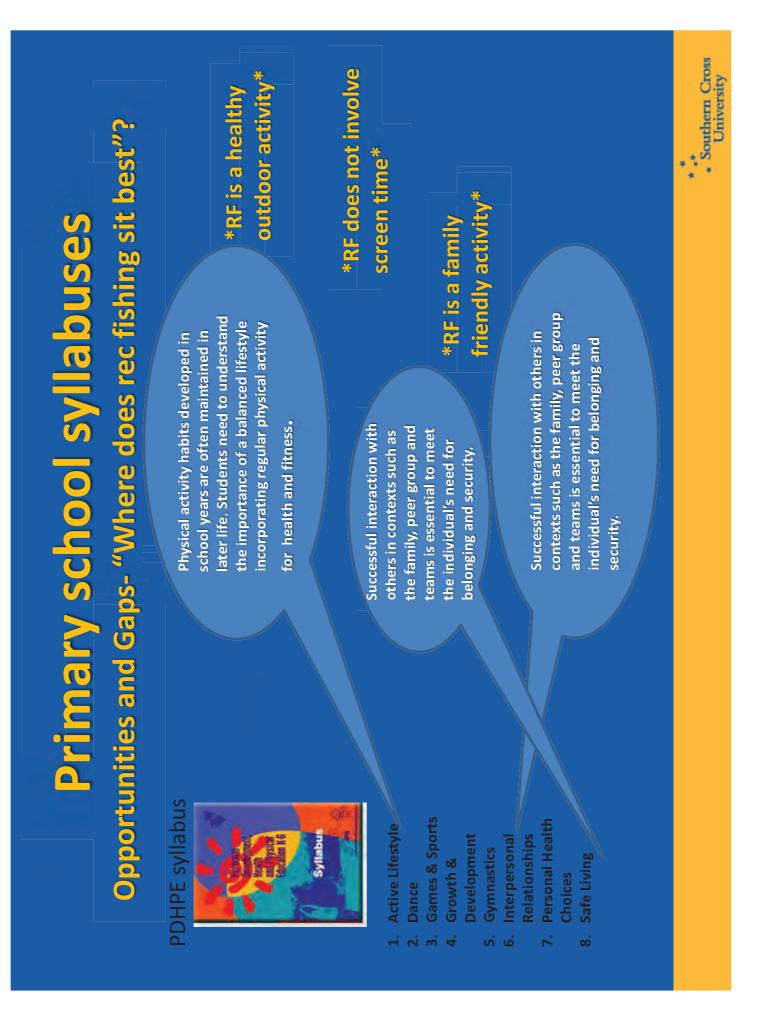
Science and Technology K-6

65% of outcomes contained in these 2 syllabuses



Source: NSW DPI website





Summary Key messages (NSW)

- I'm not aware of any recreational fishing in any current NSW primary syllabus
- However you can often adapt a syllabus to suit local needs and meet the Board of Studies outcomes (e.g. "Get Hooked " and the Y5 Marine Environment unit). 0
- To encourage uptake we need to develop rec fish learning resources which are easily accessible (web) to teachers and linked to the curriculum. 0
- <u>"Environments" (HSIE KLA) but PDHPE KLA has more diversity (= champion</u> Limited to the main knowledge areas of "Living things" (Science KLA) and <u>KLA</u> for Rec fish) 0
- All this may change due to the new National Curriculum •



Learning resources Key messages

To encourage uptake we need to develop rec fish learning resources which are easily accessible (web) to teachers and linked to the curriculum.

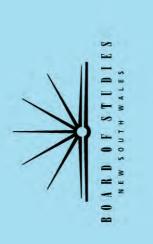




This PIEF website 'www.primezone.edu.au' is designed as a national one-stop web portal of primary industries resources for schools and the community. The site will be searchable by the Australian Curriculum when finalised = *RESOURCE NETWORK*



I. Secondary school syllabuses





Content Endorsed Course Years 7-10



Marine Studies

Content Endorsed Course

Stage 6 Years 11-12

Content Endorsed Courses have syllabuses endorsed by the Board of Studies to

cater for areas of special interest not covered in **Board Developed Courses.**

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Secondary school syllabuses



Marine and Aquaculture Technology

Content Endorsed Course

Years 7-10



TAS (Technological and Applied Studies): Y7-10

- Agricultural Technology
- Design and Technology
- Food Technology
- Graphics Technology
- Industrial Technology
- Information and Software Technology
 - Marine and Aquaculture Technology
 - Technology (Mandatory)

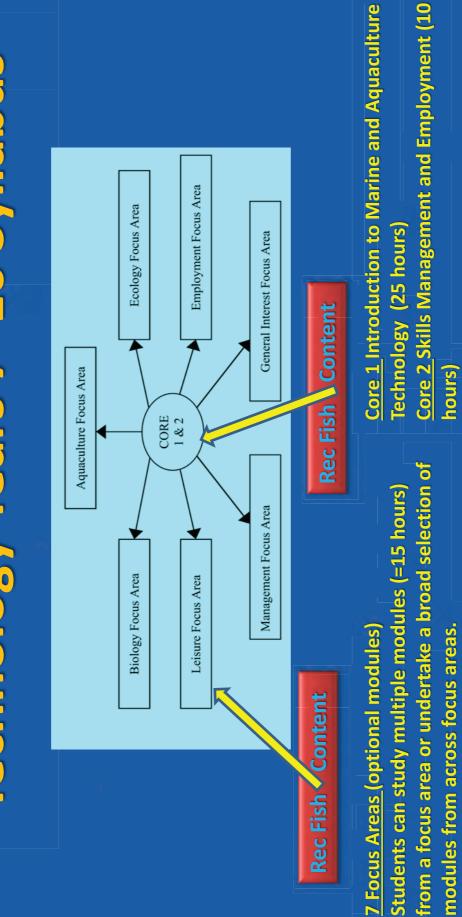
Content

Rec Fish

- Textiles Technology
- The aim of the syllabus is to develop in students a capacity to design, produce, evaluate, sustain, use and manage marine and water related environments.
- Students may study 100-hour (Core 1 and any 5 option modules) or 200-hour courses (Core 1, Core 2 and 6 option modules additional to those in the first 100 hours).







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Marine and Aquaculture Technology

Core 1 and 2 (required)

Core 1

It is a practical unit developing students' water confidence and students learn about:

- Water Safety
- General First Aid
- Maintaining Equipment Used in Water
- The Marine Environment

Students learn to:

- identify dangerous local fishing spots and list the conditions that would make them dangerous
- dismantle, clean and oil a fishing reel

Core 2

Re-accredits students in water safety and first aid for the 200-hour course and introduces them to the organisations that manage the use of the marine environment. Students learn about:

- Water Safety Re-accreditation
- General First Aid

Students learn to:

- research the roles and responsibilities of organisations that regulate and manage fish stocks
- identify and discuss the cooperative nature of volunteer groups



I. Secondary school syllabuses



Marine Studies

Content Endorsed Course Stage 6 Years 11-12



Marine Studies Years 11–12

Hours

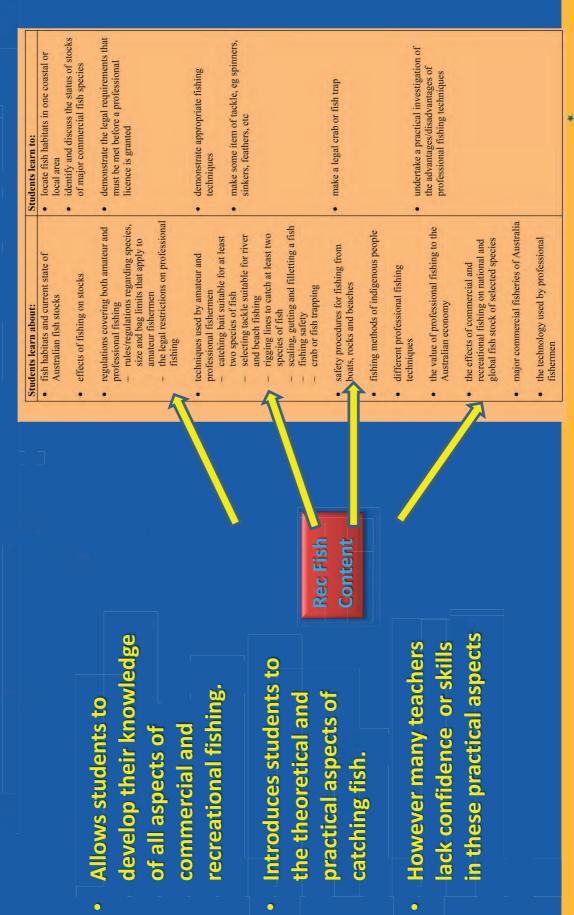
Optional Modules

Core

30 30 15/30 30 30 30 30 30 15/30 30 15/30 15/30 15/30 15/30 30 15 15 30 15 30 30 30 14 Anatomy and Physiology of Marine Organisms15 Seafood Handling and Processing 19 Boating and Seamanship
20 Marine Craft Construction and Repair
21 Pilotage and Navigation
22 Marine Communication
23 Wind Powered Craft 10 Commercial and Recreational Fishing Skin Diving and Diving Science
 Marine Engineering
 Marine Archaeology Marine Resource Management Dangerous Marine Creatures Resuscitation Certificate 5. Marine and Maritime Employment | 24 Personal Interest Project Sea Birds of Our Coast First Aid Certificate Coral Reef Ecology 13 Marine Aquarium Local Area Study **Estuarine Studies Coastal Studies** Oceanography 11 Aquaculture 12 3 8 6 2 4 102 1. Marine Safety and First Aid 2. The Marine Environment 4. Humans in Water 3. Life in the Sea (6 hours) (6 hours) (6 hours) (6 hours) (6 hours) **Content** comprised of a 30 **Marine Studies is** optional personal and 23 optional interest project. modules and an hour Core

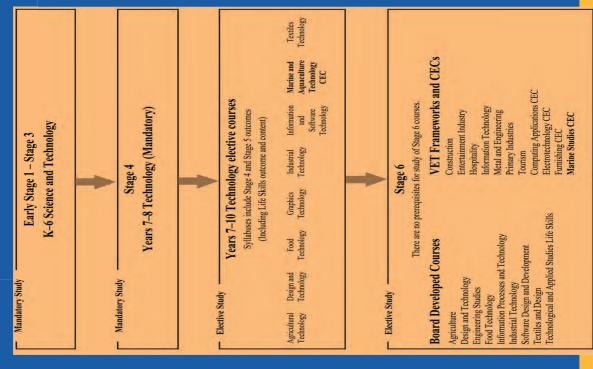
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Module 10 (optional) Commercial and Recreational Fishing **Marine Studies Years 11–12**



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Secondary school syllabuses



- Marine and Aquaculture Technology and Marine Studies CEC lie in the Technology K-12 Curriculum
- These are electives and while they count towards the HSC they do not contribute to the Australian Tertiary Admission Rank (ATAR) for University entry
- Main focus is on providing skills for work through VET (Vocational Education and Training)
- For example, using the TVET pathway, secondary school students can start TAFE Marine Science courses while still at school.



Vocational Education and Training (VET) Content Endorsed Courses (CECs)

qualifications under the Australian Qualifications Framework (AQF) as part of their NSW HSC. Industry recognised national vocational

Courses within VET CECs count as Board Endorsed towards an Australian Tertiary Admission Rank unit credit for the HSC and do not contribute (ATAR).

The AQF VET qualifications available in the Sport, Fitness and Recreation VET CEC are:

- Certificate II in Community Activities (SIS20110
 - Certificate II in Outdoor Recreation (SIS20210)
 - Certificate II in Sport and Recreation (SIS20310)
 - Certificate II in Sport Career Oriented Participation (SIS20410)
- Certificate II in Sport Coaching (SIS20510)
- Certificate III in Fitness (SIS30310)2



BOARDOFSTUDIES New south wales

Stage 6 Course Description

VET Content Endorsed Course

Sport, Fitness and Recreation



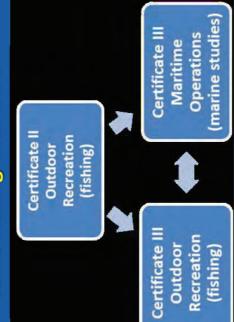


SIS20210 Certificate II Outdoor Recreation – Fishing: prepares you to assist in conducting fishing activities.

SIS30410 Certificate III Outdoor Recreation – Fishing: prepares you to safely guide fishing activites in a controlled environment.

Package: SIS10 Sport, Fitness and Recreation

Come Fishing with TAFE



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| Certificate II Outdoor Recreation –Fishing | Workshop dates |
|--|---|
| SISXIND101A Work effectively in sport & recreation environments CORE Cert II SISXOHS101A Follow occupational health and safety policies CORE Cert II & III SISOFSH201A Catch and handle fish SISOFSH206A Locate and attract fish | 26 th – 30 th March 2012 |
| HLTFA301B Apply first aid <i>CORE Cert II & III</i> SISOFSH202A Select, catch and use bait SISOFSH203A Select, rig and use terminal tackle SISOFSH204A Select, use and maintain fishing tackle ouffits SISOFSH201A Maintain sport & recreation equipment for activities | 7 th – 11 th May 2012 |
| SISOFSH205A Construct and work simple fishing lures | 25 th – 27 th June 2012 |
| SISOOPS201A Minimise environmental impact <i>CORE Cert II & III</i> SISOOPS304A Plan for minimal environmental impact SISOOPS306A Interpret weather conditions in the field <i>CORE Cert III</i> SISOOPS303A Interpret weather for marine environment SISOOPR201A Assist in conducting outdoor recreation sessions <i>CORE Cert II</i> | Covered over all workshops |
| Certificate III Outdoor Recreation – Certificate II units plus those below. | |
| SISOFSH315A Demonstrate beach fishing skills SISOFSH312A Demonstrate estuary fishing skills SISXRSK301A Undertake risk analysis of activities CORE Cert III SISXCCS201A Provide customer service CORE Cert III | 25 th – 29 th June 2012 |
| BSBWOR301A Organise personal work priorities and development CORE Cert III SISOODR302A Plan outdoor recreation activities CORE Cert III SISOODR303A Guide outdoor recreation sessions CORE Cert III TAEDEL301A Provide work skill instruction CORE Cert III SISXCA1306A Facilitate groups CORE Cert III SISXCA1306A Facilitate groups CORE Cert III SISXCA1306A Respond to emergency situations CORE Cert III SISXCFSH307A Guide fishing trips SISOFSH308A Instruct fishing skills | 13 th – 17 th August 2012 AND 15 th – 19 th October 2012 |



Implementation of Australian Curriculum in NSW

- The new syllabuses (K–10) in English, Mathematics, Science and History ready in September 2012.
- Support materials from September to December 2012.
- Teachers familiarise themselves with these throughout 2013.
- Implementation of the new syllabuses will begin from 2014.
- Education sectors have agreed on this timeline which is the responsibility of states and territories.



Science K-10 (incorporating Science and Technology K-6)

Australian Curriculum

Draft syllabus

Version 2

Consultation period 13 February – 30 April 2012



Implementation of Australian Curriculum in NSW

Kindergarten to Year 6

| | 2016 | | | | К-6 | | 2015 | 8, 10 | 8, 10 | 8, 10 | 8, 10 |
|------------------------|---------|--------------------|--|---|-------------------|------------|---------|--------------------|--------------------------------------|--|-------------------|
| | 2015 | | К–6 | К–6 | Optional | | 2014 | ٥ ر | 7, 9 | 6 | ٥ ٢ |
| | 2014 | Я 9- 7 | Optional | Optional | | | 50 | 7, | 2 | 7, | 7, |
| | 2013 | pue | noites pring | | Far | | 2013 | pus | noits: Bring | sinsilin nal9 | nsŦ |
| r 6 | 2011–12 | ז Shari שפחל | nd Su ber 20 ber 20 rs plat entatio entatio | irial Do Base W Secto Secto Mplem | ətsM эləЯ D | | 2011-12 | ı ∣S pλ ™eut | yelop aterial er 20' er 20' | is sudi N 9254 M 9254 M 9254 M 9254 M 925 M 925 | eteM BleA D |
| Kindergarten to Year 6 | | ENGLISH | MATHEMATICS | SCIENCE AND TECHNOLOGY | HISTORY | Years 7–10 | | ENGLISH | MATHEMATICS | SCIENCE | HISTORY |



Australian Curriculum links in Science (as an example)

Has three interrelated strands replacing *Knowledge and Understanding, Attitudes* and *Skills and Values* Rec fishing education in schools needs to position itself in the new National Curriculum

Cross curriculum focus on Sustainability and Environment [SE] allows rec fishing to be included

| Year 7 | |
|-------------------------------|--|
| Science Understanding | Bu |
| Biology: | There are differences within and between groups of organisms; classification helps organise this diversity |
| Biology: | Interactions between organisms can be described in terms of food chains and food webs; human activity can affect these interactions |
| Science as a Human Endeavour | Endeavour |
| Use and influence of science: | Science understanding influences the development of practices in areas of human activity such as industry, agriculture and marine and terrestrial resource management |
| Science Inquiry Skills | 5 |
| Planning and conducting: | Collaboratively and individually plan and conduct a range of investigation types, including fieldwork and experiments, ensuring safety and ethical guidelines are followed |
| Communicating: | Communicate ideas, findings and solutions to problems using scientific language and representations using digital technologies as appropriate. |

From 'Plankton to plate: The story of edible oysters' Hastings Point Field Studies Centre, Marine Discovery Centres Australia (MDCA)



II. School sport and recfishing (Informal pathway through registered fishing clubs)



NSW Government Sport & Recreation



 Listing of services for schools offered by NSW State sporting organisations and other peak bodies.

Aim is to encourage links between sporting and school communities

Program: Learn to Fish (page 24)

Description: Basics of fishing, competition casting, boat fishing (focusing on boat safety) and sustainable fishing

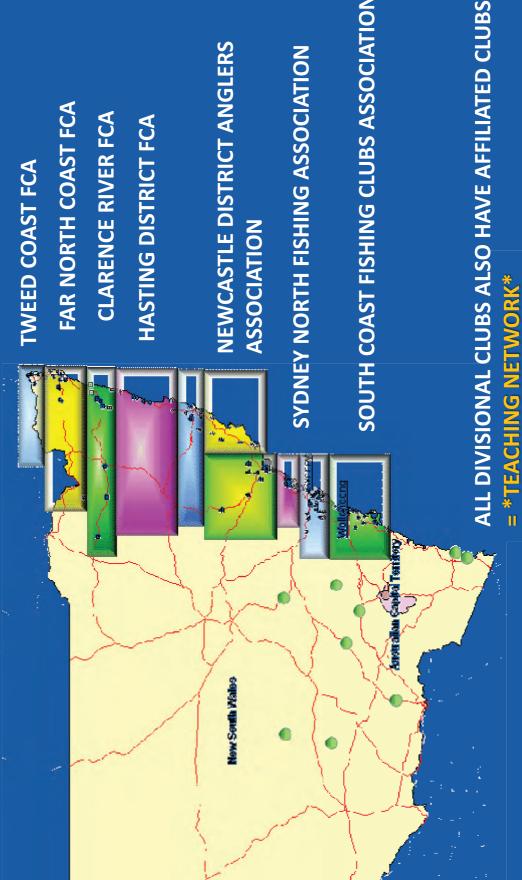
Availability: Will visit schools by arrangement, all year round

Duration: As arranged, usually for one to three visits. Restricted to groups of no more than 15 unless prior arrangements are made

Cost: Depends on availability of instructors



New South Wales Fishing Clubs Association (NSWFCA) DIVISIONAL & CLUB INFORMATION



FAR NORTH COAST FCA **CLARENCE RIVER FCA HASTING DISTRICT FCA TWEED COAST FCA**

NEWCASTLE DISTRICT ANGLERS ASSOCIATION SYDNEY NORTH FISHING ASSOCIATION

SOUTH COAST FISHING CLUBS ASSOCIATION

* Southern Cross University

12 Marine Discovery Centres Australia (MDCA)

- Established in 2005 to provide hands on environmental education focusing on marine and coastal conservation.
- government-funded and most have rec fishing messages and links Some are part of schools, while others are community- or to the new national curriculum 0

L Thursday Island MDC, QLD

Naturaliste MDC, Perth, Dolphin DC, Bunbury, MA

Henley Beach MI

MDCA is proudly supported by

RESEARCH & DEVELOPMENT CORPORATION FISHERIES

Queenscliff MD(

Woodbridge N

Port Macquarie MDC Sapphire Coast MDC **Central Coast MDC Bondi Beach MDC** = * DISTRIBUTION **NETWORK*** 3

Hastings Point MDC

zυ

Ballina MDC



* Southern Cross University

Summary Key messages (NSW)

- Rec fishing needs to sit comfortably in the new National Curriculum (challenge is that it's a new curriculum)
- Is it important that rec fishing content does not contribute towards an ATAR (Is it seen as the poor cousin?). 0
- fishers clubs and organisations, coastal and inland (challenge is to integrate However, major strength of rec fishing is its already established network of this into schools) •
- Not all teachers have the practical skills to teach rec fishing (how do we best address this? Is it a teacher education issue?) 0



Teacher education (extension training)

- Keith Latimer, Director of AE Sunfish (Qld) Inc
- Past efforts to supplement the knowledge and skills base of secondary marine studies teachers in Queensland







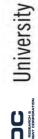














University of Wollongong



Schools – Pre and Post National Curriculum

Review of Recreational Fishing in Australian

Southern Cross

University

Dr. Jeffrey A. Guy, National Marine Science Centre

| | Why schools? |
|------|--|
| • | There is the potential to expose every Australian child to the benefits offered by fishing; |
| • | Girls and boys of all abilities, particularly at an age of 5-8, enjoy fishing and can pick up the needed basic skills and knowledge quickly; |
| • | The ethos of aquatic stewardship and the principles of sustainable use, ethical treatment of fish, environment protection and responsible fishing are best introduced at an early age; |
| • | Fishing complements and enhances classroom learning and offers an attractive low-cost outdoor activity; |
| • | The large number of women teachers in primary schools allows the introduction to fishing to include aspects that appeal particularly to girls and are consistent with their preferences later in life; |
| • | The structure of school-based teaching and fishing activities lends itself to the involvement of volunteer anglers which develops ongoing links between schools, clubs and the community, guaranteeing its sustainability (Winstanley, 2003) |
| * | *An effective and cost-efficient way of promoting participation and the benefits of RF* |
| SCUL | scueduau * University |
| | |

Review structure

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Its Implementation i

Project Aim and Objectives

a new program to address this could be developed within a 21st century learning minimal entry into the formal schools education system and to recommend how In broad terms, the review has two main aims: to investigate why RF has gained -Australian Curriculum framework.

- Review and summarise education activities relating to recreational fishing in schools around Australia. Identify common themes, key messages, target audiences, success stories and gaps.
- national curriculum including identification of relevant course materials Examine pathways for recreational fishing to be included in the (existing and new) for teaching and learning.



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Methodology

- documents from appropriate state or territory statutory bodies using key Undertaken by a combination of desktop research (searching syllabus words such as Fish, Fishing and Fisheries)
- Telephone/e-mail conversations with primary and secondary teachers throughout Australia.
- Where available, teacher associations, such as The Marine teachers Association of NSW and Queensland were also contacted.
- Contacts were also developed by attending the 2012 Marine Discovery Centre Australia (MDCA) meeting at Terrigal on the NSW Central Coast.





| State or ImportantRegulatory authorityWebsiteTerritoryDepartment of Education and Traininghttp://www.det.act.gcACTDepartment of Education and Traininghttp://www.bbss.act.ecNSWDepartment of Education and Traininghttp://www.schools.n.NSWDepartment of Education and Traininghttp://www.schools.n.NSWDepartment of Education and Traininghttp://www.schools.n.NSWDepartment of Education and Traininghttp://www.det.nt.go.NTDepartment of Education and Traininghttp://www.det.nt.go.NTDepartment of Education and Traininghttp://www.det.nt.go.NTDepartment of Education and Traininghttp://www.schools.n.NTDepartment of Education and Traininghttp://www.sec.sa.gcSamodoffQLDEducation and Children'sSamodoffDepartment of Education and Children'shttp://www.dec.sa.gcSamodoffServiceshttp://www.sace.sa.gcSarvicesServiceshttp://www.sace.sa.gcSarvicesSacuriculum, Standards and Accountabilityhttp://www.sace.sa.gcSarvicesSacuriculum frameworkhttp://www.sace.sa.gcSarvicesSacuriculum frameworkhttp://www.sace.sa.gcSarvicesSacuriculum frameworkhttp://www.sace.sa.gcSarvicesSacuriculum frameworkhttp://www.sace.sa.gcSarvicesSacuriculum frameworkhttp://www.sace.sa.gcSarvicesSacuriculum frameworkhttp://www.sace.sa.gcSarvicesSacuriculum framework <th>Š</th> <th>ethodology</th> <th>ßy</th> | Š | ethodology | ßy |
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| School Curriculum and Standards Authority | | f Education and Training Ilum and Standards Authority | http://www.det.wa.edu.au/education/ http://www.curriculum.wa.edu.au/internet/ |

http://<u>www.boar</u> dofstudies.nsw.e du.au/syllabus h sc/marinestudies.html

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Two significant national health and leadership issues frame this review.

activity in children and adolescents is decreasing, with electronic media 1) A major health concern in Australia is that the level of physical and other sedentary behaviours replacing outdoor activities. 2) Australia is currently experiencing a shortage of graduates with primary industry (agriculture, fisheries and forestry) science qualifications to fill research and development roles in industry. st Opportunity for FR education to position itself strategically within these contexts st

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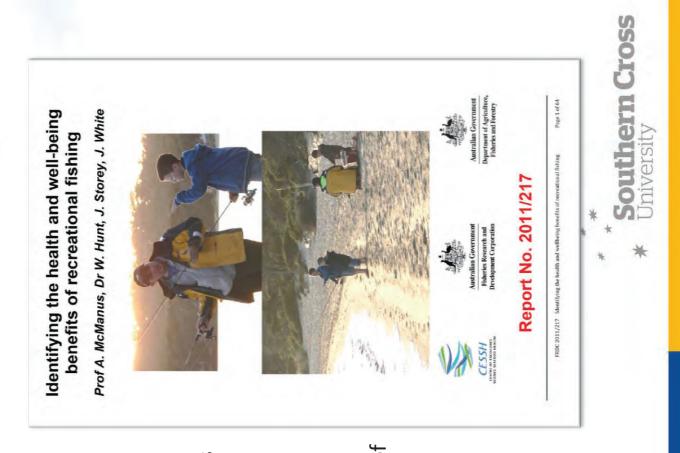
Corporations (RDCs), The Primary Industries Education Foundation (PIEF) and The Primary Industry This has recently been recognised with the formation of two national Research and Development Centre for Science Education (PICSE).



*These organisations provide an excellent framework to include a RF education message that integrate Southern Cross into pre-tertiary science curricula and use practical fisheries examples. *

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Unhealthy kids

- There is an urgent need to provide outdoor social opportunities and activities for children aged up to five years to encourage habitual healthy behaviours.
- Providing opportunities for fishing at a young age, as a family activity, or as part of a schools education program, is vital to cultivating recreational fishing as an interest for tomorrow's adults.

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NSW as a case study- Why do it?

- primary and/or secondary syllabuses as well as documenting the content An in-depth study allows us to detail the placement of RF, if any, across and general messages.
- information cited and did the content deal mainly with basic instruction on "How to fish" or have wider sustainability, environmental and ethical For example in what key learning area was the recreational fishing and community related messages?
- Then it allows us to compare the main findings to other states and territories.
- This would highlight common themes, identify gaps and potential avenues for future work and collaboration.



| | | | | | | | | 0 | 1 Cross |
|------------------------------|---------------|---|--|--|---|---|--|---|-------------------------|
| NSW as a case study- Primary | Main findings | There is no RF in any current NSW primary syllabus. | It would depend on individual teachers to adapt the curriculum to include recreational fishing *NOTE UNLIKELY, NOT WIDESPREAD* | In nearly all situations its presence or absence in schools depended on individual teacher's interest (passion) and their skill set. | Delivery in NSW mainly by government through "Get Hooked" program | However relies on continued funding, availability of volunteers or an DPI education officer | Not all schools receive an invitation, invite limited to schools that can be serviced professionally | What does 89 schools registered in 2012 represent in NSW? = 4.3% of all schools (2,070 NSW primary schools participated in 2011 NAPLAN tests) | scu.edu.au * University |
| | | | | | | | | | scut |

| | NSW as a case study- primary |
|------------|---|
| | "Get Hooked"- an exemplar |
| | The "Get Hooked" program has the following core strengths; |
| • | Consistent funding support from the Recreational Fishing Trust and support from the executive |
| • • | Local trained and accredited Fishcare Volunteers, which DET has confidence in |
| • | эцолд сигленити шикэ, соvеглад а variety ог дет зупариз зирјестз е.g. поте, мациз, елдизп, SAT, PDHPE, Creative Arts |
| • | Incursion and excursion components, which are provided at minimal cost |
| • | Support staff for teachers, to ensure consistent contact. Teachers need to have a means of |
| | contacting someone in relation to issues/problems/etc. This has been a comment often |
| • | Ability to improve, revise and refresh components of the program to ensure program is up to |
| | date with technology and trends. |
| Source | Source: Dee McElligott-National Recreational Eishing Conference Workshon-Gold Coast-August 2012 |
| 500 | CC. DCC MICHINGOR, MARIONAL MCCL CAROLAL ISTMIS COMPCICICUC VOLVEROP, COM COAST, AUBUST FOILS. |
| scu.edu.au | u.au |
| | |

NSW as a case study- " Get Hooked" gives teachers what they want.....

literacy programme, there are even better chances of it being utilised as so much uptake of the activity will be. Likewise if you can integrate your messages into a Teachers are very time poor in the classroom so the more outcomes (including across learning areas) that you can address in the one activity, the more likely time has to be spent on literacy in the classroom each day

| Junior Fishing Code | NSW Syllabus Outcomes |
|--|--|
| Code 1.Take only what you need | ENS2.5, ENS2.6, LTS2.3, COS2.1, DMS2.2, TS2.2 |
| Code 2. Fish with friends | ENS2.6, LTS2.3, SLS2.13, INS2.3, DMS2.2, TS2.2 |
| Code 3. You're the solution to water pollution | ENS2.6, LTS2.3, INVS2.7, COS2.1, INS2.3, DMS2.2, TS2.2, DRA2.3 |
| Code 4.Throw the little ones back | MS3.1, LTS3.3, INVS3.7 DMS3.8, COS3.1, INS3.3, DMS3.1, TS3.2 |
| Code 5. Don't leave your tackle behind | LTS3.3, INVS3.7, DMS3.8, COS3.1, INS3.3, DMS3.2, TS3.2, DRA3.3 |
| Code 6. Quality catchments equal quality fish | LTS3.3, INVS3.7, COS3.1, INS3.3, DMS3.2, SLS3.13, TS3.2, DRAS3.3 |
| | |





| case study- " Get Hooked" | -Based on number of messages and previous work | Port leave your tackle behind You can make a difference You can make a difference Addality catchments equals quality fish | Fish with friends | Take only what you need | You're the solution | Find better tale | vic.gov.au/fisheries/education-and- family-fishing-guide |
|---------------------------|--|---|--------------------------------|----------------------------------|------------------------------------|------------------|--|
| NSW as a cas | -Based on number o | The 6 principles of the Junior Code of Conduct (VIC) or Junior | fishing 6 learning codes (NSW) | You tube trailer http://www.y | <u>outube.com/</u> watch?v=tvcu | <u>OSJ4208</u> | Source: http://www.dpi.vic.gov.au/fisheries/education-and- training/fishing-for-kids/family-fishing-guide |

NSW as a case study- secondary main findings

Recreational fishing content can be found in:

Middle years: Marine and Aquaculture Technology Content Endorsed Course Years 7–10 which is part of the Technological and Applied Sciences (TAS) Key Learning Area (KLA) *NOTE NOT SCIENCE*

<u>contribute</u> to the Australian Tertiary Admission Rank (ATAR) for University entry. Syllabus. These are electives and while they count towards the HSC they do not Final years: Marine Studies Content Endorsed Course Stage 6 (Years 11-12) ***NOTE NO BOS EXAM NO ATAR***

HSC but <mark>do not</mark> contribute towards an Australian Tertiary Admission Rank (ATAR). TAFE: Sport, Fitness and Recreation VET CEC Certificate II in Outdoor Recreation (SIS20210) Courses within VET CECs count as Board Endorsed unit credit for the *NO ATAR AGAIN* Southern Cross

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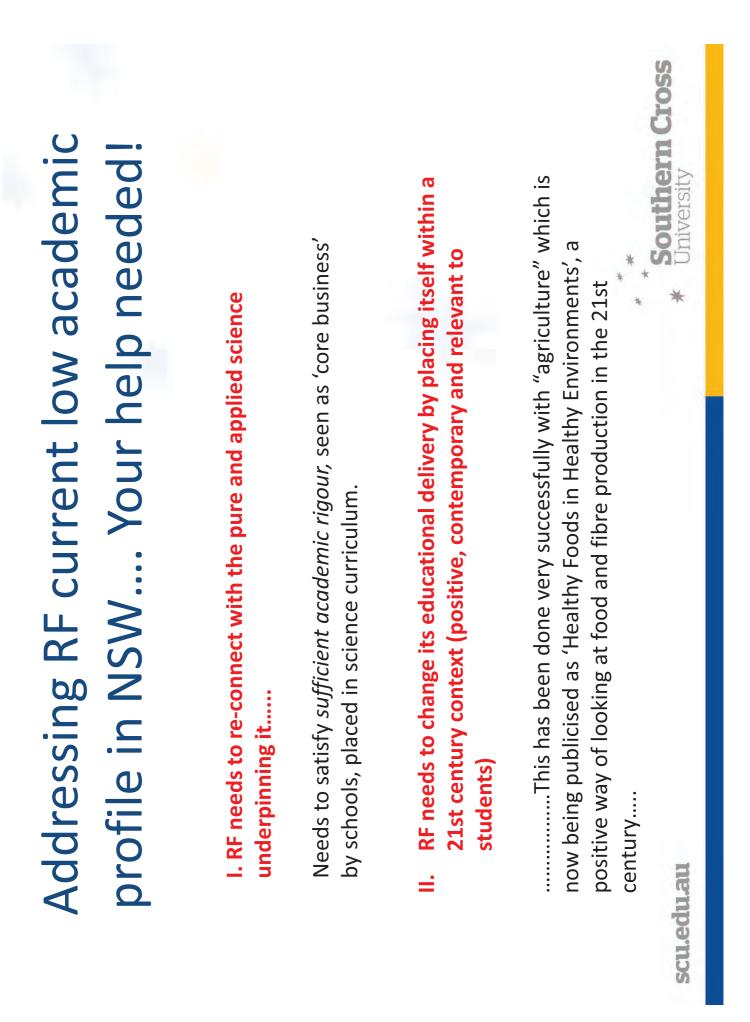
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NSW as a case study- main lessons

- At present it is not seen as 'core business' by many schools
- Placed outside the science curriculum, and as either optional or elective modules
- Does not contribute towards an ATAR, why study if going to university?
- (Primary industries currently seen as a poor option in NSW secondary Students currently do not see it as a viable or potential career path schools)
- = Current low academic profile *MAIN CHALLENGE TO RAISE THIS*













Victoria – Early innovator

- Participation Initiative to be undertaken by Sport and Recreation Victoria In 1999, the Bracks Government announced the \$420,000 Fishing (SRV) over 3.5 years.
- Program and this was launched in October 2001 aimed at Year 6 students in State primary schools. However in some small country schools it has been Students of a range of ages at two special schools have also participated. extended to Year 4 and in one secondary college it was offered at Year 8. At the time, the 3 components included a Schools Recreational Fishing
- Fishing into the Victorian Educational Curriculum at Belmont High School." Program funded "A New and Innovative Program Integrating Recreational More recently (2011-2012)VIC DPI through the Recreational Fishing Grants
- Belmont HS is a co-ed school with 1200 students in Geelong on Port Phillip Bay

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| Victoria – Provides key lessons for all |
|--|
| Fishing Participation Initiative (2001) reviewed by Winstanley in Jan 2003 |
| The program can be run independently where there are willing and competent volunteers and teachers and supportive principals. |
| Factors which tended to detract from the success of the Program were rare and included: poor choices of fishing locations/times in terms of likelihood of catching fish; rigid requirements that all fish caught be released at some clinics; distractions resulting from tangled or twisted lines on reels. |
| Belmont High School Project <i>"Teachers are generally lacking the confidence to do fishing activities by themselves and always have been very appreciative when Gary has shown them the practical skills as well as taking their classes. To take the model that Gary has established to other schools would only be successful if he was available to teach the teachers."</i> |
| *A successful RF schools education program needs to be a partnership between schools, clubs (organisations) and the community and involve some teacher training* * * * * * * * * * * * * * * * * * * |

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QLD- leading the way - well structured organised and integrated

- Year 8 10, Coast and Marine education syllabus (Practices & skills)
- Year 11 & 12, Marine & Aquatic Practices (TAFE pathway) recreational strand
 - Year 11 & 12, Marine Studies (current university pathway) Elective 7
- Year 11 & 12, Marine Science (2014 university pathway) marine research skills

.<u>qsa.qld.e</u>du

http://www

.au/20319.h

tm

includes fishing Schools also offer Certificate courses in recreation which

Grant Smith, Marine Teachers Association of Queensland - President

http://www.marineteachers.org.au/





WA – Excellence in on-line delivery of

teachers resources





South Australia – Excellence in TAFE

| | Module/Unit | | | |
|--|-------------------------|-------------------------|--------------------|------------|
| | of Competency | National | Nominal Hours - | Expiry |
| Description | Code | 41 | Supervised | Date |
| Adjust And Position Fishing Gear | SFIFISH310A | SFIFISH310A | 35 | N/A |
| Apply Deckhand Skills Aboard A Fishing Vessel | SFIFISH215A | SFIFISH215A | 40 | N/A |
| Apply Deckhand Skills Aboard A Fishing Vessel | SFIFISH215B | SFIFISH215B | 40 | N/A |
| Apply Fly Fishing Skills | SISOFSH309A | SISOFSH309A | 10 | N/A |
| Communication In A Fishing Workplace | TCE183 | TCE183 | 10 | 31/12/2006 |
| | SISOFSH314A | SISOFSH314A | 15 | N/A |
| Construct And Work Simple Fishing Lures | SISOFSH205A SISOFSH205A | SISOFSH205A | 25 | N/A |
| Develop Information And Advice On Fishing Charter Trips | CWFA | SFIFCHA301A | 40 | N/A |
| Demonstrate Beach Fishing Skills | SISOFSH315A | SISOFSH315A | 15 | N/A |
| S | SISOFSH312ASISOFSH312A | SISOFSH312A | 10 | N/A |
| Demonstrate Freshwater Fishing Skills | SISOFSH311A | SISOFSH311A SISOFSH311A | 10 | N/A |
| Demonstrate Marine Inshore Fishing Skills | SISOFSH416A | SISOFSH416ASISOFSH416A | 15 | N/A |
| Demonstrate Marine Offshore Fishing Skills | SISOFSH417A | SISOFSH417A | 20 | N/A |
| Develop Information And Advice On Fishing Charter Trips | SFIFCHA301B | SFIFCHA301B | 0 | N/A |
| Develop Information And Advice On Fishing Charter Trips | SFIFCHA301C | SFIFCHA301C | 40 | N/A |
| Fishing | BSWM | | 50 | 31/12/2006 |
| Fishing Biology & Ecology | LRRB | | 20 | 31/12/2006 |
| Fishing Gear Construction | MHBA | | 12 | 31/12/2006 |
| Fishing Gear Technology | TAE046 | TAE046 | 45 | 31/12/2006 |
| Fishing Occupational Health And Safety | TGE051 | TGE051 | 20 | 31/12/2006 |
| Fishing Practice | TAE050 | TAE050 | 60 | 31/12/2006 |
| Fishing Technology 1 | LRTL | | 36 | 31/12/2006 |
| Fishing Technology 2 Fishina Technoloav 3 | LRRD | | 36 | 31/12/2006 |
| | ГРМҮ | | 21 | /12/ |
| Guide Fishing Trips | SROFSH009A | SROFSH009A | 0 | N/A |
| | SISOFSH307ASISOFSH307A | SISOFSH307A | 20 | N/A |
| Introduction To The NT Fishing Industry | TAE049 | TAE049 | 15 | 31/12/2006 |
| Instruct Fishing Skills | SISOFSH308A | SISOFSH308ASISOFSH308A | 15 | N/A |
| Grounds And | CWEL | SFIFISH401A | 60 | N/A |
| Locate Fishing Grounds And Stocks Of Fish | SFIFISH401B | SFIFISH401B | 0 | N/A * |
| Locate Fishing Grounds And Stocks Of Fish | SFIFISH401C | SFIFISH401C | 60 | N/A |
| Manage And Control Fishing | CWEM | SFIFISH402A | 20 | N/A |

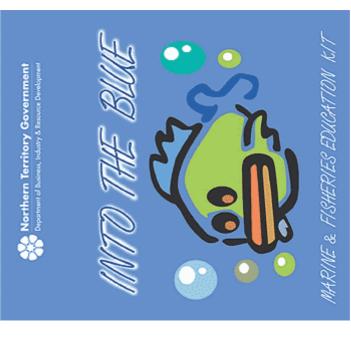


*





Northern Territory - excellence in primary programming



- Module 1 targets early childhood learners and uses NTCF outcomes from Band 1.
- Module 2 targets middle primary learners and uses NTCF outcomes from Band 2.
- Module 3 targets upper primary learners and NTCF outcomes from Band 3.

All states and territories have something to offer and can contribute to a national strategy document



More habitat ... more fish

A strategy for educating recreational fishers about habitat





the: A Strategy for Educating Recreational Fables about Habitat untino: Dr. Eitzabeth Baker (Connervation Action Unit, Industry and Investment NSW) State of New South Wales through Industry & Innestment NSW 2010



Principles

- 1. Recognise that recreational fishers are not a homogenous community.
- 2. Recognise that fishers have different motivations for engaging in their sport.
 - 3. Respect recreational fishers' knowledge.

Key messages

More habitat – More fish Habitat – the future of fishing Habitat makes fish happen

Objectives

- To improve recreational fishers' knowledge of fish habitat and its role in producing fish.
- 2. To improve recreational fishers' understanding of the scale and implications of fish habitat loss and rehabilitation.
- To contribute to recreational fishers playing an increasingly active role in fish habitat rehabilitation.



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there are 2 key components.

flexibility in how the curriculum can be accessed and organised and The Australian Curriculum is published online to provide maximum

0 Guided tour Ministerial Council in December 2008. The Melbourne Declaration emphas The development of the Australian Curriculum is guided by the Melbourne Declaration on Educational Goals for Young Australians, adopted by the The Australian Curriculum Year 12 Australian Curriculum online Foundation to

 Print/Download Consultation

Home F-10 Curriculum Senior Secondary Curriculum Student Diversity

Welcome to the

ACALA APPEndications Control

Search

ting Authority Contact us | Feedback | Technic-4 * **

ACARA Australian Curriculum, Assessi

CO | Australian

Australian curriculum

what all young Australians should learn as they progress through schooling. It skills and general capabilities important for all Australian students. It describe s the foundation for high quality teaching to meet the needs of all Australian The F-10 Australian Curriculum sets out the core knowledge, understanding the learning entitlement of students as a foundation for their future learning. growth and active participation in the Australian community. It makes clear students.



general capabilities and cross-curriculum priorities as the basis for a curriculun the importance of knowledge, skills and understandings of learning areas, designed to support 21st century learning.

Digital resources supporting the Australian Curriculum Ò

Foundation to Year 10 (F-10) Curriculum

| F-10 Curriculum Overview Learning Areas English Mathematics Science History | Search | асана изгания сончания. | W DATE AND |
|---|---|--|--|
| Overview Learning Areas English Mathematics Science History | Senior Secondary Curriculum Student Diversity | | Print/Download |
| Learning Areas English Mathematics Science History | | | |
| English Mathematics Science History | | Cross-curriculum priorities | Year Level |
| Mathematics Science History | General Capabilities Overview Cross-curric | Cross-curriculum priorities | Foundation |
| History History | OVEIVIEW | 2 C | Year 1 |
| History | Aboriginal a Islander hist | Aboriginal and Torres Strait slander histories and cultures | Year 2 |
| <u> </u> | | Istralia's | Year 3 |
| | uou recimology engagement with Asia lifty contractifier. | | Year 4 |
| | Critical and creative thinking | ty . | Year 5 |
| | Personal and social capability | | Year 6 |
| | irstanding | | Year 7 |
| | understanding | | Year 8 |
| | | | Year 9 |
| | | | Year 10 |
| | | | Year 10A |
| Endeave | | | |



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Senior Secondary Curriculum

| accalla antimeterment | © Consultation | | | | Print this page | Next * | | | ing ecosystems | number of diverse | inderlying unity of |
|--|--|-----------------------|--------------------------|----------------------------|------------------------|-----------------------------------|--------------------------|------------------|--|------------------------------------|--|
| Mastralian Australian Beeback Technical Leconder Lecond | on sheets) Mathematics | Essential Mathematics | General Mathematics | Mathematical Methods | Specialist Mathematics | Humanities and Social Sciences | factor dende | Ancient History | Modern History | | |
| Senior Secondary Curr | Overview (videos and information sheets) English Mather | English | English as an Additional | Eanguage of platect | Literature | Science | Biology | Chemistry | Earth and Environmental | Science | Physics |
| A Curriculum Home F-10 Curriculum | | Biology | (Boloid | Rationale/Aims Organisatic | Sh | | Unit 1: Bloalversity and | Unit Description | The current view of the biosphere developed from the work of eighte | distribution of organisms and envi | ecosystems, exploring the range of these systems |



Foundation to Year 10 (F-10) Curriculum

- The Australian Curriculum F-10 has been published for English, Mathematics, Science and History.
- Curriculum for these years is being developed for Geography, Languages, Business and Civics and Citizenship and will be published progressively. The Arts, Health and Physical Education, Technologies, Economics and
- The F-10 Australian Curriculum pays explicit attention to how 7 general capabilities and 3 cross-curriculum priorities contribute to, and can be developed through, teaching in each learning area (ACARA, 2012).





| | | l focus. | Cross |
|---|---|--|--|
| Foundation to Year 10 (F-10) Curriculum | The 7 general capabilities are: literacy literacy numeracy nomeracy Information and Communications Technology (ICT) competence The first three align with national testing, <u>all teachers have to address this!</u> critical and creative thinking ethical behaviour tersonal and social competence intercultural understanding | The 3 cross-curriculum priorities are: 1. Aboriginal and Torres Strait Islander histories and cultures - This is a national focus. 2. Asia and Australia's engagement with Asia-This is a regional focus. 3. Sustainability - This is a global focus. | * RF schools education program needs to position itself within this framework * * * * * * * * * * * * * * * * * * * |

How does RF achieve this in the F-10 curriculum?

There is an emphasis on literacy - in the early years of schooling and in the upper primary years and the first years of lower secondary schooling.

This is a major opportunity for RF; to identify a series of key texts or champion one for use in all Australian schools for teachers to use in an integrated literacy program.

At present this is centred around the reading and comprehension of the books 'Blueback' and 'The Deep', written by Western Australian author Tim Wintonare there any better ones?

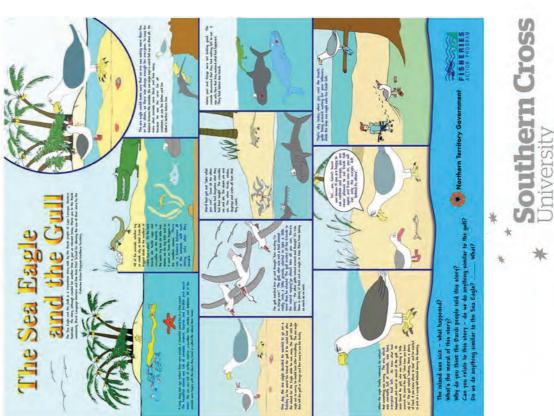
| | HUMANS – Humans & the Marine Environment | ick | M3 | Students will study the sustainability of the marine environment in an integrated literacy program. The program consists of reading and discussing the books 'Blueback' and 'The Deep', written by Western Australian author Tim Winton. | 2. LINKS TO CURRICULUM International Curriculum Internation Control | | | est Autre Cabreching Lareary burgering, Anayong, tranading Resources | ES | and the state of t | Have an understanding of the elements of a deoate Understand how language influences how we read a text | Understand how language influences the way we feel about a text Have knowledge and understanding of persuasive writing | · Understand the importance of sustainability within the marine environment | 4. TEACHER BACKGROUND INFORMATION | The activities in this lesson plan can be carried out over a two to five week literacy program. | lueback: | Abel Jackson has lived by the sea at Longboat Bay ever since he could remember. He helps his mother each day and loves to dive. One day he meets Blueback, the biggest and most beautiful fish he has ever seen. | When Abel's mother is approached by developers, she decides she must do something to protect their fragile piece of coastline, but can Abel and his mother save Blueback and Longboas Bay in time? Book Blue - The Deep: | Alices family lives by the sea. Every day they run down to the jetty and jump into the rmooth, dark water. They look like a bunch of dolphins learning and Japhing. But Alice misses out. She's aftaid of the deep. She is aftaid of what might be down there where the water turns from green to blue and you can't see the bottom. Then, one day some new water turns from green to blue and you can't see the bottom. Then, one day some new |
|---------------|--|----------|-------------|---|---|----------------|--------------------------|---|---------------|--|--|---|---|-----------------------------------|---|------------------------|--|---|---|
| Marine WATERs | HUMANS - HI | Blueback | 1. OVERVIEW | Students wi an integrate discussing th Australian a | 2. LINKS TO CURRIC | CURRICULUM FRA | Learning Area English | Society and Inversement | 3. OBJECTIVES | Students will: | Understand h | Understand h Have knowled | Understand the stand the stand the standard the stan | 4. TEACHER | The activities in | Book blurb - Blueback: | Abel Jackson ha helps his mothe and most beaut | When Abel's mother is ap to protect their fragile pie Longboat Bay in time? Book Blurb - The Deep: | Alice's family liv smooth, dark w misses out. She water turns fror |

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1 ISTAN - GIVELOC WEAK-11-DV SECTION

Engaging children at a young age F-10 curriculum- strategy:

- Dreamtime stories, an ideal teaching resource for early primary. The Eagle and the Gull Dreamtime story from the Bardi people of North Western Australia illustrates the influence people can have upon natural resources when used unwisely and addresses the global issue of sustainability.
- Addresses the cross-curriculum priorities of Aboriginal and Torres Strait Islander histories and cultures and goal 6, strategy 6 (Promote the cultural heritage value of recreational fishing in Australia) of the RFIDS as well as F-10 emphasis on literacy



++++positive attitudes towards RF+++ F-10 curriculum- strategy: develop

- The importance of the primary years is well recognized as laying a positive foundation for learning throughout life.
- Many programs target the later years of primary school (mainly for teaching how to fish) and neglect the early years when positive experiences can be created.
- fishing industry and profiling of recreational fishers provide evidence of Recent FRDC surveys (2011) on the sustainability of the Australian this being important





| towards RF | <text><text><text><text><text></text></text></text></text></text> | Intuitive |
|---|---|-----------|
| Why are positive attitudes towards RF important? | Recent FRDC surveys (2011) found that the overwhelming majority of regular recreational fishers reported being concerned about the public's perception of the fishing industry. They discussed the need to be alert to an imbalance in the presentation of facts and information about recreational fishers; a number highlighted instances of where misinformation creates a particularly adverse picture of recreational fishers. | uedu.au |

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How do we develop positive attitudes towards RF?

- pedagogy of 'experiential education' is learning that occurs through active involvement in what is being studiedand values direct experience more highly than abstract Use relevant pedagogies for 21st Century Learning that engage students. E.g. the knowledge.
- This involves a classroom or farm visits, participation in fishing competitions, excursions facility or factory, to extend students' knowledge of the entire food production line and to the Fisherman's Co-operative or to a wharf, aquaculture facility, seafood processing on a larger scale.
- Ongoing contact between these organisations via email, sms, social media, or other technology taps into the new capabilities of 21st century learning
- All these activities develop positive attitudes and encourage students towards high school courses and careers in the industry



F-10 curriculum- strategy: develop cross-curriculum resources

- Another important aspect of the Australian Curriculum is Connections to other Learning Areas.
- environment, life cycles, fish behaviour, aquatic food chains, habitat Here RF is ideally placed into a cross-curriculum unit combining use, fishing gear technology, tides and climate/weather as well introducing skills and healthy recreational activity to students.
- RF provides an avenue through which students can make connections with the natural world and learn about ecosystems in an authentic learning environment.
- activity in children and adolescents (Broad National Issue 1). Southern Cross addresses multiple outcomes as well as influencing the level of physical This is a major strength of RF as it gives teachers the opportunity to

Jniversity

Senior Secondary Curriculum

In the final two years of school, choices are informed by previous success future options will involve RF as a pathway through school and beyond and enjoyment. If the previous strategies have been implemented, (Broad National Issue 2)





All this leads to a Whole School Approach to RF Education

Guiding principle: That RF education begins with 1) creating student interest from experiences in primary school, 2) continuing this engagement in early high school (through 'real-life' learning) while 3) ensuring students understand the career potential fisheries offers through tertiary studies in their final years.

develop positive attitudes towards fishing as an industry and potential career path. science curricula (primary and middle schooling) which provides opportunities to This would also involve the contextual use of recreational fishing/fisheries in



Marine Discovery Centres Australia http://www.mdca.org.au/

| Name & | Organisational | Coverage | Contact details | Website/Mail address | Rec. fishing content | Type of |
|----------------|------------------|---------------------|---------------------------|--------------------------------------|---|-----------------|
| Location | structure | (visits per | | | | content (main |
| | | year) | | | | messages) |
| Queenscliff | GOVERNMENT | 55,000 | Philip Armato | P.O. Box 114, 2A Bellarine Hwy, | Yes, well developed, although not | Always |
| Marine and | (Department of | (10,000 | Manager | Queenscliff, Victoria, 3225. | expansive | compliance |
| Freshwater | Primary Indus- | general | <u>philip.armato@dpi.</u> | Phone number: (03) 5258 3344 | | |
| Discovery | tries- Fisheries | public; | vic.gov.au | Fax number: (03) 5258 1435 | 1. Displays at centre | Education |
| Centre, VIC. | Victoria) | 20,000 | (03) 5258 0237 | http://www.dpi.vic.gov.au/fisherie | -Interactive touch screen (fishing | programs all |
| | | primary; | 0427 507 343 | <u>s/education-and-training/mfdc</u> | locations and stockings) | have |
| | | 15,000 | (Mobile) | | -Interactive ipad fishing game | sustainable |
| | | secondary; | | New centre combining fresh and | -Static displays on fishing code of | fisheries focus |
| | | 10,000 | Julie Murphy staff | salt water activities | conduct, fisheries research and | |
| | | community | member | | management. | |
| | | events ¹ | | Marine education curriculum | | |
| | | | | resources not well developed, poor | 2. Education programs. | |
| | | | | on-line delivery. | -Family fishing fun (boat fishing | |
| | | | | | activity). | |
| | | | | Limited teacher resources. | -Careers program (marine science and | |
| | | | | | fisheries officer pathways) | |
| Naturaliste | GOVERNMENT | 12,000 | Michael Burke | Naturaliste Marine Discovery | Yes, very well developed. | Sustainability |
| Marine | (Department of | (4,000 | Manager, | Centre | | of aquatic |
| Discovery | Fisheries, | general | Community and | 39 Northside Drive | Wide scope targets schools, fishers, | natural |
| Centre, Perth, | Western | public; | Education, WA | Hillarys WA 6025 | non-fishers, community groups, | resources. |
| WA. | Australia) | 4,000 | Fisheries | www.nmdc.com.au | tertiary students, educators, WA | |
| | | primary and | Chair MDCA | | community | Rec fishing |
| | | 4,000 | P: (08) 9203 0342 | Excellent marine education | | rules and regs. |
| | | secondary) | M: 0437 886 015 | curriculum resources link through | -Public display material in exhibit and | |
| | | | <u>michael.burke@fish</u> | nmdc | at events | Science behind |
| | | | .wa.gov.au | http://marinewaters.fish.wa.gov.a | -Interactive fishing educational activity | management |
| | | | | <u>/n</u> | -Rec fishing research activities (stock | |
| | | | Also MESA (Marine | | assessment, fish aging, fish biology) | Catchment |
| | | | Education Society | Leader in on-line marine education | -online education lesson plans and | care |
| | | | of Australasia) | resources | resources (e.g. Fishing for the future | |
| | | | President | | Hook line and sinker, Planning a safe | Community |
| | | | | | fishing trip lesson plans) | interaction |
| | | | Carina Gemignani, | | | with aquatic |

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| | | | Community Education Officer | | 2 year project to develop web site. | environment |
|--------------------------|------------------------------|----------------------------|---|---|--|------------------------------|
| | GOVT SUB- TOTAL | 67,000 | | | | |
| Port Macquarie Marine | SCHOOLS Newman Senior | 700 (200 | Warren Bridge Marine and | Boundary Street (Po Box 442) | Yes, but limited material and resources - new centre will be expanding in 2012. | Sustainable fishing |
| Uiscovery Centre, NSW | lechnical College - | primary; 500 secondary) | Maritime Studies, P: (02) 6580 3800 | Port Macquarie NSW 2444 http://www.newman.nsw.edu.au/ | Practical learning e.g. fishing trips on | Catch and |
| | Catholic | | M: 0404 878 236 | | Hastings River to learn rigs, tackle and | release |
| | secondary Years 11 and 12 | | <u>wbridge@lism.cath</u> olic.edu.au | Vocational Education and Training. | fishing methods. | Bag and size |
| | | | | Students study their HSC in | Utilise free NSW fisheries material | limits |
| | | | | combination with specialised 'on' and 'off the ioh' training | such as saltwater guide and posters. | |
| | | | | | Promote fishing with popular DVD and TV shows libe ET | |
| Ballina High | SCHOOLS | 3, 000 ^{2.} | Mick O'Connor | Ballina Marine Discovery Centre | | Explain, |
| School Marine | Ballina High - | Centre | macoilau@norex.co | Locked Bag 1 | | instruct and |
| Discovery and | State Secondary | visitors each | m.au | Burnett Street | display resources | promote best |
| Resource | School | year. | | Ballina N.S.W. 2478 | Institute programs | practice |
| Centre, NSW | | | Lynda Hourigan | | | recreational |
| | | | LYNDA.HOURIGA | Phone 02 66 862133 | | fishing |
| | | | <u>N@det.nsw.edu.a</u> u | http://www.ballinamarinediscover | | principles and techniques |
| | | | I | <u>ycentre.nsw.edu.au/main.htm</u> | | |
| | | | | Initially set up to deliver the | | |
| | | | | Marine Studies curriculum to | | |
| | | | | Secondary School students at | | |
| | | | | expanded to include early | | |
| | | | | childhood, primary and adult | | |
| | | | | education. | | |
| Woodbridge | SCHOOLS | 7,000 | Primary | 3509 Channel Highway | Yes, well-resourced and hub for | Fishcare |
| Marine | State school (K - | (800 general | Coordinator : | WOODBRIDGE TAS 7162 | schools in southern Tasmania. Links | volunteer |

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| training | n Sustainable Fishing | | Legal sizes | catch and gear limits | - - - - - | Safe fishing | | | | h Sustainable | . fisheries | | o Legal sizes | | Good choices | | Catchment | care | | t Sustainability | | Protecting the | |
|---|--|---------------------------------------|-------------------------|-----------------------------------|---|--|------------|---|--|---|---|------------------|-------------------------------------|----------------------------------|-----------------|---|----------------------------------|--------------------------------|---|---|---------------------------------------|--|----------------------------|
| with organisations such as Oceanwatch/Seafood Industry | Partnerships in Schools (SIPS) program | Simulated fishing exercise (rods with | magnets) | Large posters showing legal sizes | - - - - - - - - - - - - - - - - - - - | Y7 to Y8 sustainable fishing program includes discussion of management | strategies | Practical learning- use of research vessel (hand and long line) | Marine Links education resource kit available (pre and post visit resource) | Yes, extensive use of interactive touch | or joystick screen models for learning. | See | http://www.marinediscoverycentre.co | m.au/Marine Discovery/models/Mod | <u>els.html</u> | - - - - - - - - - - - - - - - - - - - | Rec. tishing content included in | Our Fishing Interactive model, | Fishing model and Fish Forever model | Students undertake rec. fishing as part | of marine studies program in Year 11- | 12. | Some Rec. fishing displays |
| Phone 03 6267 4667 https://education.tas.edu.au/wood | bridge/Pages/default.aspx | https://education.tas.edu.au/wood | bridge/mdc/default.aspx | Multiple roles education and | training/workshops for volunteers. | | | | | www.marinediscoverycentre.com.a | П | 333 Military Rd | Henley Beach SA 5022 | | | Target audience is primary school | students. | | Leager in kigs discovery and education | 31 Hargrave Street | I hursday Island QLD 48/5 | Telephone: (07) 4030 6333 https://tamicc.ea.edu.ur/Parec/de | fault.aspx |
| andrew.walsh@edu cation.tas.gov.au | Secondary | Coordinator: | pam.elliott@educat | <u>ion.tas.gov.au</u> | | | | | | Tim Hoile, Director | THoile@star.catholi | <u>c.edu.au</u> | 0428 735 006 | (Mobile) | 618 8356 8943 | | | | | Tim Hillie | thill20/@eq.edu.au | 0428540507 (Mohila) | |
| public; 2,500 primary; | 3,500 secondary; | 200 | community | groups) | | | | | | 12,500 | (11,000 | primary, | 1,500 | community | groups) | | | | | 2,000 | (600 | primary; | secondary) |
| 10) | | | | | | | | | | SCHOOLS | Star of the Sea - | Catholic Primary | | | | | | | | SCHOOLS | Lagal State | Primary and | secondary |
| Discovery Centre, | Southern D'Entrecasteaux | Cnannel, 1AS | | | | | | | | Henley Beach | Marine | Discovery | Centre, | Adelaide, SA | | | | | | Tagai Marine | Discovery | Centre Thursday | Island QLD |

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| | SCHOOLS SUB- | 25,200 | | | | |
|----------------|-----------------|----------------|------------------------------|-------------------------------------|--|----------------|
| | IUIAL | | | | | |
| Sapphire Coast | COMMUNITY | 4,000 | Jenny Robb | The Wharf Building, Snug Cove, 253 | No, | |
| Marine | Not-for-profit | (probably | Chief Executive | Imlay Street, PO Box 239 Eden | Would like to develop: | |
| Discovery | community | general | Officer | NSW 2551 | -responsible fishing; | |
| Centre, Eden, | organisation | public and | | 02 6496 1699 | adhering to regulations; | |
| NSW | | school kids) | Sheree Epe | http://www.sapphirecoastdiscover | dispensing of waste and tackle | |
| | | | Marine scientist/ teacher | <u>y.com.au/</u> | correctly | |
| | | | 0409 288 492 | ANU through Regional Partnerships | | |
| | | | | Program assists SCMDC to | | |
| | | | | encourage interest in | | |
| | | | | Environmental and Marine Science | | |
| | | | | in local primary and secondary | | |
| | | | | schools | | |
| Central Coast | COMMUNITY | 4,000 | Jane Smith | 11 Terrigal Drive | Yes, but small centre with limited | Sustainable |
| Marine | Not-for-profit | (general | Mob: 0438 555 619 | PO Box 82 | facilities and resources. | fishing |
| Discovery | community | public) | admin@ccmdc.org. | Terrigal 2260 | | |
| Centre, | organisation | -School visits | au | Ph: 4349 4756 | Fishing information on display | Habitat and |
| Terrigal, NSW | | to | | Web: <u>www.ccmdc.org.au</u> | | environmental |
| | | commence | | | Fishing workshops run by Fishcare | protection |
| | | in 2013 | | Developing links with University of | during school holidays and special | |
| | | | | Newcastle (Ourimbah Campus) | events | Learn how to |
| | | | | | | fish |
| | | | | | Fisherman give talks | |
| | | | | | | |
| The Coastal | COMMUNITY | 14,272 | Toni Wilson | Pelican Path, Lake Park Road, North | Yes, but limited rec .fish educational | Sustainability |
| Environment | Pittwater | (3,000 | Senior Community | Narrabeen | material. Core role is environmental | |
| Centre (CEC), | Council –a not- | general | Educator | (02) 9970 1386 | education for schools, especially | Protecting the |
| Northern | for-profit- | public; 2,800 | <u>twilson@pittwater.</u> | | secondary. | environment |
| Beaches, | community | primary; | nsw.gov.au | http://www.pittwater.nsw.gov.au/ | | |
| Sydney, NSW | environmental | 6,000 | | Cec | Tangler bins on display (Oceanwatch) | Learn how to |
| | learning centre | secondary; | also secondary | | and rec. fishing brochures. | fish |
| | | 1,434 school | school co-ordinator | Pittwater Council's environmental | | |
| | | holiday | | flagship. | School holiday program activities | |

4

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| | | program; | | Den meimone darid bere | include DPI's Junior Fishing Workshops | |
|--------------------|----------------------|-------------------|---------------------------------------|---|--|--|
| | | community | | rre, primary and migh school programs | Also Intertidal rock platform school | |
| | | groups; 538 | | : | groups | |
| | | pre-school and | | Teacher resources and community/ sustainability learning | *Many NESB visit as part of Geography | |
| | | University) | | | field trips*. Scope for interaction with this group. | |
| Marine | COMMUNITY | Not | Will Jones | Bondi Pavilion | | |
| Discovery | Non-profit | available | Executive Director | Queen Elizabeth Drive | | |
| Centre | environmental | | <u>will@marinediscov</u> | Bondi Beach, NSW 2026 | | |
| Bondi Beach | organisation | | <u>ery.org.au</u> Mach: 0425234020 | Tel: 02 9300 0242 http://www.marinediscoverv.org a | | |
| | | | | 7n | | |
| | COMMUNITY | 22,272 | | | | |
| | NOT-FOR- | Does not | | | | |
| | PROFIT SUB | include | | | | |
| | TOTAL | Bondi | | | : | |
| Hastings Point | PRIVALE | 6,000 | Kerrie Irees | Hastings Point Marine | No | |
| Marine | BIG4 North Star | (1,200 | Mobile: 0402 549 | Environments Field Study & | Would like to develop hands on | |
| Environments | Holiday Resort | primary, | 655 | Resource Centre | learning: | |
| Field Study & | | 4,800 | Mobile: 0402 549 | | -safe, sustainable fishing techniques; | |
| Resource | | secondary) | 655 advedu 1 @hienond | http://www.adventureeducation.in fo/index_aba/bome | - a holiday program (3-4 lessons) but | |
| | | | аихеиитерони. сот | | | |
| | | | | | Estuarine/brackish water beach | |
| | | | | big4 North Star Holiday Resort | environment | |
| | | | | http://www.northstar.com.au/inde | | |
| | | | | <u>xmenu.asp.rmenu=marine_environ</u> ment_museum_28 | | |
| | PRIVATE SUB TOTAL | 6,000 | | | | |
| GRAND TOTAL | | 120, 472 | | | | |

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| Marine Educators Gr 2012 Meeting, 18th | Group 1 – 21st October, Central Coast MDC, Terrigal, NSW | st MDC, Terrigal, NSW | Marine <u>http://</u> / |
|---|---|-----------------------|----------------------------|
| (includes government, | (Excluding Bondi) | | |

| Australia | |
|------------------------------|------------------|
| Centres | .org.au/ |
| e Discovery Centres Australi | www.mdca.org.au, |
| Marine I | http://v |

| (includes | (Excluding | | |
|----------------|------------|--|--|
| government, | Bondi) | | |
| schools, | | | |
| community and | | | |
| private | | | |
| organisations) | | | |

¹ Community events is outreach, visits to festivals, events to promote sustainable fishing

² Coverage data obtained from Recreational Fishing Saltwater Trust Expenditure Committee (RFSTEC) Draft Outcomes, Meeting 38, 23-24 August 2012, Cronulla Fisheries Research Centre of Excellence http://www.dpi.nsw.gov.au/fisheries/recreational/licence-fee/trusts/rfstec

Fisheries Research and Development Corporation (FRDC) Project 2011/527.

Appendix 7: The National Animal Welfare Strategy and RFE.

The National Animal Welfare Strategy and Recreational Fishing Education

At the beginning of this project, the FRDC advised that we ensure the education strategy takes due regards to the national animal welfare strategy [http://www.daff.gov.au/animal-plant-health/welfare/aaws]. We have developed this Draft review piece under the RFE project in late 2014 to enable the "welfare" issue to be considered in the outputs of the project.

For a variety of reasons the Australian Animal Welfare Strategy working group has since been disbanded since the Abbot government came in. However, the social pressures that gave their work impetus are still very much extant, and relevant to the recreational fishing community. We will therefore address this issue by reviewing past and existing works in the area of extension of fish welfare messages to the recreational fishing community, and make strategic suggestions for the incorporation of past works into recreational fisher education in the context of our strategies document.

Over the last 20 years, evidence has mounted that suggests that fish can feel pain and suffering. This evidence has led to groups like the RSPCA moving for changes in national legislation to have fish included as sentient vertebrates, and to the Australian government funding work to establish new animal welfare strategies. The mounting evidence and increasingly public messaging about animal and fish welfare means that the conduct of the recreational fisher community is under increasing scrutiny.

To pro-actively address this issue, several state fisheries management departments, independent consultancies and peak bodies have been working to establish guidelines, codes of conduct, and information packs in an attempt to raise awareness among the recreational fishing community, and educate them on best practice.

Prior to its dissolution, the Australian Animal Welfare working group had put together a document addressing the welfare issues in commercial fisheries. While the document does not directly address recreational fishing, the line fishing portion of this document is still relevant to recreational fishing practices

[http://www.australiananimalwelfare.com.au/app/webroot/files/upload/files/Rod%20Handline%20 Animal%20Welfare%20Guidelines%20%28Final%29%20-%20December%202012.pdf]. The guidelines presented therein encompass the importance of selecting suitable tackle that minimises fight time and the fish's chances of breaking the line, the selection of correct hook sizes to minimise by-catch, the need to retrieve lines promptly upon hooking a fish at a speed that minimises stress to the animal (particularly when the fish is hooked in <30m of water), the immediate removal of hooks and return of unwanted by-catch, the nature of the livewell fish are to be maintained in, and humane methods of dispatch, including the Japanese method of *iki jime*.

Iki jime is the Japanese technique of destroying a fish's brain with a sharp implement, killing it instantly. It is widely regarded as one of the most human and quickest methods of dispatching a fish. *Iki jime* therefore features heavily in many of the communications and extensions that will be mentioned in this review. A website [www.ikijime.com] explaining the *iki jime* technique is endorsed by and linked to the Australian Animal Welfare site. This website was developed by Dr. Ben Diggles. The purpose of this website is to educate fishers on how to use this technique on species of fish that they regularly catch and keep for food, highlighting the benefits that *iki jime* has for improving the

food value of your fish. The site includes a species list, along with x-rays of each species of fish indicating where their brains are located. To complement this website, Dr. Diggles has also created a Facebook page, uploaded Youtube videos, written articles in a popular fishing magazine (Fishing World), and a further article, which was published in that magazine's heavily used blog. This latter article was about releasing the results of Fishing World magazine's online survey of fishers' favourite fish dispatch methods and was accompanied by an explanation of the most humane and practical techniques available to recreational fishers. Dr. Diggles has also created several apps suitable for multiple platforms, which fishers can download for further information and guidance when using *iki jime*.

Another webpage endorsed by and linked to the Australian Animal Welfare site expressly deals with welfare issues surrounding the fishing for pink snapper (Pagrus auratus) [http://www.panaquatic.com/fishinfo.html]. This page was based on a brochure created by Dr. Paul Hardy-Smith and Dr. John Daly as part of FRDC Project 2012-508 in collaboration with VRFish. The website was uploaded in October 2013, and provides highly detailed information about welfare related issues such as barotrauma, hook patterns, how to avoid deep hooking, hooking mortality associated with deep hooking, the negative aspects of prolonged fight times, correct handling of fish intended for release, humane dispatch of fish, and tips on how to maximise the food value of any fish retained. During the FRDC Project 2012-508, several key areas that need to be addressed in recreational fisher education were identified:

- Education on different methods used to kill fish.
- The need to kill fish as soon as possible after they have been brought aboard.
- The impact of keeping a fish out of water if it is planned to be released.
- How to properly store fish once killed to optimise their eating quality.
- The need to have optimal water quality in live wells for those who wish to keep fish alive after capture.

As part of the project, Dr. Hardy-Smith gave a presentation to several charter boat operators after first attending one of their trips before accompanying them on a second trip. He noted that the presentation had been successful in causing behaviour change. On his second trip, Dr. Hardy-Smith noted that the charter operators were doing the following:

- Pithing (spiking the brain), or stunning of all legal fish that came onboard and intended to be kept.
- The cessation of targeting a certain species once the bag limit was reached i.e. no deliberate catch and release of fish.
- All fish were immediately placed into ice slurry after bleeding, and approximately 3-5 minutes after being stunned or spiked.
- Circle hooks were used exclusively.
- The charter operator requested as many of the "Fishing for Snapper" brochures developed by Dr. Hardy-Smith as possible.

In 2007, a DVD about best practice catch and release fishing was commissioned as part of the Recreational Fishing Community Grants Program. This DVD was part of the "Gently does it" campaign, and included important information and best practice for catch and release of a number of highly popular and commonly encountered Australian fish species. The public can view the clips

easily on a webpage hosted by Recfishwest [http://www.recfishwest.org.au/publications/releaseweight.html]. The species covered include: flathead, bream, pink snapper, Samson fish and barramundi. Welfare issues such as barotrauma and deep hooking were addressed throughout the DVD, as well as relevant research and how that was conducted. The DVD was presented by noted fishing presenter Andrew "ET" Ettingshausen, who hosts his own fishing show on television: "Escape with ET".

An independent consultancy, Infofish also created a pamphlet contributing to the "Gently does it" campaign [http://recfishingresearch.org/gently-does-it/]. This brochure covers the National Strategy for the Survival of Released Line Caught Fish (2001), establishes the importance of best practice by detailing why fish are released and the numbers of fish released by recreational fishers in Australia. Important welfare issues affecting fish survival such as hooking mortality, correct hook selection, barotrauma and the correct methods of handling large fish are also covered in this brochure.

Recfishing Research's website also hosts a series of 10 infosheets and brochures about best practice and fish welfare [http://recfishingresearch.org/category/fact-sheets/brochures/]. The infosheets and brochures cover the survivability of several species including pink snapper, bream, barramundi and flathead, the correct usage of release weights for fish caught in deep water, and best practice for fish that are intended for release.

State departments across Australia have also taken fish welfare seriously, and are striving to make information readily available to recreational fishers. In 2008, the WA Recreational Fishing Advisory Committee developed a recreational fisher code of practice that dealt largely with the correct handling and dispatch of fish caught by recreational fishers. Primary Industries and Regions SA has a webpage dedicated to outlining responsible recreational fishing practices including information about correct handling of the fish, how to avoid catching undersized fish, the correct way to land, release, handle, weigh (while live), and dispatch fish, and also ways for fishers to protect themselves from injury. The Department of Environment and Primary Industries in Victoria has a webpage dedicated to aquatic animal welfare, which outlines the importance of considering animal welfare in commercial and recreational fisheries. Their page includes a link to www.ikijime.com, the website developed by Dr. Ben Diggles about the correct way to dispatch a number of fish species humanely using the Japanese technique of iki jime. The Tasmanian Department of Primary Industries, Parks, Water and Environment has a page titled "Responsible Fishing" [http://dpipwe.tas.gov.au/seafishing-aquaculture/recreational-fishing/scalefish/responsible-fishing], which outlines responsible fishing practices such as correct fish handling, gear selection and humane dispatch. The NSW Department of Primary Industries has dedicated a webpage to the humane harvesting of fish and crustaceans [http://www.dpi.nsw.gov.au/agriculture/livestock/animalwelfare/general/fish/shellfish], with detailed explanations of how one should dispatch their fish and crustacean humanely as well as a description of unacceptable methods. The NSW Department of Primary Industries also has a separate webpage dedicated to explaining best practice in catch and release, with a link to their handbook [http://www.dpi.nsw.gov.au/fisheries/recreational/info/catchand-release]. The handbook includes detailed information about fish welfare, issues such as barotrauma that can complicate catch and release, gear selection, and a summary of factors contributing to decreased survival on a species level as well as the results of the research informing those findings. The NT Department of Primary Industry and Fisheries has several pages dedicated to informing recreational fishers about barotrauma

[http://www.nt.gov.au/d/Fisheries/recreational/barotrauma.shtml], correct catch and release fish protocol including gear selection and handling advice [http://www.nt.gov.au/d/Fisheries/recreational/catch_release.shtml], and one page about humane dispatch and maximising food value and return of the fish and crustacean retained [http://www.nt.gov.au/d/Fisheries/recreational/keeping_catch.shtml]. The Queensland Department of Fisheries and Forestry also has several web pages dedicated to fish welfare and dedicated responsible fishing. There is one to catch and release [http://www.daff.qld.gov.au/fisheries/recreational/tips-responsibilities/how-to-release-fish-forsurvival], which includes fish handling and gear selection advice. This page also has a link to information about research carried out by Dr. Ian Brown on increasing the survival of released linecaught Australian tropical and sub-tropical reef fish [http://www.daff.qld.gov.au/fisheries/research/research-projects/increasing-the-survival-of-The Queensland Department of Fisheries and Forestry also has a released-line-caught-fish]. webpage dedicated to explaining barotrauma, and how fishers can minimise its effects through fish handling technique correct and gear selection [http://www.daff.qld.gov.au/fisheries/recreational/tips-responsibilities/barotrauma-faqs]. Lastly, the Queensland site also has a page that is linked to the National Code of Practice for Recreational and Commercial fishing [http://www.daff.gov.au/fisheries/recreational/recfishinggrants/code].

The 2012 survey run by Fishing World magazine between February and May 2012 indicates that most fishers are already concerned about fish welfare and practice humane methods of dispatch. Of the 450 respondents, 79 per cent already used techniques that are considered best practice (i.e. percussive stunning, decapitation, brain destruction, placement in ice slurry). 52 per cent of respondents used a combination of these best practice methods. Only 13 per cent of respondents killed their fish by bleeding out alone, and a smaller minority of five per cent simply left their fish to asphyxiate in air or a bucket of water. However, while these numbers are promising, recreational fisher surveys typically have biases towards highly avid fishers, who are a minority within the community. It is therefore likely that the actual percentage of fishers performing best practice and preserving fish welfare is smaller than 79 per cent of the recreational fisher community. As a community, recreational fishers must strive for 100 per cent adoption of best practice, a goal that can only be achieved through effective RFE.

As an addendum, we also strongly recommend that any fish welfare RFE activities should involve Dr. Paul Hardy-Smith and Dr. Ben Diggles owing to their past successes in the area.

We propose that to improve uptake of best practice and awareness of fish welfare issues in the recreational fisher activity, best practice and fish welfare messaging need to be incorporated into the following strategies:

- Strategy 1.2 Produce messages to the general public which outline regulatory controls on fishing, status of fish stocks, areas of concern and RF strategies currently in place to address these.
 - Produce messages for the public showing that the recreational fisher community is striving to protect fish welfare while conducting their activities.

- Strategy 2.7 Facilitate themed communications and workshops via the web on RFE themes of national importance to encourage the exchange of ideas and resources, based on the outcomes of the trial forum.
 - Best practice and humane dispatch should be subjects of online themed communications and workshops.
- Strategy 3.9 Strengthen the capacity and professionalism (accreditation) of local angling clubs i.e. volunteer anglers.
 - Any accredited angler or club should be able to prove that they undergo best practice in all aspects of fishing. Any certification should have best practice and knowledge of fish welfare as key criteria that must be met.
- Strategy 5.1 Employ more program structure into RFE program activities enabling program evaluation.
 - Any program structures developed for RFE must include modules to do with fish welfare and best practice. (Evaluation component?)
- Strategy 5.3 Refine and develop core RFE messages into sector specific RFE strategic plans.
 - Best practice and fish welfare need to be addressed by core RFE messages, with more specialised information addressing these issues targeted at specific audiences (e.g. Target those targeting specific species in a specific way to make information more relevant)
- Strategy 5.8 Implement national RFE program standards, such as for fishing clinic content and delivery, which incorporate higher order messages built on the Recfish code of practice.
 - The thorough and correct addressing of best practice and fish welfare should be program standards for any endorsed RFE activity e.g. fishing clinics.
- Strategy 5.9 Develop and implement national evaluation protocols, procedures and reporting requirements for RFE activities including fishing clinics.
 - Our evaluation protocols must encompass how well the RFE activity has addressed best practice and fish welfare.
- Strategy 5.10 Implement a national accreditation process for RFE training providers and promote the use of recognised training providers as means of learning to fish correctly.
 - Accredited trainers should be assessed to have an excellent understanding of best practice and fish welfare.

References:

http://dpipwe.tas.gov.au/sea-fishing-aquaculture/recreational-fishing/scalefish/responsible-fishing

http://recfishingresearch.org/catch-and-release-poster-nsw-dpi-fisheries/

http://www.australiananimalwelfare.com.au/app/webroot/files/upload/files/Rod%20Handline%20A nimal%20Welfare%20Guidelines%20%28Final%29%20-%20December%202012.pdf

http://www.daff.gov.au/animal-plant-health/welfare/aaws

http://www.daff.gov.au/fisheries/recreational/recfishinggrants/code

http://www.daff.qld.gov.au/fisheries/recreational/tips-responsibilities/how-to-release-fish-for-survival

http://www.daff.qld.gov.au/fisheries/recreational/tips-responsibilities/barotrauma-faqs

http://www.daff.qld.gov.au/fisheries/research/research-projects/increasing-the-survival-of-released-line-caught-fish

http://www.depi.vic.gov.au/agriculture-and-food/animal-health-and-welfare/animalwelfare/aquatic-animal-welfare

http://www.dpi.nsw.gov.au/agriculture/livestock/animal-welfare/general/fish/shellfish

http://www.dpi.nsw.gov.au/fisheries/recreational/info/catch-and-release

http://www.fishingworld.com.au/news/fish-facts-humane-dispatch-survey-results-the-iki-jimeadvantage

http://www.nt.gov.au/d/Fisheries/recreational/barotrauma.shtml

http://www.nt.gov.au/d/Fisheries/recreational/catch_release.shtml

http://www.nt.gov.au/d/Fisheries/recreational/keeping_catch.shtml

http://www.panaquatic.com/fishinfo.html

http://www.pir.sa.gov.au/fisheries/recreational_fishing/responsible_fishing/handling_your_catch

http://www.recfishwest.org.au/publications/release-weight.html

Infofish (2011) Gently Does It, Best Practices in Releasing Fish.

NSW Department of Primary Industries (2013) NSW Recreational Fishing Catch and Release Handbook. *Department of Primary Industries, New South Wales*.

Recreational Fishing Advisory Committee WA (2008) Code of Practice for Recreational Fishers in WA - Fisheries Occasional Publication No.51. *Department of Fisheries, Western Australia*.

VRFish, Hardy-Smith P. (2013) AAWS practical extension, implementation and evaluation of the Aquatic Animal Working Group Fish Welfare overarching principles within the recreational fishing sector. *FRDC Project 2012-508*.

www.ikijime.com