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FISHERIES RESEARCH &
DEVELOPMENT CORPORATION

Indigenous Cultural Fishing and Fisheries Governance

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**Indigenous Cultural Fishing and Fisheries Governance
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Abbreviations

ABARES Australian Bureau of Agriculture and Resource Economics and Sciences

ACF Aboriginal cultural fishing

AFAC New South Wales Aboriginal Fishing Advisory Council

AIATSIS Australian Institute of Aboriginal and Torres Strait Islander Studies

BL Bag limit

CBD United Nations Convention on Biodiversity

CLP Community Liaison Person

DAFF Australian Government, Department of Agriculture, Fisheries and Forestry

DPI New South Wales Department of Primary Industries, Fisheries

FAO United Nations Food and Agriculture Organisation

FRDC Fisheries Research and Development Corporation

GDR Great Dividing Range

ICP Interim Compliance Policy

IRG Indigenous Reference Group to Fisheries Research and Development Corporation

NNTT National Native Title Tribunal

NRIFS National Recreational and Indigenous Fishing Survey

NSWALC New South Wales Aboriginal Land Council

PIRSA Primary Industries and Regions South Australia

PL Possession limit

Executive Summary

Background

This FRDC funded project, Project No 2012/216, sought to build on an earlier pilot study, Project No. 2009/308, undertaken in 2010 which examined the nature and dimensions of Aboriginal cultural fishing in the Tweed region of far northern New South Wales. Project No 2012/216 had two elements, the first one sought to adapt the methodology used in the Tweed study to collect data on catch for application in other regions of NSW. The second element sought to build on what had been achieved in the pilot project by facilitating the development of a local Aboriginal fisheries management strategy/plan for the Tweed Aboriginal community. Support for both elements of the project was obtained from the NSW Aboriginal Fishing Advisory Council (AFAC), the NSW Department of Primary Industries, Fisheries (DPI), the NSW Aboriginal Land Council (NSWALC) and the Indigenous Reference Group to the Fisheries Research and Development Corporation (IRG) and the Tweed Aboriginal community. Application for funding from FRDC was successful and the project commenced in July 2012.

Aims/objectives

1. Use methodology developed in FRDC Project No. 2009/038 to estimate Aboriginal cultural catch in some coastal and inland waters of NSW.
2. Develop a local Aboriginal fisheries management strategy/plan for the Tweed region.
3. Identify other Aboriginal communities that would be willing to develop local fisheries management strategies/plan.

Methodology

Two methodologies were used: one for determining Aboriginal cultural catch in NSW, and the other for developing a draft local Aboriginal fisheries management plan (The Tweed Plan).

For the cultural catch component of the project, three study regions were chosen in consultation with the NSWALC including, Region 1 (the inland, west of the Great Dividing Range) covering Kamilaroi and Wailwan country, Wiradjuri and Ngunawal country, region 2 (southern coastal NSW) covering Yuin country and Region 3 (northern coastal NSW) covering Worimi, Biripi, Daingatti and Gumbainggir country.

Data collection in each region was based on the deployment of a survey questionnaire developed in the previous pilot project. Catch size was measured numerically by asking participants to select on the questionnaire a catch range for each species caught in the previous 12 months. As data on catch size was measured numerically, it was decided where possible, to convert numbers data to weights data for each species.

For the local Aboriginal fisheries management plan component of the project the study site was the Tweed region and surrounds of northern NSW. Data collection took place over a 12 month period starting in 2013 and involved five community workshops as well as fieldwork undertaken between each workshop. In the lead up to workshops researchers consulted with local and regional Aboriginal organisations including the Tweed Byron Local Aboriginal Land Council, Tweed Aboriginal Advisory Council, and the Tweed Aboriginal Co-operative. State wide bodies also contacted included the Aboriginal Fishing Advisory Council, the NSW Office of Aboriginal Affairs, the NSW Department of Primary Industry and the National Native Title Services. The research team also employed a local community liaison person (CLP) to aid in the development of 'The Tweed Plan', running of the workshops and data collection between workshops.

Both components of this project were undertaken in accordance with national and international protocols for research in Indigenous communities. In accordance with the protocols a collaborative approach was adopted involving culturally appropriate engagement with Indigenous people in all aspects of the research

as both ‘givers’ and ‘receivers’ of information. Uppermost in the minds of the researchers was the need to obtain ‘prior informed consent’ from project participants and ensure there were ‘benefit sharing’ arrangements in place with the Indigenous community. The researchers sought and obtained feedback from Aboriginal communities at various stages of the project. Ethics approval for the project was granted by the Southern Cross University (SCU) Human Research and Ethics Committee, ethics approval number EC14-037.

Results/key findings

For the cultural fishing component of the project 123 Aboriginal people from inland and coastal regions of NSW took part with women making up 18% of participants and men, 82%. Participants ranged in age from 18 to 56 and over. More than 50% of participants indicated they fished on a weekly basis. The average number of hours fished by participants each day was 3.4. The estimated total hours fished by all participants in the 12-month period was 33,506 hours. Most participants fished from the shore but use of boats was also common.

Coastal participants showed a preference for fishing in estuaries and near-shore coastal areas including beaches and headlands with a small percentage travelling across the Great Dividing Range (GDR) to fish in inland waters. Inland participants showed a preference for fishing in freshwater systems west of the GDR including rivers, lakes and dams with a small percentage of fishers travelling across the GDR to fish in estuaries, beaches and headlands. Hook and line was the predominant fishing method used by participants in NSW, followed by hand collection, diving, traps, spears and nets. Most participants identified their household as the main destination for their catch followed by immediate family and extended family. However, some indicated that they bartered and/or sold some of their catch.

Fish consumed by participants came from personal and family catches, with smaller amounts obtained from other fishers or the fish co-op. Some catch came from local Aboriginal commercial fishers, highlighting their role in providing their communities with seafood. The consumption rate of finfish and invertebrates by coastal and inland Aboriginal participants was at least once a week. However participants indicated they preferred to eat ‘fish’ more frequently.

The estimated total annual inland catch numerically for all species was approximately 34,457 of which, 40% were finfish, 59% invertebrates and 1% other vertebrates. Of the finfish catch approximately 47% were caught for food and 53% were non-food (pest species). The catch comprised a mix of introduced and native freshwater species including: European carp (*Cyprinus carpio*), golden perch (*Macquaria ambigua*), Murray cod (*Maccullochella peelii*), eel-tail catfish (*Tandanus tandanus*), rainbow trout (*Oncorhynchus mykiss*), redfin perch (*Perca fluviatilis*), brown trout (*Salmo trutta*), silver perch (*Bidyanus bidyanus*), longfin eel (*Anguilla reinhardtii*), and river blackfish (*Gadopsis marmoratus*). European carp comprised more than 50% of the catch but were not caught incidentally and not for consumption. Other introduced species in the catch included: rainbow trout, redfin perch and brown trout. All were taken for consumption. A small number of coastal species including luderick (*Girella tricuspidata*), yellow-fin bream (*Acanthopagrus australis*), dusky flathead (*Platycephalus fuscus*) and sea mullet (*Mugil cephalus*) also made up the catch. Of the invertebrate catch, 57% were taken for food and 43% non-food (bait species). The top 5 invertebrate species included: the freshwater yabby (*Cherax destructor*), earth worms (Class Oligochaeta), Murray crayfish (*Euastacus armatus*), bloodworms (F. Chironomidae) and other invertebrates (Orders Orthoptera and Coleoptera). Earthworms, bloodworms, crickets and beetles were highly sought after as bait for a range of freshwater fish species. Some marine species including pipis (*Plebidonax deltooides*), school prawns (*Metapenaeus macleayi*) and Sydney rock oysters (*Saccostrea glomerata*) were caught by fishers from Region 1 when visiting the coast.

The estimated annual total catch numerically for the south coast region was approximately 353,487 of which 7% were finfish and 93% invertebrates. The top 10 finfish species were: sea mullet (*M. cephalus*), Australian salmon (*Arripes trutta*), dusky flathead (*P. fuscus*), sand mullet (*Myxus elongatus*), tailor (*Pomatomus saltatrix*), trevally (*Pseudocaranx sp.*), snapper (*Pagrus auratus*), sand whiting (*Sillago ciliata*), Eastern sea garfish (*Hyporhamphus australis*) and yellow-fin bream (*A. australis*). The top 10 invertebrate species in the catch included: the Eastern king prawn (*Penaeus plebejus*), school prawn (*M. macleayi*), hairy mussel (*Trichomya hirsuta*), Sydney rock oyster (*S. glomerata*), Pacific oyster

(*Crassostrea gigas*), abalone (*Haliotis* sp.), pipi (*P. deltoides*), Eastern rock-lobster (*Jasus verreauxi*), beach worms (F. Onuphidae) and soldier crab (*Mictyris longicarpus*).

Aboriginal fishers on the north coast took an estimated annual total catch numerically of approximately 66,345 of which finfish made up 33% and invertebrates 67%. The top 10 finfish species were sea mullet (*M. cephalus*), sand mullet (*M. elongatus*), yellow-eye mullet (*Aldrichetta forsteri*), luderick (*G. tricuspidata*), yellow-fin bream (*A. australis*), dusky flathead (*P. fuscus*), sand whiting (*S. ciliata*), tailor (*P. saltatrix*), tarwhine (*Rhabdosargus sarba*) and swallow tail dart, (*Trachinotus* sp.). The top 10 invertebrate species in the catch included: the Eastern king prawn (*P. plebejus*), school prawn (*M. macleayi*), hairy mussel (*T. hirsuta*), Sydney rock oyster (*S. glomerata*), Pacific oyster (*C. gigas*), pipi (*P. deltoides*), abalone (*Haliotis* sp.), beach worm (F. Onuphidae), blue swimmer crab (*Portunus pelagicus*), and bait yabby (*Callinassa australiensis*).

The methodology used in this project to collect data on Aboriginal catch size does not lend itself to a rapid wide scale approach as used in the NRIFS 2003. It relies on developing trust in the communities, which takes time, but has the benefit of a two-way exchange of knowledge with researchers that in turn allows for capacity building activities to occur within the participating communities. While this approach suits Aboriginal communities it does not necessarily provide the volume of data sought after by fisheries scientists and managers. Both approaches have value under certain conditions. In an environment in which Aboriginal communities are cautious of fisheries researchers and managers and sceptical that data will be used in a way that supports their needs, then the approach used in this project offers some hope but it requires time and resources. A melding of both approaches may be possible but it is the view of the researchers in this project that it would have to be done sequentially. One way forward could be to first conduct research that builds trust, capacity and a small data base and then add to the data base through research based on the approaches similar to those used in the NRIFS 2003.

For the second element of this project, the development of the Tweed Aboriginal Cultural Fisheries Management Plan was the key result. A draft 'Tweed Plan' was developed over a period of 2 years during which time there were 5 community workshops combined with 4 inter-workshop data collection periods. The original intent was to complete The Tweed Plan in 12 months but a series of events within the Tweed community ultimately delayed the process. Workshops were held at the Minjungbal cultural centre in Tweed Heads and were attended on average by 15 community people. The draft plan contains information on historical and contemporary Aboriginal cultural fishing in the Tweed region as well as suggested management arrangements relating to cultural bag and size limits, Aboriginal fishing gear, waters that can be fished, and identification of who can fish under The Tweed Plan.

At the request of the Aboriginal participants, it was decided that the draft plan would be shared with other stakeholders once negotiations with DPI on a way forward for implementation have taken place.

At least two other Aboriginal communities have indicated they would be interested in developing cultural fishing management plans: one on the south coast and one from the south western inland.

Implications for relevant stakeholders

Information about the size and nature of the Aboriginal cultural catch in some regions of NSW will provide a better understanding of the cultural fishery in those regions for all stakeholders including: non-indigenous fishers, fisheries managers, fisheries researchers and the broader public. This information will continue to be used to inform policy development by the NSW government as well as the development of strategies by management agencies like DPI that will be more attuned to the needs of Aboriginal communities dependent on fisheries resources for a wide range of purposes. For Aboriginal communities in the regions covered by this research this information will provide them with documented evidence about their fisheries which they could use in arguing their case for a fairer share of fisheries resources in NSW as well as more culturally appropriate management measures for their fisheries.

The development of the draft Tweed Aboriginal Cultural Fisheries Management Plan is the first of its kind in NSW and as such provides DPI with a potential model for the development of other such plans. It has also provided DPI with an opportunity to follow the implementation of such a plan once it has been

formally adopted. For Aboriginal people in the Tweed they now have an evidence based plan that can be used in negotiations and awareness building processes with DPI and the broader community. More generally, Aboriginal fishing communities in NSW have a model for how they might develop their own cultural fisheries management plan.

Results on cultural catch should be made available to the Australian and NSW governments for inclusion where appropriate in the periodic reporting of the status of fish stocks. It is also recommended that more work is needed to increase the sample size of Aboriginal fishers in NSW so as to strengthen conclusions drawn about the nature and size of the cultural catch. It is also recommended that the IRG discuss the possibility of a national workshop comprising researchers with experience in conducting catch surveys that could be held to examine the appropriateness of more rapid broad scale methodologies for estimating indigenous cultural catch.

It is recommended that negotiations start as soon as practical between DPI and the Tweed Aboriginal community on how best to move the draft 'Tweed Plan' forward for adoption. It is recommended that when these negotiations start that other stakeholders be engaged in a manner determined by the Tweed community.

It is also recommended that DPI in conjunction with the willing communities identified in this project begin a dialogue on how best to move forward in developing local cultural fisheries management plans for their regions.

Keywords

Aboriginal, Indigenous, cultural fishing catch, governance, management plan.

Introduction

Background

In 2010 the *NSW Fisheries Management Act 1994* (the Act) was amended to recognise the connection Aboriginal people have with their fisheries resources within the objects of the Act and to include a definition of Aboriginal cultural fishing. The amendments also provided for:

- the establishment of an Aboriginal Fishing Advisory Council (AFAC) to advise the Minister on fishing issues affecting Aboriginal people;
- specific permit arrangements to provide for the collecting of fish by Aboriginal people for large cultural gatherings and ceremonies;
- a blanket exemption for Aboriginal people from paying a recreational fishing fee; and,
- Aboriginal people to fish for cultural purposes outside current bag and possession limits (section 21AA of the Act).

Section 21AA provides for regulation making powers to be applied to matters prescribing cultural fishing provisions, including setting bag and possession limits and/or other management options, for example plans of management. When AFAC was established in 2011 an immediate priority was to assist the Department of Primary Industries (DPI) in developing regulations in support of the operation of the yet to be commenced, Section 21AA. In the meantime and to allow what was intended in Section 21AA to occur, an Interim Compliance Policy (ICP) was put in place. Essentially the ICP provided a framework to allow for the provisioning of fish to Aboriginal community members unable to fish for cultural purposes themselves. Under the ICP, community members could be provided for within the context of cultural fishing by other more able fishers. In these situations, the individual bag limits for an Aboriginal fisher were increased to double that of the existing recreational bag and/or possession limits.

In anticipation of the information needs around the implementation of the amendments to the Act a pilot study funded by the Fisheries Research and Development Corporation (FRDC) was undertaken in 2010 on the nature and dimensions of Aboriginal cultural fishing in coastal far northern NSW (Schnierer and Egan, 2011). The project sought to begin the development of a knowledge base on Aboriginal culture fishing in NSW that could be used where needed in support of the development of special management approaches aimed at supporting cultural fishing in the light of the 2010 changes to the Act. Recognising the special nature of conducting research in Aboriginal communities this project sought to develop a methodology for collecting data that engaged the communities in a two-way exchange of information with the researchers so as to also enable some two-way capacity building to occur. Together the researchers and the community designed a questionnaire and cultural fishing logbook, to be used to collect quantitative data and qualitative information on the nature of the Tweed cultural catch.

Ultimately 56 Aboriginal people participated in the Tweed project, all participants completed the questionnaire and 20 volunteered to maintain a fishing logbook. The results provided a picture of Aboriginal fishing around the Tweed which included details about the frequency and duration of fishing events, rate of participation in fishing, preferred fishing locations, platforms and gear used, distance travelled to fishing grounds, species targeted and the size of the catch in numbers, cultural importance of species, destination of the cultural catch and source and frequency of seafood consumption (see Schnierer and Egan, 2011). The project report, from an agency perspective, has informed DPI's development of more appropriate bag limits for Aboriginal fishers especially in far northern NSW. From a community perspective the report has provided the Tweed Aboriginal community with documentation of their fisheries which can be used in support of their input into a range of other decision-making processes associated with the management of aquatic biological resources.

Another component of the 2010 pilot project was the use of Aboriginal focus groups and individual interviews to obtain qualitative insights into such things as cultural fishing values, economic benefits, perceptions of management approaches and community aspirations. The results obtained from the focus groups covered a range of issues and community aspirations. In particular, they revealed a community interest in playing a greater role in the management of their fisheries. One suggestion put by focus group participants which generated a lot of interest and support was the idea of developing a local Aboriginal

fisheries strategy or plan for the Tweed region. Based on this, members of the community suggested that further funding be sought to develop such a strategy/plan.

It was against this background that the idea for a new project was conceived which aimed to extend on the original project in two ways. Firstly, adapting the methodology used to determine Aboriginal catch for application on a larger scale in other regions of NSW so as to add to our growing understanding of cultural catch at a state level. Secondly, to extend on what had been achieved in the Tweed region through the original project by piloting the development of a local Aboriginal fisheries management strategy/plan. A project concept was developed and in principal support for both ideas was sought and eventually obtained from the Tweed community, the NSW AFAC, the NSW DPI, Fisheries, the NSW Aboriginal Land Council (ALC) and the Indigenous Reference Group (IRG) to the FRDC. Application for funding from the FRDC was successful and the project commenced in July 2012.

Objectives

1. Use methodology developed in FRDC Project No. 2009/038 to estimate Aboriginal cultural catch in some coastal and inland waters of NSW.
2. Develop a local Aboriginal fisheries management strategy/plan for the Tweed region.
3. Identify other Aboriginal communities that would be willing to develop local fisheries management strategies/plan.

Method

The methodology section is divided into two sections reflecting the two elements of this project. Section one describes the methodology for determining Aboriginal cultural catch in NSW. Section 2 describes the methodology for developing a draft local Aboriginal fisheries management plan.

Aboriginal cultural catch in NSW

Study regions

Three study regions were chosen in consultation with the NSWALC and they included, the inland (Region 1) and two coastal regions (Regions 2 and 3). The inland region was west of the Great Dividing Range (GDR) and therefore included freshwater systems only, while coastal regions were east of the GDR and included marine, estuarine and freshwater systems.

Region 1: This region included some northern locations covering Kamilaroi and Wailwan country, research undertaken in the towns of Walgett, Brewarrina, Moree and Tamworth. It also included central and southern locations, including Wiradjuri and Ngunawal country. Research was undertaken in Condobolin, Lake Cagelligo, Dubbo, Cowra, Yass, Wagga Wagga, Narrandera, Leeton and numerous Missions surrounding these locations.

Region 2: Southern coastal region, which included Yuin country. Research was undertaken in Wallaga Lake, Moruya, Mogo, Batemans Bay, Ulladulla, Wreck Bay and Nowra.

Region 3: Northern coastal region, which included Worimi, Biripi, Daingatti and Gumbainggir country. Research was undertaken in Newcastle, Taree, Port Macquarie and Nambucca areas.

Sites in regions 1 to 3 correspond with traditional country boundaries illustrated in Figure 1.



Figure 1: New South Wales Aboriginal Traditional Country Map (source: NSW Aboriginal Area Health, 2015) Note: This map is an indication of Traditional country not to be used as definitive boundaries.

Data Collection

Data collection in each of the study regions was based on the deployment of a survey questionnaire as developed in the previous project (see Schnierer and Egan, 2011). For Regions 1, a community liaison person (CLP) was contracted to help with identifying and engaging potential participants. The research team and the CLP worked together to test run the questionnaire on six participants in Region 1 in Moree, Walgett and Dubbo between the 22nd and 27th of July in 2013. Based on this trial the questionnaire was modified in recognition of the different species targeted and methods employed in the inland compared to the coastal regions.

To make potential participants aware of the project the research team prepared press releases and a brochure for each study region in advance of the field trips (Appendix 2). Project information was also disseminated through established networks of local ALC's, Aboriginal community organisations, traditional owner groups, the AFAC, local fisheries compliance officers and state fisheries managers. For example four AFAC representatives assisted in organising meetings with participants from their respective areas.

Catch size was measured numerically by asking participants to select on the questionnaire a catch range for each species caught in the previous 12 months.

Data Analysis

Data was analysed in the same way as in the previous project with one exception, instead of presenting the catch data for the lower and upper values of the fishers selected range for each species, a midpoint value, calculated by adding the lower and upper value and dividing by two, was used.

Data sets from each of the three regions were in some cases combined so as to present either an overall picture for NSW, separate pictures for coastal and inland regions, or separate pictures for each region. For example it made more sense to present the results on catch composition separately for each of the three regions given the differences in the species available for targeting.

As data on catch size was measured numerically, it was decided to, where possible, convert numbers data to weights data for each species. This was achieved by multiplying the numerical value given for each species by a known weight for that species. Known weights for each species were obtained from at least two sources including the Sydney Fish Market web page and the FRDC Fishfiles webpage. The weight values retrieved from these sources were presumably based on average weights of species taken by fishers.

The rationale for converting numbers data to weights data was to see if 'importance' of various species varied depending on what type of data was presented. For example small bivalves (e.g. pipis) may be numerically more important than larger gastropods (e.g. abalone) but the reverse may hold true based on the use of weights data for the each.

Local Aboriginal cultural fisheries management plan

Study site

The study site for this element of the project was the Tweed Aboriginal peoples' country, which included all flood plains and coastal areas from the NSW-Queensland border in the north to the southern bank of the Brunswick River in the south as well as all offshore islands and waters within this region. From the coast in the north it follows along the border west to the Border Ranges and makes its way south along the eastern ridgeline to Mt Burrell through the north-eastern side of Night Cap National Park to reach the Brunswick River (Figure 2).

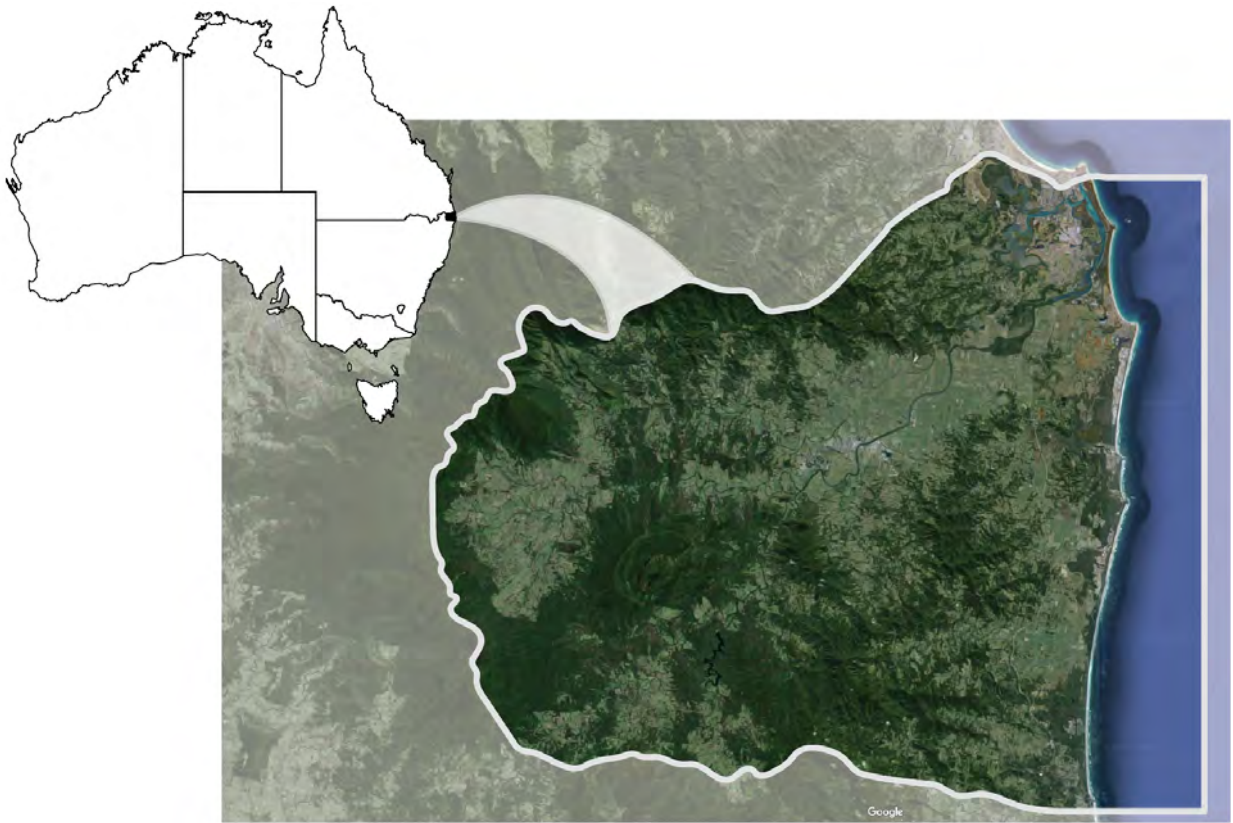


Figure 2: Study site for the development of the Tweed draft Aboriginal local fisheries management plan (UOM, 2015; Google, 2014)

Data collection

Data collection for the development of The Tweed Plan was scheduled to take place over a 12month period starting in 2013 and involving four community workshops as well as fieldwork undertaken during the periods between each workshop. A workshop day was split in to two sessions: an early afternoon session from 10am to 2pm and a later session from 3pm to 6pm. All workshops were conducted at the Minjungbal Cultural Centre in Tweed Heads. To make potential participants aware of the project the research team prepared press releases and a brochure for distribution in the Tweed area (Appendix 2). In the lead up to first workshop researchers sought to consult with local and regional Aboriginal organisations including the Tweed Byron local ALC, Tweed Aboriginal Advisory Council, Tweed Aboriginal Co-operative. State wide bodies also contacted included the AFAC, the NSW Office of Aboriginal Affairs, the NSW DPI and the National Native Title Services. The research team also employed a local CLP to aid in the development of 'The Tweed Plan, running of the workshops and data collection between workshops.

Workshop 1

- Presentation detailing the background to the project, the project objectives and an outline of the processes and timing for collecting the data required for the development of The Tweed Plan.
- Question and answers time.
- General group discussion about relevance of the project and the processes and timing.
- Breakout session to develop an outline of the sections to be included in The Tweed Plan and identification of data needs to add content
- Timing of next workshop and process for data collection in the lead up to the next workshop.

Workshop 2

- Presentation on progress since the first workshop outlining results from data collection and analysis.
- Question and answers time.
- General group discussion about data collection and analysis.

- Breakout session to refine the outline of The Tweed Plan and to begin adding content to each section.
- Timing of the next workshop and process for additional data collection in the lead up to the next workshop.
- Timing for the development of a preliminary draft of The Tweed Plan for circulation before Workshop 3.

Workshop 3

- Presentation on progress since the second workshop outlining results from data collection and analysis.
- Question and answers time.
- General group discussion about data collection and analysis.
- Discussion of the draft plan, identification of gaps and suggested additions/deletions of content in each section.
- Timing of next workshop and process for additional data collection in the lead up to the next workshop.
- Timing for the development of the final draft of The Tweed Plan for circulation before Workshop 4.

Workshop 4

- Presentation on progress since third workshop outlining any new data collection and analysis.
- Question and answers time.
- Finalisation of the latest draft of The Tweed Plan.

Indigenous research protocols and ethics approval

Both components of this project were undertaken in accordance with national and international protocols for research in Indigenous communities, in particular the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) *Guidelines for Ethical Research in Australian Indigenous Studies* (2011). These research protocols are in place to protect Indigenous rights and promote approaches that are based on a two-way flow of information and benefits during research activities.

In accordance with the protocols for research in Indigenous communities, a collaborative research methodology was adopted for this project. Collaborative research involves culturally appropriate engagement with Indigenous people in all aspects of the research as both ‘givers’ and ‘receivers’ of information. Uppermost in the minds of the researchers was the need to obtain ‘prior informed consent’ from project participants and ensure there were ‘benefit sharing’ arrangements in place with the Indigenous community. After reading an outline of the research project and receiving a briefing from the research team, each potential participant was provided with a consent form for signature (Appendix 3).

It must be recognised that collaborative research, by design, may be iterant, emergent and require modifications or adaptations. The researchers sought and obtained feedback from Aboriginal communities at various stages of the project. This report identifies where community feedback was received and was subsequently incorporated into the methodology.

Ethics approval for the project was granted by the Southern Cross University (SCU) Human Research and Ethics Committee, ethics approval number EC14-037 (Appendix 3). As the project spanned more than 2 years the original ethics approval had to be renewed twice.

Results

The results are presented in two sections reflecting the two elements of the project. The first section describes data collected on the cultural catch from Aboriginal coastal and inland fishers around NSW during 2013-14. The second section contains results used in the development of the draft local Aboriginal cultural fisheries management plan for the Tweed Heads region.

Aboriginal Cultural Fishing

Characteristics

A total of 123 Aboriginal people from inland and coastal regions of NSW took part in this component of the project (Table 1).

Table 1: The number of Aboriginal participants from each study region in NSW.

Study region	No. participants
Region 1	53
Region 2	30
Region 3	40
Total	123

When participants were asked if in addition to completing the questionnaire they would take part in an interview and keep a fishing logbook over a 12-month period, most declined (Table 2). This constrained the research team to a once off collection of data from each participant using the questionnaire.

Table 2: Percentage of participants willing to undertake an interview and/or maintain a fishing logbook (N=123).

Interview	%	Fishing logbook	%
Yes	37	Yes	20
No	63	No	80

Participant profile

Of the 123 participants that took part in the survey, women made up a small proportion (18%) compared to men (82%). Participants ranged in age from 18 to 56 and over, with the dominant age groups being 26 to 35 years, 56+ and 36 to 45 (Table 3). There were 3 participants in the 18 to 25 year age group.

Table 3: The percentage of different age groups of Aboriginal participants in the cultural catch component of the project (N=123)

Age range (years)	Percentage
18-25	3
26-35	35
36-45	23
46-55	6
56+	33

Frequency of fishing

More than 50% of the participants indicated they fished on a weekly basis and a small percentage fished everyday (Figure 3).

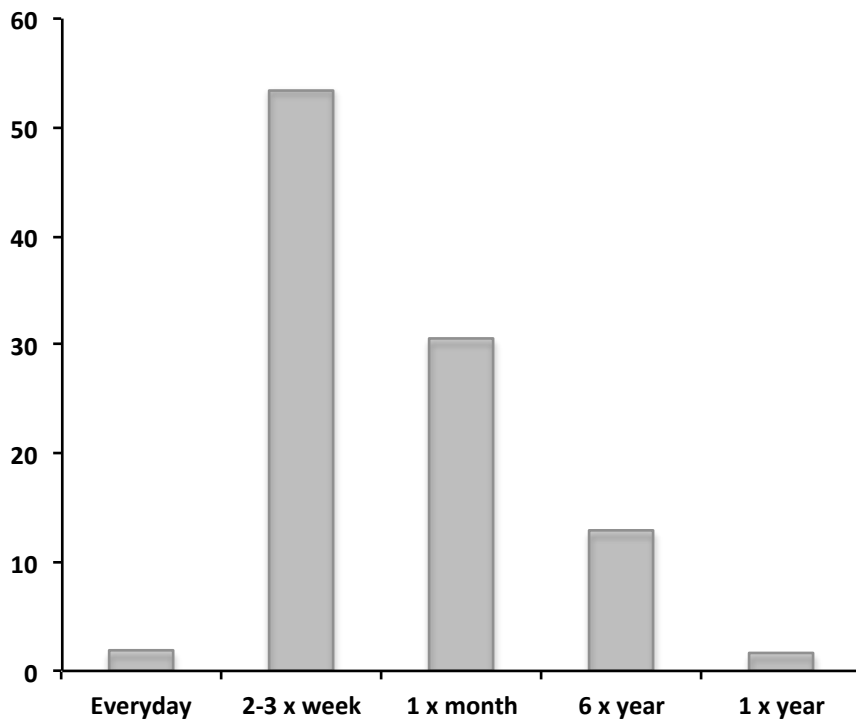


Figure 3: The frequency of fishing trips taken by participants in the cultural fishing survey in 2013, (N=123).

When participants were asked how often they thought other family members went fishing they estimated about 35% fished on a regular basis (Figure 4).

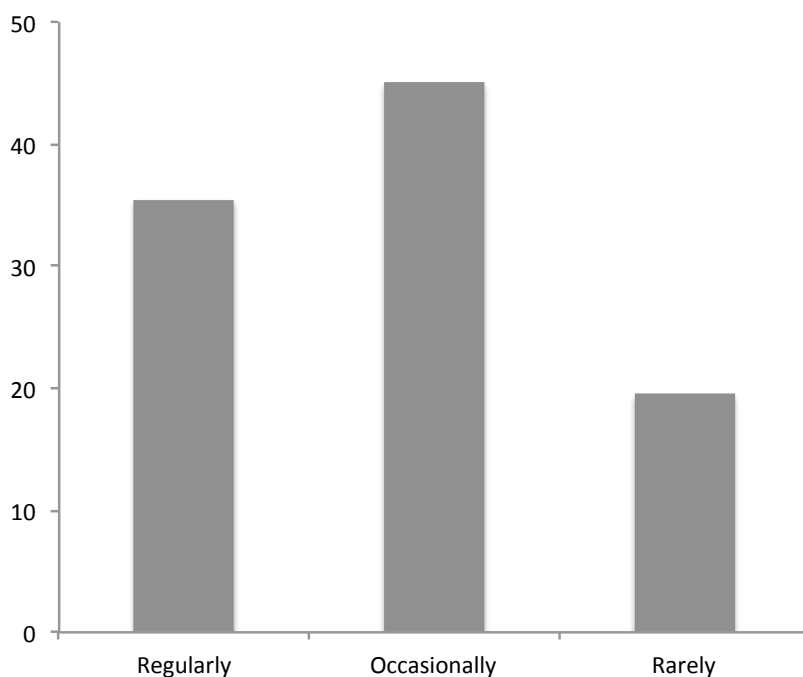


Figure 4: The participants' estimate of how often other family members went fishing, as a percentage (N=123).

Similarly, when asked how often they thought other members of their local community fished they estimated about 35% went on a regular basis (Figure 5).

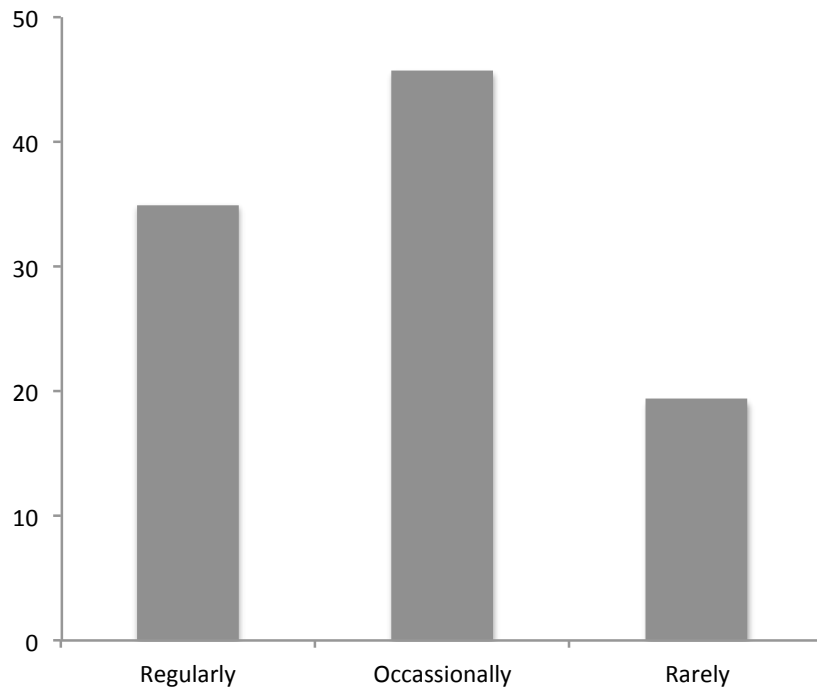


Figure 5: The participants' estimate of how often other community members went fishing, as a percentage (N=123).

Fishing with children

Children regularly accompanied adults when fishing (Figure 6).

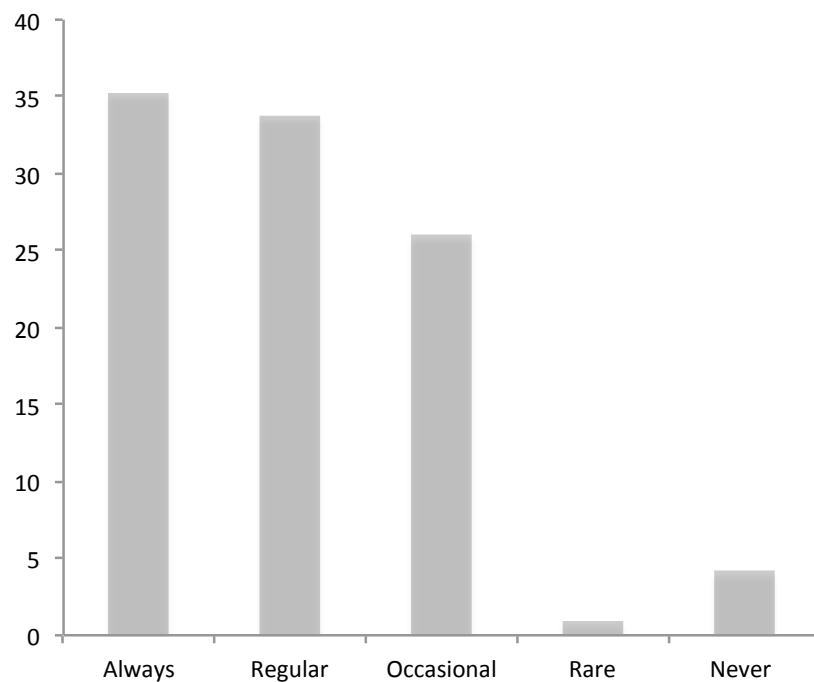


Figure 6: The frequency as a percentage with which children accompanied adults on fishing outings (N=123).

Time spent fishing

The average number hours fished each day was 3.4. The estimated total hours fished by all participants in the 12-month period was 33,506 hours.

Preferred fishing platform

Most Aboriginal people fishing were shore-based for both coastal and inland communities (Figure 7). Use of boats appears to be greater in coastal communities compared to inland communities.

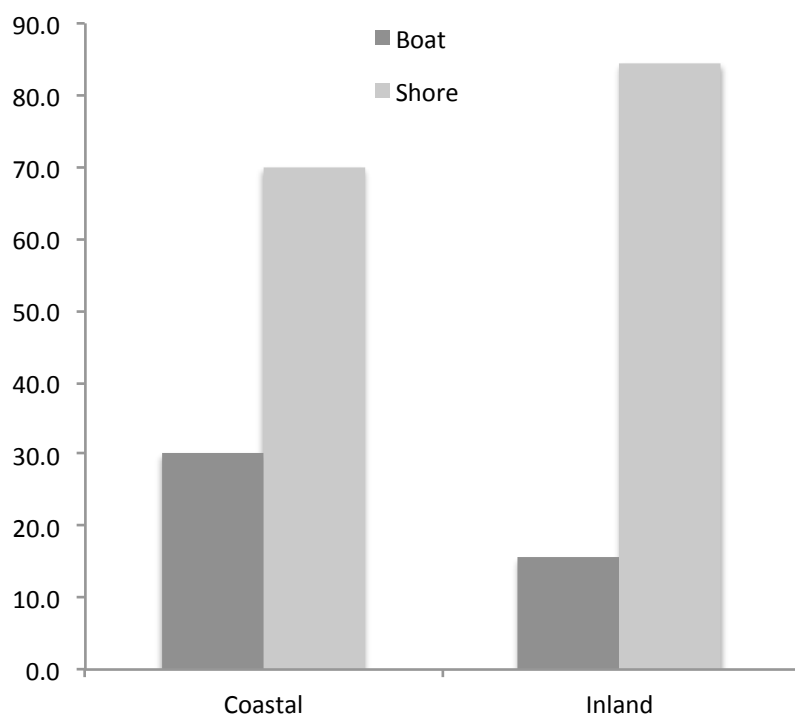


Figure 7: The Percentage preference of coastal and inland participants for fishing from a boat or from the shoreline (N=69, 54 respectively).

Fishing locations

Coastal Aboriginal participants showed a preference for fishing in estuaries and near-shore coastal areas including beaches and headlands (Figure 8). A very small percentage of coastal fishers travel across the GDR to fish in inland waters.

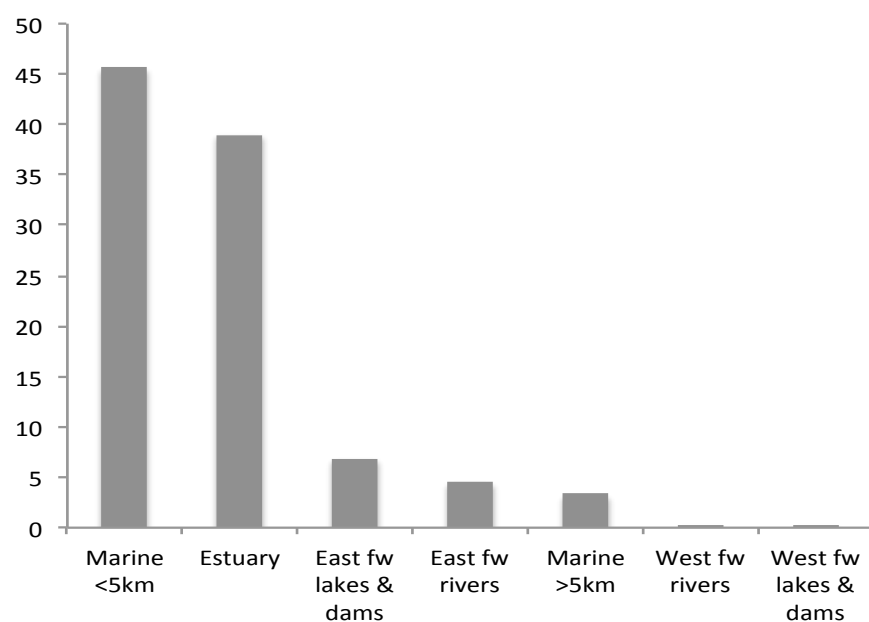


Figure 8: The percentages of coastal Aboriginal participants fishing in different environments (N=69). Marine<5km includes beaches, headlands and coastal waters to 5kms offshore; East fw includes freshwater systems east of the GDR; West fw includes freshwater systems west of the GDR.

Inland Aboriginal participants showed a preference for fishing in freshwater systems west of the GDR including rivers, lakes and dams (Figure 9). A small percentage of fishers travel across the GDR to fish in estuaries, beaches and headlands.

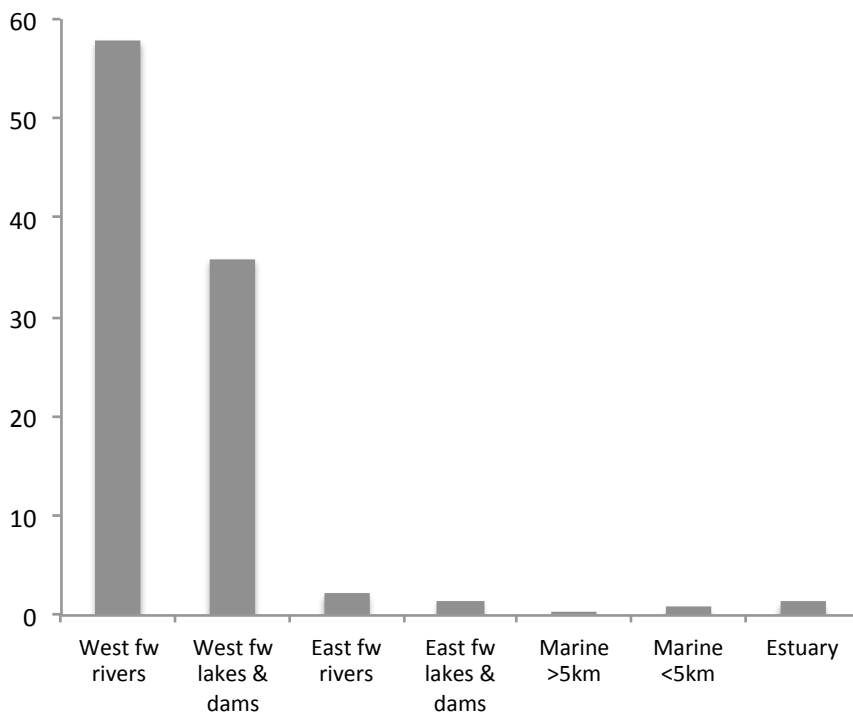


Figure 9: The percentages of inland Aboriginal participants fishing in different environments (N=54). West fw includes freshwater systems west of the GDR, Marine<5km includes beaches, headlands and coastal waters out to 5kms offshore; East fw includes freshwater systems east of the GDR.

Distances travelled to fishing locations

Most Aboriginal cultural fishing occurred within 10 kilometres of the participant's home location (Figure 10). Inland fishers appear to travel further a field to fish compared to fishers on the coast.

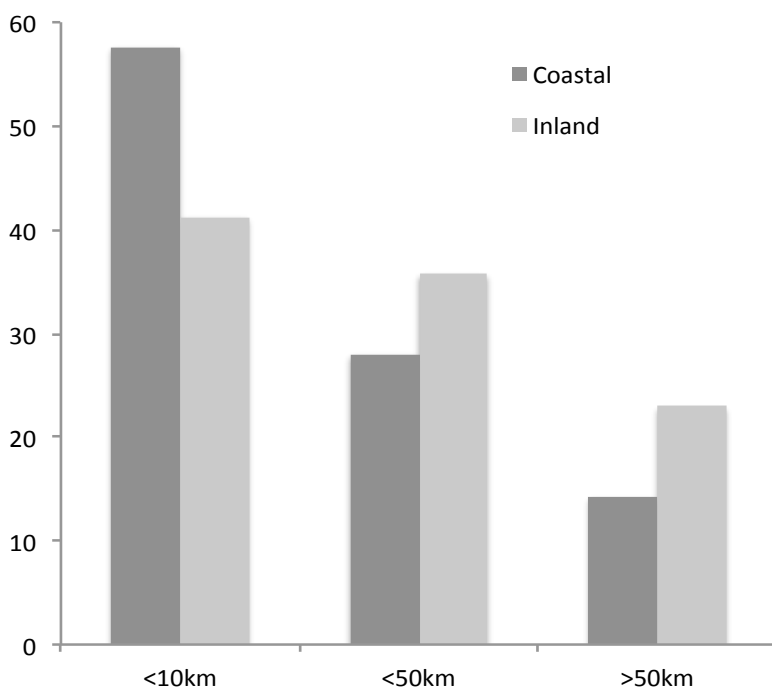


Figure 10: Distances travelled from home to fishing location by coastal and inland Aboriginal cultural fishers (N=69, 54 respectively).

Preferred fishing methods

Hook and line was the predominant fishing method used by Aboriginal fishers along the NSW coast, followed by hand collection, diving, traps, spears and nets (Figure 11).

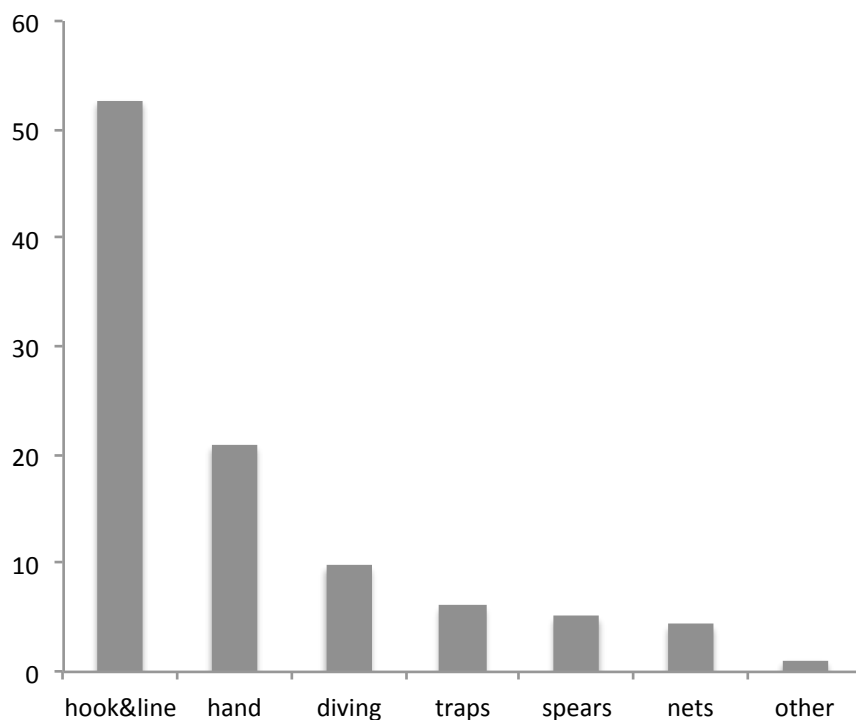


Figure 11: Percentage preference for various fishing methods used by coastal Aboriginal fishers (N=69).

The predominant fishing method used by Aboriginal fishers on inland waters involved hook and line, followed by rakes and traps and to a lesser extent spears and nets (Figure 12).

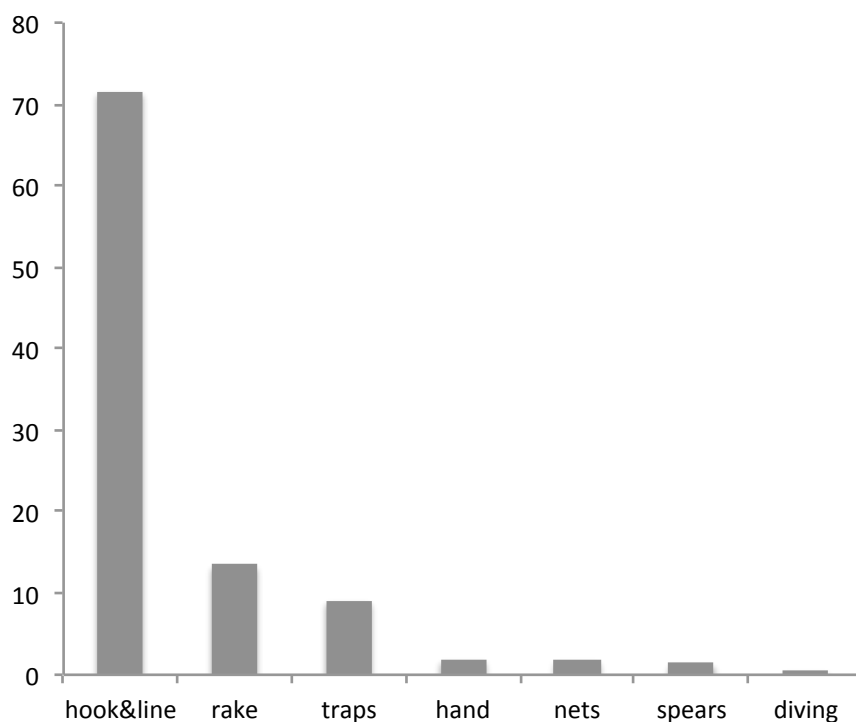


Figure 12: Percentage preference for various fishing methods used by inland Aboriginal fishers (n=54).

Participants used rakes to gather freshwater yabbies from the bottoms of lakes and dams.

Destination of cultural catch

Most coastal and inland Aboriginal fishers identified their household as the main destination for their catch followed by immediate family and extended family (Figure 13). Some participants indicated that they bartered and/or sold some of their catch.

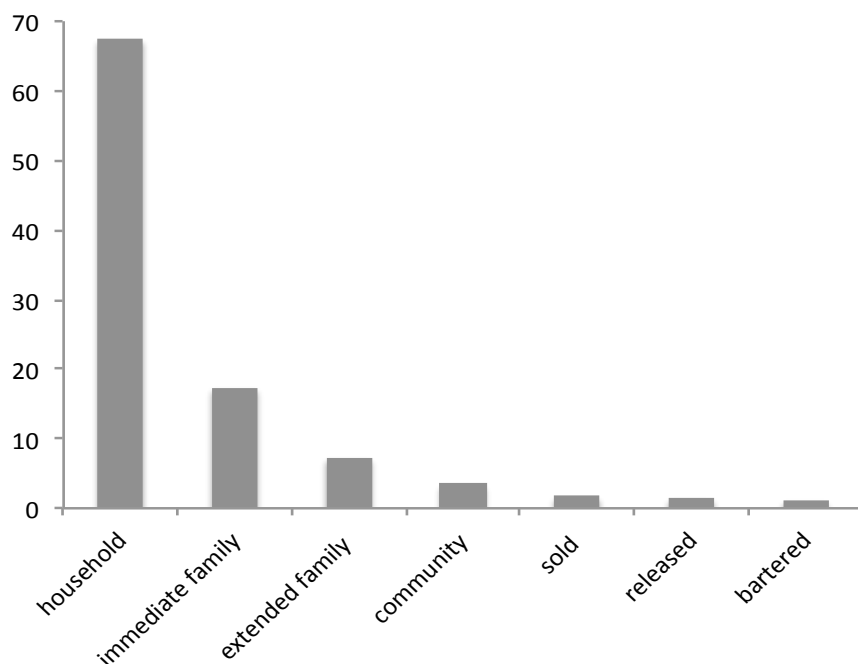


Figure 13: The percentage of catch going to various destinations for Aboriginal cultural fishers in NSW (n=123).

Source of 'fish' consumed

Fish and a variety of invertebrates consumed by participants came from personal and family catches, with smaller amounts obtained from other fishers or the fish co-op (Figure 14). Some came from local Indigenous commercial fishers, highlighting their role in providing their communities with seafood.

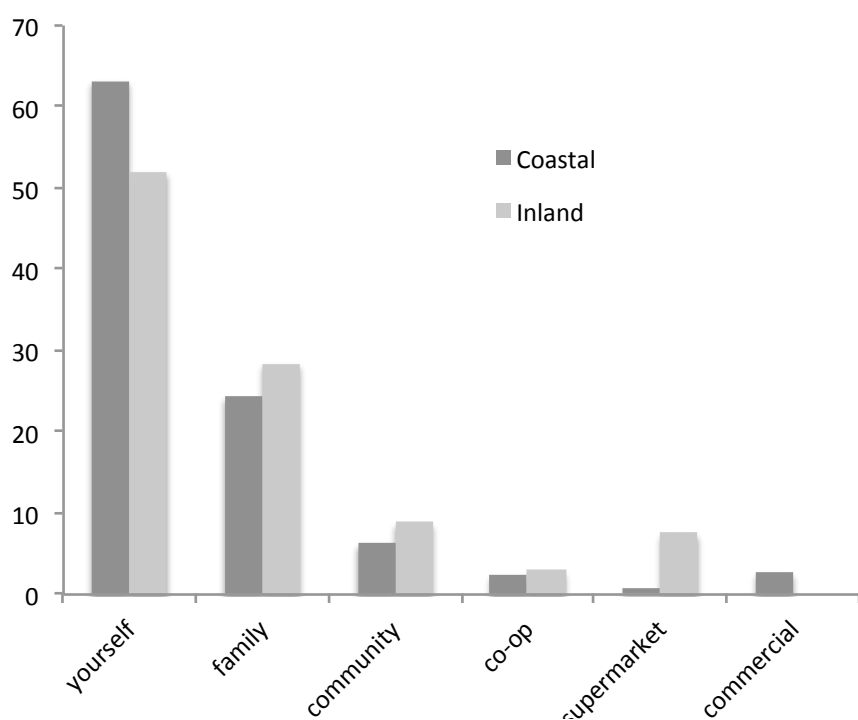


Figure 14: The percentage contribution of each source of fish and invertebrate catch consumed by coastal (N=69) and inland Aboriginal cultural fishers (N=54).

Consumption rate of 'fish'

The consumption rate of fish and invertebrates by coastal and inland Aboriginal participants was at least once a week (Figure 15).

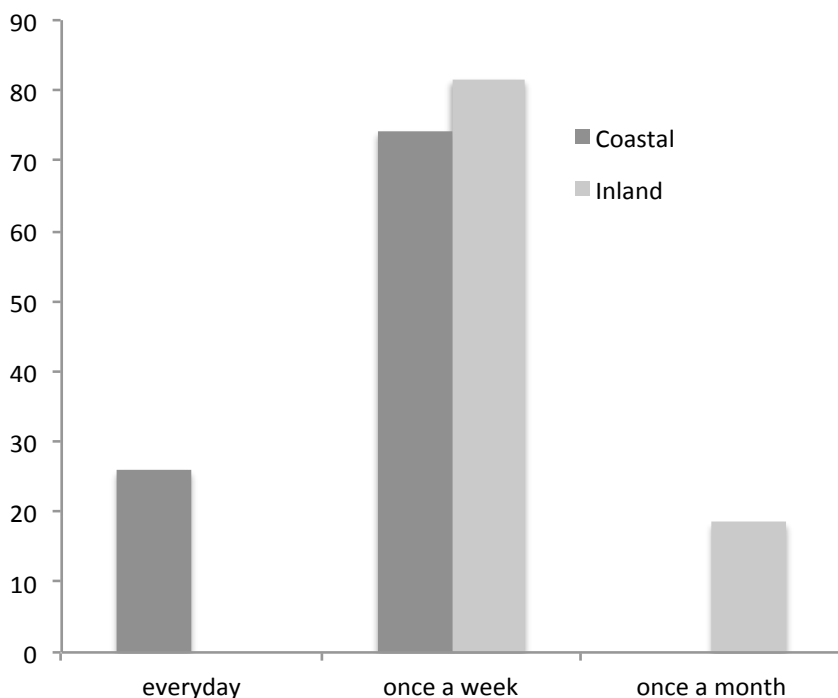


Figure 15: The actual frequency with which coastal and inland participants consume seafood (n=64, n=59 respectively).

However participants indicated they preferred to eat 'fish' more frequently (Figure 16). For example, approximately 80% of coastal participants and 70% of inland participants said they would like to eat 'fish' every day.

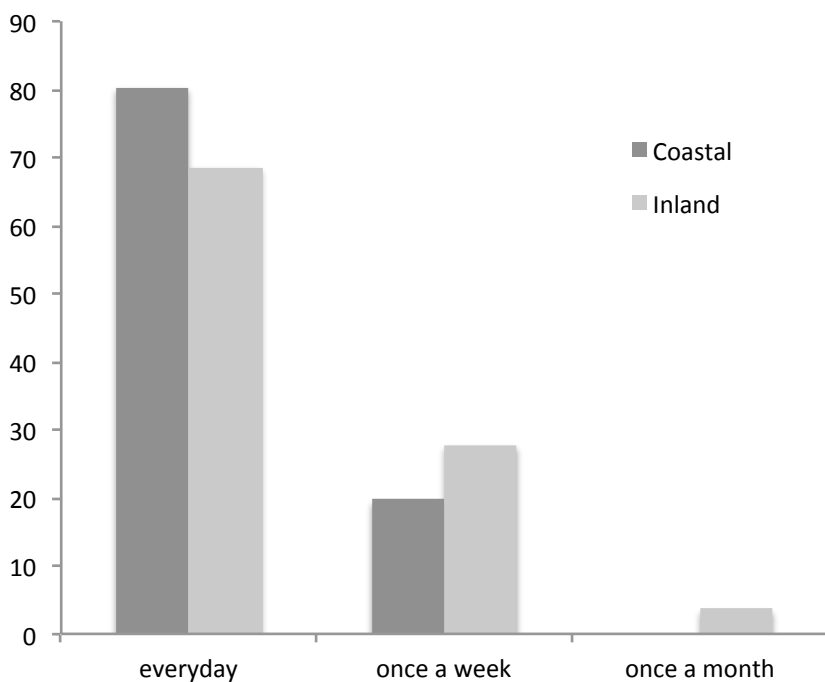


Figure 16: The preferred frequency of consumption of fish and invertebrates as a percentage for coastal and inland Aboriginal participants (N=69, 54 respectively).

Catch Composition and Size

Data for Aboriginal cultural catch is presented separately for each Region (see also Appendix 4).

Region 1: Inland Catch

Catch estimates were given by participants for 34 species of finfish, invertebrate and other vertebrates. The estimated total annual catch for all species was approximately 34,457 of which, 40% comprised finfish, 59% invertebrates and 1% other vertebrates. Fifty-three per cent of the catch comprised species taken for food and 47% were taken as bait or were pest species.

Finfish

Of the finfish catch approximately 47% were caught for food and 53% were non-food (pest species). The catch comprised a mix of introduced and native freshwater species. The top 10 finfish species made up 98% of the overall finfish catch and included: European carp (*Cyprinus carpio*), golden perch (*Macquaria ambigua*), Murray cod (*Maccullochella peelii*), eel-tail catfish (*Tandanus tandanus*), rainbow trout (*Oncorhynchus mykiss*), redfin perch (*Perca fluviatilis*), brown trout (*Salmo trutta*), silver perch (*Bidyanus bidyanus*), longfin eel (*Anguilla reinhardtii*), and river blackfish (*Gadopsis marmoratus*) (Figure 17). European carp comprised more than 50% of the catch but these were not caught for consumption. Other introduced species in the catch included, rainbow trout, redfin perch and brown trout, all taken for consumption.

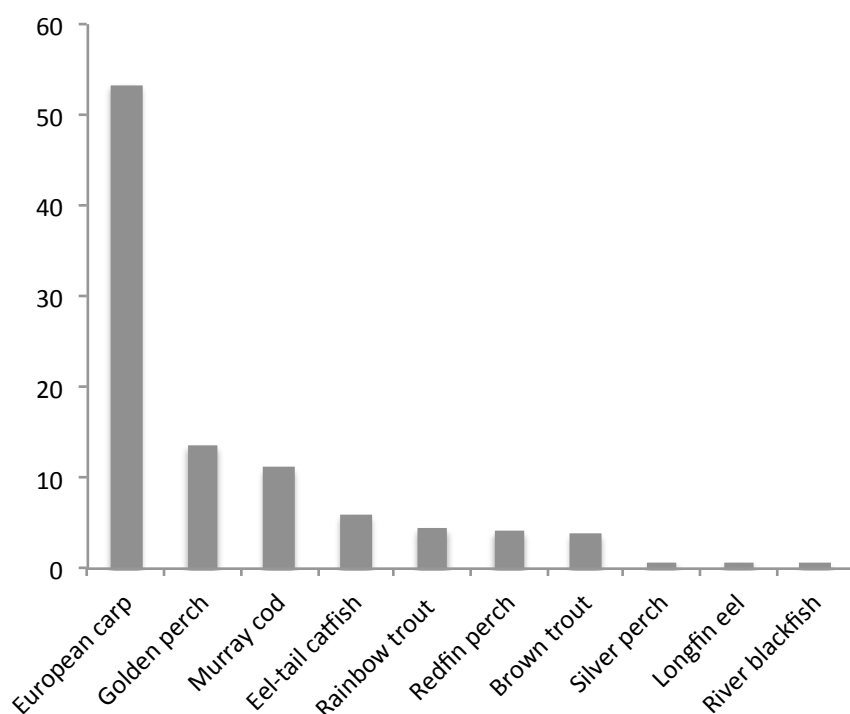


Figure 17: The top 10 finfish species, by percentages, caught by Aboriginal cultural fishers from inland waters west of the GDR in NSW 2013.

Some marine species including luderick, yellow-fin bream, dusky flathead and sea mullet as well as species from coastal rivers such as the Australian bass and estuary perch were also reported in catches from participants in the Region 1. These species were taken when participants were visiting the coast and connecting with family.

Invertebrates

Invertebrates made up 59% of the catch numerically of which 57% comprised species taken for food and 43% were non-food (bait species).

The top 5 invertebrate species in the inland catch made up 96% of the overall invertebrate catch and included: the freshwater yabby (*Cherax destructor*), earth worms (Class Oligochaeta), Murray crayfish

(*Euastacus armatus*), bloodworms (F. Chironomidae) and other invertebrates (Orders Orthoptera and Coleoptera) (Figure 18). Earthworms, bloodworms, crickets and beetles were highly sought after as bait for a range of freshwater fish species.

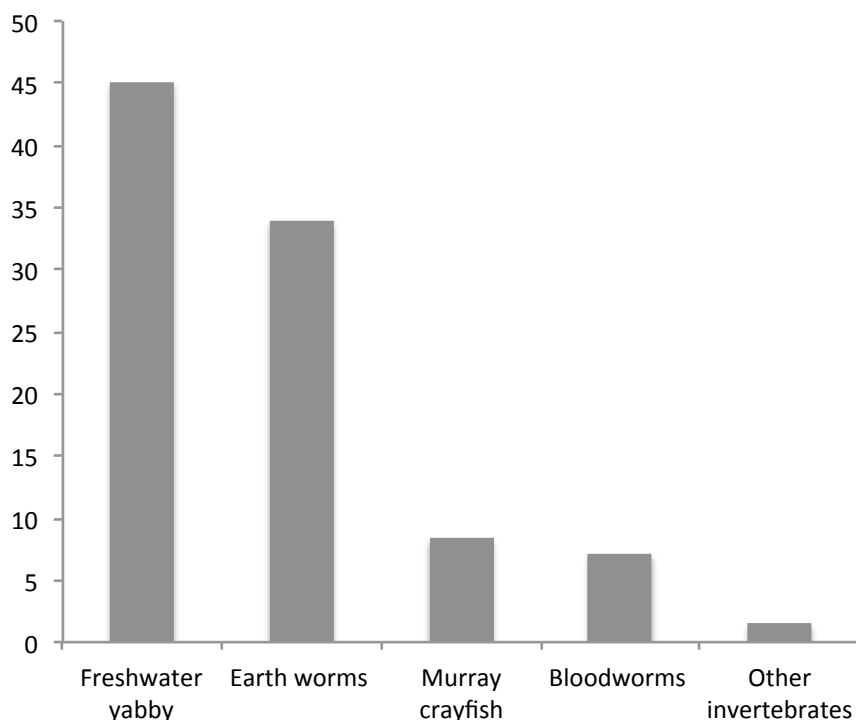


Figure 18: The top 5 invertebrate species, by percentages, caught by Aboriginal fishers west of the Great Dividing Range in NSW 2013.

Some marine species including: pipis (*Plebidonax deltoides*), school prawns (*Metapenaeus macleayi*) and Sydney rock oysters (*Saccostrea glomerata*) were caught by fishers from Region 1 when visiting the coast (Appendix 4).

Other vertebrates

Other vertebrates comprised 1% of the total catch of which 53% comprised species taken for food and 47% were non-food (bait species). Various frog species were sought out across the inland fishery for use as bait to catch Murray cod and golden perch. Freshwater turtles were also taken by some inland fishers for food, especially in Region 1 (Appendix 4).

Region 2: South Coast

Catch estimates were given by south coast participants for 56 species of finfish and invertebrate (Appendix 4). The estimated annual total coastal catch numerically for finfish and invertebrates combined was approximately 353,487. Finfish made up 7% of the catch numerically and invertebrates 93%. Data on catches of finfish and invertebrates is presented separately.

Finfish catch

Numerically, the top 10 finfish species in the southern coastal finfish catch were sea mullet (*Mugil cephalus*), Australian salmon (*Arripes trutta*), dusky flathead (*Platycephalus fuscus*), sand mullet (*Myxus elongatus*), tailor (*Pomatomus saltatrix*), trevally (*Pseudocaranyx sp.*), snapper (*Pagrus auratus*), sand whiting (*Sillago ciliata*), Eastern sea garfish (*Hyporhamphus australis*) and yellow-fin bream (*Acanthopagrus australis*), (Figure 19). These 10 species numerically, made up 85% of the overall south coast finfish catch (also see Table 1 Appendix B2 for other species).

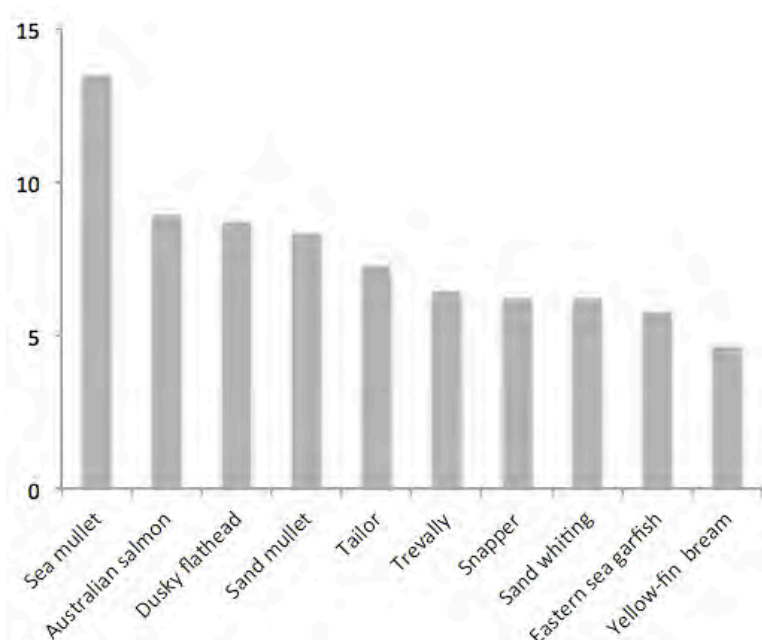


Figure 19: The top 10 finfish species numerically caught by Aboriginal cultural fishers along the south coast of NSW in 2013.

When ranking of species in catch is based on weights data percentages rather than numerical data the species order in the rankings changes. For example while sea mullet are the top ranked species numerically, snapper are the top ranked species by weight (Table 4). Also, other species, which weren't in the top ten by numbers, are now in the top ten by weight, for example yellowtail kingfish, mulloway, blue groper and spotted mackerel. On the other hand some species in the top ten by numbers for example, sand mullet, Eastern sea garfish, sand whiting and yellow-fin bream drop out of the top ten by weights list.

Table 4: Comparison of ranking of finfish species in south coast cultural catch using numbers data versus weight data for the top 10 species only.

Rank	Species	%No.	Species	%Wt.
1	Sea mullet	13	Snapper	27
2	Australian salmon	9	Yellowtail kingfish	14
3	Dusky flathead	9	Mulloway	10
4	Sand mullet	8	Australian salmon	10
5	Tailor	7	Blue groper	7
6	Trevally	6	Sea mullet	6
7	Snapper	6	Dusky flathead	6
8	Sand whiting	6	Spotted mackerel	4
9	Eastern sea garfish	6	Tailor	4
10	Yellow-fin bream	5	Trevally	3

Invertebrate catch

The top 10 invertebrate species numerically in the southern coastal catch made up 90% of the overall invertebrate catch and included: the Eastern king prawn (*Penaeus plebejus*), school prawn (*M. macleayi*), hairy mussel (*Trichomya hirsuta*), Sydney rock oyster (*S. glomerata*), Pacific oyster (*Crassostrea gigas*), abalone (*Haliotis* sp.), pipi (*P. deltooides*), Eastern rock-lobster (*Jasus verreauxi*), beach worm (F. Onuphidae) and soldier crab (*Mictyris longicarpus*), (Figure 20).

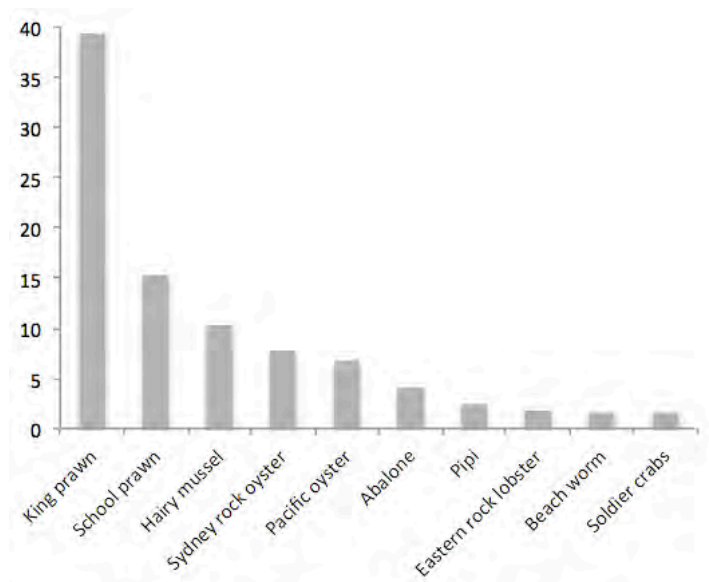


Figure 20: The top 10 invertebrate species numerically in the overall Aboriginal catch on the south coast of NSW for 2013.

In comparison to the rankings by numbers the rankings based on weights data for invertebrates reveal differences, for example rock lobsters, abalone and crabs are more prominent whereas school prawns, hairy mussels and Sydney rock oysters are less prominent (Table 5).

Table 5: Comparison of ranking of invertebrate species in south coast cultural catch using numbers data versus weight data for the top 10 species only.

Rank	Species	%No.	Species	%Wt.
1	King prawn	39	Eastern rock lobster	28
2	School prawn	15	King prawn	19
3	Hairy mussel	10	Abalone	11
4	Sydney rock oyster	8	Southern rock lobster	8
5	Pacific oyster	7	Blue swimmer crab	6
6	Abalone	4	Pacific oyster	5
7	Pipi	3	Hairy mussel	5
8	Eastern rock lobster	2	Sydney rock oyster	4
9	Beach worm	2	Octopus	3
10	Soldier crabs	2	Mud crab	3

Region 3: North Coast

Catch estimates were given by north coast participants for 61 species of finfish and invertebrate (Appendix 4). The estimated annual total coastal catch numerically for finfish and invertebrates combined was approximately 66,345. Finfish made up 33% of the catch numerically and invertebrates 67%. Data on catches of finfish and invertebrates is presented separately.

Finfish catch

The top 10 finfish species in the coastal finfish catch included: sea mullet (*M. cephalus*), sand mullet (*M. elongatus*), yellow-eye mullet (*Aldrichetta forsteri*), luderick (*Girella tricuspidata*), yellow-fin bream (*A. australis*), dusky flathead (*P. fuscus*), sand whiting (*S. ciliata*), tailor (*P. saltatrix*), tarwhine (*Rhabdosargus*

sarba) and swallow tail dart, (*Trachinotus sp.*), (Figure 21). These 10 species made up 90% of the overall coastal finfish catch.

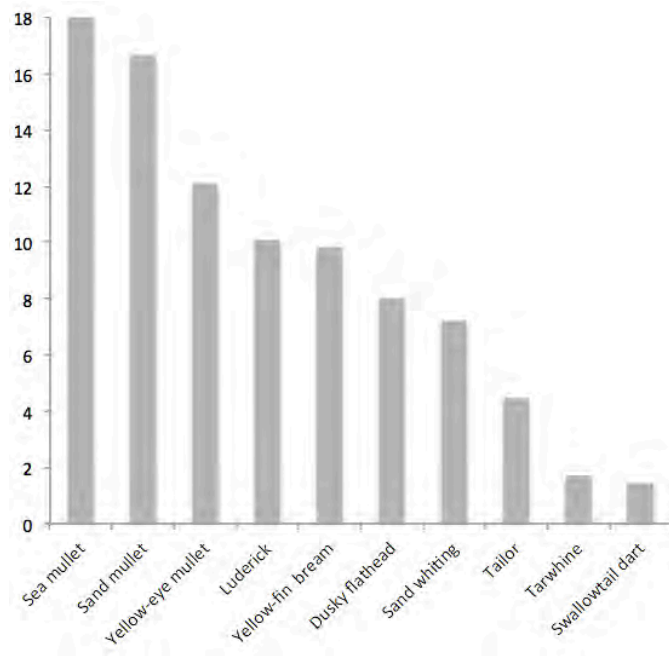


Figure 21: The top 10 finfish species, numerically by percentages, caught by Aboriginal cultural fishers along the north coast of NSW in 2013.

In comparison to the rankings by numbers, the rankings based on weights data for finfish reveal some small differences, for example mahi mahi and mulloway appear in the weights column whereas sand whiting and tailor drop out (Table 6).

Table 6: Comparison of ranking of finfish species in north coast cultural catch using numbers data versus weight data for the top 10 species only.

Rank	Species	%No	Species	%Wt
1	Sea mullet	18	Sea mullet	19
2	Sand mullet	17	Dusky flathead	12
3	Yellow-eye mullet	12	Sand mullet	10
4	Luderick	10	Mahi mahi	9
5	Yellow-fin bream	10	Luderick	8
6	Dusky flathead	8	Yellow-fin bream	8
7	Sand whiting	7	Mulloway	6
8	Tailor	4	Yellow-eye mullet	6
9	Tarwhine	2	Tailor	6
10	Swallowtail dart	1	Sand whiting	3

Invertebrate Catch

The top 10 invertebrate species numerically in the coastal catch made up over 80% of the overall invertebrate catch and included: the Eastern king prawn (*P. plebejus*), school prawn (*M. macleayi*), hairy mussel (*T. hirsuta*), Sydney rock oyster (*S. glomerata*), Pacific oyster (*C. gigas*), pipi (*P. deltoides*), abalone (*Haliotis*

sp.), beach worm (F.Onuphidae), blue swimmer crab (*Portunus pelagicus*), and bait yabby (*Callinassa australiensis*) (Figure 22).

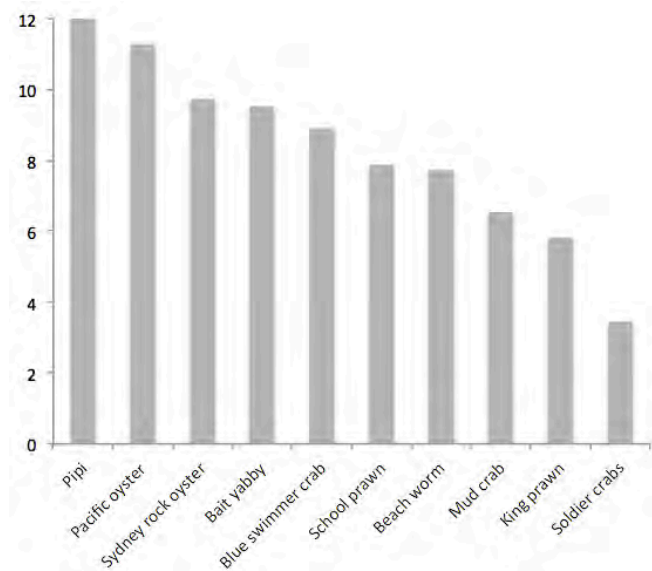


Figure 22: The top 10 invertebrate species numerically in the overall Aboriginal coastal catch in NSW for 2013.

In comparison to the rankings by numbers, the rankings based on weights data for invertebrates reveal differences, for example pipis and oysters figure highly based on numerical data whereas crabs and rock lobsters, are more prominent in the weights column (Table 7).

Table 7: Comparison of ranking of invertebrate species in south coast cultural catch using numbers data versus weight data for the top 10 species only.

Rank	Species	%No.	Species	%Wt.
1	Pigi	12	Mud crab	37
2	Pacific oyster	11	Blue swimmer crab	25
3	Sydney rock oyster	10	Eastern rock lobster	10
4	Bait yabby	10	Pacific oyster	6
5	Blue swimmer crab	9	Octopus	4
6	School prawn	8	Sydney rock oyster	3
7	Beach worm	8	Pigi	3
8	Mud crab	7	King prawn	2
9	King prawn	6	Abalone	2
10	Soldier crabs	3	Squid	1

Preferred target species

The results on preferred target species are presented for coastal fisheries (Regions 3 and 4) combined and inland fisheries (Regions 1 and 2) combined.

Coastal NSW

Of the 67 species of finfish and invertebrate taken in the coastal fisheries the top ten species targeted included a mix of finfish and invertebrates (Figure 23). All of these are species were targeted mainly for food, except pipis some of which are used for bait as well as for consumption.

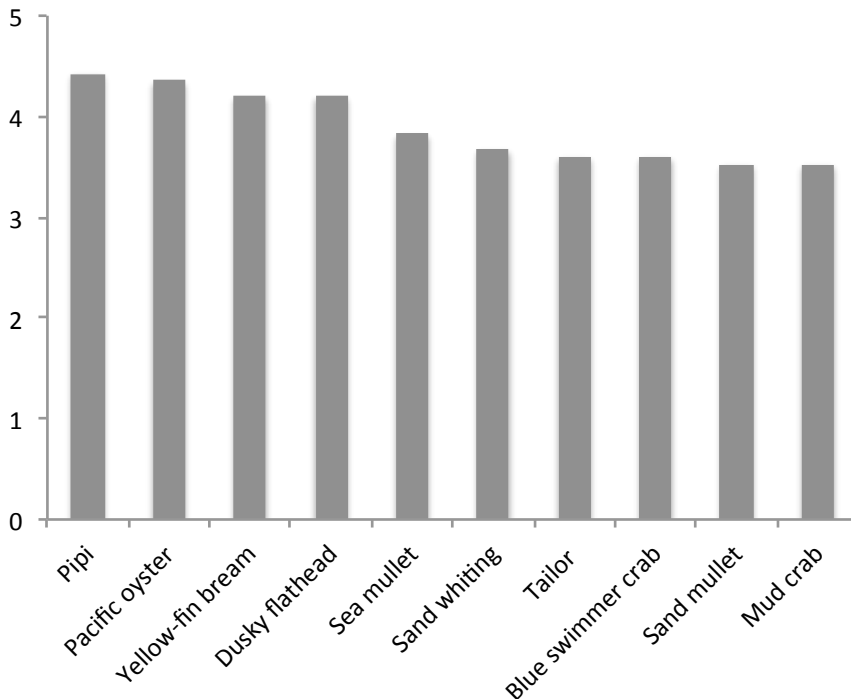


Figure 23: The 10 species by percentages nominated as preferred target species by coastal Aboriginal fishers in NSW in 2013 (N=69)

Cultural importance

Region 1: Inland NSW

Of the 34 species taken in the inland fisheries the top 10 species considered by Aboriginal fishers to be culturally important included a mix of finfish and invertebrates (Figure 24). Most of these were species caught for food, except for earthworms and bloodworms, which were taken for bait.

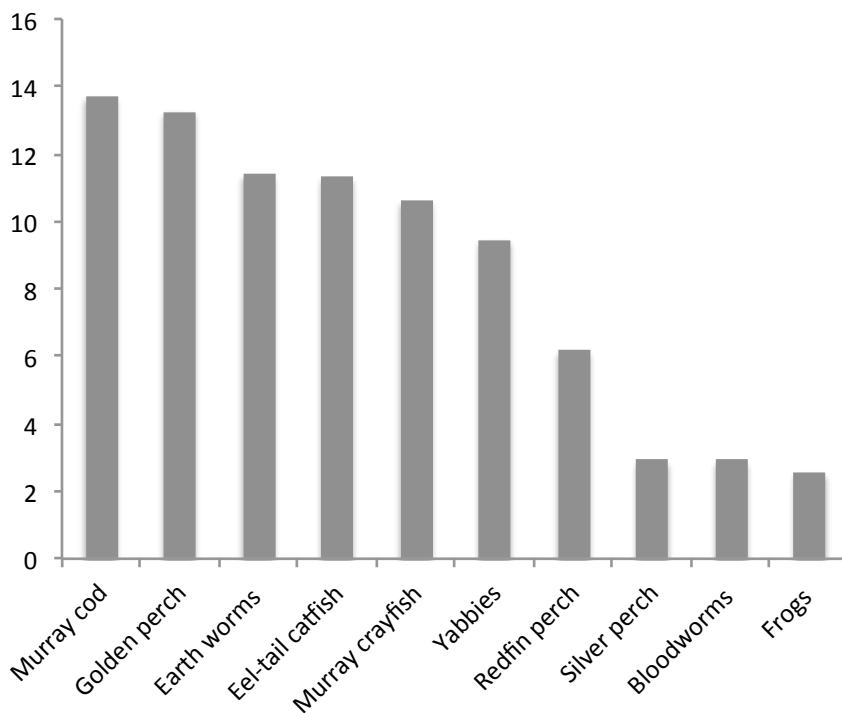


Figure 24: Top 10 rated culturally important species by percentages, as indicated by inland Aboriginal fishers from NSW in 2013. (N=54)

Region 2&3: Coastal NSW

Of the 67 species of finfish and invertebrate taken in coastal fisheries the top 10 species considered by Aboriginal fishers to be culturally important included a mix of finfish and invertebrates (Figure 25). All of these are species targeted mainly for food, except pipis some of which can be used as bait.

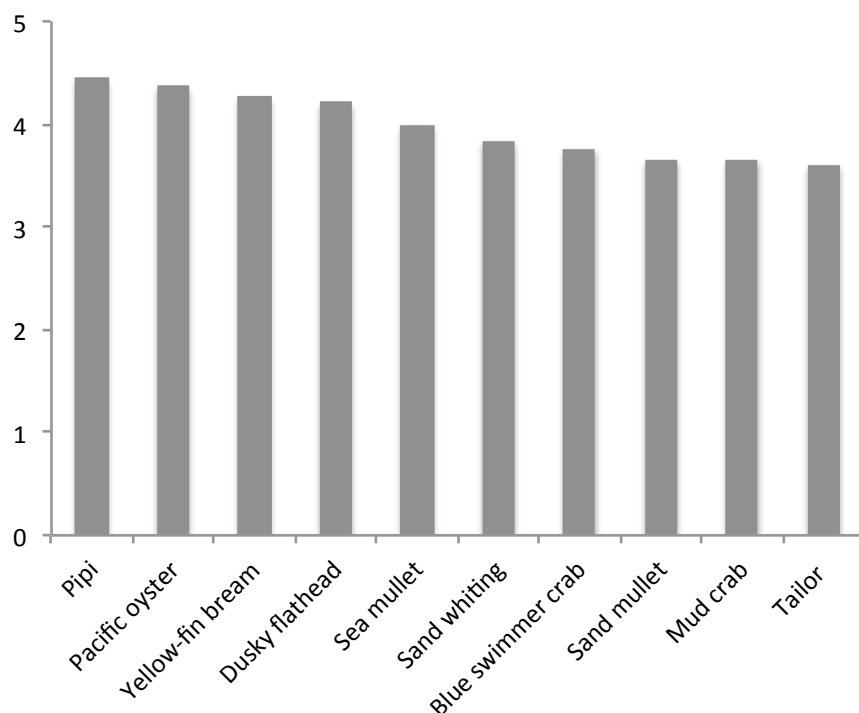


Figure 25: Top 10 culturally important species by percentages, as indicated by coastal Aboriginal fishers in NSW (N=69).

Draft Local Aboriginal Cultural Fisheries Management Plan

This part of the results section describes discussion and outcomes of community workshops held at Tweed Heads aimed at developing a draft local Aboriginal cultural fisheries management plan (the Tweed Plan).

The Tweed Plan was developed over a period of approximately 2 years during which time there were 5 community workshops combined with 4 inter-workshop data collection periods. The original intent was to complete The Tweed Plan in 12 months but a series of events within the Tweed community ultimately delayed the process.

The initial workshop scheduled for October 2012 was delayed as a result of events arising from an incident on the 24/10/2012 in the Tweed. This incident involved an Aboriginal cultural fisher who was fined by a fisheries compliance officer for being over the bag limit for sea worms. The event caused much community angst and was the catalyst for a community meeting held on the 16/5/2013 in Tweed Heads, which also included representatives from DPI, AFAC and the research team from the current project. The meeting sought to resolve issues around who could fish as an Aboriginal cultural fisher under the then current Interim Compliance Policy (ICP). This meeting became quite heated at times and little progress was made other than venting frustrations. One outcome was to refer the issue to participants in the research project and research team to be addressed through the project workshop.

Workshop 1

The first workshop was held at the Minjungbal cultural centre in Tweed Heads on the 20th of June 2013 and was attended by eleven people. A power-point presentation was given by the research team, outlining the history of the development of the project, the overall project objectives and the proposed future workshops. Attendees reaffirmed their commitment to engage in the project especially given developments at the community meeting held on the 16/5/2013. The presentation also outlined changes to the NSW FMA 1994 to recognise Aboriginal cultural fishing especially the implementation of an ICP, which allowed for cultural

fishers to take double the recreational bag limit (RBL) and possession limit (RPL) for Aboriginal cultural purposes as defined in the Act.

A broader issue raised in the workshop at this point was whether cultural bag limits (CBL) and cultural possession limits (CPL) should be connected to RBL and RPL via the ICP. Under this arrangement, reviews conducted periodically by DPI to evaluate and adjust RBLs would automatically change CBLs, and this could potentially occur without any Aboriginal consultation. Workshop participants suggested that a separate process was needed for reviewing CBLs and CPLs and that the development of the Tweed Plan could be used as a means for adjusting the ICP to meet local cultural fishing conditions.

The workshop then proceeded with a session on identifying the elements that might be contained in the Tweed Plan. Attendees agreed that The Tweed Plan required sections containing:

- Objectives
- History of cultural fishing in the Tweed area,
- Prescribed geographical boundaries within which The Tweed Plan would apply,
- Description of 'who' could fish under the proposed plan,
- Methods/gear,
- Special areas,
- Cultural bag limits and possession limits,
- Community commercial license,
- Compliance,
- Iconic species

There was much discussion by participants about the issue of 'who' could fish under The Tweed Plan especially given the community meeting on the 16/5/2013 and the unique circumstances in the Tweed region of the presence of South Sea Islander and Torres Strait Islander descendants of indentured workers on sugar cane plantations from the late 1800's. Inter-marriage between Aboriginal people and these descendants has resulted in some people being able to claim 'dual' identity of descent. This has created a situation where some community members question the identity of others and therefore their 'right' to fish within the framework of the changes to the FMA 1994 and the subsequent implementation of the ICP. Discussion on this issue took up a large amount of the workshop time and it became clear that it would require even more time to reach a resolution and consensus. The participants decided that the best approach might be to create a process within The Tweed Plan involving the establishment of an advisory group that would develop guidelines for the identification of cultural fishers. Further thought and discussion was required on this issue at following workshops.

A second focus for discussion was the development of management measures for The Tweed Plan aimed at managing cultural fishing at the local level. Measures such as specifically tailored CBLs and CPLs, use of traditional methods and gear and area and seasonal closure were discussed at length. Most participants felt the CBLs and CPLs under the ICP were a good starting point but were not sufficient for a number of locally iconic species identified in previous research (Schnierer and Egan, 2011). The workshop participants agreed there was a need to gauge broader Tweed Aboriginal community support for the ICP arrangements especially if these arrangements were to be incorporated into the Tweed Plan. Participants decided this could be achieved through a survey questionnaire designed by the research team and deployed before the next workshop. That questionnaire could seek the views of the community on such measures as minimum legal lengths, BLs, PLs, traditional methods and gear, seasonal and area closures and the boundaries within which the Tweed Plan would operate.

Attendees also agreed to the suggestion that local person be appointed as a CLP to assist in the development of aspects of The Tweed Plan and to assist in the collection of data.

Inter-workshop activities

Following the initial workshop a CLP was appointed to the research team and provided with training. Meetings were arranged with representatives of the Tweed-Byron Local ALC and the Local Aboriginal Men's Group. This resulted in a further eight individuals being briefed on the information provided at Workshop 1. The feedback and suggestions provided by these new participants was similar to that received

in Workshop 1. The research team then began to add content to the draft Tweed Plan around the sections identified at workshop based on the input provided by participants this far.

A survey questionnaire was developed to collect data on the issues identified by participants in Workshop 1. The questionnaire was trialled with 6 people but proved problematic for several reasons including:

- survey participants were not comfortable answering questions relating to how people should identify nor the mechanisms for validation of identity (Outcome: question deleted)
- the determination of boundary was too complicated (Outcome: question deleted)
- preferred mechanism/process for engagement caused confusion (Outcome: question deleted)
- species table showing minimum legal lengths, recreational bag limits, recreational possession limits, cultural bag limits and cultural possession limits was too complicated and was therefore modified.
- amount of time required by participants to complete the questionnaire was too long (2-3 hours)

A modified survey questionnaire was developed and trialled and found to be more acceptable (see Appendix 6).

Workshop 2

Nineteen people attended this workshop, which was held at the Minjungbal cultural centre in Tweed Heads on the 27th of August 2013. In attendance also was a representative from DPI.

A power-point presentation was made to participants reviewing progress (Appendix 6). As a result, discussions by workshop participants reaffirmed the overall structure of the Tweed Plan with an emphasis on the need for a more detailed description of the existing fishery, especially the history and current practices so as to contextualise The Tweed Plan and raise awareness in the broader community about the need for such a plan. The DPI representative gave a short presentation on developments around the legislative recognition since 2010.

Participants were then given a presentation on the progress of the survey questionnaire and support was given to the research team to conduct further fieldwork before the next workshop. Bag limits, possession limits and gear were discussed in fine detail with participants.

The questionnaire was completed by three people at the workshop.

Inter-workshop activities

Twenty seven people were surveyed and the data analysed. An initial draft of The Tweed Plan was developed and distributed to project participants.

Workshop 3

Twelve people attended WS3 held at the Minjungbal cultural centre in Tweed Heads on the 27th of May 2014. A DPI representative was also in attendance.

- Power point delivered walking participants through the draft management plan and preliminary survey data analysis. Participants were given time to give feedback and were asked if they were happy with the content and if anything had been missed. Plan boundaries were also worked through.
- DPI representative drew attention to the current recreational fishing survey and the fact that based on this the RBL may change. As they were linked through the ICP this would have the effect of encouraging workshop participants to make a submission to the recreational fish survey emphasising impact on cultural fishing (4-5 were completed at the meeting).
- DPI representative foreshadowed a round of Aboriginal community consultation on the ICP in the next few months and suggested the community make a submission based on the survey being undertaken for this project, this was agreed to by participants
- Reviewed survey data analysis, supported implications in terms of setting CBL/CPL/limits with a few exceptions:
 - all agreed on final BL/Pl limits, pipis, oysters, prawns, cockles, worms, mullet, tailor,
- Boundaries for The Tweed Plan were agreed,

- The overall structure of The Tweed Plan was set

Inter-workshop activities

- Survey data collection from the local Aboriginal men's group
- Survey data collection completed and analysed
- Preparation of report using survey data for a submission to be made to the DPI consultation process (Appendix 6)
- DPI starts a community consultation on regulations as a result of AFAC meeting 27/6
- More submissions to the Recreational fishing survey completed by Aboriginal community people with assistance of research team.
- Preparation and circulation of next iteration of the Tweed Plan
- Meet with key participants about mapping culturally significant places.

Workshop 4

Twenty-eight people attended the workshop which was held at the Minjungbal cultural centre in Tweed Heads on the 21st of January 2015.

- A PowerPoint was made outlining the last iteration of the Tweed Plan. Participants provided input.
- The draft plan was reviewed and key points raised needing to be addressed included:
 - provision of access to significant areas such as Wommin Lake, Kerosene Bay and Spensers Lagoon
 - inclusion of a statement on cultural fishing by those responsible for harvesting for important events
 - the use of Aboriginal place and species names where appropriate.
 - the need to highlight pipi ban impact on cultural fishing and the steps needed to take to gain access
 - the inclusion of spearing and netting in areas of that are of high cultural significance but are currently closed
- A presentation was made by the research team on results of the survey which showed broad support for the existing ICP cultural bag and possession limits with a few exceptions for iconic species (Appendix 5).¹
- An update on outcomes of community consultation process by DPI relating to the ICP was given and the submission made by Tweed community to that process .
- A fifth workshop was called for and agreed to.

Inter-workshop activities

- Researchers worked on entering participants feedback into The Tweed Plan and arranging meetings with key family groups as requested in Workshop 4.
- Ten meetings took place focusing on cultural details, such as mapping areas of cultural significance, naming places and species in the local dialect.
 - meetings occurred with Traditional Owner's, the Tweed-Byron local ALC and a number of Aboriginal cultural fishers
- The team re-drafted The Tweed Plan entering the new information and set up a final meeting to ensure The Tweed Plan was viewed by the community. The final draft was printed and posted to participants two weeks prior to meeting 5.

¹ The Tweed Plan is a stand-alone document. A draft version is provided in Appendix 5. At the request of the community and NSW Fisheries, this draft is not yet available for wider circulation. The Plan will be held no longer than 12 months whilst broader community education and Tweed Aboriginal community negotiations take place. Public release of the Tweed Plan is anticipated to be 15 January 2017.

Workshop 5

Eighteen people attended this workshop held at the Minjungbal cultural centre in Tweed Heads on the 30th of April 2015.

- A PowerPoint presentation on the final draft of the Tweed Plan was made and participants were given a chance to provide feedback.
- There was general agreement with The Tweed Plan with adjustments to the overall layout.
- Following the meeting the research team met with Tweed-Byron Local ALC, TAAC and selected Traditional Owners' to finalise details in The Tweed Plan.

Availability of the Draft Tweed Plan.

The Tweed Plan is a stand-alone document. A draft version is provided in Appendix 5. At the request of the community and NSW Fisheries, this draft is not yet available for wider circulation. The Plan will be held no longer than 12 months whilst broader community education and Tweed Aboriginal community negotiations take place. Public release of the Tweed Plan is anticipated to be 15 January 2017.

Engagement Effort

In undertaking research for both components of this project the amount of time devoted to maintaining community engagement was substantial (Appendix 7). The research team feels that it is important to note the effort for future reference for other researchers seeking to engage indigenous communities in fisheries related research projects.

Discussion

Aboriginal cultural fishing in NSW

Aspects of cultural fishing and catch composition

The results in this project suggest that Aboriginal cultural fishing continues to be practiced on a regular basis in coastal and inland regions of NSW as was the case in the Tweed region (see Schnierer and Egan, 2011). Survey participants estimated that about 30% of the Aboriginal population go fishing on a regular basis, which was similar to the previous findings (see Schnierer and Egan 2011) but much higher than the participation rate of 17% reported by Coleman *et al* (2003). Aboriginal fishers take their children fishing on a regular basis and this provides opportunities for the transferal of traditional knowledge about the environment and fishing to occur.

Aboriginal cultural fishing in NSW mostly takes place within 10 kilometres from the fisher's home. However, inland fishers appear to travel greater distances to go fishing than coastal fishers. Cultural fishing is predominantly shore-based with coastal fishers using boats a little more frequently than inland fishers. Coastal fishers spend a large proportion of their time fishing from beaches and headlands as well as estuaries and near-shore coastal waters. Some coastal fishers venture inland over the GDR but they are few in number and such trips are usually associated with maintaining family connections. Inland fishers spend most of their time fishing on inland rivers and lakes but occasionally a small number venture across the GDR to fish in coastal systems such as estuaries and from beaches. Again this is usually associated with visits to family living on the coast.

The main types of gear used in NSW by Aboriginal fishers were rods and hand lines. There were some slight differences between coastal and inland types with diving being more prominent in the former and the use of hand held rakes in the latter. Diving was especially important in southern coastal regions where species such as abalone and rock lobsters were highly sought after. Hand rakes were prominent in inland fisheries where they are used to dislodge freshwater yabbies from bottom sediments. Spears, traps and nets were also commonly used on the coast and traps in the inland fishery.

The main destination for the cultural catch was for personal consumption either by the fisher themselves, their family and extended family, or their local community which is similar to that found in the Tweed survey (Schnierer and Egan, 2011). Some of the catch was also used as bait. A small proportion of the cultural catch was bartered or traded for other goods and services within the community. Only a small percentage of the catch was released indicating that most was consumed. One notable exception occurs in the inland fisheries where large numbers of European carp were caught, these were not released back into the water but were disposed of on dry land. A small percentage of Aboriginal fishers obtain quantities of seafood from the supermarkets and fish cooperatives but the largest source appears to be the fishers themselves, their family and to a lesser extent the local community. Some seafood is provided directly by Aboriginal commercial fishers especially during seasonal runs of such species as sea mullet.

While coastal people consume fish products a little more frequently than inland people both groups express a strong desire to have access to fish products on a more regular basis.

The cultural catch along the coast of NSW comprised a range of mostly estuarine and near-shore finfish and invertebrate species, as was the case in the Tweed study (Schnierer and Egan, 2011). The coastal finfish catch was dominated numerically by various species of mullet including sea mullet, sand mullet and yelloweye mullet as well as flathead, bream, whiting, tailor, luderick, Australian salmon and trevally. Some north-south differences included the prominence of mullet and luderick in northern catches and trevally, Australian salmon and kingfish in southern catches.

The coastal invertebrate catches were dominated numerically by prawns, pipis, oysters, prawns, crabs, abalone and cockles as well as bait species including the bait yabby and beach worms. North-south differences included the prominence of crabs and bait yabbies in the north and abalones, cockles, rock lobsters and squid in the south.

The cultural catch from inland regions of NSW, west of the GDR, comprised a smaller range of species compared to that for coastal fisheries and included freshwater finfish, invertebrates and other vertebrate species. The inland finfish catch comprised a mix of introduced and native species, some of which were caught for food and at least one that was considered a major pest species. That pest species was the European carp and it dominated the cultural catch even though it was not targeted. Carp were caught incidentally but were not kept for food. Native species prominent in the catch included golden perch, Murray cod and eel-tail catfish. Each of these species is highly sought after by inland fishers as a source of fresh food. Non-native species also targeted for food included the rainbow trout, redfin perch and brown trout. Very small numbers of silver perch, eels and river blackfish were noted in the catch.

Some finfish species typical of coastal regions including luderick, yellow-fin bream, dusky flathead, sea mullet, Australian bass and estuary perch were also reported in catches made by inland fishers. These catches were taken during visits to the coast to connect with family.

The inland invertebrate catch comprised a small number of species some of which were targeted as food for example freshwater yabbies and Murray crayfish and others targeted for bait for example earth worms and bloodworms sourced from river and lake banks. These bait species were highly prized by Aboriginal fishers because they were considered the best bait for catching finfish species such as golden perch and cod. Some marine invertebrates were also recorded in inland catches and they included pipis, prawns, and oysters. These catches were taken during visits to the coast to connect with family.

In comparison to the key species targeted in recreational fisheries in NSW as reported by Henry and Lyle (2003) there was overlap with the species caught by Aboriginal fishers as reported in this project for both coastal and inland fisheries. Overlap with commercial fisheries also occurs especially in relation to Aboriginal culturally iconic species such as abalone, lobster, pipis, mullet, crabs and various prawn species.

Comments on Methodology

The methodology used in this element of the project did not lend itself to the rapid and wide geographical scale approach used in the NRIFS 2003. This project relied on developing trust in and working with the communities, all of which takes time, but has the benefit of a two-way exchange of knowledge with researchers, which in turn allows for capacity building activities to occur within the participating communities. While this approach suits Aboriginal communities it does not necessarily provide the volume of data typically sought by fisheries scientists and managers. Both approaches have value under certain conditions. In an environment in which Aboriginal communities are cautious of fisheries researchers and managers and sceptical that data will be used in a way that supports their needs, then the approach used in this project offers some hope but it requires time and resources. A melding of both approaches may be possible but it is the view of the researchers in this project that it would have to be done sequentially. One way forward could be to first conduct research that builds trust, capacity and a small data base and then add to that data base through research based on the approaches similar to those used in the NRIFS 2003.

Local Aboriginal Cultural Fisheries Management Plan

The Tweed Aboriginal Cultural Fisheries Management Plan was developed within the context of the recognition by the NSW government of Aboriginal cultural fishing within the FMA 1994.

In developing the Tweed Plan the research team found little in the way of existing Indigenous fishing plans to draw on other than the Yandruwandha Yawarrawarrka Aboriginal Traditional Fishing Management Plan (YYFMP) which is a component of the Management Plan for the Lake Eyre Basin Fisheries in South Australia. The YYFMP was developed by the Fisheries and Aquaculture Division of Primary Industries and Regions South Australia (PIRSA) along with the parties to the Yandruwandha Yawarrawarrka Fishing Indigenous Land Use Agreement, for the purpose of implementing elements of the agreement relating to activities regulated under the South Australian Fisheries Management Act 2007. The plan was approved by the Minister for Agriculture, Food and Fisheries pursuant to section 44 of the Fisheries Management Act 2007 on the 1 March 2013. In addition to the Yandruwandha Yawarrawarrka plan. The research team also reviewed various commercial fisheries management plans in NSW for guidance on key elements.

The design of the Tweed Plan was shaped and driven entirely by the Tweed Aboriginal community. The research team facilitated this via a series of community workshops. An outline of the structure of The Tweed

Plan was agreed upon at the first community workshop and the research team then designed appropriate methodological instruments to collect the information needed for the content of The Tweed Plan. Subsequent community meetings were to refine the various aspects of The Tweed Plan.

Extension occurred throughout the development phase of The Tweed Plan. DPI representatives were present and given feedback throughout the process. The data and community contribution throughout informed regulatory development through face-to-face consultation and also submissions to the department. Working closely with DPI representatives opened a clear line of communication though community mistrust often slowed the researchers progress.

The results in this project are consistent with data collected from the Tweed community reported in Schnierer and Egan (2011). Participants are supportive of the current ICP bag, size and possession limits with the exception of a few key culturally important species. Culturally important species, locations and gear identified in the The Tweed Plan are also consistent with the findings reported in Schnierer and Egan (2011).

The research team experienced delays in data collection due to the methodology used. These included the time taken to contact and organise a meeting place time and conducting face-to-face interviews. Although this method of data collection is time consuming it is essential to building trust and respect with participants. Though this does mean that less people were interviewed over the course of the project. The research teams progress with data collection was also impacted by the sovereign movement which a few members of the community members support. Participants that supported this movement were met with and declined to give information in relation to details of harvest, location and cultural needs. The research team were very respectful of their views and consider the contrasting views of its participants important in this research.

Time spent with and trust built between participants and researchers is an essential part of this body of research. Fluctuating levels of trust in the community impeded data collection, not that of the researchers and participants but of participants and the DPI. Several incidences occurred during the project between participants and local DPI compliance officers that delayed and sent ripples of miss-trust through the community.

Cultural sensitivities also arose throughout the project when addressing key issues. One of these centred on the question of who would be eligible to fish under The Tweed Plan and what process was needed to identify cultural fishers for the purpose of The Tweed Plan. Identification is necessary for governance but for many community members it is a painful and or contentious issue. In trying to find the right words to define who could fish under The Tweed Plan the researchers sought individual face-to-face meetings to ensure that each participant could speak freely and have their voices heard. The research team also gathered examples from other governance plans for guidance.

Other cultural sensitivities surfaced included the need to add more area specific cultural content to The Tweed Plan. The rationale for this was to inform the broader non-indigenous community in the Tweed of the special nature of cultural fishing with the intent of garnering broader acceptance of the need for special measures under The Tweed Plan. This cultural content included language names for fish species, locations and briefly mapping the cultural landscape. Naming of places in some cases is inappropriate due to the fact that it is cultural practice to only speak the name when you are standing on the location. Men's and woman's places also proved sensitive. Stories that unite fishing locations and places of high cultural significance in some instances were appropriate to share openly but others were bound to those rightfully initiated to that level of knowledge.

Data was analysed and reported back to the community to ensure shared views and acceptance. As a result the Aboriginal community are now be well informed of the process, results and drivers that validate and justify the actions requested in the Tweed Plan. This process was the key to getting a great deal of Aboriginal community buy in, participation and support for this plan.

Conclusion

The conclusions are presented in two sections reflecting the two components of this project.

Aboriginal Cultural Catch: NSW

Objective 1 of this project was to 'Use methodology developed in FRDC Project No. 2009/038 to estimate Aboriginal cultural catch in coastal and inland waters of NSW'.

This objective has been achieved in part and in particular for three regions covering some parts of the NSW coast and some inland waters. The information obtained provides a more detailed picture than hitherto available about the size and nature of the Aboriginal cultural fishing catch in NSW. However given that the total sample size in this project was 123 for all regions and the estimated Aboriginal population between the age of 15 and 64 for those regions was approximately 60,000 in 2011, this represents a survey coverage of approximately 0.21% of the population. Therefore more needs to be done to increase the sample size of Aboriginal fishers to further strengthen the data so that extrapolation of catch sizes to the state level can be achieved.

Draft Local Aboriginal Fisheries Management Plan: Tweed Heads

Objective 2 of this project was to 'Develop a local Aboriginal fisheries management strategy/plan for the Tweed region'. This has been achieved and a draft of a plan is available for use in negotiations between the Tweed Aboriginal community and the DPI on a range of issues relating to for example cultural bag limits, gear and access to closed areas. This plan contains a lot of information some of which is sensitive in nature and so a system for managing access to The Tweed Plan needs to be developed to protect that information given by the Tweed community.

During the development of the Tweed Plan some of the data collected was used to make a submission to DPI on the formulation of cultural bag limits under the ICP. Recommendations by the Tweed community were incorporated into the subsequent development of the Aboriginal Cultural Fishing Interim Access arrangements which came in to place in 3rd of November 2014.

Objective 3 of this project was to 'Identify other Aboriginal communities that would be willing to develop local fisheries management strategies/plan.' In relation to this objective communities in two regions, the south coast and the inland have expressed interest in developing local plans.

Implications

Assessment of impacts and outcomes on end users is presented in two sections reflecting the two components of this project.

Aboriginal Cultural Catch: NSW

Management

The research provides a better understanding of the cultural fishery throughout the state that has and will continue to be used to inform policy development. By engaging and reporting findings regularly to DPI representatives it has built the capacity of managers and compliance officers in engaging communities and gathering information on cultural harvest. As a result of this engagement DPI representatives undertook community consultation in regional NSW further increasing their willingness to action changes in regulations. DPI managers were for the first time provided access to regional data that displayed the contrast in harvest between regions, realising that state-wide regulations may not be as appropriate as first thought.

Aboriginal people

The report generated by this research will be a tool used by communities to engage with DPI and other departments in fisheries related issues. It is also a body of evidence for communities to validate the need for environmental protection and protection of access to cultural resources.

The research team reported on this every AFAC meeting and the report will be used by AFAC as a key reference document. Capacity of members was built over this process and the value of the research and methods used was highlighted.

More broadly the research team has met with many communities across the state and nation helping people and communities understand the need for this kind of data when designing management and regulatory frameworks.

For communities nationally this research will become the baseline data to form the foundation of future community projects

Broader community

The data collected will be published in this report and disseminated widely which will raise awareness and potentially garner political support. The information published will also build the capacity of the broader community.

Draft Local Aboriginal Fisheries Management Plan: Tweed Heads

Management

DPI representatives were engaged in and actively observed the process of community engagement and Draft Plan formation. This insight has given them experience in developing local approaches and adapting generic state approaches to the local level. It has also provided a successful model for future community governance throughout the state. This project has raised the capacity of DPI staff both by having them present during the process and also reporting to them when any misunderstandings occurred on the ground. During this project DPI ran a series of community consultations throughout the state gauging the appropriateness of the current ICP. Data collected in this project was directly comparable with what DPI needed and as a result a report was submitted to DPI informing them of the Tweed community's stance on the matter. The details presented in the report were far more in depth than any other data submitted in NSW and was used to guide the establishment of the first draft of the regulations under the FMA 1994 for cultural fishing. As a result of this project DPI representatives were given a very clear indication of the value of trust, transparency and clear communication when engaging Aboriginal communities.

Aboriginal people

Aboriginal people throughout the state and nationally now have a potential alternative model for engaging in fisheries management at the local level outside of the Native Title process. The Tweed community has an evidence based Draft Plan to take forward into the negotiation and awareness building with DPI and the broader community. Tweed participants have gained experience in planning and now have a greater understanding of fisheries management requirements and approaches. They are more informed about the ways in which other Indigenous communities nationally have undergone similar processes. The community elected a CPL who was actively working with the research team from the initial meeting, through the development and implementation of research methodologies. The CPL was trained by the research team and gained many new skills and confidence from her position. The community by the completion of this project were empowered by the process and have taken ownership and responsibility to drive this plan through the negotiation.

Broader community

The broader community in the Tweed region have yet to be engaged in the development of the draft plan at the request of the Aboriginal participants. They have also asked that DPI to keep the draft plan available only to Tweed Aboriginal community and the department at this stage. With respect to publishing other aspects of this report, especially information about cultural fishing and catch, it is hoped that the broader community will get an insight into the fishing needs of Aboriginal people. It is hoped that with awareness this Draft Plan will garner community and political support, as well as challenge stereotypes that are held in the broader community.

Recommendations

Recommendations are presented in two sections reflecting the two components of this project.

Aboriginal Cultural Catch: NSW

Further research is required to increase the sample size of cultural fishers so as to strengthen the current findings from this project. Further trust and stronger relationships between Aboriginal fishers, researchers, managers and other stakeholder's needs to be developed throughout the whole of NSW. This will increase the chances for greater engagement and participation in future research and management.

The PI is currently working with ABARES on refining the methodological instruments to fit cultural catch questions into their upcoming proposed National Recreational Fishing Survey. This will allow for greater sample sizes and give the project a national platform. The researchers are releasing data into the future to contribute to ABARES status reports, which is working to close the gaps in national fisheries documents.

Dissemination of Results

Copies of the project report and a two page summary of the project will be distributed to participating Aboriginal communities: AFAC; DPI; ABARES; DAFF; AIATSIS; FAO; CBD; NSWALC; NNTT; and IRG.

Research finding need to be written into Journal format and submitted by peer reviews and presented at conferences. Key results will be submitted for inclusion in the Commonwealth's Fisheries Status report for 2016 and the next NSW fisheries status report.

It is essential that presentations are given to AFAC, NSWALC, local Aboriginal organisations, DPI, NNTT and at Aboriginal fishing rights meetings.

It is essential for the research team to work with DPI to produce educational material to be distributed to the broader public. To raise awareness and acceptance more broadly.

Draft Local Aboriginal Fisheries Management Plan: Tweed Heads

There are many parts of this plan that will be worked through after completion of this report. Firstly The Tweed Plan advisory group will be established. The advisory will seek support from AFAC to aid the negotiation process. From here the advisory group will engage DPI to start the process of negotiations. When the advisory and DPI deem it appropriate the two parties will engage the broader stakeholder groups. This is for the purpose of information dissemination and education; elements of The Tweed Plan will be simplified and widely disseminated to raise broader community awareness. Researchers will continue to work with the advisory group to help with the production of educational materials. DPI have shown an interest in educational material development with the potential of DPI further disseminating through their NSW Education Unit. It has been recommended by all parties that until the negotiation and educational material has been disseminated to the boader stakeholders that The Tweed Plan not be released to the public.

Further developments

Further developments are presented in two sections reflecting the two components of this project.

Aboriginal Cultural Catch: NSW

This body of research will help government and research organisations prioritise research around Aboriginal Fishing. Methodology should be further developed to deal with catch data collection at the national level still linking in with a local approach. Increasing the sample size is a future avenue that would strengthen this data set further.

Time and resources influences data collection and project outcomes. Face to face consultation is essential and this project will further validate that. Future research in this area needs to include appropriate timeframes and resources for the project to perform well. Engagement and rapport is more difficult to develop over large areas. Future research would be aided by utilising a local liaison for each region.

Draft Local Aboriginal Fisheries Management Plan: Tweed Heads

As this is the first Draft Plan of its kind in Australia there are many avenues for further research that would strengthen this process and the data received.

In the Tweed region specifically, further research could be undertaken to gain greater input and expand the data sample size. Research into models for plan adoption, department engagement and communication strategies between the two parties would be of great value moving forward.

As a result of this research interest and requests have been made by communities in the far south of NSW to undertake the consultation, data collection and plan development. This is an opportunity to trial the methodology in communities in the south. There has also been interest from communities around Wagga Wagga area in the west to combine this research program with the only Aboriginal water allocation in the state to aid there rights to access and protect their cultural resources.

The community are also looking for appropriate models to engage and educate the broader public to enhance their understanding and acceptance. The research team will continue to work with The Tweed Plan Advisory group and DPI to guide this process.

Extension and Adoption

Extension and adoption is presented in two sections reflecting the two components of this project.

Aboriginal Cultural Catch: NSW

Managers

Extension and communication of this component of the project happened through presentations by the research team during implementation phase. This has included project progress reports to DPI via meetings of the NSW AFAC (see Appendix G). Managers made up part of the steering committee for this research and were kept up to date throughout the project. Managers will continue to use research results to inform regulation change. The DPI also engaged the research team regarding appropriate methods to engage Indigenous fisheris in consultation and researchers were also untalised by the community to clarify Industries consultation information.

Researchers

The research team has actively engaged and presented research methods on ways to appropriately engage Indigenous communities to researchers at the Fisheries Council of South Australia, University of Technology Sydney, AIATSIS, IMAS, NSW FRAB and members of FRDC Indigenous Reference Group. These presentations will hopefully guide ethical research practices into the future. National Industry representatives have also been given a brief presentation on research findings at the 2015 first residential for the National Seafood Industry Leadership Program.

The PI provided information from this project in a review of draft report entitled “Sea countries of New South Wales: benefits and threats to Aboriginal people’s connections to the marine environment” done for the NSW Department of Primary Industries (DPI Fisheries) on behalf of the NSW Marine Estate Management Authority (MEMA).

The PI also provided information from this project in the development and running of a workshop held at Kioloa on the south coast of NSW hosted by the Centre for Aboriginal Economic Policy Research at the Australian National University in Canberra aimed at developing a research project to assist Aboriginal peoples along the south coast of NSW in the business and activity of fishing.

The researchers also provided advice on possible Aboriginal participants for the FRDC Project 2012/018 optimising the collection of relative abundance data for the pipi population in New South Wales. The intent was to try to engage Aboriginal pipi gatherers in the research to build capacity in undertaking scientific research.

The PI has done some preliminary work with ABARES to help the development of the national recreational fishing survey and providing advice on how to enter cultural fishing questions into the survey. Researchers have also presented results at conferences to post graduate and undergraduate students studying fisheries management, fisheries and aquaculture and marine science. The PI also presented the research findings at a cultural fishing research workshop at Kiola on the south coast of NSW.

The research team also met and contributed to FRDC project: Social and Economic Evaluation of NSW Coastal Commercial Wild-Catch Fisheries.

Industry

Researchers have kept DPI representatives updated throughout the project reporting back both with semi-formal presentations and phone calls. DPI has used the data to inform the development of regulations to manage cultural fishing under the NSW FMA 1994. The researchers have also been part of the 'Loaves and Fishers' festival, an annual community event held at South West Rocks. The event is a community awareness day hosted by commercial fishers and Ocean Watch; the researchers work with organisers to raise awareness of the cultural fishery commercial and non-commercial and will continue to do so. The PI has an

appointment on the Ministerial Fishing Advisory Council and gives regular research updates that raise awareness and validate his requests for needed change.

The PI has also provided information from the project to a broader stakeholder group including recreational and commercial fisheries representatives set up by DPI to inform the development of regulations relating to Section 21AA. The research Team have during this project and will continue long after its completion updating and presenting the AFAC on the project results and outcomes. Presentations have and will continue to be made to AFAC's broader stakeholder working group.

Broader

The co-investigator worked with Aboriginal participants and attended a meeting with the advisor to the NSW Minister responsible for fisheries informing them about the research findings and the participants' needs and concerns. The co-investigator also held an informal meeting with the previous Fisheries Ministers advisor in her local office at Yass. The advisor was given an update on the projects methodology, objectives and key preliminary findings. Researchers have presented results at conferences to post graduate and undergraduate students studying fisheries management, fisheries and aquaculture and marine science.

Project coverage

Newspaper articles were used regionally a month prior to the research team undertaking research in the area. Researchers also gave two radio interviews talking about where and when research would take place and preliminary results. The co-investigator had a research article published followed by a radio interview on the completion of the data collection. The project and preliminary results have also been shared with the 2015 National Seafood Leadership Graduates.

Draft Local Aboriginal Fisheries Management Plan: Tweed Heads

Managers

The Draft Plan is one of the first steps in a long process of raising awareness, capacity and entering into the negotiations. DPI representatives will continue their involvement in this process post project completion. They have been walked through in detail the Draft Plans contents and are keen to see how the community keep this moving forward. The project has opened a line of dialog between DPI and Tweed fishers and the department is looking to strengthen that in the future because of the insight they have gained and the potential for using methods administered in this project to help Native Title negotiations. The PI has also offered to voluntarily chair consultation meetings between the two parties into the future.

The research team and the community put together a report from the research findings that were submitted to the department to inform the development of regulations to support cultural fishing. The Tweed community is the department's key reference point in the state when gaining insight into the development of appropriate regulations.

The data collected and the Draft Plan will form the baseline for community level governance plans in NSW. After witnessing the success of the research teams community consultation the DPI is planning to adopt methodologies from this project in their own Indigenous consultation. They are also looking at adapting our plan methodologies to better engage Native Title claimants in negotiations to achieve more detailed and well-rounded ILUA's.

Researchers

This plan has proven that it is possible to undertake management planning at the local level independent of Native Title. This project provides a methodological framework for other researchers to attempt this in communities nationally and internationally. The research team has actively engaged and presented research methods on ways to appropriately engage Indigenous communities to researchers at the Fisheries Council of South Australia, University of Technology Sydney, AIATSIS, IMAS and members of FRDC Indigenous Reference Group. These presentations will hopefully guide ethical research practices into the future. Presentations given and the publishing of this report will give researchers clear indications of the time and resources required to undertake this type of research which will assist researchers when planning future

projects. National Industry representatives have also been given a brief presentation on research findings at the 2015 first residential for the National Seafood Industry Leadership Program.

This research builds on the case studies researchers have to draw on in this area. Building the foundation for knowledge and highlighting key areas for research into the future.

Industry

Industry has been engaged throughout this process and will continue to be into the future in the negotiation stage and working with the researchers and community to create and disseminate information to the broader community and hold stakeholder consultation. Industry through AFAC will also be kept updated and be a supportive force driving this plan forward. AFAC will update the Minister on the projects progress into the future.

Broader community

The Draft Plan and the broader project will be highlighted in future University lectures presented to fisheries management, fisheries and aquaculture and marine science students. The research team will present research findings at both national and international conferences. Workshops for both industry and Indigenous fishing will be a platform where researchers will disseminate information about this project and its implications. Researchers gave two separate presentations at the Cultural Fishing Rights Group gathering at Bingi on the south coast on the 6th of September 2015.

The PI will be consistently feeding research results and progress into international working groups he is a part of including the CBD and the International small-scale fisheries working group.

The educational material produced from this research will be overseen by DPI and if approved they have agreed that they will disseminate it through their education unit.

Project coverage

Media coverage for this part of the project was respectfully denied in the initial stages whilst the community was working through The Tweed Plans establishment. After the 4th community meeting both researchers gave radio interviews to ABC north coast and Radio National.

It is also proposed to develop an article for the FRDC FISH magazine and for findings to be outlined at the 3rd FRDC National Indigenous Fisheries RD&E Forum scheduled for February/March 2016.

References

Coleman APM, Henry GW, Reid DD, Murphy JJ (2003) Indigenous fishing survey of northern Australia. In: Henry GW, Lyle JM (eds) The National Recreational and Indigenous Fishing Survey, Australian Government Department of Agriculture, Fisheries and Forestry, Canberra, ACT.

Henry GW, Lyle JM (2003) The National Recreational and Indigenous Fishing Survey. Final Report to the Fisheries Research and Development Corporation, Project 99/158. NSW Fisheries Final Report Series No. 40 188 pp.

NSW Aboriginal Area Health (2015). New South Wales Area Health Services Aboriginal Nations Map. <http://www.health.nsw.gov.au/aboriginal/pages/default.aspx> accessed 10th Jan 2015.

Schnierer S, Egan H (2011) Aboriginal fisheries in New South Wales: determining catch, cultural significance of species and traditional fishing knowledge needs. Report to the Fisheries Research and Development Corporation, Canberra, ACT.

Project materials developed

Draft Tweed Aboriginal Cultural Fisheries Management Plan²

² The Tweed Plan is a stand-alone document. A draft version is provided in Appendix 5. At the request of the community and NSW Fisheries, this draft is not yet available for wider circulation. The Plan will be held no longer than 12 months whilst broader community education and Tweed Aboriginal community negotiations take place. Public release of the Tweed Plan is anticipated to be 15 January 2017.

Appendices

- Appendix 1. List of researchers and project staff and Intellectual Property**
- Appendix 2. Part 1 – NSW Aboriginal Cultural Catch data collection brochure**
Part 2 – Tweed Community Meeting brochure
- Appendix 3. Ethics**
Part 1 – Research Participant Consent form
Part 2 – Ethics Approval
- Appendix 4. Catch Data**
Part 1 - Numerical estimates of coastal finfish catch
Part 2 - Numerical estimates of coastal invertebrate catch
Part 3 - Numerical estimates of freshwater finfish catch
Part 4 - Numerical estimates of freshwater invertebrate catch
Part 5 - Numerical estimates of vertebrate catch
- Appendix 5. Draft Tweed Aboriginal Cultural Fisheries Management Plan³**
- Appendix 6. Part 1 – Modified questionnaire**
Part 2 – PowerPoint presentation
Part 3 – Submission
- Appendix 7. Part 1 - Cultural catch research effort**
Part 2 – Draft fisheries management plan research effort.

³ The Tweed Plan is a stand-alone document. A draft version is provided in Appendix 5. At the request of the community and NSW Fisheries, this draft is not yet available for wider circulation. The Plan will be held no longer than 12 months whilst broader community education and Tweed Aboriginal community negotiations take place. Public release of the Tweed Plan is anticipated to be 15 January 2017.

Appendix 1

List of Researchers and project staff:

Assoc. Prof Stephan Schnierer

Hayley Egan

Lexene Busbridge

Phil Duncan

Mika Malkki


This report is not to be cited without permission from the author.

Background intellectual property (IP)

Item:	Nature of right	Description sufficient to identify background IP
<i>1</i>	<i>Know-how</i>	Pre-existing IP relating to Indigenous fisheries owned by A/Prof Stephan Schnierer arising from his culturally embedded knowledge and know-how
<i>2</i>	<i>Know-how</i>	Research methodologies used within the School of Environmental, Science and Engineering at Southern Cross University
<i>3</i>	<i>Know-how</i>	Southern Cross University cultural mapping protocols used within the School of Environmental, Science and Engineering
<i>4</i>	<i>Copyright</i>	Unpublished research project by A/Prof Stephan Schnierer entitled ‘A description of the Indigenous Fisheries of New South Wales’, Fisheries Action Program Natural Heritage Trust, Project no. NC0958.98, Indigenous Environmental Research Centre, Southern Cross University, Lismore.

Appendix 2

Part 1: Cultural catch data collection brochure




INDIGENOUS CULTURAL FISHERIES PROJECT
(NORTH WEST NSW)

WHO: Indigenous Cultural Fishers living and fishing in North West NSW

WHEN AND WHERE:
Moree area: Monday 22nd of July
Walgett area: Tuesday 23rd of July
Brewarrina area: Wednesday 24th of July
Bourke area: Thursday 25th of July
Dubbo area: Friday 26 – Monday 29th of July

Hosted by Southern Cross University's
Indigenous Fisheries Research Team




PROGRAM

The Indigenous Fisheries Research Team from Southern Cross University would like to invite you to attend the 1st North West NSW Indigenous Cultural Fisheries project consultation

What's it about?

A team of researchers, led by Stephan Schnierer, from Southern Cross University want to work with the North West mob to do a study on cultural fishing. This study is an important step in raising awareness about protecting indigenous fishing rights. Come and join the mob to have a yarn about the project and perhaps be involved.

For any further information please contact Hayley on
0409023197




Part 2: Tweed Fisheries Management Plan Community Meeting Brochure



INDIGENOUS CULTURAL FISHERIES GOVERNANCE PROJECT

(TWEED HEADS NSW)



WHO: Indigenous Cultural Fishers living and fishing in Far Northern NSW


WHEN: Thursday the 27th of August 2013



WHERE: Minjungbal Aboriginal Cultural Centre

AT: Cnr Kirkwood Road and Duffy Street, South Tweed Heads

TIME: 1st Meeting 12:00 – 3:00pm
2nd Meeting 4:00 – 7:00pm




Both meetings will cover the same content exactly. We have done this for participant convenience. Please pick a time slot that best fits your lifestyle.

BBQ fresh fish and salads will be served on arrival

Artist: Dean Bennett

Southern Cross University



PROGRAM

The Indigenous Fisheries Research Team from Southern Cross University would like to invite you to attend the 2nd Indigenous Cultural Fisheries Governance Meeting.

What were the outcomes of meeting 1?

Participants worked on the structure of a governance plan, key points included:

- ✦ Objectives – Definitions – Strategies
- ✦ History – Geographical locations – Who fishes
- ✦ Cultural practices – Events
- ✦ Gear – Bag limits – Iconic species
- ✦ Community licences – Compliance & monitoring

Workshop 2 will delve into the details of a few of the plans segments, these will include:

- ✦ Bag limits
- ✦ Possession limits &
- ✦ Gear

Please come along with questions you may have so far.

For any further information please contact Hayley on 0409023197

Australian Government
Fisheries Research and
Development Corporation

Appendix 3

Ethics

Part 1 – Research participant consent form



Participant Consent Form

Project Title: Cultural Fishing Project

Researchers: Stephan Schnierer and Hayley Egan.

I agree participate in the research project specified above under 'Project Title'. Yes ☐ No ☐

I understand all the information provided by the researchers about my participation in this project. Yes ☐ No ☐

I agree to participate in this project by providing information to the researcher via questionnaires and/or face-to-face interviews. Yes ☐ No ☐

I agree to allow any interviews to be audio-taped. Yes ☐ No ☐

I understand that my participation in this project is on a voluntary basis. Yes ☐ No ☐

I understand that I can cease my participation in this project at any time. Yes ☐ No ☐

I understand that my identity, whilst participating in this project, will be kept anonymous and that information identifying me will be removed when the data is analysed. Yes ☐ No ☐

I understand that all information gathered in this research is confidential and will be kept secure for 7 years at SCU. Yes ☐ No ☐

I am aware that I can contact the researchers at any time to seek clarification about this project and my participation. Yes ☐ No ☐

I understand that this project was approved by the SCU Human Research Ethics Committee. Yes ☐ No ☐

Participant's name: _____

Date: _____

Participant's signature: _____

☐ Please tick this box and provide your email or mail address below if you wish to receive a summary of the results:

Email: _____

Part 2 – Ethics Approval



Division of Research

HUMAN RESEARCH ETHICS COMMITTEE (HREC) HUMAN RESEARCH ETHICS SUB-COMMITTEE (HRESC)

NOTIFICATION

To: Associate Professor Stephan Schnierer/Hayley Egan
School of Environment, Science and Engineering
stephan.schnierer@scu.edu.au; hayley.egan@scu.edu.au

From: Secretary, Human Research Ethics Committee
Division of Research, R. Block

Date: 5 December 2012

Project name: *Indigenous cultural fishing and fisheries governance in NSW.*

Approval Number ECN-12-304

At the meeting of the HREC on Monday, 3 December, this application was considered. This research has been approved subject to your satisfactory responses to the following special conditions. Please ensure that you respond to the special conditions within one month of this notification.

Please send your responses to rudi.meir@scu.edu.au with copy to ethics.lismore@scu.edu.au

Special Conditions

1. NEAF Q 8.4.2 (a) what is the 1% security interest. Please clarify this section.

FRDC's 1% is to ensure accountability for funding (to ensure the Government and general public is aware the project is funded by them. Also if FRDC was ever audited the data would be accessible after following appropriate protocol.

2. NEAF 6.1.1 Consent

Consent – 6.6.1 – face-to-face – are the researchers going to validate the verbal consent after the explanation about the project, with a written and signed consent?

Yes to participate in this research all participants will need to give written and signed consent.

3. The HREC considered that participant information should include the following statement.

'If you are going to provide detail about an illegal activity, then we are obliged to report this illegal activity'.

How and where will the researchers include this information for the participants?

The research team agrees this is an issue but due to the nature of our research think this would derail the objectives of the project. We have spoken to many community members informally on this issue and we are all of the opinion that the above statement will lead to huge trust issues and in turn may result in a lot of people refusing to be apart of the project. The data we seek for this project is all cultural/traditional which often does not fall within colonial legal

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CRICOS Provider: NSW 01241/G, QLD 03135E, WA 02621K

Appendix 4

Part 1 – Numerical estimates of coastal finfish catch

Table 1: Numerical estimates and percentages of finfish species taken by coastal Aboriginal fishers in NSW for the 12-month period prior to the survey (n=69). Note, NC= north coast and SC = south coast.

Common name	Scientific name	NC	%	SC	%	Total No.	%
Sea mullet	<i>Mugil cephalus</i>	3971	18.05	3293	13.48	7264	15.65
Sand mullet	<i>Myxus elongatus</i>	3656	16.62	2032	8.32	5688	12.25
Dusky flathead	<i>Platycephalus fuscus</i>	1763	8.01	2135	8.74	3898	8.40
Yellow-eye mullet	<i>Aldrichetta forsteri</i>	2651	12.05	745	3.05	3396	7.31
Yellow-fin bream	<i>Acanthopagrus australis</i>	2163	9.83	1135	4.65	3298	7.10
Sand whiting	<i>Sillago ciliata</i>	1577	7.17	1513	6.19	3090	6.66
Tailor	<i>Pomatomus saltatrix</i>	983	4.47	1770	7.25	2753	5.93
Luderick	<i>Girella tricuspidata</i>	2219	10.09	343	1.40	2562	5.52
Australian salmon	<i>Arripes trutta</i>	0	0.00	2182	8.93	2182	4.70
Trevally	<i>Pseudocaranyx sp.</i>	278	1.26	1580	6.47	1858	4.00
Snapper	<i>Pagrus auratus</i>	130	0.59	1520	6.22	1650	3.55
Eastern sea garfish	<i>Hyporhamphus australis</i>	83	0.38	1414	5.79	1497	3.22
Yellowtail kingfish	<i>Seriola lalandi</i>	11	0.05	948	3.88	959	2.07
Blue groper	<i>Archoerodus viridis</i>	6	0.03	819	3.35	825	1.78
Spotted mackerel	<i>Scomberomorus munroi</i>	11	0.05	778	3.18	789	1.70
Mulloway	<i>Argyrosomus japonicus</i>	133	0.60	580	2.37	713	1.54
Leatherjacket	F. Monacanthidae	175	0.80	511	2.09	686	1.48
Red rock cod	<i>Scorpaena cardinalis</i>	25	0.11	413	1.69	438	0.94
Tarwhine	<i>Rhabdosargus sarba</i>	373	1.70	0	0.00	373	0.80
Swallowtail dart	<i>Trachinotus sp.</i>	319	1.45	0	0.00	319	0.69
Mangrove jack	<i>Lutjanus argentimaculatus</i>	234	1.06	31	0.13	265	0.57
Australian bass	<i>Macquaria novemaculeata</i>	230	1.05	31	0.13	261	0.56
Estuary rock cod	<i>Epinephelus daemeli</i>	11	0.05	198	0.81	209	0.45
Black drummer	<i>Girella elevata</i>	103	0.47	106	0.43	209	0.45
Sole	F. Soleidae	25	0.11	173	0.71	198	0.43
Eel-tail catfish	<i>Tandanus tandanus</i>	175	0.80	11	0.05	186	0.40
Estuary perch	<i>Macquaria colonorum</i>	182	0.83	0	0.00	182	0.39
Mahi mahi	<i>Coryphaena hippurus</i>	131	0.60	6	0.02	137	0.30
Shark	Various species	39	0.18	72	0.29	111	0.24
Teraglin	<i>Atractoscionea equidens</i>	108	0.49	0	0.00	108	0.23
Fork-tail catfish	<i>Arius graeffei</i>	73	0.33	11	0.05	84	0.18
Long-fin eel	<i>Anguilla rheinhardtii</i>	67	0.30	17	0.07	84	0.18
Flounder	F. Pleuronectidae	22	0.10	33	0.14	55	0.12
Short-fin eel	<i>Anguilla rheinhardtii</i>	67	0.30	17	0.07	84	0.18
Silver drummer	<i>Kyphosus sydneyanus</i>	6	0.03	11	0.05	17	0.04
Totals		22000	100	24428	100	46428	100

Part 2 – Numerical estimates of coastal invertebrate catch

Table 2: Numerical estimates and percentages of invertebrate species taken by coastal Aboriginal fishers in NSW for the 12-month period prior to the survey (n=69). Note NC= north coast and SC= south coast.

Common name	Scientific name	NC	%	SC	%	Total No.	%
Eastern king prawn	<i>Penaeus plebejus</i>	2590	5.8	129353	39.3	131943	35.3
School prawn	<i>Metapenaeus macleayi</i>	3492	7.9	50636	15.4	54128	14.5
Hairy mussel	<i>Trichomya hirsuta</i>	1026	2.3	33829	10.3	34855	9.3
Sydney rock oyster	<i>Saccostrea glomerata</i>	4321	9.7	25863	7.9	30184	8.1
Pacific oyster	<i>Crassostrea gigas</i>	5004	11.3	22102	6.7	27106	7.3
Pipi	<i>Plebidonax deltoides</i>	5404	12.2	8272	2.5	13676	3.7
Abalone	<i>Haliotis</i> sp.	454	1.0	13217	4.0	13671	3.7
Beach worm	F. Onuphidae	3417	7.7	5433	1.7	8850	2.4
Blue swimmer crab	<i>Portunus pelagicus</i>	3951	8.9	4190	1.3	8141	2.2
Bait yabby	<i>Callinassa australiensis</i>	4219	9.5	3181	1.0	7400	2.0
Soldier crab	<i>Mictyris longicarpus</i>	1531	3.5	5238	1.6	6769	1.8
Eastern rock lobster	<i>Jasus verreauxi</i>	417	0.9	5873	1.8	6290	1.7
Sydney cockle	<i>Anadara trapezia</i>	327	0.7	5043	1.5	5370	1.4
Freshwater yabby	<i>Cherax</i> sp.	995	2.2	3004	0.9	3999	1.1
Mud crab	<i>Scylla serrata</i>	2903	6.5	1069	0.3	3972	1.1
Cunjevoi	<i>Pyura stolonifera</i>	585	1.3	2431	0.7	3016	0.8
Southern rock lobster	<i>Jasus edwardsii</i>	0	0.0	3000	0.9	3000	0.8
Limpets	<i>Cellana tramoserica</i>	237	0.5	2627	0.8	2864	0.8
Squid	<i>Notodarus</i> sp.	282	0.6	1751	0.5	2033	0.5
Black nerite	<i>Nerita atramentosa</i>	287	0.6	1500	0.5	1787	0.5
Octopus	<i>Octopus</i> sp.	245	0.6	889	0.3	1134	0.3
Mud whelk	<i>Pyrazus ebeninus</i>	763	1.7	176	0.1	939	0.3
Freshwater crayfish	<i>Cherax destructor</i>	529	1.2	218	0.1	747	0.2
Turban snail	<i>Turbo</i> sp.	652	1.5	0	0.0	652	0.2
Ship worm	<i>Toredo</i> sp	577	1.3	0	0.0	577	0.2
Cuttlefish	<i>Sepia</i> sp.	31	0.1	158	0.0	189	0.1
Red Rock crab	<i>Plagusia chabrus</i>	106	0.2	0	0.0	106	0.0
Fan shells	Unknown	0	0.0	6	0.0	6	0.0
Totals		44345	100	329059	100	373404	100

Part 3 – Numerical estimates of freshwater finfish catch

Table 3: Numerical estimates and percentages of finfish species taken by Aboriginal fishers in freshwater systems west of the Great Dividing Range in NSW for the 12-month period prior to the survey (n=54).

Common name	Scientific name	No.	%
European carp	<i>Cyprinus carpio</i>	7350	52.9
Golden perch	<i>Macquaria ambigua</i>	1877	13.5
Murray cod	<i>Maccullochella peelii</i>	1537	11.1
Eel-tail catfish	<i>Tandanus tandanus</i>	823	5.9
Rainbow trout	<i>Oncorhynchus mykiss</i>	618	4.4
Redfin perch	<i>Perca fluviatilis</i>	579	4.2
Brown trout	<i>Salmo trutta</i>	535	3.8
Silver perch	<i>Bidyanus bidyanus</i>	105	0.8
Longfin eel	<i>Anguilla reinhardtii</i>	103	0.7
River blackfish	<i>Gadopsis marmoratus</i>	94	0.7
Luderick	<i>Girella tricuspidata</i>	81	0.6
Australian bass	<i>Macquaria novemaculeatus</i>	47	0.3
Shortfin eel	<i>Anguilla australis</i>	36	0.3
Brook trout	<i>Salvelinus fontinalis</i>	31	0.2
Trout cod	<i>Maccullochella macquariensis</i>	22	0.2
Bream	<i>Acanthopagrus australis</i>	17	0.1
Flathead	<i>Platycephalus fuscus</i>	16	0.1
Estuary perch	<i>Macquaria colonorum</i>	11	0.1
Macquarie perch	<i>Macquaria australasica</i>	6	0.0
Clarence River cod	<i>Maccullochella ikei</i>	6	0.0
Sea Mullet	<i>Mugil cephalus</i>	6	0.0
Bull shark	<i>Carcharhinus leucas</i>	6	0.0
Totals		13903	100

Part 4 – Numerical estimates of freshwater invertebrate catch

Table 4: Numerical estimates and percentages of invertebrate species taken by Aboriginal fishers predominantly in freshwater systems west of the Great Dividing Range in NSW for the 12-month period prior to the survey (n=54).

Common name	Scientific name	No.	%
Freshwater yabby	<i>Cherax destructor</i>	9065	45.1
Earth worms	Class Oligochaeta	6834	34.0
Murray crayfish	<i>Euastacus armatus</i>	1686	8.4
Bloodworms	F. Chironomidae	1446	7.2
Other invertebrates	Order Orthoptera, Coleoptera	318	1.6
Pipis	<i>Plebidonax deltoides</i>	251	1.2
Spiny crayfish	<i>Euastacus</i> sp	218	1.1
School prawns	<i>Metapenaeus macleayi</i>	151	0.8
Sydney rock oyster	<i>Saccostrea cucullata</i>	106	0.5
Fitzroy falls spiny crayfish	<i>Euastacus</i> sp	22	0.1
Totals		20095	100

Part 5 – Numerical estimates of vertebrate catch

Table 5: Numerical estimates and percentages of other vertebrate species taken by Aboriginal fishers predominantly in freshwater systems west of the Great Dividing Range in NSW for the 12-month period prior to the survey (n=54)..

Common name	Scientific name	No.s	%
Freshwater turtle	<i>Emydura krefftii</i>	299	64.9
Frogs	Order Anura	161	35.1
Totals		460	100

Appendix 5

Draft Tweed Aboriginal Cultural Fisheries Management Plan

Note: The Tweed Plan is a stand-alone document. A draft version is provided in Appendix 5. At the request of the community and NSW Fisheries, this draft is not yet available for wider circulation. The Plan will be held no longer than 12 months whilst broader community education and Tweed Aboriginal community negotiations take place. Public release of the Tweed Plan is anticipated to be 15 January 2017.

Appendix 6

Part 1 – Modified questionnaire

Participant Information

Name:	
Gender:	
Age:	
Address:	
Phone:	
Email:	

Currently there is a range of fishing gear that can be used under the recreational fishing guidelines, please indicate if you are happy with these current gear regulations, if not indicate what would be culturally appropriate.

Gear	Number permitted	Y/N	Comment
Line fishing	4 handlines or rods in total		
Spearfishing	1		
Hand gathering			
Prawn scoop net	1		
Hand hauled prawn net	1		
Scissors net	1		
Hoop net	1		
Cast net	0		
Seine net	0		
Spanner crab net	1		
Crab trap	1		
Lobster trap	1		
Spear/spear gun	1 not permitted in many waterways		
Other			

ATTACHMENT 1. Saltwater species size limits, bag limits, a possession limits, methods of catch, seasonal closures, other comments (NB. Where not specified, the possession limit is the same as the daily bag limit. Note also that a maximum daily bag and possession limit of 20 applies to any species not listed in the table). Also refer to the numbered notes in attachment 3)

Species	SL-cm	y/n/?	ICP BL	y/n/?	ICP PL	y/n/?	method	Season	Comments
Tailor	30		40		40				
Bream (Black & Yellowfin)	25		40*		40				
Tarwhine	20		40*		40				
Flathead, Dusky	36		20 (N1)		20				
Luderick (Blackfish)	27		40		40				
Flathead (Bluespotted & Tiger)	33		40*		40*				
Mullet	30 (N2)		40*		40*				
Poddy mullet (live bait)	<15 (N2)		40*		40*				
Whiting	27 (N3)		40*		40*				
Mulloway (Jewfish)	45		10 (N4)		10 (N4)				
Snapper	30		20		20				
Teraglin	38		10		10				
Yellowtail Kingfish	65		10		10				
Flounder	25		20*		20*				
Soles	None		20*		20*				
Spanish Mackerel	75		10*		10*				
Spotted Mackerel	60		10*		10*				
Eastern Sea Garfish	None		40		40				
Mangrove Jack	None		10		10				
Sharks and Rays	(N5)		10* (N6)		10* (N6)				
Trevallies	30 (N7)		40*		40*				
Wahoo	None		10		10				
Baitfish 1: (N8)	None		100 (N9)		100 (N9)				
Baitfish 2: (N10)	None		100*		100*				
Australian salmon	None		10		10				
Bonito	None		20		20				
Blue Drummer	None		0		0				
Cobia	None		10		10				
Deep sea fish: (N11)	None		10*		10*				
Gemfish	None		(N12)		(N12)				
Red Scorpionfish (red rock cod)	None		10		10				
Groper (Blue/Red/Brown)	30		N13						
Hairtail	None		20		20				
Leatherjackets	None		40*		40*				

Species	SL-cm	y/n/?	ICP BL	y/n/?	ICP PL	y/n/?	method	Season	Comments
Mahi Mahi	60		20 (N14)		20 (N14)				
Marlin (Striped, Black, Blue)	None		2 (N15)		2 (N15)				
Morwong (Jackass & Grey/Rubberlip)	30		same		same				
Morwong (Red)	30		10		10				
Morwong (Banded)	None		10		10				
Moses Snapper (Moses Perch)	None		10		10				
Other Native finfish	None		20*		20*				
Pearl Perch	30		10		10				
Rock blackfish (Black Drummer)	30		20		20				
Samsonfish and Amberjack	None		10*		10*				
Sawtail (Surgeonfish)	None		10		10				
Spearfish	None		2		2				
Sailfish	None		2		2				
Swordfish	None		2		2				
Tuna: (N16)	None		14* (N17)		14*(N17)				
INVERTEBRATES									
Beach Worms	None		40 (N18)		40				
Other worm species	None		200*		200*				
Pipis	None		100*		100*				
Mud crab	8.5		10		10				
Cockles	None		100*		100*				
Mussels	None		100*		100*				
Blue swimmer Crab	6		40		40				
Spanner Crab	9.3		20		20				
Soldier Crab	None		200*		200*				
Crab-Other	None		20*		20*				
Cunjevoi	None		40*		40*				
Southern Rock Lobster	(N19)		4 (N20)		4 (N20)				
Tropical Rock Lobster	None		4*		4*				
Eastern Rock Lobster	(N21)		4(N22)		4(N22)				
Octopus	None		20*		20*				
Oysters (Sydney Rock)	None		100*		100*				
Oysters (Pacific)	None		100*		100*				
Oysters (Native)	None		100*		100*				
Prawns	None		20 litres*		20 litres*				
Saltwater nippers	None		200*		200*				
Squid and cuttlefish	None		40*		40*				
Turban snails	(N23)		40*		40*				

Species	SL-cm	y/n/?	ICP BL	y/n/?	ICP PL	y/n/?	method	Season	Comments
other molluscs	None		40* (N24)		40* (N24)				
Abalone	11.7		10		10				
Balmain Bug	10 (N25)		40		40				
Scallops	None		100*		100*				
Sea urchins	None		20*		20*				
Slipper Lobster	None		4		4				

ATTACHMENT 2. Freshwater species size limits, bag limits, a possession limits, methods of catch seasonal closures, other comments (NB: Where not specified, the possession limit is the same as the daily bag limit. Note also that a maximum daily bag and possession limit of 20 applies to any species not listed in the table).

Species	SL	Y/N/?	ICP BL	Y/N/?	ICP PL	Y/N/?	Method	Season	Comments
Australian Bass	None		4*(N26)		8				
Estuary Perch	None		4* (N26)						
Longfin Eel	58		20		20				
Southern Shortfin Eel	30		20		20				
Freshwater Catfish (Eel-Tailed)	30		10 (N27)		20 (N27)				
			4 (N28)		8 (N28)				
			0 (N29)		0 (N29)				
Golden Perch (Yellow belly)	30		10		20				
Murray Cod	60		4 (N30)		8(N30)				
	60 (N31)		2		4				
Other Native fish	None		20 (N32)						
Silver Perch	25 (N33)		10 (N33)		20 (N33)				
Trout(all sp) & Atlantic Salmon	25 (N34)		(N36)		(N37)				
	50(N35)								
Invertebrates									
Murray Crayfish	(N38)		4 (N39)		20 (N39)				
Eastern Freshwater Spiny Crayfish	9		10 (N39)		20 (N39)				
Yabbies (Freshwater)	None		400		800				

Workshop 2:

Local Aboriginal Fishing Management Plan Tweed Area

Prepared by
A/Prof Stephan Schnierer
27th August 2013

Outline of today

- Welcome to country
- Recap so far
- NSW DPI Mikka Malki
 - NSW FMA 1994 recognition of cultural fishing
 - AFAC cultural fishing management in NSW Mikka Malki
 - How this project connects with recognition
- Discussion – 30 minutes
- Working groups – 1 hour (elements of plan)
- Plenary – 1 hour
- Next workshop

Amendments to Fisheries Management Act 1994

- Recognition of significance of fisheries resources to Aboriginal people and protection and promotion of cultural fishing.
- exemption from paying recreational fishing fee.
- Definition of cultural fishing.
- Establishment of **Aboriginal Fishing Advisory Council**.
- Specific provision within section 37 for authorities to be issued for extended fishing arrangements for cultural events.
- Head of power to provide for **establishment of regulation to provide cultural fishing rules**.

Interim Compliance Policy

- introduced to provide greater access to the resource for Aboriginal people in specific circumstances **during the development stage of the cultural fishing regulation**.
- Greater access is in circumstances of, and allows for:
 - Where elders, the incapacitated or community members are not able to or otherwise it is not appropriate for them to engage in the fishing activity.
 - **Individual limit of the person taking/being in possession of fish is doubled** (except for abalone – limit is 10).
 - Shucking of abalone, lobster and turban shell permitted within 100 metres of high water mark – need to be consumed in area.

Map of AFAC membership regions



Cultural Fishing Rules (Development)

- **Rules are being developed** in consultation with the Aboriginal Fishing Advisory Council.
 - Working group of **AFAC** established (AFAC Regulation Working Group).
- Broader stakeholder based working group established (Cultural Fishing Regulation Working Group).
 - Consists of AFAC Regulation Working Group; commercial and recreational fishing sector along with conservation participants; departmental staff.
- **Aboriginal community input sought**
 - Further consultation/communication measures need to be utilised as well.
 - **This project will hopefully provide grass roots input into the development of these rules as well as..**

Origin of the project concept

- The idea for this project was conceived during the previous cultural fishing project funded by FRDC in 2009/2010

5.3.5 Management of cultural fishing

(a) Cultural fishing charter and strategy

In thinking about tackling management issues, the participants in both FGI came to a similar conclusion, that is, the need for a local community organisation to take the lead and develop a cultural fishing strategy:

If the community was to get together and develop a charter they could get the resources, the money. They could then get a hold of a scientist and say, 'We want you to come up here and look at these stocks, these species and inform us what you think is the best take in terms of what's known in science'. Then bring in what the traditional fishermen are seeing and try and work the two together. Then use that as a basis as to what might be a reasonable catch. It's doing basically what the fisheries has been. (mFG)

Aboriginal fisheries in New South Wales:
determining catch, cultural significance of species
and traditional fishing knowledge needs

Associate Professor Stephan Schnierer



Southern Cross
University
A new way to think

Australian Government
Fisheries Research and
Development Corporation

Project No. 2009/038

FINAL REPORT - FRDC PROJECT NO. 2009/038

Project Outline FRDC application

Project Title

Indigenous cultural fishing and fisheries governance in NSW.

Objectives

- 1 Use methodology developed in project 2009/038 to estimate indigenous cultural catch in coastal and inland waters of N.S.W.
- 2 Develop a local indigenous fisheries management plan for the Tweed region.
- 3 Identify other Aboriginal communities that would be willing to develop local fisheries management plan.

Intent of the LAFMP

(1) An Indigenous Cultural Fishing Management Plan

For use;

- by local community to negotiate with NSW DPI on the development of culturally appropriate management measures (regulations and compliance strategies)
- as a model for the development of ICFMP's in other regions
- in raising awareness of cultural fishing in other fishing sectors and the broader public
- in cross cultural training programs for NSW DPI compliance officers
- in developing cultural fisheries based business opportunities.

(2) Up to 4 community workshops will run in the development of the ICFMP.

- workshops will provide an opportunity for the local community to learn about fisheries management

Process

2. DEVELOPMENT OF LOCAL INDIGENOUS CULTURAL FISHING MANAGEMENT PLAN (LICFMP) FOR THE TWEED REGION

This will involve approximately 4 community workshops in the Tweed area building on the work and trust achieved during project no.2009/308

Workshop 1. Will set the scene, identify participants, gain initial ideas and approaches to the development of a LICFMP for the Tweed.

Workshop 2. Will develop concrete strategies and an overarching vision for incorporation into a Draft LICFMP for circulation to the Tweed community.

Workshop 3. Review and revise draft LICFMP based on feedback from the community and develop a final version of the LICFMP

Workshop 4. Finalise LICFMP, establish a committee to implement the plan in consultation with II NSW and explore options for implementation including identifying funding opportunities.

Data addressing Objective 2:

-qualitative data;

(i) workshop outputs (ideas/recommendations for managing cultural fishing at local level) for incorporation into ICFMP.

Project Performance Indicators

- (2) Production of Local Indigenous Cultural Fisheries Management Strategy for Tweed region.
- (3) Incorporation of report results into the development of fisheries regulations for cultural fishing in NSW.

Workshops

Workshop 1 – Introduction, discussion, working groups identify elements of LICFMP, plenary agreement, develop draft document and circulate widely next workshop and in between activity (visit participants who can't attend)

Workshop 2 – Working groups to flesh out detail of the elements of a LCIFMP as identified in Workshop1, develop draft document and circulate widely (process?)

Workshop 3 – Review draft, identify any missing elements, agree on final structure, develop final draft document and circulate widely (process?)

Workshop 4 – Review final draft, make amendments and finalise and then endorsement (process?)

Possible Elements of a LICFMP

- Purpose
- Definitions
- History
- Application of plan engagement with government
- Description of fishery
- Objectives
- Strategies and tools
- Area (Boundary)
- Who can fish
- Rights
- Special areas and or times
- Restrictions
- Special species
- Gear
- Catch limits (bag limits)
- Protected species and areas
- Reporting
- Research strategy
- Education and awareness
- Admin
- Funding
- Consultation
- Monitoring and compliance
- Review

Submission to Aboriginal Cultural Fishing Regulation Development

Prepared by A/Prof Stephan Schnierer and Hayley Egan

Southern Cross University

1 Introduction

This submission is based on research being undertaken in the Tweed Region on the development of a Local Indigenous Fisheries Management Plan (LIFMP). This research is being funded by FRDC and is being done in collaboration with DPI and NSWALC. In developing the LIFMP the research team collected data from Indigenous cultural fishers and the Aboriginal community in the Tweed region on preferred cultural bag and possession limits for a range of fish and invertebrates taken in the local cultural fishery. This data will give a perspective from the far north coast of NSW on the development of Aboriginal Cultural Fishing Regulation in NSW.

2 Methodology

In seeking information for the development of the LIFMP the research team constructed a questionnaire to find out such things as preferred size limits, cultural bag limits, cultural possession limits and gear types (Appendix 1). The questionnaire lists a range of species known to be taken in the Tweed region along with the current interim cultural bag (ICBL) and possession limits (ICPL) that have been in place since 2010 when the NSW FMA was amended to recognise Aboriginal cultural fishing. The ICBL are set at twice the current recreational bag limits and this was the starting point in the questionnaire. Participants were asked whether they agreed ('yes') or not ('no') with the ICBL/ICPL and if not what they thought would be a more appropriate level. Participants were also asked about the appropriateness of the current gear regulations, which are based on those that can be used by recreational fishers. Percentages in the table of results were only calculated for the 'no' responses and 'yes' percentages can be calculated by subtracting the 'no' percentages from 100.

3 Results

A total of 34 people undertook to complete the questionnaire. Four participants declined to provide any information at all claiming that they had sovereign rights to fish, which overrode, as they said, the rules and regulations enacted and enforced on behalf of the Crown. These participants claimed the right to determine the size of their catch and the type and quantity of gear used in accordance with tradition, culture and spirituality. Thirty participants completed the questionnaires. Please note that Table 1 referenced below is located at the end of the document due to its size and density.

3.1 Size Limits

Of the total number of responses for all species by all participants, more than 98% of were in favour of the current recreational size limits. About 10% of responses in relation to whiting only, indicated the current size limit could be increased marginally and 30% and 13% respectively believed there should be a MLL for pipis

and cockles (Table 1). A small number of participants expressed a need for the establishment of MLL on species such as Red Rock Cod, Moses Snapper, Marlin, Leather Jacket, Swordfish and Tuna.

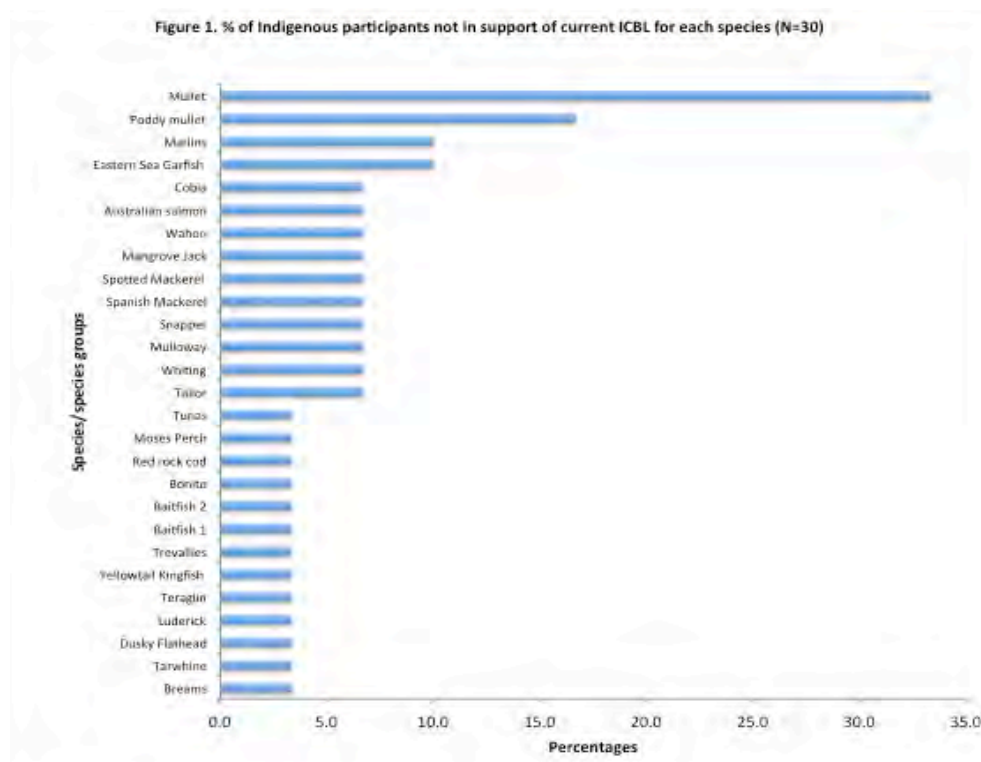
3.2 Interim Cultural Bag Limits (ICBL)

Of the total number of responses in support (yes) or not (no) for all species listed in the questionnaire, approximately 91% were in favour of the current ICBL's (Table 1). This would seem to indicate a general acceptance, however when the data was disaggregated by various species groupings the patterns of acceptance varied from totally acceptable (100%) to varying levels of acceptability (<100%).

For example of the total number of responses for all salt water finfish species approximately 96% were in favour of the current ICBL, compared to 80% for saltwater invertebrates, 97% for freshwater finfishes and 91% for freshwater invertebrates (Table 1 – Sub-totals row).

3.2.1 Saltwater Finfish

When the data was disaggregated for saltwater finfish the level of support for current ICBL's for approximately 46% of the fish listed in the questionnaire was 100% (0 nos). For 50% of the species ICBL support varied between 83% and 96%. However for one species 33% of the participants did not support the ICBL. That species was the sea mullet, *Mugil cephalus* (Figure 1).



Mullet is a culturally iconic species for the Tweed community and they have previously expressed a desire to be able to catch more of this species especially during the mullet season April to June (Schnierer and Egan 2011).

Proposed changes to current Saltwater fish ICBL

Based on the level of support for existing ICBL and using an arbitrary cut off point of >30% dissatisfaction (i.e. > 30% nos) then there is only one species for which an argument could be put to increase the ICBL for the Tweed region, that is for sea mullet as per the following:

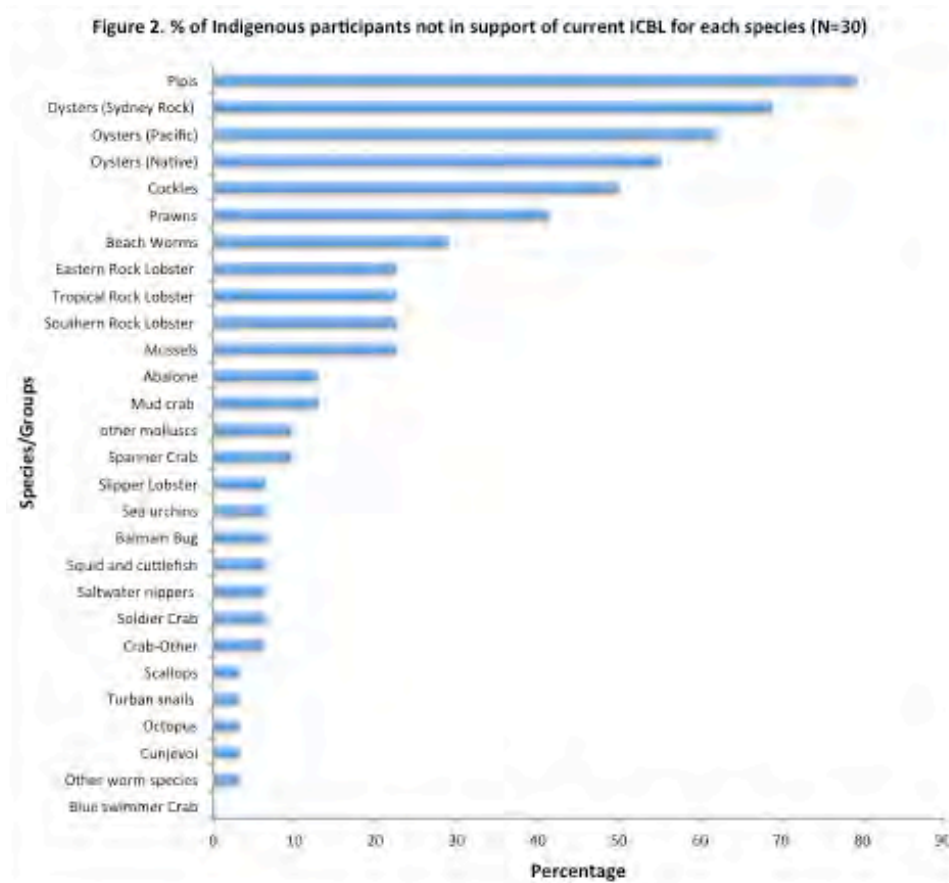
Species	Existing ICBL	Proposed CBL for Tweed Region
<i>Mugil cephalus</i>	40	80

Participants have justified this consistently indicating that due to the short seasonal run of the species and the significance of it to the community they need to stock up on the species during that short window to allow it to be dispersed throughout the community and stored over time.

3.2.2 Saltwater Invertebrates

For saltwater invertebrate species, there was much more variation in the level of support for ICBL's. Support ranged from $\approx 19\%$ to 100% (Table 1).

There were clearly several invertebrate species for which the ICBL's were unacceptable to large percentages of the participants (Figure 2).



ICBL's for species groups such as pipis, oysters, cockles and prawn species registered from 40% to 80% disapproval by participants. Other groups such as the various lobster species, mussels and worms registered from 20% to 30% disapproval. Many of the species especially the pipis, oysters, prawns and lobsters are culturally iconic species in the Tweed (Schnierer and Egan 2011). Interestingly, mud crabs, which are considered highly important, received 87% support from participants for the current ICBL.

Proposed changes to current Saltwater invertebrates ICBL

Based on the level of support for existing ICBL and using an arbitrarily cut off point of $>30\%$ dissatisfaction then there are at least 7 invertebrate species where the argument can be put to increase the ICBL for the Tweed region.

Note the table below displays where possible two unit measures for participants proposed CBL's. This is due to the fact that when participants gave what they devised as culturally appropriate data on ICBL's and ICPL's and the number of an individual species caught was over 100 majority were more comfortable with a bucket measure (L) for convenience. As a result we have attempted to display both unit measures for both Invertebrates ICBL's and ICPL's proposed changes.

In relation to the numbers given for the seven species the proposed ICBL's ranged from 225 – 280 for consistency a value of 250 was selected. Similarly for litre values these range from 18-40 for six species so a 20L was taken.

Beach worms and prawns were allocated values in line with those measurements used in the FMA, which is averaged and displayed accordingly.

Species	Current ICBL	% Not Supported	Proposed CBL for the Tweed Region	
			Numbers	Litres
Pipis	100	83.3	250	20
Sydney rock oysters	100	71	250	20
Pacific oysters	100	64.5	250	20
Native oysters	100	58.1	250	20
Cockles	100	51.6	250	20
Prawns	20 litres	45.1	-	40
Beach Worms	40	29	80	-

3.2.3 Freshwater finfish

For freshwater finfish species there was strong support for current ICBL's ranging from 87% to 100 % (Table 1). A few participants felt the ICBL's could be raised form Australian bass, eels and golden perch. Participants expressed that although ICBL's may be as a whole ok for their needs, they are saltwater people and feel the needs of the fresh water peoples need to be considered.

Proposed changes to current Freshwater fish ICBL

Based on the low support for changes, none are proposed for the Tweed region.

It is more likely that Indigenous cultural fishers from upstream freshwater reaches of eastern flowing rivers as well as those fishing west of the GDR will have differing views on ICBL's for freshwater species.

3.2.4 Freshwater invertebrates

For the 3 groups of freshwater invertebrates listed, support for current ICBL's ranged from 77% to 100 % (Table 1). Twenty seven per cent and 20% of participants respectively felt the ICBL's could be raised for Murray crayfish and the eastern spiny crayfish respectively.

Proposed changes to current Freshwater Invertebrate ICBL

Based on the low support for changes, none are proposed.

It is more likely that Indigenous cultural fishers from upstream freshwater reaches of eastern flowing rivers as well as those fishing west of the GDR will have differing views on ICBL's for freshwater species.

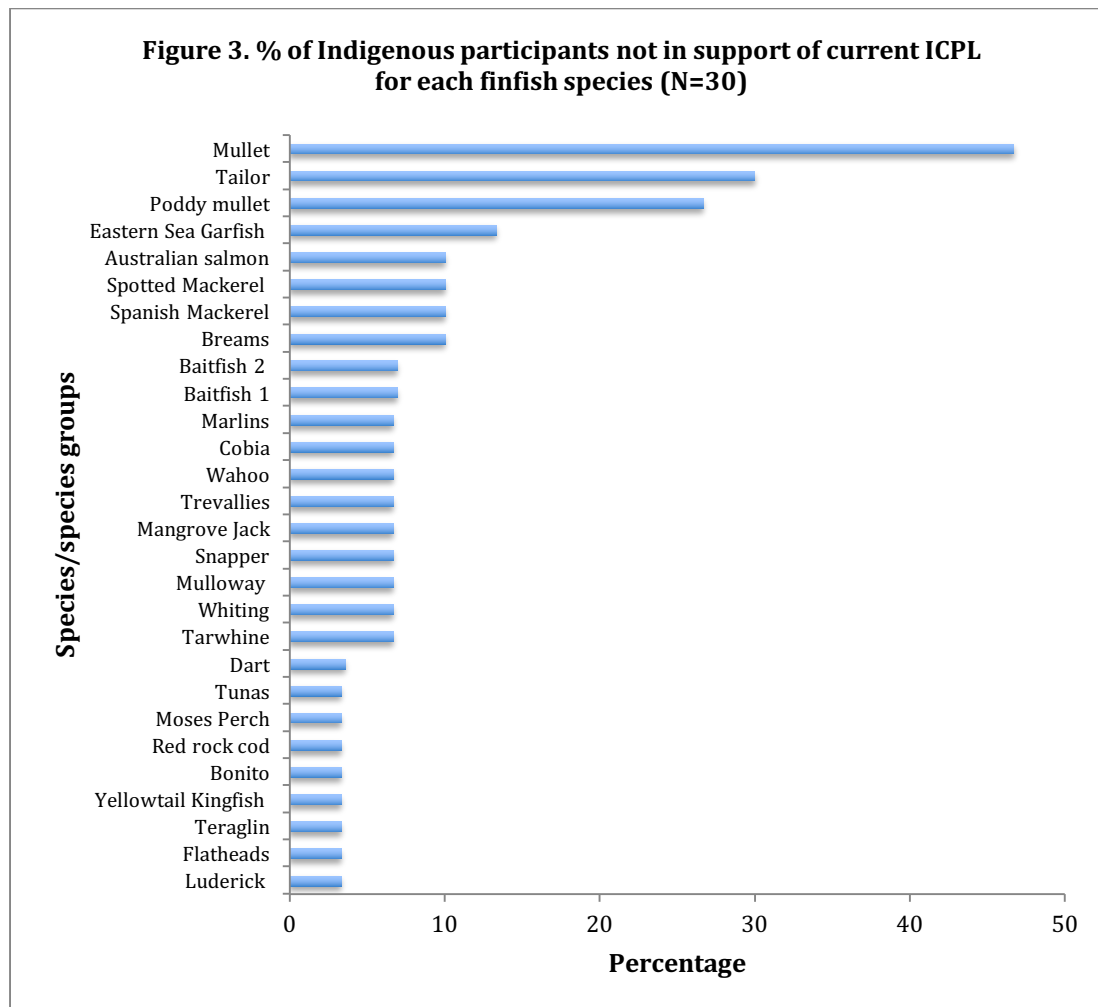
3.3 Cultural Possession Limits (ICPL)

Of the total number of responses (yes and nos) for all species listed in the questionnaire, approximately 89% were in favour of the current ICPL's (Table 1). Again as with ICBL's this would seem to indicate a general acceptance of current ICPL's, however when the data was disaggregated by various species groupings the patterns of acceptance varied from acceptable to unacceptable. For example of the total number of responses for all salt water finfish species approximately 94% were in favour of the current ICPL, compared to 75% for saltwater invertebrates, 95% for freshwater finfishes and 93% for freshwater invertebrates.

3.3.1 Saltwater Finfish

When the data was further disaggregated for saltwater finfish the level of support for current ICPL's was 100% for approximately 30% of the species listed in the questionnaire. For the other 70% support varied between 53% and 96% (Table 1).

As with ICBL's there was a high level of dissatisfaction ($\approx 47\%$) with the ICPL for mullet while tailor and poddy mullet also registered a 30% and 26.7% disapproval rating respectively (Figure 3).



Proposed changes to current Saltwater fish ICPL

Based on the level of support for existing ICPL and using an arbitrary cut off point of $>30\%$ dissatisfaction then there are two species where the argument could put to increase the ICPL for the Tweed region, that is for mullet (*M. cephalus*) and tailor (*P. saltatrix*) as per the following:

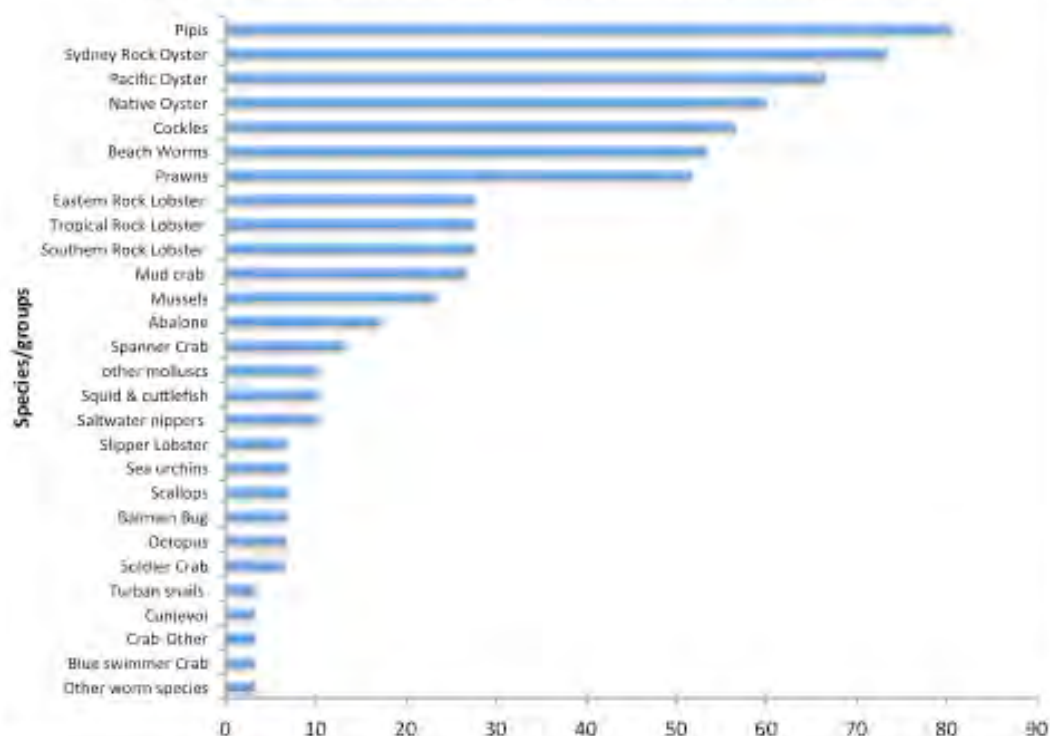
Species	Existing ICPL	% Not Supported	Proposed CPL for Tweed Region
<i>Mugil cephalus</i>	40	33.3	80
<i>Pomatomus saltatrix</i>	40	30	80

The dissatisfaction expressed is consistent with Schnierer and Egan (2011) data shows Tailor and Mullet being the top targeted species, of the highest cultural significance and first and third highest finfish species harvested by the community.

3.3.2 Saltwater Invertebrates

For saltwater invertebrate species the variation in the level of support for IPBL's ranged from 21% to 100 % (Table 1). There were clearly several invertebrate species for which the ICPL's were unacceptable to large percentages of the participants (Figure 4).

Figure 4. % of Indigenous participants not in support of current ICPL for each species (N=30)



One block of species groups including pipsis, oysters, cockles, worms and prawns registered from $\approx 52\%$ to $\approx 81\%$ disapproval by participants for the current ICPL. Another block including lobsters, mud crabs and mussels registered from $\approx 23\%$ to $\approx 28\%$ disapproval. While a third block of species registered from $\approx 3\%$ to $\approx 17\%$ disapproval.

Proposed changes to current Saltwater invertebrates ICPL

Based on the level of support for existing ICPL and using an arbitrarily cut off point of $>30\%$ dissatisfaction then there are at least 7 invertebrate species where the argument can be put to increase the ICPL for the Tweed region. As explained above for proposed changes to ICBL's for saltwater invertebrates two unit measures for species is displayed below.

In relation to the numbers given for the five top species the proposed ICBL's ranged from 225 – 280 for consistency a value of 250 was selected. Similarly for litre values these range from 20-43 for six species so 40L was chosen.

Beach worms and prawns were allocated values in line with those measurements used in the FMA, which is averaged and displayed accordingly.

Species	Current ICPL	% Not Supported	Proposed CPL for the Tweed Region	
			Numbers	Litres
Pipsis	100	83.3	250	40
Sydney rock oysters	100	73.3	250	40
Pacific oysters	100	66.7	250	40
Native oysters	100	60	250	40
Cockles	100	56.7	250	40
Prawns	20 litres	53.3	-	40
Beach Worms	40	51.7	80	-

3.3.3 Freshwater finfish

For freshwater finfish species there was strong support for current ICPL's with that support ranging from $\approx 87\%$ to 100% (Table 1). A few participants felt the ICPL's could be raised from Australian bass, eels and golden perch.

Proposed changes to current Freshwater fish ICBL

Based on the low support for changes, none are proposed for the Tweed region.

It is more likely that Indigenous cultural fishers from upstream freshwater reaches of eastern flowing rivers as well as those fishing west of the GDR will have differing views on ICPL's for freshwater species.

3.3.4 Freshwater invertebrates

For the 3 groups of freshwater invertebrates listed support for current ICPL's ranged from $\approx 87\%$ to 100% (Table 1). A small proportion of participant's $\approx 13\%$ felt the ICPL's could be raised for the eastern spiny crayfish respectively.

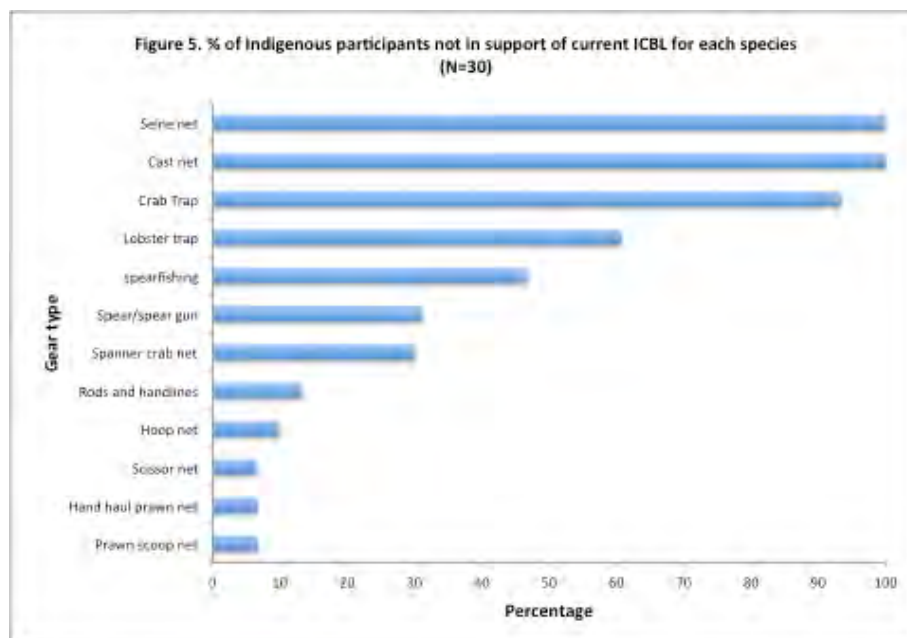
Proposed changes to current Freshwater Invertebrate ICBL

Based on the low support for changes, none are proposed.

It is more likely that Indigenous cultural fishers from upstream freshwater reaches of eastern flowing rivers as well as those fishing west of the GDR will have differing views on ICPL's for freshwater species.

3.4 Fishing Gear

In relation to current gear restrictions, which apply equally to recreational fishers and Indigenous cultural fishers, participants expressed varying degrees of dissatisfaction (Figure 5).



There was a unanimous opposition to the ban on the use of seine nets and cast nets. Virtually all participants expressed the desire for their communities to have access to at least one seine net to enable them to catch mullet during the spawning run along the coast each year. This desire was also expressed in research conducted in 2009 (Schnierer and Egan 2011). There is also strong support for cultural fishers to be able to possess and use a cast net in order to catch baitfish.

Dissatisfaction was also expressed in relation to the number of traps an individual could possess for crabs and lobsters. Most participants felt that they should be able to possess and use at least 4 crab traps and 3

lobster traps. They felt without this number they were unable to catch the current recreational bag limit let alone the ICBL. One problem with crabbing is that a lot of female crabs are caught and then released compared to male crabs so the number of traps needed to be increased to increase the chances of catching enough males. Participants in both Schnierer and Egan 2011 and this year's research articulated that taking of jenny's is a cultural taboo and in the Tweed area because of the restrictions placed on jenny harvest the ratio of jenny's to buck's is around 7:1.

Gear	Rec no. Permitted	% Not Supported	Proposed change
Seine net	0	100	1
Cast net	0	100	1
Crab trap	1	93	4
Lobster trap	1	61	3
Spanner crab net	1	30	6

More traditional types of gear not mentioned in the FMA that were of great importance and in use in the community were carb hooks, handcrafted spears, jaggling hooks and also lawyer cane fish and eel traps. Crab hooks, spears and to a lesser extent jaggling hooks have been common cultural practice in the Tweed for generations. Traditional fish and eel traps are in use with a select few within the community but of no lesser value, as this is essential for knowledge transfer throughout the community.

Table 1. Aboriginal support for current size limits (SL), interim cultural bag limits (ICBL) and interim cultural possession limits (ICPL) in the Tweed Region, far north coast NSW, 2014, yes=support current limits, no=don't support current limits (n=34)

Species	SL-cm	yes	no	%no	ICBL	yes	no	%no	ICPL	yes	no	%no
Marine Finfish												
Tailor	30	30	0	0.0	40	28	2	6.7	40	21	9	30.0
Bream (Black & Yellowfin)	25	29	1	3.3	40*	29	1	3.3	40	27	3	10.0
Dart (Swallowtail)	-	-	-	-	-	-	-	-	-	-	-	-
Tarwhine	20	30	0	0.0	40*	29	1	3.3	40	28	2	6.7
Flathead, Dusky	36	29	1	3.3	20 (N1)	29	1	3.3	20	30	0	0.0
Luderick (Blackfish)	27	30	0	0.0	40	29	1	3.3	40	29	1	3.3
Flathead (Bluespotted & Tiger)	33	30	0	0.0	40*	30	0	0.0	40*	29	1	3.3
Mullet	30 (N2)	29	1	3.3	40*	20	10	33.3	40*	16	14	46.7
Poddy mullet (live bait)	<15 (N2)	30	0	0.0	40*	25	5	16.7	40*	22	8	26.7
Whiting	27 (N3)	27	3	10.0	40*	28	2	6.7	40*	28	2	6.7
Mulloway (Jewfish)	45	29	1	3.3	10 (N4)	28	2	6.7	10 (N4)	28	2	6.7
Snapper	30	29	1	3.3	20	28	2	6.7	20	28	2	6.7
Teraglin	38	29	1	3.3	10	29	1	3.3	10	29	1	3.3
Yellowtail Kingfish	65	29	0	0.0	10	29	1	3.3	10	29	1	3.3
Flounder	25	30	0	0.0	20*	30	0	0.0	20*	30	0	0.0
Soles	-	30	0	0.0	20*	30	0	0.0	20*	30	0	0.0
Spanish Mackerel	75	29	1	3.3	10*	28	2	6.7	10*	27	3	10.0
Spotted Mackerel	60	30	0	0.0	10*	28	2	6.7	10*	27	3	10.0
Eastern Sea Garfish	-	29	1	3.3	40	27	3	10.0	40	26	4	13.3
Mangrove Jack	-	29	1	3.3	10	28	2	6.7	10	28	2	6.7
Sharks and Rays	(N5)	30	0	0.0	10* (N6)	30	0	0.0	10* (N6)	30	0	0.0
Trevallies	30 (N7)	30	0	0.0	40*	29	1	3.3	40*	28	2	6.7
Wahoo	-	29	1	3.3	10	28	2	6.7	10	28	2	6.7
Baitfish 1: (N8)	-	30	0	0.0	100 (N9)	29	1	3.3	100 (N9)	27	2	6.9
Baitfish 2: (N10)	-	30	0	0.0	100*	29	1	3.3	100*	27	2	6.9
Australian salmon	-	29	1	3.3	10	28	2	6.7	10	27	3	10.0
Bonito	-	29	1	3.3	20	29	1	3.3	20	29	1	3.3
Blue Drummer	-	30	0	0.0	0	30	0	0.0	0	30	0	0.0
Cobia	-	29	1	3.3	10	28	2	6.7	10	28	2	6.7

Deep sea fish: (N11)	-	30	0	0.0	10*	30	0	0.0	10*	30	0	0.0
Gemfish	-	30	0	0.0	(N12)	30	0	0.0	(N12)	30	0	0.0
Red Scorpionfish (red rock cod)	-	29	1	3.3	10	29	1	3.3	10	29	1	3.3
Groper (Blue/Red/Brown)	30	30	0	0.0	N13	30	0	0.0		30	0	0.0
Hairtail	-	30	0	0.0	20	30	0	0.0	20	30	0	0.0
Leatherjackets	-	29	1	3.3	40*	30	0	0.0	40*	30	0	0.0
Mahi Mahi	60	29	1	3.3	20 (N14)	30	0	0.0	20 (N14)	30	0	0.0
Marlin (Striped, Black, Blue)	-	29	1	3.3	2 (N15)	27	3	10.0	2 (N15)	28	2	6.7
Morwong (Jackass & Grey/Rubberlip)	30	30	0	0.0	same	30	0	0.0	same	30	0	0.0
Morwong (Red)	30	30	0	0.0	10	30	0	0.0	10	30	0	0.0
Morwong (Banded)	-	30	0	0.0	10	30	0	0.0	10	30	0	0.0
Moses Snapper (Moses Perch)	-	29	1	3.3	10	29	1	3.3	10	29	1	3.3
Other Native finfish	-	30	0	0.0	20*	30	0	0.0	20*	30	0	0.0
Pearl Perch	30	30	0	0.0	10	30	0	0.0	10	30	0	0.0
Rock blackfish (Black Drummer)	30	30	0	0.0	20	30	0	0.0	20	30	0	0.0
Samsonfish and Amberjack	-	30	0	0.0	10*	30	0	0.0	10*	30	0	0.0
Sawtail (Surgeonfish)	-	30	0	0.0	10	30	0	0.0	10	30	0	0.0
Spearfish	-	30	0	0.0	2	30	0	0.0	2	30	0	0.0
Sailfish	-	30	0	0.0	2	30	0	0.0	2	30	0	0.0
Swordfish	-	29	1	3.3	2	30	0	0.0	2	30	0	0.0
Tuna: (N16)	-	29	1	3.3	14* (N17)	29	1	3.3	14* (N17)	29	1	3.3
Sub total		1476	23	1.5		1444	54	3.6		1418	78	5.2
Marine Invertebrates												
Beach Worms	-	30	0	0.0	40 (N18)	22	9	29.0	40	14	16	53.3
Other worm species	-	30	0	0.0	200*	30	1	3.2	200*	29	1	3.3
Pipis	-	21	9	30.0	100*	6	23	79.3	100*	6	25	80.6
Mud crab	8.5	30	0	0.0	10	27	4	12.9	10	22	8	26.7
Cockles	-	26	4	13.3	100*	15	15	50.0	100*	13	17	56.7
Mussels	-	30	0	0.0	100*	24	7	22.6	100*	23	7	23.3
Blue swimmer Crab	6	30	0	0.0	40	31	0	0.0	40	29	1	3.3
Spanner Crab	9.3	30	0	0.0	20	28	3	9.7	20	26	4	13.3
Soldier Crab	-	30	0	0.0	200*	29	2	6.5	200*	28	2	6.7
Crab-Other	-	30	0	0.0	20*	30	2	6.3	20*	29	1	3.3
Cunjevoi	-	30	0	0.0	40*	30	1	3.2	40*	29	1	3.3
Southern Rock Lobster	(N19)	30	0	0.0	4 (N20)	24	7	22.6	4 (N20)	21	8	27.6
Tropical Rock Lobster	-	30	0	0.0	4*	24	7	22.6	4*	21	8	27.6
Eastern Rock Lobster	(N21)	30	0	0.0	4 (N22)	24	7	22.6	4 (N22)	21	8	27.6
Octopus	-	30	0	0.0	20*	30	1	3.2	20*	28	2	6.7
Oysters (Sydney Rock)	-	30	0	0.0	100*	9	20	69.0	100*	8	22	73.3
Oysters (Pacific)	-	30	0	0.0	100*	11	18	62.1	100*	10	20	66.7
Oysters (Native)	-	30	0	0.0	100*	13	16	55.2	100*	12	18	60.0
Prawns	-	30	0	0.0	20 litres*	17	12	41.4	20 litres*	14	15	51.7
Saltwater nippers	-	30	0	0.0	200*	29	2	6.5	200*	26	3	10.3
Squid and cuttlefish	-	30	0	0.0	40*	29	2	6.5	40*	26	3	10.3
Turban snails	(N23)	30	0	0.0	40*	30	1	3.2	40*	28	1	3.4
other molluscs	-	30	0	0.0	40* (N24)	28	3	9.7	40* (N24)	26	3	10.3
Abalone	11.7	30	0	0.0	10	27	4	12.9	10	24	5	17.2
Balmain Bug	10 (N25)	30	0	0.0	40	29	2	6.5	40	27	2	6.9
Scallops	-	30	0	0.0	100*	30	1	3.2	100*	27	2	6.9
Sea urchins	-	30	0	0.0	20*	29	2	6.5	20*	27	2	6.9
Slipper Lobster	-	30	0	0.0	4	29	2	6.5	4	27	2	6.9
Sub total		827	13	1.5		684	174	20.3		621	207	25.0
Freshwater fish												
Australian Bass	None	30	0	0.0	4* (N26)	27	3	10.0	8	26	4	13.3
Estuary Perch	None	30	0	0.0	4* (N26)	28	2	6.7	8	28	2	6.7
Longfin Eel	58	30	0	0.0	20	28	2	6.7	20	27	3	10.0
Southern Shortfin Eel	30	30	0	0.0	20	29	1	3.3	20	28	2	6.7
Freshwater Catfish (Eel-Tailed)	30	30	0	0.0	10 (N27)	30	0	0.0	20 (N27)	29	1	3.3
		1	0	0.0	4 (N28)	30	0	0.0	8 (N28)	29	1	3.3
		1	0	0.0	0 (N29)	29	0	0.0	0 (N29)	29	0	0.0
Golden Perch (Yellow belly)	30	29	1	3.3	10	28	2	6.7	20	27	3	10.0
Murray Cod	60	30	0	0.0	4 (N30)	30	0	0.0	8 (N30)	30	0	0.0
	60 (N31)	30	0	0.0	2	28	0	0.0	4	30	0	0.0
Other Native fish	None	30	0	0.0	20 (N32)	30	0	0.0		30	0	0.0

Silver Perch	25 (N33)	30	0	0.0	10 (N33)	30	0	0.0	20 (N33)	29	1	3.3
Trout(all sp) & Atlantic Salmon	25 (N34)	30	0	0.0	(N36)	28	0	0.0	(N37)	22	1	4.3
	50(N35)	1	0	0.0		1	2	66.7		19	2	9.5
Sub Total		332	1	0.3		376	12	3.1		383	20	5.0
Freshwater Invertebrates												
Murray Crayfish	(N38)	30	0	0.0	4 (N39)	22	8	26.7	20 (N39)	28	2	6.7
E. Freshwater Spiny Crayfish	9	30	0	0.0	10 (N39)	24	6	20.0	20 (N39)	26	4	13.3
Yabbies (Freshwater)	None	30	0	0.0	400	30	0	0.0	800	30	0	0.0
Sub total		90	0	0.0		76	14	15.6		84	6	6.7
Total		2725	37	1.3		2580	254	9.0		2506	311	11.0

Appendix 7

Part 1 – Cultural catch researchers effort table

Region	Phone/email		Travel hours	Meetings		Extension (hours)
	events	hours		events	hours	
1	33	9.5	36	15	45	- Helped DPI to engage Aboriginal participants in consultation - Capacity built, DPI intent, processes and current rules
2	64	11.6	41	31	62.5	- Aided participants with fisheries business proposal - Helped DPI to engage Aboriginal participants in consultation - Capacity built, DPI intent, processes and current rules
3	71	22.5	39	18	33	- 7 phone meetings advising other researchers on appropriate Aboriginal engagement - Meeting with the NSW ministerial advisor and four Aboriginal participants to voice concerns – 3 meetings with participants to prepare for meeting - generated two working documents at the ministerial advisors request on behalf of participants for the NSW Minister - 10 calls regarding fisheries consultation - 10 general question calls building capacity for participant and government
4	56	19	47	26	78	- Helped DPI engage Aboriginal participants in consultation - Attended fisheries consultation meeting with Aboriginal participants - Capacity built, fisheries intent, processes and current rules, held three meetings walking participants through consultation documents - Helped Aboriginal participants with submission and disseminated information from the DPI meeting. - 15 calls regarding DPI consultation process
Total	224	62.6	163	90	218.5	182
Combine total hours	<u>626.1</u>		Combine total events		<u>314</u>	

Part 2 – Draft governance plan researchers effort (hours) table

Community meetings	Aboriginal organisations meetings	Aboriginal individuals meetings	DPI meetings	Phone calls	Totals hours
37	52	210	25	16	<u>295</u>