

Development and delivery of an accredited training program toward improved environmental performance in the Southern Shark Fishery

Matt Koopman, Simon Boag, Ron Stott,
Richard Owen and Ian Knuckey

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FRDC Project 2011/408



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2011/408 Development and delivery of an accredited training program toward improved environmental performance in the Southern Shark Fishery

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Objectives

1. Interpret the draft Code of Practice to produce a customised training program and learning materials
2. Development of a training program in consultation with industry to promote best practice
3. Delivery of the training program to the shark fishery participants
4. Improved industry practices and mitigation of interactions

Non-technical Summary

OUTCOMES ACHIEVED

There are two major outcomes from this project; increased environmental stewardship in the SGSHS and an improved stakeholder perception of the SGSHS. Increased environmental stewardship will have a direct effect on the management and sustainability of the fishery through improved reporting of and reduced interactions with protected species and greater compliance with area closures, while improved understanding of other compliance activities, reporting requirements, stock assessments and management strategies will improve the data collected by industry members, acceptance of management decisions and compliance with management directions. Improved stakeholder perception of the SGSHS is important to maintain the social license that the fishery requires to ensure long-term operation.

The Gillnet, Hook and Trap Sector (GHTS) is a sector of the Southern and Eastern Scalefish and Shark Fishery (SESSF), which comprises mainly of the Shark Gillnet and Shark Hook sub-sector (SGSHS). The SGSHS targets mainly Gummy Shark (*Mustelus antarcticus*), but also takes Elephantfish (*Callorhinchus milii*), Sawsharks (*Pristiophorus cirratus* and *P. nudipinnis*) and School Shark (*Galeorhinus galeus*) as well as numerous other byproduct species. In 2009 – 10, gross value of the SGSHS was about \$18.4 million.

The SGSHS have faced some major management issues in recent years regarding sustainability of one of their former target species (School Shark), and interactions with Threatened, Endangered and Protected species such as the Australian Sea Lion and Common Dolphin. This has not only resulted in the introduction of a “bycatch” TAC for School Shark, but also significant closures of productive fishing ground off South Australia. Further, publicity surrounding these issues has likely reduced public perception of the sector, and this may influence consumer choice away from Gummy Shark.

Understanding their own issues surrounding poor stakeholder and consumer perceptions in their own fishery, the South East Trawl Fishing Industry Association

(SETFIA) developed a two day training course funded by the Fisheries Research and Development Corporation (FRDC Project 2009/330), in accordance with the nationally recognised unit of competence “***SFIEMS301A Implement and monitor environmentally sustainable work practices***”. This course was delivered to a total of 83 owners, skippers and senior crew from the Commonwealth Trawl Sector (CTS), and was considered a great success on many levels. Recognising the success of the project, Sustainable Shark Fishing Incorporated in conjunction with South East Australia Maritime Education Centre (SEAMEC) successfully applied to the FRDC for funding to provide training of a similar nature to members of their own sector.

The SGSHS training course was based on FRDC Project 2009/330, customising content in accordance with the direction of a steering committee comprising industry members, an AFMA manager, the PI from the former project, and SEAMEC (a division of Advance TAFE).

Two day courses were held in Lakes Entrance, Devonport and Adelaide, and were attended by a total of 64 industry members, four more than anticipated. Active participation varied between members, but in general, was very good. All 64 participants completed the assessments required, and received a nationally recognised statement of attainment. Feedback received on the curriculum, structure and delivery of the course was very positive.

Evaluation of changes to fishing practices will be possible after the May and June 2012 SGSHS logbook data is entered into the AFMA database. As was observed in the CTS data after the completion of FRDC Project 2009/330, it would be expected that increased reporting of discards and TEP species interactions would be detected in the SGSHS data. From these measures, inferences could then be made regarding improved aspects of fishing practices that could not be measured.

Keywords: Gillnet, Hook and Trap Sector, Shark Gillnet and Shark Hook Sector, Southern and Eastern Scalefish and Shark Fishery, shark, Gummy Shark, School Shark, environment, accreditation, training, TEP species, protected species, social license, stock assessment, harvest strategy, stock rebuilding strategy.

Acknowledgments

We wish to thank all of the owners, skippers and crew of the SGSHS who gave up their time to enthusiastically participate in these courses. Participation was greater than expected. We are appreciative of Mike Gerner (AFMA) for participating in the steering committee meeting, and of Phil Ravello (AFMA) for delivering the module on *spatial and temporal closures* at all three courses. John Sussman from Fisheads (Lakes Entrance and Devonport) and Simon Bryant (Adelaide) are thanked for presenting entertaining and inspirational modules on *consumer trends and the customers perspective*. Tracey Cuttriss (SEAMEC) provided great administrative support for this project to ensure all went smoothly.

Background

The Southern and Eastern Scalefish and Shark Fishery (SESSF) is Australia's second largest fishery and supplies much of the fresh fish to our domestic markets. The fishery landed about 20,000 tonnes of fish during 2010, which had a gross value of production worth \$89.1 million in 2009 – 10 (Woodhams *et al.* 2011). The Gillnet, Hook and Trap Sector (GHTS) is a sub-fishery (sector) of the SESSF which comprises mainly of the Scalefish Hook sub-sector and Shark Gillnet and Shark Hook sub-sector (SGSHS). The SGSHS targets mainly Gummy Shark (*Mustelus antarcticus*), but also takes Elephantfish (*Callorhinchus milii*), Sawsharks (*Pristiophorus cirratus* and *P. nudipinnis*) and School Shark (*Galeorhinus galeus*), as well as numerous other byproduct species. As its name suggests, the SGSHS uses demersal gillnet and demersal longline gear, and operates across south-east Australia — from the New South Wales/Victorian border in the east to the South Australian/Western Australian border in the west. In 2009 – 10, the gross value of the SGSHS was about \$18.4 million (Woodhams *et al.* 2011), and is managed through both input controls (such as area closures, gear regulations and limited vessel licences) and output controls (such as quota, prohibited take and trip limits). The 59 active vessels operating in the sector during 2009 – 10 conducted approximately 40,226 km net lifts and 300,750 hook lifts (Woodhams *et al.* 2011).

The SGSHS have faced some major management issues in recent years regarding sustainability of one of their former target species (School Shark), and interactions with Threatened, Endangered and Protected species such as the Australian Sea Lion (Goldsworthy *et al.* 2010) and the Common Dolphin (Woodhams *et al.* 2011). This has not only resulted in the introduction of a “bycatch” TAC for School Shark, but also significant closures of productive fishing ground off South Australia. Further, publicity surrounding these issues has likely reduced public perception of the sector, and this may influence consumer choice away from Gummy Shark.

While public perception of the SGSHS has not been quantified, the performance of and attitudes towards the Commonwealth Trawl Sector (CTS) of the SESSF have been examined, and they were found to be lacking in some areas. Brooks (2009) identified that the “*the South East Trawl Fishery has experienced enormous difficulty in stepping out from the shadow of perceived unsustainable and bad practices, which has been*

reflected in poor stakeholder and consumer perceptions". Furthermore, in their study to examine changes to reporting rates of protected species interactions by CTS operators, Knuckey and Koopman (2011) found wide-spread under-reporting of seal interactions by the majority of the CTS fleet. It would be reasonable to assume that similar results would be obtained if these studies were repeated for the SGSHS.

Understanding their shortcomings, the CTS's industry association — South East Trawl Fishing Industry Association (SETFIA) — developed a strategic plan (Boag 2011) with the conviction that the sector needs to improve its credibility with stakeholders (decision makers and influencers). By doing so, SETFIA believed that there was a higher likelihood that the sector would have greater involvement in management decisions (and that these decisions would be better), and also that management arrangements may then be less precautionary.

In line with their strategic plan, SETFIA developed a two day training course (Boag *et al.* 2012) funded by the Fisheries Research and Development Corporation (FRDC Project 2009/330), in accordance with the nationally recognised unit of competence "***SFIEMS301A Implement and monitor environmentally sustainable work practices***". The modules that were covered by the course were determined at a curriculum steering meeting involving fishery managers, an environmental NGO, OceanWatch, fisheries scientists, and industry members. These modules were then adapted into the frameworks for the units of competence, which were then developed into subject plans, content (presentations) and assessment questions. The training course was delivered to a total of 83 owners, skippers and senior crew. FRDC Project 2009/330 was considered a great success in that it was well attended and valued by participants, achieved immediate measurable industry improvements in performance (for example see Knuckey and Koopman, 2011), received media attention via numerous media releases, newsletters and radio interviews, and obtained a number of environmental and industry training awards.

The interests of SGSHS operators are represented by two different industry associations, the Southern Shark Industry Alliance and Sustainable Shark Fishing Incorporated. Recognising the success of FRDC Project 2009/330, Sustainable Shark Fishing Incorporated in conjunction with SEAMEC successfully applied to the FRDC

for funding to provide training of a similar nature to members of their own sector. This report describes the development and delivery of the SGSHS course.

Need

While the performance measures of the SGSHS's target stock — Gummy Shark — show that they are well above the target reference point, some other aspects of the SGSHS are lacking. This has been particularly true in recent years with well publicised spatial closures to reduce interactions with Threatened, Endangered and Protected species, and the School Shark stock remaining below the 20% limit reference point. Further, there is some stigma attached to shark fishing because of the perception that people have from campaigns highlighting the practice of shark finning elsewhere in the world. Combined, these issues affect the SGSHS by reducing profitability through increased observer costs, reduces quotas, and possibly also through market forces with decreased demand in the products due to negative public perception.

A better informed, more compliant, proactive and participatory industry group will lead to improved efficiencies in management, improved stock assessments and the potential to leverage improved public perception. There was a clear need for SGSHS operators to undergo formal training in some aspects of their fishing behaviours, and knowledge of formal and informal requirements, and for their participation in that training to be recognised by other key stakeholders including consumers.

Objectives

1. Interpret the draft Code of Practice to produce a customised training program and learning materials
2. Development of a training program in consultation with industry to promote best practice
3. Delivery of the training program to the shark fishery participants
4. Improved industry practices and mitigation of interactions

Methods

To provide formal accreditation for participants, training was delivered within the Australian Qualifications Framework (AQF). Consultation with SEAMEC (Advance TAFE's Lakes Entrance Campus) confirmed that the required skills and knowledge identified by the steering committee were described by the Unit of Competency

SFIEMS301A Implement and monitor environmentally sustainable work practices (a Unit of Competency is a formal building block for a nationally recognised vocational qualification). *SFIEMS301A* is a unit within the following Seafood Industry qualifications:

- SFI50411 - Diploma of Fisheries Compliance
- SFI40611 - Certificate IV in Seafood Industry Sales and Distribution
- SFI40511 - Certificate IV in Seafood Processing
- SFI40411 - Certificate IV in Fisheries Compliance
- SFI40311 - Certificate IV in Seafood Industry (Environmental Management)
- SFI40211 - Certificate IV in Fishing Operations
- SFI40111 - Certificate IV in Aquaculture
- SFI30611 - Certificate III in Seafood Industry (Sales and Distribution)
- SFI30511 - Certificate III in Seafood Processing
- SFI30211 - Certificate III in Fishing Operations
- SFI30111 - Certificate III in Aquaculture

Only a Registered Training Organisation (RTO) can issue a Statement of Attainment to demonstrate that an individual has met all the requirements of the Unit of Competency. As the principle investigators of this project, SEAMEC as the RTO was responsible for administering the training. Specialising in maritime and fishing training, SEAMEC staff are experienced at working with members of the fishing industry.

A Unit of Competence describes a suite of skills and associated underpinning knowledge that relate to a specific job function. From an educational point of view, a Unit of Competence describes what competence looks like but does not specify how training be delivered. A range of contexts and conditions may be used when training for, and assessing competency. Training was therefore tailored to issues relevant to the SGSHS.

Each Unit of Competence contains Elements and Performance Criteria. Elements are roles or tasks that are performed in the workplace. Beneath each Element sit Performance Criteria. Performance Criteria are guiding statements indicating that the Element has been achieved.

In total SFIEMS301A contains four Elements and 19 Performance Criteria against which participants were assessed. These are shown in Appendix 2.

The SGSHS training course was designed to be delivered over two days. It comprised nine modules, five of which were formally assessed. This method was considered appropriate because it ensured that participants were all presented with the same information, they actively participated in all modules, demonstrated that they had retained the knowledge in a formal assessment, and that the participants received recognised certification if they successfully completed the assessment.

During FRDC Project 2009/330, it was recognised that it was important to the development of the program to engage with key stakeholders to ensure that appropriate modules were being included to provide the most benefit along the aims of the project (Boag *et al.* 2012). This was done by forming a curriculum steering committee, comprising AFMA managers, SETFIA members, OceanWatch, fisheries scientists and a representative of Australian Marine Conservation Society. Because the SGSHS was based on the framework developed during FRDC Project 2009/330, a reduced steering committee — comprising representatives of both the Sustainable Shark Fishing Incorporated (David Stone and Shane Duggins) and Southern Shark Industry Alliance (Anthony Ciconte), and AFMA manager (Mike Gerner), a fishing industry association consultant (Simon Boag) and SEAMEC (Advance TAFE) staff (Richard Owen and Tracey Cuttriss) — met on 29 March 2012 to finalise the curriculum (Table 1).

Table 1. Course modules and name of presenter(s).

Session name	Presenter
1. Introduction, the opportunity for industry: a snapshot of the sector's strategic environment	Simon Boag (SETFIA)
2. Fishery stock assessments	Matt Koopman (Fishwell)
3. Harvest strategies and stock rebuilding strategies	Matt Koopman (Fishwell Consulting)
4. Protected species mitigations and reporting	Matt Koopman (Fishwell)
5. Commercial logbook reporting	Matt Koopman (Fishwell Consulting)
6. Spatial and temporal closures	Phil Ravanello (AFMA)
7. Codes of conduct	Simon Boag (SETFIA)
8. Consumer trends and the customers perspective	John Sussman/Simon Bryant
9. Conclusion: The opportunity from here	Simon Boag (SETFIA)

The introductory session (module 1) worked in an interactive way through a Porter's 5 Forces strategic snapshot model. This identified the key components of each: *bargaining power of suppliers* (quota, fishing grounds, crew, consumables, TEP species

with which to unintentionally interact with), *bargaining power of consumers* (consumer purchasing decisions), *threat of new entrants* (limited entry), and the *threat of substitute products* (aquaculture). Discussion focussed on the relative pressure that these components put on profitability (attractiveness) of the SGSHS. This introduction intended to have candidates reach their own conclusions about what consumers demand, and to create a desire for them to see this as an opportunity rather than a burden.

The modules that followed were then ordered to build on each other (Table 1). Participants were taught about fishery stock assessments (module 2) and how the harvest strategy and stock rebuilding strategy is applied using the assessment results (module 3). The importance of industry-collected data is highlighted throughout these modules. The TEP species module (module 4) defined what a TEP species is, what an interaction is, and what to do if you have a TEP species interaction. This naturally leads into reporting (module 5) which described the correct reporting practices of catch and effort information, discards and TEP species interactions. Building on knowledge gained on strategies to rebuild depleted stocks and protection of TEP species, module 6 focused on a description and enforcement of spatial and temporal closures. To bring together all information presented in previous modules, the Codes of Conduct for each of the two industry organisations were compared and summarised, and suggestions made for change (module 7). The final two modules (modules 8 and 9) aimed to provide inspiration to industry members to take ownership of their fishery, and to practice change by 1) showing environmental stewardship, 2) accurate reporting and participation in stock assessments, and 3) creating a strong and stable industry organisation (Figure 1).

SGSHS operators were invited to participate at one of three courses held at the key ports of Lakes Entrance, Devonport and Adelaide. During the course they undertook each module, and were assessed in a written exam to test their recall of key points. A practical exercise on reporting catch and effort information, discards and TEP species interactions was also undertaken. Participants were also given information folders containing sections on each module and were encouraged to store these on their vessel following the course. Documentation of the training program enables it to be updated, and rolled out again after some time to capture new entrants into the fishery, and refresh the memory of past participants. This initial unit also lays a framework for

related future units. Potentially a participant might undertake further training to achieve a full qualification or skill set.

A branding logo was developed during FRDC Project 2009/330 that can be used to identify vessels with accredited skippers (Figure 2). This has been made available to the two SGSHS associations for their use. To enable course evaluation, questionnaires were given to all participants to complete after the final days training.



Figure 1. Final two slides of course



Figure 2. Logo developed for advertising participation in course

Results and Discussion

Planning

The unit selected, SFIEMS301A, addresses the knowledge, processes and techniques necessary to implement and monitor environmentally sustainable work practices in the fishing industry, including the development of processes and tools. It applies to those who have responsibility for a specific area of work or who lead a work group or team.

The following describes the curriculum originally developed for the CTS, and adapted for the SGSHS, with examples relevant to the course that was delivered.

1. Investigate current practices in relation to resource usage

- Regulations (e.g. spatial and temporal closures, reporting requirements)
- Setting TAC's (harvest strategy, stock assessments)
- Compliance to environmental regulations (EPBC Act, TEP species interactions, reporting)
- Information collection and recording (e.g. catch, effort and TEP species interactions)
- Work practices/processes (e.g. TEP species interaction mitigation, reporting discards of quota and non-quota species)

2. Set targets for improvements

- Stock rebuilding strategies
- Interactions with protected species (codes of conduct)
- Logbook reporting and reporting of discards

3. Implement performance improvement strategies

- Interactions with protected species (reporting, mitigation techniques, codes of conduct)
- Logbook reporting and reporting of discards

4. Monitor performance

- Recording procedures
- Reporting (interactions and discarding: industry reporting vs. observed data)

Using that framework, each subject was developed into a session plan (based on that shown in Appendix 6 of Boag *et al.* 2012), that was used to compile the appropriate information for delivery, and construction of PowerPoint presentations within a common template. Assessment questions were also developed for each subject (Appendix 4).

Courses

Attendance at courses was above expectation, and included owners, skippers and senior deck hands. Overall, a total of 64 industry members participated in the training courses (Table 2), four more than what was anticipated. Active participation varied between members, but in general, was very good. All participants attained accreditation.

Feedback received from participants was excellent (Table 3). All respondents selected “agree” or “strongly agree” for six of the ten questions, while there were two responses of “disagree” to question 3, and one responses of “disagree” to each of questions 6 and 7.

Table 2. Number of industry participants attending each course

Course	Number of participants
Lakes Entrance (10–11 May 2012)	29
Devonport (22–23 May 2012)	14
Adelaide (29 – 30 May 2012)	21
Total	64

Table 3. Ratings given to different aspects of the course by participants

Question	Number of responses				n/a
	Strongly disagree	Disagree	Agree	Strongly agree	
Q1. Sufficient time was allowed for discussion	0	0	33	31	
Q2. Training was presented at a suitable level	0	0	27	37	
Q3. The trainer managed to engage all participants	0	2	19	35	
Q4. The training was well organized and professionally conducted	0	0	24	40	
Q5. Trainers were effective in their teaching	0	0	28	36	
Q6. The trainer used up to date equipment, facilities and materials	0	1	27	35	1
Q7. Assessments were based on realistic activities	0	1	27	35	1
Q8 Trainers were able to relate material to the workshop	0	0	27	37	
Q9. Overall I am satisfied with the training	0	0	22	42	
Q10. I would recommend Advance TAFE to others	0	0	20	43	1

Benefits and Adoption

It was anticipated that about 60 SGSHS skippers would attend training courses delivered by this project. Participation exceeded expectations with 64 owners, skippers or senior crew attending, and all receiving nationally recognised accreditation. Excellent feedback from questionnaires, active contribution to discussion and return attendance on second day of courses demonstrates the relevance of the subject matter, and that its method of delivery was appropriate.

If improved practises communicated during these courses are adopted, there will be clear benefits to the environment. While the adoption of some aspects of this course cannot be evaluated, there are others for which it will be possible to quantify over time. For example, in direct response to FRDC Project 2009/330, Knuckey and Koopman (2011) found a large increase in reporting rates of seal interactions. Those increases occurred immediately after the CTS courses, and were made by crews that had attended the courses. There was also a large increase in the reporting of “discards” (Boag *et al.* 2012). Likewise, it will be possible in the near future (there is often a lag of about 2 months between the fishing operation, and those data becoming available) to make comparisons of reporting rates of TEP species and discards before and after the SGSHS courses. Inferences could then be made regarding improvement in aspects of fishing practices that could not be measured.

It was not within the scope of this project to communicate participation to the media or general public, however the industry associations can now promote their industry’s accreditation in order to improve stakeholder perception of the industry from seeing them being pro-active in addressing environmental concerns.

Further Development

The majority of SGSHS skippers and many owners and crew have participated in, and been accredited, during the improved environmental operations course. Over time there will be turnover of skippers and crew, and this will require retraining. The industry associations are now responsible to initiate such retaining in the future. Re-running the course at least every two years in some form to cover new entrants into the fishery, and also to retrain past participants to refresh the memory or to provide updated information is recommended.

Planned Outcomes

There are two major outcomes from this project; increased environmental stewardship in the SGSHS and an improved stakeholder perception of the SGSHS. Increased environmental stewardship will have a direct affect on the management and sustainability of the SGSHS through improved reporting of and reduced interactions with protected species and greater compliance with area closures, while improved understanding of other compliance activities, reporting requirements, stock assessments and management strategies will improve the data collected by industry members, acceptance of management decisions and compliance with management directions. With the majority of SGSHS skippers having been accredited during this course, the industry associations are in a position to leverage improved public perception, which is important to maintain the social license that the fisher requires to ensure long-term operation.

The outcomes achieved during this project are shown against objectives in Table 4.

Table 4. Planned outcomes versus achievement

Project Objective	Degree of Achievement
Interpret the draft Code of Practice to produce a customised training program and learning materials	Achieved.
Development of a training program in consultation with industry to promote best practice	Achieved.
Delivery of the training program to the shark fishery participants	Achieved. Exceeded expectations by training 4 more industry members than anticipated.
Improved industry practices and mitigation of interactions	Cannot be evaluated until the May/June SGSHS data becomes available.

Conclusions

- A training course based on the Unit of Competence *SFIEMS301A Implement and monitor environmentally sustainable work practices* was developed to educate SGSHS skippers, owners and crews on improved environmental operations.
- The syllabus was modified from that produced during FRDC Project 2009/330 by a committee comprised of industry members, an AFMA manager and SEAMEC staff.

- The course comprised 9 modules delivered over two days at each of three locations; Lakes Entrance, Devonport and Adelaide.
- A total of 64 participants (versus a planned 60) were trained and accredited. They included owners, skippers and senior crew.
- Evaluation of adoption of course content was not possible at the time of writing this report because of the lag in logbook data entry into the AFMA database (there is a lag of up to two months), however this would be possible retrospectively.

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Appendix 1 - Intellectual Property

There is IP associated with the course content developed during this project. Individual presenters developed and used PowerPoint presentations. Approval has not been sought for these presentations to be released into the public domain. These presentations are viewed as FRDC IP category B. These presentations were not project objectives.

SFIEMS301A Implement and monitor environmentally sustainable work practices



Improved Environmental Work Practices Record of Evidence

The candidate consistently

Assessment Criteria	CM	NC	Comments
Element 1. Investigate current practices in relation to resource usage			
1.1 Environmental regulations applying to the enterprise are identified.			
1.2 Procedures for assessing compliance with environmental regulations are evaluated for their effectiveness.			
1.3 Information on environmental and resource efficiency systems and procedures is collected, and when appropriate, provided to the work group.			
1.4 Current resource usage is measured and documented by members of the work group.			
1.5 Current purchasing strategies are analysed and documented			
1.6 Current work processes are analysed to identify areas for improvement.			
Element 2. Set targets for improvements			
2.1 Input is sought from stakeholders, key personnel and specialists.			
2.2 External sources of information and data are accessed as required.			
2.3 Alternative solutions to workplace environmental issues are evaluated.			
2.4 Efficiency targets are set.			

SFIEMS301A Implement and monitor environmentally sustainable work practices



Element 3. Implement performance improvement strategies.				
3.1	Techniques and tools are sourced to assist in achieving efficiency targets.			
3.2	Continuous improvement strategies are applied to own work area and ideas and possible solutions are communicated to the work group and management.			
3.3	Environmental and resource efficiency improvement plans for own work group are integrated with other operational activities and are implemented.			
3.4	Suggestions and ideas to improve the management of environmental and resource efficiency are sought from stakeholders and acted upon where appropriate.			
3.5	Costing strategies are implemented to fully value environmental assets.			
Element 4. Monitor performance.				
4.1	Outcomes are documented and reports on targets are communicated to key personnel and stakeholders.			
4.2	Strategies are evaluated.			
4.3	New targets are set and new tools and strategies are investigated and applied.			
4.4	Successful strategies are promoted and, where possible, participants are rewarded.			

Appendix 3 - Staff

Name	Organisation	Project Involvement
Simon Boag	SETFIA	Course facilitator/presenter
Matt Koopman	Fishwell Consulting	Scientist/course presenter
Ron Stott	SEAMEC	Course facilitator
Richard Owen	SEAMEC	Principle Investigator & Project Manager

Appendix 4 - Assessment Questions

Topic: Stock assessments (How we set quotas?)

Q 1. What document (plan) specifies the requirement for fisheries stock assessments in the GHAT?

Q 2. List three ways that the fishing industry is involved in stock assessments?

Q 3. Which factors are taken into account when analysing catch rates (known as standardisation) in stock assessments? (circle the correct answer or answers)

- a) Vessel
- b) Season
- c) Depth
- d) Area
- e) All of the above.

Q 4. List two ways that Industry can improve stock assessment through changing their practices.

Topic: Spatial and temporal management

Q 5. Name 3 reasons why a part of the fishery would be closed?

Q 6. What is the name of the rule for transiting a closure?

Q 7. What is the best course of action if you are unable to avoid being in a closure (steaming or drifting) due to some unforeseen circumstance?

Q 8. Is a voluntary closure as important as a regulated closure? If so why is it?

Q 9. What two things should you do if you catch a Great White Shark?

Topic: Stock rebuilding

Q 10. Why is information provided by Skippers on species managed under stock rebuilding strategies so important?

Q 11. Name the GHAT species managed under stock rebuilding strategies

Q 12. What are the two stock reference points that drive harvest strategies in the fishery?

Q 13. What reference point triggers a stock rebuilding strategy?

Q 14. What is the primary strategy for rebuilding a stock?

Q 15. What two things should Skippers do if they start catching a species managed under a rebuilding strategy?

Topic: Reporting

Q 16. List 3 things that fishing logbook data are used for?

Q 17. Which two Acts require you to complete logbooks?

Q 18. When filling in your logbook, you must separate species from 'mixed fish' if you?

- a) Catch more than 1kg
- b) Catch more than 5kg
- c) Catch more than 10kg
- d) Acknowledge it's a quota species.

Q 19. When do logbook sheets need to be returned to AFMA?

Topic: TEP species

Q 20. What is an interaction?

Q 21. Which TEP species do you need to report interactions with in your logbooks? Which TEP species do you not need to report?

Q 22. What is the primary consideration in assessing and implementing mitigation techniques?

Q 23. What three actions should you take with regard to preventing interactions with sea lions?

Q24. What actions would you take after interaction has occurred with regard to release techniques?

Improved Environmental Work Practices

Session plan for Shark Fishery workshops

Day 1

Time	Duration	Who	Content
9.00am	0.30	RS, SB	Introduction, housekeeping, forms, email addresses
9.30am	1.00	SB	<p>Strategic Review</p> <p>Current practice in relation to environmental regulations (E1)</p> <ul style="list-style-type: none"> • Current state of the fishery including challenges • Environmental and social concerns • Perception of the fishery <p>Targets for improvement (E2)</p> <ul style="list-style-type: none"> • What options exist for improving the environmental performance of the fishery?
10.30am	0.30		MORNING TEA
11.00am	0.45	SB	<p>Strategic Review (cont)</p> <p>Targets for improvement (E2)</p> <ul style="list-style-type: none"> • What do the regulations say? Fisheries Management Act EPBC Act Codes of Practice <p>Powerpoint presentation, Vox Pop video, Taronga Zoo video. Group discussion</p>
12.00pm	1.00		LUNCH
1.00pm	1.30	MK	<p>Stock assessments and TAC setting</p> <p>Current practice in relation to environmental regulations (E1)</p> <ul style="list-style-type: none"> • Relevant regulations • Management plan

			<ul style="list-style-type: none"> • Compliance recording (log books and accountability) <p>Targets for improvement (E2)</p> <ul style="list-style-type: none"> • Improved data recording (s**t in/s**t out) • Log books sent in complete and on time • Assessment process RAG meetings Data summaries Quantitative assessments RBC's TAC's Undercatch/overcatch <p>Performance improvement strategies (E3)</p> <ul style="list-style-type: none"> • Implement improvements Increased reporting of discards Increased accuracy of data <p>Monitoring of environmental operations (E4)</p> <ul style="list-style-type: none"> • Observation and reporting procedures Logbook records • What are the benefits to the industry and individuals? Better stock assessments Increased TAC? Sustainable fisheries <p>Powerpoint presentation, stock assessment video, group discussion</p> <p>ASSESSMENT</p>
2.30pm	0.30	SB	<p>Mark/Recapture – estimating population size</p> <p>Current practice in relation to environmental regulations (E1)</p> <ul style="list-style-type: none"> • Why are fish tagged? Estimates of population size Estimates of population age structure Estimates of distribution and movement patterns <p>Targets for improvement (E2)</p> <ul style="list-style-type: none"> • Improved reporting of tagged individuals • Improved accuracy of reported data

			<p>Performance improvement strategies (E3)</p> <ul style="list-style-type: none"> • Submission of tags with required data <p>Monitoring of environmental operations (E4)</p> <ul style="list-style-type: none"> • Maintain reporting requirements of tags <p>Powerpoint presentation, practical activity (how many beans in the bag?), group discussion</p>
3.00pm	0.30		AFTERNOON TEA
3.30pm	1.30	MK	<p>Stock rebuilding strategies</p> <p>Current practice in relation to environmental regulations (E1)</p> <ul style="list-style-type: none"> • What are the regulations? Commonwealth Harvest Strategy and how legislated How the regulation works with respect to stock rebuilding Higher level regulation Ramifications of overfishing Species under rebuilding strategies • How does the industry comply? (work practices) Actions from harvest strategy control the rules • How is compliance recorded? Fishery monitoring programs <p>Targets for improvement (E2)</p> <ul style="list-style-type: none"> • In what ways can compliance be improved? Reporting • What targets are realistic? Reference points under the harvest Strategies <p>Performance improvement strategies (E3)</p> <ul style="list-style-type: none"> • How can improvements be implemented? Industry initiatives under stock rebuilding strategies <p>Monitoring of environmental operations (E4)</p> <ul style="list-style-type: none"> • Observation and reporting procedures What is in fishery monitoring programs • What are the reporting requirements? Already covered above • What is the process for reviewing and evaluating

			<p>targets and reporting requirements? Stock assessments and RAG's</p> <ul style="list-style-type: none"> • What are the benefits to the industry or individuals? Better results from making improvements in reporting and other contributions <p>Powerpoint presentation, group discussion</p> <p>ASSESSMENT</p>
5.00pm	0.30	JS	<p>Consumer trends and the Customers perspective</p> <p>Current practice in relation to environmental regulations (E1)</p> <ul style="list-style-type: none"> • Current market perceptions of the fishery and landed catch <p>Targets for improvement (E2)</p> <ul style="list-style-type: none"> • What's the fish really like? • What's the potential value of the catch? <p>Performance improvement strategies (E3)</p> <ul style="list-style-type: none"> • Marketing and processing to value add • Commodity vs product <p>Monitoring of environmental operations (E4)</p> <ul style="list-style-type: none"> • Improved market value provides greater opportunity for stewardship <p>Presentation and group discussion</p>
5.30pm			CLOSE

Day 2

Time	Duration	Who	Content
9.00am	1.30	MK	<p>Reporting</p> <p>Current practice in relation to environmental regulations (E1)</p> <ul style="list-style-type: none"> • Requirements under legislation Fisheries Management Act EPBC Act AFMA • Industry compliance Reporting and data use Importance of completing logbook correctly Examples of misreporting Consequences of misreporting <p>Targets for improvement (E2)</p> <ul style="list-style-type: none"> • How to correctly fill out a logbook • Real time communication with AFMA • Feedback to AFMA on reporting requirements and process • Reduction in non-compliance ‘errors’ <p>Performance improvement strategies (E3)</p> <ul style="list-style-type: none"> • Implementation of improvements Discuss reasons for shortfalls in current logbook reporting practices Discuss possible improvements to logbooks Discuss other ways to ensure better logbook reporting <p>Monitoring of environmental operations (E4)</p> <ul style="list-style-type: none"> • Process for review and evaluation Comments from AFMA • What are the benefits to the industry or individuals Cost saving Stock assessments Quotas Legal Industry accreditation <p>Powerpoint presentation and group discussion</p> <p>ASSESSMENT</p>

10.30am	0.30		MORNING TEA
11.00am	1.00	PR	<p>Closures and 5 knot rule</p> <p>Current practice in relation to environmental regulations (E1)</p> <ul style="list-style-type: none"> • Requirements under legislation Fisheries Management Act EPBC Act AFMA • Industry compliance <p>Targets for improvement (E2)</p> <ul style="list-style-type: none"> • VMS • Reporting (real time and logbooks) <p>Performance improvement strategies (E3)</p> <ul style="list-style-type: none"> • Embed improvement targets into operating procedures <p>Monitoring of environmental operations (E4)</p> <ul style="list-style-type: none"> • Monitor compliance across the fishery <p>Powerpoint presentation and group discussion</p> <p>ASSESSMENT</p>
12.00pm	1.00		LUNCH
1.00pm	1.00	MK	<p>TEP interactions (including reporting)</p> <p>Current practice in relation to environmental regulations (E1)</p> <ul style="list-style-type: none"> • Definitions What is a TEP species? What is an interaction? • Requirements under legislation and regulations EPBC Act MOU between AFMA and DEWHA Fisheries Management Plan Codes of Practice • Current work practices in relation to TEP's that the fishery encounters What are the issues? Current mitigation strategies in the GHAT

			<p>Targets for improvement (E2)</p> <ul style="list-style-type: none"> • Acknowledgement that there may be a problem • What other mitigation and avoidance techniques are out there? • Improved mitigation techniques • Experimentation • Improved reporting • Handling <p>Performance improvement strategies (E3)</p> <ul style="list-style-type: none"> • Implement simple mitigation measures • What other mitigation measures are suitable for your vessel? • Vessel Management Plans <p>Monitoring of environmental operations (E4)</p> <ul style="list-style-type: none"> • Observation and reporting procedures Logbooks Observers AFMA reports to DEWHA • Process for reviewing and evaluating targets and reporting requirements Comparing interactions between trips with observers and not observers • Benefits to the industry or individuals Can demonstrate improvements Legitimacy • Accreditation <p>Powerpoint presentation and group discussion</p> <p>ASSESSMENT</p>
2.00pm	0.30	MK	<p>Codes of conduct</p> <p>Current practice in relation to environmental regulations (E1)</p> <ul style="list-style-type: none"> • Review existing Codes of Conduct <p>Targets for improvement (E2)</p> <ul style="list-style-type: none"> • One Code of Conduct for the fishery • Language and accessibility • Ownership and compliance

			<p>Performance improvement strategies (E3)</p> <ul style="list-style-type: none"> • Develop one Code of Practice <p>Monitoring of environmental operations (E4)</p> <ul style="list-style-type: none"> • Compliance with the Code of Practice • Reporting standards • Reduction of breaches • Public perception • Stewardship <p>Powerpoint presentation and group discussion</p> <p>ASSESSMENT</p>
2.30pm	0.30		AFTERNOON TEA
3.00pm	1.00	SB	<p>The opportunity from here</p> <ul style="list-style-type: none"> • Review of all workshop sessions • Improvements to the fishery are the responsibility of all operators • Choice (the fork in the road) • Good behaviour is a rewarded cycle • Work together • ‘Own’ the fishery • Maintain awareness and keep ahead of emerging issues
4.00pm			CLOSE

Presenters

SB Simon Boag
 RS Ron Stott
 MK Matt Koopman
 PR Phil Ravello
 JS John Susman