

THE LAKES & COORONG FISHERIES SOUTH AUSTRALIA

2010 MSC Surveillance Visit Report
Certificate Number: **SCS-MFCP-F-0075**



Pipi (Goolwa cockles)



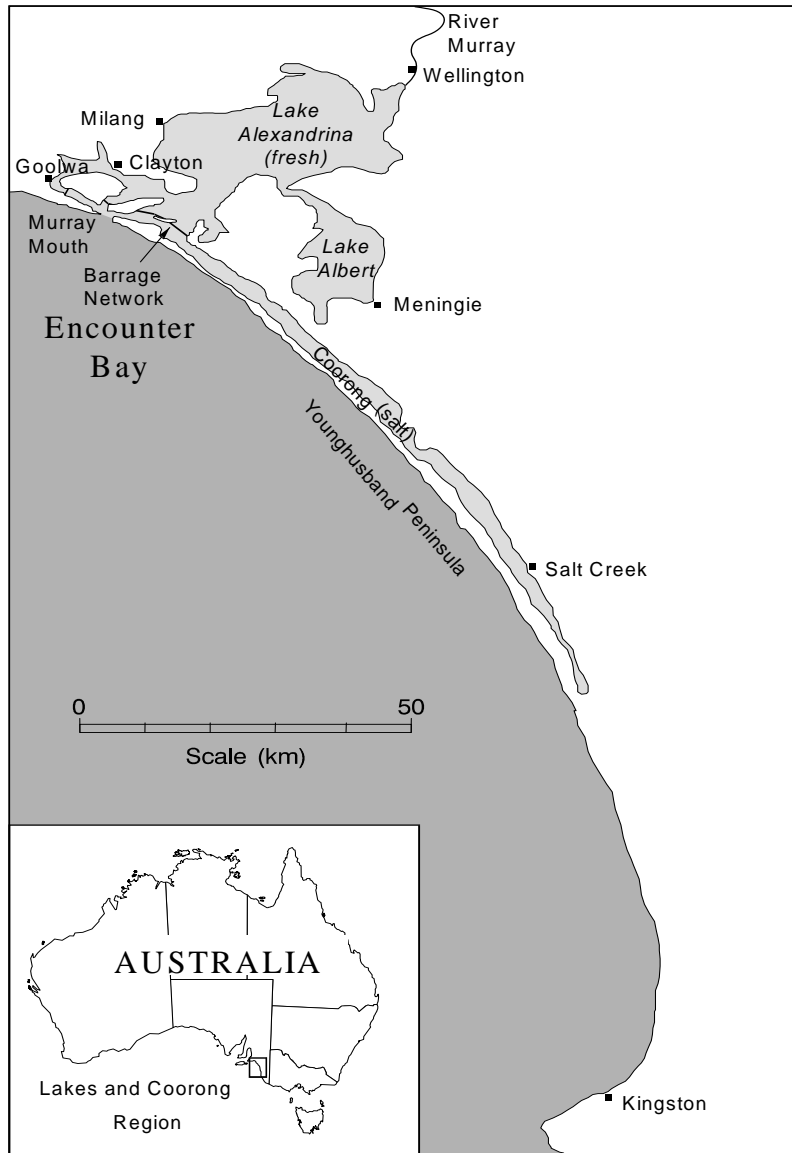
Mulloway



Yellow-eyed mullet



Golden perch



Prepared for:

Southern Fishermen's Association

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Date of Issue	30 June 2010	
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Certification Date	15 July 2008	
Certification Expiration Date	14 July 2013	
Surveillance Team	SCS	Sabine Daume, Ph.D (Lead Assessor) Trevor Ward, PhD (Assessor)
Surveillance Stage	2nd Annual Surveillance	
Methodologies	MSC Accreditation Manual Issue 5, MSC Fisheries Certification Methodology (FCM) Version 6	

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Preface

All facts in this report were provided to SCS by Southern Fisherman's Association. However, the interpretation, opinions, and assertions made in this report as to the compliance of the fishery with MSC requirements are the sole responsibility of Scientific Certification Systems, Inc.

Executive Summary

This is the 2nd Annual Surveillance Report (2010) (after certification) for the Lakes and Coorong Fishery prepared by SCS to meet the requirements of the MSC for annual audits of certified fisheries. It is SCS's view that the Lakes and Coorong fishery continues to meet the standards of the MSC and complies with the 'Requirements for Continued Certification'. SCS issued x minor non-conformances that need to be addressed. Given the situation under each of these conditions, SCS finds that it is acceptable to set a timeline for addressing these non-conformances by the next annual audit. SCS recommends the continued use of the MSC certificate through to the next annual surveillance audit.

Background

The Lakes and Coorong fishery (LCF) in South Australia includes freshwater, estuarine and marine waters of the lower Murray River lakes (Lake Alexandrina and Lake Albert), the Coorong lagoons and the coastal marine waters adjacent to the Sir Richard and Younghusband Peninsulas, to three nautical miles from the low water mark. This fishery is a small-scale, multi-species, multi-method fishery. Four species are certified Pipi or Goolwa cockles (*Donax deltooides*); mulloway (*Argyrosomus japonicus*); yellow-eye mullet (*Aldrichetta forsteri*); and golden perch (*Macquaria ambigua*). According to these species Cockle Rake and Cockle Net, Mesh Nets, Swinger Nets, Hauling nets, Drum Net are used. The management of the fishery is undertaken by the Minister for Agriculture, Food and Fisheries with the advice from PIRSA (Department of Primary Industries and Resources South Australia), Inland Fisheries Management Committee, SARDI (South Australia Research and Development Institute) and SFA (Southern Fishermen's Association).

Assessment process

The annual surveillance audit process is comprised of five general parts:

1. The certification body provides questions around areas of inquiry to determine if the fishery is maintaining the level of management observed during the original certification. In addition, the surveillance team requires that the client provide evidence that the fishery management system has taken the necessary actions to meet all conditions placed on the fishery during the initial certification assessment or any previous surveillance audits.
2. The surveillance/assessment team meets with the client fishery to allow the client to present the information gathered in answer to the questions asked by the surveillance team. The surveillance team can then ask questions about the information provided to ensure its full understanding of how well the fishery management system is functioning and if the fishery management system is continuing to meet the MSC standards.
3. The surveillance team presents its findings to the client fishery at the end of the site visit. The results outline the assessment team's understanding of the information presented and its conclusion regarding the fishery management system's continued compliance with MSC standards. Where indicated, the surveillance team may provide the client fishery with additional

time to supplement the information provided if the surveillance team finds that there are still issues requiring clarification.

4. SCS announces the surveillance visit and invites stakeholders to submit any information they deem appropriate. During this surveillance, SCS as usual set forth a notice of meetings. Initially, no comments were received from stakeholders. However, subsequent to all visits and exchange of information with the client, SCS was contacted with a request to provide information. Since the audit results had been delayed by client's submissions of documents, SCS felt it acceptable to incorporate stakeholder comments and concerns in this final report.

5. Where appropriate, the client fishery submits final information to the surveillance/assessment team for consideration in the surveillance findings and report. The surveillance team then reviews the final information and submits a final report to the client fishery and the MSC for posting on the MSC website. If there are continued compliance concerns, these are presented as non-conformances that require further action and audits as specified in the surveillance report.

Surveillance Team

Two assessment team members were involved in the 2nd annual surveillance audit. As outlined below and to fulfill the requirements of the Fisheries Certification Methodology (section 6.3) team members are clearly experienced and comparably qualified to the original assessment team.

Dr. Sabine Daume, Scientific Certification Systems

Dr. Daume led the audit. Dr Daume is responsible for leading SCS's Sustainable Seafood Certification program, which includes both fishery and chain of custody certification under the auspices of the Marine Stewardship Council (MSC), using the MSC methodology and standards. Dr. Daume has been involved and/ or lead numerous pre and full assessments, including the West Australia Rock Lobster Fishery, Mexican Spiny Rock Lobster Fishery, Mexican Sardine fishery, Australian Icefish fishery, the Australian Lakes & Coroong fishery and the North Pacific Halibut fishery and the North Pacific Sablefish (Black Cod) fishery. Dr. Daume is a marine biologist with special expertise in the biology and ecology of exploited marine resources. She has over 10 years experience working closely with the fishing and aquaculture industry in Australia. In her role as the Senior Research Scientist at the Department of Fisheries in Western Australia, she lead research projects related to fishery and fisheries habitats of temperate and tropical invertebrate species.

Dr. Trevor Ward, Greenward Consulting - Marine Ecosystems and Biodiversity

Dr. Ward was responsible for Principle 2. Dr Trevor Ward is an independent marine ecologist specialising in performance assessment systems for marine ecosystems and biodiversity. Dr Ward provides strategic policy and technical advice to government agencies, fisheries managers, conservation groups and local communities worldwide on the conservation and sustainable management of marine ecosystems and fisheries. He has published more than 140 scientific journal papers, book chapters and research reports in marine ecology and environmental management. In 1996 he was jointly awarded the CSIRO Australia Chairman's Medal for excellence in marine science. In addition to his consulting practice he currently holds academic appointments at 3 Australian Universities, and is a member of 3 government advisory panels for

marine parks, state of the environment reporting and national biodiversity research priorities. Dr Ward has published extensively on the assessment of fisheries within the MSC system, including a university-level text book. Dr Ward has been the Principal 2 assessor for the currently MSC-certified fisheries in Australia and New Zealand, including the original Lakes and Coorong Fishery assessment under the MSC standard.

Data Submitted to SCS

The client, the Southern Fishermen's Association, prepared documents for submittal to SCS in preparation for the on-site meetings and as follow up to questions put forward by SCS during the meetings. All documents can be obtained by contacting Garry Hera-Singh at the Southern Fishermen's Association (SFA).

Ferguson, G. (2010a). The South Australian Lakes and Coorong Fishery: Fisheries Stock Status Report for PIRSA. SARDI Publication No. F2009/000669-1, SARDI Research Report Series No.421.

Ferguson, G. (2010b). Gear interaction of non-targeted species in the Lake and Coorong commercial and recreational fisheries of South Australia. Final Report to Fisheries Research and Development Corporation. SARDI Publication No. F2010/000239-1, SARDI Research Report Series No.436. FRDC Project No. 2005/061, ISBN 978 1 921563 28 7.

Ferguson, G., Ward, T.M., Geddes, M.C. (2008). Do recent age structures and historical catches of mulloway, *Argyrosomus japonicus* (Sciaenidae), reflect freshwater inflows in the remnant estuary of the Murray River, South Australia? Aquatic Living Resources 21: 145–152.

Jones, K. (2009). South Australian Recreational Fishing Survey 2007/08. PIRSA, Fisheries, Adelaide, South Australian Fisheries Management Series Paper No 54. pp. 84.

Ye, Q., Noell, C.J., (2009). Milestone report No. 8 for FRDC Project No. 2006/045: Flow-related fish and fisheries ecology in the Coorong, South Australia.

Lakes and Coorong Consultative Committee: Minutes of the Fifth Meeting 23 April 2010 (Appendix 2).

FRDC funding application: Harvesting Strategy development for South Australia's Lakes and Coorong Fishery for pipi (*Donax deltoides*). SARDI 2008

Rules review project outlines (incl. Lakes and Coorong Fishery). PIRSA 2009

Notice to Fishers: Pipi TACC 2009/10. PIRSA 23 October 2009.

Preliminary project outline: bird fishery interactions: Understanding the potential interactions between commercial fishing and piscivorous birds of the Coorong, Lower Lakes and Murray Mouth (Appendix 1).

No stakeholder comments regarding the second surveillance audit for the Lakes and Coorong Fishery were received prior or during the onsite visit.

Surveillance Meeting

The surveillance audit comprised the following activities:

1. An exchange of information indicating to the client the areas of inquiry by SCS for the surveillance audit
2. Meetings were held in Adelaide, Australia on 28th of May 2010. SCS met with Garry Hera-Singh of the Southern Fisherman's Association and Neil MacDonald, the recently appointed new Executive Officer of the Southern Fishermen Association and Chairman of the Lakes & Coorong Consultative Committee. In addition, SCS met with research management representatives involved with the fishery (Greg Ferguson, Dr Tim Ward of SARDI and Dr Lianos Triantafillos of PIRSA).
3. Follow ups by email were conducted between May and June 2010 to obtain additional documents to complete the surveillance audit.

Summary of Conditions/Non-Conformances

Condition	Indicator	Status of Condition/Non-Conformance
1	1.1.1.2	Open – On Target.
2	1.1.1.2	Open – On Target.
3	1.1.1.3	Open – On Target.
4	1.1.1.3	Open – On Target.
5	1.1.1.3	Open – On Target.
6	1.1.1.3	Open – On Target.
7	1.1.1.4	Open – On Target.
8	1.1.1.4	Open – On Target.
9	1.1.1.4	Open – On Target.
10	1.1.2.1	Open – On Target.
11	1.1.2.1	Open – On Target.
12	1.1.2.1	Open – On Target.
13	1.1.2.1	Open – On Target.
14	1.1.2.2	Open – On Target.
15	1.1.2.2	Open – Minor Non-Conformance
16	1.1.2.2	Open – On Target
17	1.1.2.2	Open – On Target.
18	1.1.2.3	Open – On Target.
19	1.1.2.3	Open – On Target.
20	1.1.2.3	Open – On Target.
21	1.1.2.3	Open – On Target.
22	1.1.3.1	Open – On Target.

23	2.1.1.2	Open – On Target.
24	2.1.3.1	Open – Minor Non-Conformance
25	2.1.5.1	Open – On Target.
26	2.2.2.1	Open – On Target.
27	2.2.2.2	Open – On Target.
28	2.2.2.3	Open – On Target.
29	3.4.1	Open – On Target.
30	3.4.2	Open – On Target.

Conclusion

It is SCS's view that the Lakes and Coorong fishery continues to meet the standards of the MSC and complies with the 'Requirements for Continued Certification'. One minor non-conformance, which was raised during the previous surveillance audit, was closed out (condition 16); the other non-conformance continues and needs to be addressed (condition 15). Due to changes in research priorities and focus on other species like pipi, the client action plan and the timelines for meeting this and other conditions have been adjusted (see Appendix 1 and 2 for more explanations). A new additional non-conformance was raised against condition 24. Overall SCS recommends the continued use of the MSC certificate through to the next annual surveillance audit.

Results

Principle 1 - Status of the stock and recruitment

SARDI Aquatic Sciences collects, collates and validates catch and effort data from the Lakes and Coorong Fishery for stock assessment and stock status reporting. In the past five years, stock assessments have been produced for both freshwater and estuarine species — mullet (2003), golden perch (2004 and 2008), yellow-eye mullet (2005) and pipi (2003 and 2006).

The fifth fishery status report for the South Australian Lakes and Coorong indicated that relevant to the species under certification, there were two PIs below the lower RPs and one above the lower RP. In the 2008/09 season, catch and CPUE for pipi were 41% and 61% respectively below the lower RP (Ferguson, 2010). Catch for yellow-eye mullet was 24% above the upper RP.

Fishery-independent data on distribution and relative abundance continued to be collected during the 2008-09 season.

A pipi research program that was initiated during the 2007/08 season continued during the 2008/2009 season and 2009/2010 (see below) to

- examine the potential for using fishery-independent surveys to assess the status of pipi (Goowla cockle) on the Youngusband Peninsula and to inform future management;

- assess the potential of using length/age frequency information to characterize the demographic structure of pipi (Goowla cockle)

Initial results indicate that there has been a recent recruitment and the stock is improving. The final report of this work is expected in the next 2-3 months.

A new funding proposal was successful and has been funded by the Fisheries Research and Development Cooperation (FRDC). The project aims to develop a new harvest strategy for the pipi fishery. It also includes a new winter sampling (fishery-independent) program.

Principle 2 – Ecosystems impacts

The condition of the Coorong and lower lakes in South Australia remains serious and inflows from the Murray River into lakes Alexandrina and Albert remain low (PIRSA 2008).

Most of the target species for the fishery are reliant on healthy freshwater inflows and their reproduction and early life stages are influenced by these (Sloane, 2005). The Fishery Management Plan explicitly recognizes this and more precautionary TACC were set for pipi fishery for the 2009/10 season (see below).

The severe restrictions on freshwater availability for the Coorong lagoons from the Murray River coupled with very major droughts and floods in recent years in the upper catchment systems and tributaries may be enhancing the importance of the Coorong and the Lakes as a coastal refuge for waterbirds. The limited flow of freshwater into and out of the Coorong may also affect the productivity and abundance of species taken by this fishery in the adjacent marine waters as well as their ecologically dependent species.

Bycatch and interaction with protected species

A Fisheries Research and Development Corporation (FRDC) funded project on the bycatch in the Lakes and Coorong Fishery is ongoing and will provide estimates on discards and risk assessment of bycatch in the fishery. In addition, all license holders are required to record all wildlife interactions using a logbook developed by PIRSA and SARDI and the fishing industry.

The Lakes & Coorong Fishery is in a sensitive habitat area (a RAMSAR wetland that has international significance) and as a result, the fishery is required to monitor their interactions with all forms of wildlife including the birds and mammals that are protected under state and commonwealth legislation.

Fishing Gear

The FRDC project on gear interaction of non-targeted species has been finalized and a report issued (Ferguson 2010b).

Ecological Impacts

The impacts of the fishery are judged to be broadly within acceptable limits at this time of certification. The assessment completed by PIRSA (2008) states that there are no changes in the type and nature of ecological impacts in the fishery. In addition, the management response to impacts has not changed. However, SFA provided an update to this noting that the management of the cockle fishery has changed, and that decisions regarding water availability in the Lakes and Coorong area may have significant impacts on the ecological setting of the fishery.

In terms of water management, it is difficult to know if this will significantly affect the fishery in terms of the impacts fishing has on the ecosystem. It is more likely that any significant shift in water management will overshadow any specific impacts from fishing. Gains or losses in salt water and fresh water inputs will affect not only the stocks fished, but the predators and prey of the stock fished. As of the time of this surveillance, no final management decisions had been made with regard to future water management, and in addition, it remains uncertain how water restrictions are now, and may in the future, affecting the populations of wildlife species that may depend on the fished species for their survival in the Coorong and Lakes ecosystems. The client has provided an important outline for a research project that would address some of this question about the role of the fishery in influencing the effectiveness of the Coorong as a coastal refugia for protected species of waterbirds. The client has been notified that any significant changes need to be reported to the CB for consideration in as quick and efficacious manner as possible to determine if changes will affect the continued certification of the fishery.

Principle 3 - Change in management arrangements.

For the most part, management of the Lakes & Coorong Fisheries is the same as when the fishery was certified. The fishery is still managed under the South Australia Fisheries Management Act of 2007, which has provisions for management of the target species as well as the associated ecosystem.

1. *Change in management of the cockle fishery and results of the parliamentary inquiry about quota allocations*

In December 2007, a quota management system was introduced for the pipi (Goowla cockle) sector of the fishery. The Total Allowable Commercial Catch (TACC) was set at 1,150 tonnes for the 2007/08 season, based on historical catch and effort information. The regulations that established the quota management system and allowed for the allocation of quota units for the Pipi fishery were disallowed in Parliament on 23 July 2008. Following the release of the Select Committee's report on 8 September 2009, the Minister of Agriculture, Food and Fisheries decided to reintroduce the quota management system for pipis. Due to the questionable status of the Pipi (Goolwa cockle) stock the TACC for the 2009/10 season was significantly reduced to 300 t. In addition to protect the pipi spawning stock and increase egg production, the commercial fishing season was delayed until 1 December, a two-week closure from 1 January to 14 January 2010 and a 2 x 1 week closures was implemented commencing 1st March and 1st April 2010.

2. Management of water flows in the Lakes & Coorong area

Water regulation is not in the hands of the fishery management authorities. However, any changes to water management can have significant impacts on the Lakes & Coorong region since significant parts of the area depend heavily on the influx of fresh water for maintenance of the estuarine conditions. The Lakes & Coorong are in the fourth year of a drought where water flows have diminished and the estuarine components of the area are being impacted. Onfarm storage, over allocation and over extraction continue to stress the riverine environment. Proposals are still circulating to make major changes to water management to compensate for the drought, which in turn could have significant impacts on the fisheries. While the catchment system has recently experienced exceptional rainfalls a consequently major flooding across much of inland Australia, it is unclear if any of this water will reach the Lakes or the Coorong system because of the natural losses and human offtake processes mentioned above.

Principle 1 - Status of Previously Raised Conditions

1.1.1.2		
There is knowledge of the life history and biology of the species.		
SG 60	SG 80	SG 300
There are serious gaps in information but the basis of the life history is understood adequately to support a rudimentary evaluation of the fishery.	The life history of the species is clearly documented and understood well enough to support a high degree of confidence in the evaluation of the fishery.	All aspects of the life history of the species are clearly documented and understood so as to support a very high degree of confidence in the evaluation of the fishery.

Score:

Mulloway	75
Goolwa cockles	75

Condition 1 (mulloway): A reliable assessment should be made of the extent to which the juvenile mulloway within the Coorong lagoons and the adult assemblage found off the beaches and in the waters adjacent to the mouth of the Murray River outside the Coorong are interdependent so that a more complete understanding of the life history is available to support a reliable assessment as required under the 80 Scoring Guidepost for this indicator. Data should be collected and analyzed to provide reliable estimates of growth and size and age at maturity. This condition should be met by 2010.

Client Action Plan:	WHO	DUE
1. PhD program (currently underway, but has been problematic due to the prevailing weather conditions), stages of the program are: <ol style="list-style-type: none"> Collection of field data on habitat usage, recruitment, size at age data, growth rates, characteristics of reproduction and sexual maturity size. 	Greg Ferguson	2010

<ul style="list-style-type: none"> b. Laboratory analysis on otolith microchemistry, population substructure (from otoliths), validate size/age data. c. Final analysis and write up. <p>2. Pursue FRDC program investigating otolith microchemistry for mullet population in southern Australia. This would include the following stages:</p> <ul style="list-style-type: none"> a. Develop a proposal in consultation with the key stakeholders and groups. b. Source funding (in-kind plus matching contributions) and partners in the program. c. Tender the research 	<p>SFA, PIRSA, Adel. Uni, SARDI (with WA, Vic, NSW)</p>	
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Progress on Condition 1: Based on information provided by SFA and Greg Ferguson there is sufficient progress to meet this Condition. The Ph.D. project is almost completed and expected to be finalized by the end of 2010. A paper derived from this study was provided to SCS (Ferguson et al. 2008).

Status of Condition 1: Open - On Target

Condition 2 (Goolwa cockles): Reliable estimates of growth and of the size and age at which maturity are attained should be determined, together with a more detailed understanding of spatial distribution and recruitment processes. These life history parameters are necessary to support a more reliable assessment of the species as required under the 80 Scoring Guidepost for this indicator.

This condition should be met by 2011.

Client Action Plan:	WHO	DUE
<p>PhD program. Aims of the program to:</p> <ul style="list-style-type: none"> a) describe spatial and temporal distribution and develop protocols to determine changes in this distribution pattern over time b) determine the reproductive patterns including the length of larval phase; c) annual and inter-annual recruitment patterns; d) determine the growth patterns including length frequency and validate the results; e) investigate ageing techniques; f) estimate the biomass; g) estimate levels of natural mortality; and h) determine the appropriate management strategies for the clam fisheries. 	<p>Coby Matthews</p>	<p>2011</p>

Progress on Condition 2:

Progress is sufficient; significant progress on data collection has been made in the PhD project. Data will complement ongoing research program implemented by SARDI on pipi (Goolwa cockles). A new project was funded by the FRDC to develop harvest strategies for the pipi fishery which include extended winter sampling protocols.

Status of Condition 2: Open – On Target

1.1.1.3		
There is information to measure trends in abundance of stocks.		
SG 60	SG 80	SG 100
An index of abundance is available for each target stock. A time series of such indices is being maintained.	Indices of abundance are monitored on an annual basis. If based on fishery-dependent data, an appropriate and consistent measure of fishing effort is being used, which avoids changes in fishing power associated with changing fishing practices. Factors, e.g. environmental variables or changes in fishing practice, that may affect the index of abundance have been identified and are being monitored and incorporated into statistical analyses.	Fishery independent indices of abundance are available. Indices of abundance of mature fish are available.

Score:

Mulloway	75
Golden perch	75
Goolwa cockles	70
Yellow-eye mullet	75

Condition 3 (mulloway): An improved index of abundance, with finer temporal and spatial resolution, should be developed (to supplement existing indices) that is less likely to be influenced by temporal/spatial changes in fishing operations or other factors, such as environmental variables. Note that (1) existing indices of abundance should be maintained as these have been established as the indicator variables that are calculated and compared against reference points to trigger an appropriate management response; and (2) the refinement of existing fishery-dependent indices of abundance may require the collection of additional and more detailed spatial and environmental data by each type of fishing gear to enhance the catch and effort data currently supplied by fishers and will require appropriate statistical analyses of those data. This is in line with the requirements of the 80 Scoring Guidepost.

This condition should be met by 2010.

Client Action Plan:	WHO	DUE
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1. Further refine the stock assessment process in order to develop more robust yield estimates.	PIRSA	2010
2. Implement ongoing programs to obtain biological and environmental data required to inform stock assessment and performance of key species.	SARDI	2010
3. Continue to investigate alternate methods for assessing stock abundance estimates etc.	SFA	2010

Progress on Condition 3: Progress is sufficient; according to Greg Ferguson, the work is ongoing but not expected to be finalized until the end of 2010.

Status of Condition 3: Open – on target

Condition 4 (Golden perch): An improved index of abundance with finer temporal and spatial resolution should be developed (to supplement existing indices) that is less likely to be influenced by temporal/spatial changes in fishing operations or other factors, such as environmental variables as required under the 80 Scoring Guidepost for this indicator. (See the note appended above to Condition 3 for mulloway).

This condition should be met by 2010.

Client Action Plan:	WHO	DUE
1. Further refine the stock assessment process in order to develop more robust yield estimates.	SFA, SARDI & PIRSA	2010 Revised
2. Implement ongoing programs to obtain biological and environmental data required to inform stock assessment and performance of key species.	SARDI & PIRSA	2012 2010 Revised
3. Continue to investigate alternate methods for assessing stock abundance estimates etc.	SAFIC	2012 2010 Revised 2012

Progress on Condition 4: According to minutes from the Lakes & Coorong Consultative Committee on 23 April 2010 (Appendix 2) research priorities have been changed and the next stock assessment for golden perch is now scheduled for 2011/12. The timeline to meet this condition has been revised.

Status of Condition 4: Open – on target, after revised timeline

Condition 5 (Goolwa cockles): An improved index of abundance should, with finer temporal and spatial resolution, be developed (to supplement existing indices) that is less likely to be influenced by temporal/spatial changes in fishing operations, distribution of cockles, or other factors, such as environmental variables. (See the note appended above to Condition 3 for mulloway) The potential that catch per unit of effort may be sustained (i.e. that cpue is hyperstable) through movement of fishers to new sections of beach needs to be accounted for by appropriate collection and analysis of data as required under the 80

Scoring Guidepost for this indicator.

This condition should be met by 2012.

Client Action Plan:	WHO	DUE
1. Sustainability indicators for the species based on external environmental drivers e.g. primary productivity (diatom abundance, strength of the Bonney up-welling), sea conditions (wind speed and direction, swell height), day/night tides, discards.	SFA	2012
2. Upgraded logbook specifically designed for cockles. Additional information includes: search time, sea conditions, and distance from the Murray Mouth, day/night tides, discards.	PIRSA, SFA	2009
3. Sampling program – size frequency distribution of cockles	PIRSA, SARDI, SFA	2009
4. Improved index of abundance	PIRSA, SARDI, SFA	2011

Progress on Condition 5:

Progress is sufficient; SFA has agreed with SARDI to review the stock assessment indicators for cockles in time to incorporate any new ideas into the revised management plan being put together to meet the Fisheries Management Act 2007.

Logbook data collection has been modified to provide additional data on cockles that can be reviewed and used in future assessments. Evidence has been provided by the client (see appendix 1).

The sampling for cockles continues as in previous years with the supplemental data from the updated logbooks coming available for future assessments. A new project was funded by the FRDC to develop harvest strategies for the pipi fishery which include extended winter sampling protocols.

All other items of the client's action plan are not due until 2011 or 2012.

Status of Condition 5: Open – On Target

Condition 6 (Yellow-eye mullet): An improved index of abundance with finer temporal and spatial resolution should be developed, as required under the 80 Scoring Guidepost for this indicator (to supplement existing indices), that is less likely to be influenced by temporal/spatial changes in fishing operations or other factors, such as environmental variables. (See the note appended above to Condition 3 for mulloway).

This condition should be met by 2010.

Client Action Plan:	WHO	DUE
1. Further refine the stock assessment process in order to develop more robust yield estimates.	SFA, PIRSA, SARDI	2010
2. Implement ongoing programs to obtain biological and environmental data required to inform stock assessment and performance of key species.	PIRSA, SARDI	2010
3. Investigate alternate methods for assessing stock abundance estimates.	SFA	2010 Revised 2012

Progress on Condition 6: According to the minutes from the Lakes & Coorong Consultative Committee on 23 April 2010 research priorities have been changed and the next stock assessment for yellow-eye mullet is now scheduled for 2012/13. The timeline to meet this condition has been revised.

Status of Condition 6: Open – on target with revised timeline

1.1.1.4		
There is adequate knowledge of environmental influences on stock dynamics to manage the fishery for the target stock.		
SG 60	SG 80	SG 100
A conceptual understanding of the relationships between fish abundance and both habitat and environment has been developed.	Relationships between environmental variables and catches, indices of abundance, growth, etc. have been investigated at least qualitatively.	There is a sound understanding of the relationship between catches and/or indices of abundance and environmental variables.

Score:

Mulloway **79**
Goolwa cockles **70**
Yellow-eye mullet **75**

Condition 7 (mulloway): The influence of freshwater outflows and other environmental variables on the abundance and distribution of mulloway should be ascertained, and their implications for management considered as required under the 80 Scoring Guidepost for this indicator.

This condition should be met by 2010.

Client Action Plan:	WHO	DUE
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<p>1. FRDC Freshwater Flow Project - objectives include:</p> <ul style="list-style-type: none"> a. Determine the distribution, relative abundance and size/age structure of (black bream, greenback flounder, yellow-eye mullet, congollis and gobies) and the relationship with habitat and environmental conditions. b. Examine aspect of reproductive biology and how environmental influences affect spawning success. c. Investigate influence of habitat, salinity, water quality, food availability etc on critical life stages. d. Investigate the relationship between freshwater flows (timing, quantity and duration) on recruitment success and fisheries productivity. 	<p>Qifeng Ye (SARDI)</p>	<p>2010</p>
<p>2. PhD program (see condition 1)</p>	<p>Greg Ferguson</p>	<p>2009</p>

Progress on Condition 7: The work on the FRDC project 'Flow-related effects on fish and fisheries ecology in the Coorong, South Australia' is ongoing. The program aims to evaluate the ecological trade-off for different water management scenarios as well as different future climate scenarios for the Murray- Darling Basin. The last milestone report submitted to FRDC in 2009 (milestone rep. 8) indicate that the project is on target, 75% of the data analysis is completed and response models have been developed and tested for 4 finfish species.

However the acting PI of the project Noell has resigned and the final report is now expected in October 2010.

The Ph.D. work continued and is scheduled to be completed by the end of 2010. The project will review a number of the variables affecting Mullocky.

Status of Condition 7: Open – On Target

Condition 8 (Golwa cockles): The influence of freshwater outflows and other environmental variables on the abundance and distribution of Goolwa cockles should be explored (either qualitatively or quantitatively), and their implications for management considered as required under the 80 Scoring Guidepost for this indicator. This condition should be met by 2011.

Client Action Plan:	WHO	DUE
<p>1. PhD program. Aims of the program to:</p> <ul style="list-style-type: none"> a. Describe spatial and temporal distribution and develop protocols to determine changes in this distribution pattern over time. b. Determine the reproductive patterns including the length of larval phase. c. Annual and inter-annual recruitment patterns. d. Determine the growth patterns including length frequency and validate the results. e. Investigate ageing techniques. 	<p>Coby Matthews</p>	<p>2011 (if PhD candidate remains fulltime)</p>

<ul style="list-style-type: none"> f. Estimate the biomass. g. Estimate levels of natural mortality. h. Determine the appropriate management strategies for the Clam fisheries. 		
2. FRDC Freshwater Flow Project (see above)	Qifeng Ye (SARDI)	2009
3. Influence of the other environmental variables on the cockle stocks e.g. diatom levels from water sampling (Ken Lee)	SFA	2011 (dependent upon weather specifically rainfall)

Progress on Condition 8: Progress on the first part of the client's action plan is sufficient; significant progress on data collection has been made in the PhD project. Data will complement ongoing research program implemented by SARDI on pipi (Goolwa cockles). For more detail see progress on condition 2.

For progress on the FRDC project 'Flow-related effects on fish and fisheries ecology in the Coorong, South Australia' see condition 7 above.

Ongoing research on cockles continues to collect and analyze data
Drought conditions have caused problems with data collection, but efforts are ongoing. Changes in logbooks are also helping to improve the assessments.

PIRSA intends to begin to review the Plan in 2009 in order that it can be completed and included as a statutory plan under the Act in 2010.

Status of Condition 8: open – on target

Condition 9 (Yellow-eye mullet): The influence of environmental variables and catch, CPUE, growth, etc. of yellow-eye mullet should be explored (either qualitatively or quantitatively) as required under the 80 Scoring Guidepost for this indicator.

This condition should be met by 2010.

Client Action Plan:	WHO	DUE
<ul style="list-style-type: none"> 1. FRDC Freshwater Flow Project (see above) 2. Examination of how freshwater flow variables may affect yellow-eyed mullet catch, CPUE, and life history parameters. 	Qifeng Ye (SARDI)	2010

Progress on Condition 9: The work on the FRDC project 'Flow-related effects on fish and fisheries ecology in the Coorong, South Australia' is ongoing. The final report is expected to be released in October 2010 (see above)

Status of Condition 9: open – on target

1.1.2.1

All major sources of fishing mortality, including illegal fishing on the target stock, are measured or estimated.

SG 60	SG 80	SG 100
Estimates on the catch from the target stock by all significant fishing sectors and fisheries, including those exploiting the stock outside the bounds of the Lakes and Coorong fishery, are available.	Data on retained and discarded catches of the target stock are collected from each significant fishing sector at an appropriate spatial and temporal resolution. A broad estimate is available of the mortality of discarded individuals of the target species. Broad estimates of illegal catches are available.	An accurate estimate is available of the mortality of discarded individuals of the target species. Catch data are collected from the fishery at a level of resolution determined by the fishing gear (e.g., haul of a gill net) or fishing technique and at the spatial resolution appropriate to the fishing operation. Accuracy of catch data have been confirmed by fishery-independent data.

Score:

Mulloway	65
Golden perch	65
Goolwa cockles	65
Yellow-eye mullet	65

Condition 10 (mulloway): The 80 Scoring Guidepost for this indicator requires that good data be collected and made available on retained catch and discards to get a better understanding of mortality in the fishery. For this fishery, we are requiring the following activities to meet this goal:

1. Processes should be implemented and data obtained to develop indices or measures of both annual recreational and indigenous fishing activity (catch, effort) that could supplement any future National Recreational Fishing Surveys.
2. Research should be undertaken and an estimate of release mortality determined.
3. Estimates of annual indigenous and illegal catches, and removals through mortality of discarded fish, need to be developed.
4. For each fishing gear and fishing sector, the fishery data (catch and effort) should be collected at a spatial and temporal resolution that is appropriate for subsequent stock assessment.

This condition should be met by 2011.

Client Action Plan:	WHO	DUE
1. Development of methods to estimate catch from recreational, indigenous and illegal harvest and management responses for these.	PIRSA	2010
2. Ongoing ILUA negotiations between indigenous communities and the fishing industry.	ILUA team	Ongoing
3. "Operation Envelop" the illegal harvest reporting program conducted in the Lakes and Coorong Fishery.	PIRSA Compliance	Ongoing
4. Implement a monitoring program for the recreational net sector to ascertain the level of catch and effort from the	PIRSA (NRM)	2010

sector.		
5. Release mortality is being investigated in the Mulloway PhD. Further risk assessment will be determined from the completion of the by-catch study.	Greg Ferguson	2010
6. Provide clarification on the spatial scale in the Lakes and Coorong Commercial Fishing Areas 1-16 as reported in the SA Inland Waters Catch and Effort Returns.	SFA	2009 Revised to 2012

Progress on Condition 10: Programs collecting data are continuing (see explanations above). The final report of an FRDC funded project on “Gear interaction of non-targeted species in the Lakes and Coorong commercial and recreational fisheries of South Australia” was provided to SCS which meets client action plan item no.5. According to the client and PIRSA manager, a compliance risk assessment report is expected in July 2010.

Status of Condition 10: Open – on target, with revised timeline

<p>Condition 11 (Golden perch): The 80 Scoring Guidepost for this indicator requires that good data be collected and made available on retained catch and discards to get a better understanding of mortality in the fishery. For this fishery, we are requiring the following activities to meet this goal:</p> <ol style="list-style-type: none"> 1. Processes should be implemented and data obtained to develop indices or measures of both annual recreational and indigenous fishing activity (catch, effort) that could supplement any future National Recreational Fishing Surveys. 2. Research should be undertaken and an estimate of release mortality determined. 3. Estimates of annual indigenous and illegal catches, and removals through mortality of discarded fish, need to be developed. 4. For each fishing gear and fishing sector, the fishery data (catch and effort) should be collected at a spatial and temporal resolution that is appropriate for subsequent stock assessment. <p>This condition should be met by 2011.</p>

Client Action Plan:	WHO	DUE
1. Development of methods estimate catch from recreational, indigenous and illegal harvest and management responses for these.	PIRSA	2010
2. Ongoing ILUA negotiations between indigenous communities and the fishing industry.	ILUA team	Ongoing
3. “Operation Envelop” the illegal harvest reporting program conducted in the Lakes and Coorong Fishery.	PIRSA Compliance	Ongoing
4. Implement a monitoring program for the recreational net sector to ascertain the level of catch and effort from the sector.	PIRSA (NRM)	2010
5. Complete a desk top search to ascertain the risk profile for post release survival of Golden Perch. The next stock assessment (due 2010) will aim to incorporate post release	SFA	2012

survival estimates from field research.		
6. Provide clarification on the spatial scale in the Lakes and Coorong Commercial Fishing Areas 1-16 as reported in the SA Inland Waters Catch and Effort Returns.	SFA	2009 Revised to 2012

Progress on Condition 11: According to PIRSA manager, golden perch is not a priority species and due to the concerns associated with the pipi stock this species have taken priority in the last few years. SCS accepts the discussions SFA is having with PIRSA and SARDI as acceptable progress toward meeting the Condition. The next formal stock assessment for golden perch is not scheduled until 2011/12. As indicated in condition 4 due to changes in priorities the timeline for this condition has been revised.

Status of Condition 11: Open – on target with revised timeline

<p>Condition 12 (Goolwa cockles): The 80 Scoring Guidepost for this indicator requires that good data be collected and made available on retained catch and discards to get a better understanding of mortality in the fishery. For this fishery, we are requiring the following activities to meet this goal:</p> <ol style="list-style-type: none"> 1. Processes should be implemented and data obtained to develop indices or measures of both annual recreational and indigenous fishing activity (catch, effort) that could supplement any future National Recreational Fishing Surveys. 2. Research should be undertaken and an estimate of release mortality determined. 3. The spatial and temporal resolution of commercial catch statistics should be improved and changes in the distribution of fishing or of cockles assessed appropriately. 4. Estimates of annual indigenous and illegal catches, and removals through mortality of released/sieved undersized cockles, need to be developed. <p>This condition should be met by 2011.</p>
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Client Action Plan:	WHO	DUE
1. Development of methods estimate catch from recreational, indigenous and illegal harvest and management responses for these.	PIRSA	2010
2. Ongoing ILUA negotiations between indigenous communities and the fishing industry.	ILUA team	Ongoing
3. “Operation Envelop” the illegal harvest reporting program conducted in the Lakes and Coorong Fishery.	PIRSA Compliance	Ongoing
4. Provide clarification on cockle sampling program (as required for the provision of quota) beginning in October 2007	SARDI, PIRSA	2010
5. Provide clarification on the spatial scale in the Lakes and Coorong Commercial Fishing Areas 1-16 as reported in the SA Inland Waters Catch and Effort Returns.	SFA	2009

Progress on Condition 12: Cockle research is underway, logbook data collection has been revised and improved and will improve the spatial resolution of the data.

SARDI has stated that they are in the process of reviewing the management plan to meet statutory requirements in 2010

Status of Condition 12: Open – on target

Condition 13 (Yellow-eye mullet): The 80 Scoring Guidepost for this indicator requires that good data be collected and made available on retained catch and discards to get a better understanding of mortality in the fishery. For this fishery, we are requiring the following activities to meet this goal:

1. Processes should be implemented and data obtained to develop indices or measures of both annual recreational and indigenous fishing activity (catch, effort) that could supplement any future National Recreational Fishing Surveys.
2. Research should be undertaken and an estimate of release mortality determined.
3. Estimates of annual indigenous and illegal catches, and removals through mortality of discarded fish, need to be developed.
4. For each fishing gear and fishing sector, the fishery data (catch and effort) should be collected at a spatial and temporal resolution that is appropriate for subsequent stock assessment.

This condition should be met by 2011.

Client Action Plan:	WHO	DUE
1. Development of methods estimate catch from recreational, indigenous and illegal harvest and management responses for these.	PIRSA	2010
2. Ongoing ILUA negotiations between indigenous communities and the fishing industry.	ILUA team	Ongoing
3. Operation Envelop” the illegal harvest reporting program conducted in the Lakes and Coorong Fishery.	PIRSA Compliance	Ongoing
4. Implement a monitoring program for the recreational net sector to ascertain the level of catch and effort from the sector.	PIRSA (NRM)	2010
5. The bycatch study will provide baseline data of discards from which a risk assessment of the post release survival can be assessed and action if required.	SARDI	Ongoing (weather dependent)
6. Provide clarification on the spatial scale in the Lakes and Coorong Commercial Fishing Areas 1-16 as reported in the SA Inland Waters Catch and Effort Returns.	SFA	2009 Revised to 2012

Progress on Condition 13: See Progress on Conditions for 10 and 11 above.

Status of Condition 13: Open – on target with revised timeline

1.1.2.2		
The size and age structure of catches and sex ratio are measured.		
SG 60	SG 80	SG 100
Estimates on the size and/or age composition of the stock fished are available.	Data on the size and/or age composition of representative samples of the commercial catch are collected at an appropriate spatial and temporal resolution and analyzed.	Selectivity of fishing gear is considered when assessing the size and composition of each stock.

Score:

Mulloway	79
Golden perch	79
Goolwa cockles	65
Yellow-eye mullet	60

Condition 14 (mulloway): As required under the 80 Scoring Guidepost for this indicator, an appropriate monitoring program should be established to collect reliable size composition data from the fishery and to monitor changes in annual age/size composition and sex ratio.

This condition should be met by 2010.

Client Action Plan:	WHO	DUE
1. Mulloway PhD program.	Greg Ferguson	2009
2. Using the information from the PhD, a long term sampling program would be established at an appropriate scale to detect any changes.	SFA	2012

Progress on Condition 14: The Ph.D. research on Mulloway is expected to be completed at the end of 2010. From this, management processes will be reviewed to determine what additional measure may need to be taken to properly manage Mulloway.

Status of Condition 14: Open – on target

Condition15 (Golden perch): As required under the 80 Scoring Guidepost for this indicator, an appropriate monitoring program should be established to collect reliable size composition data from the fishery and to monitor changes in annual age/size composition and sex ratio.

This condition should be met by 2010.

Client Action Plan:	WHO	DUE
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1. Sampling program gathering data on the length frequency information, size, otoliths, abundance etc.	SFA, SARDI	2010
2. Stock Assessment report	SARDI	2008-09 Revised to 2012

Progress on Condition 15: As stated in condition 4 and 11, the stock assessment for golden perch has been postponed until 2011/12 due to re-prioritisation and hence the timeline for this condition needs to be revised. This non-conformance was not raised to a major non-conformance because the decisions about changing research priorities are out of the control of the fisheries client. In accordance with the FCM6.7.4 and TAB D-013,

Status of Condition 15: Open – Minor Non-Conformance maintained revised timeline provided

Condition 16 (Golwa cockles): As required under the 80 Scoring Guidepost for this indicator an appropriate monitoring program should be established to collect reliable annual size composition data from the fishery and to monitor changes in these data.

This condition should be met by 2010.

Client Action Plan:	WHO	DUE
1. PhD program.	Coby Matthews	2010 (if candidate remains fulltime)
2. Implementation of quota management for cockles	PIRSA, SFA	2008
3. Sampling program – size frequency distribution of cockles	PIRSA, SARDI, SFA	2008-ongoing

Progress on Condition 16: See Condition 2 for item 1 PhD program and additional sampling program.

The quota management system for the pipi (Golwa cockle) fishery was reintroduced following the release of the Select Committee’s report on 8 September 2009. Due to the questionable status of the Pipi (Goolwa cockle) stock the TACC for the 2009/10 season was significantly reduced to 300 t. Additional measures were put in place to protect the pipi spawning stock. The non-conformance that was raised during the last annual surveillance was closed out.

Status of Condition 16: Open – On target

Condition 17 (Yellow-eye mullet): As required under the 80 Scoring Guidepost for this indicator, an appropriate monitoring program should be established to collect reliable annual age/size composition data from the fishery and to monitor changes in age/size composition and sex ratio.

This condition should be met by 2011.

Client Action Plan:	WHO	DUE
1. Sampling program gathering data on the length frequency information, size, otoliths, abundance etc.	SFA	2010
2. By-catch assessment project.	SFA, SARDI	2009
3. Yellow-eye mullet literature review and gap analysis for the species in order to develop a strategic research plan for the species.	SFA	2010

Progress on Condition 17: See Progress on Conditions for 10, 12 and 13.

Status of Condition 17: Open – On Target

1.1.2.3		
Fishing methods and patterns are well understood.		
SG 60	SG 80	SG 100
Estimates on the fishing effort expended by each significant fishing sector (and fishery), by gear type, are available.	Effort data are collected from each commercial fishery at an appropriate spatial and temporal resolution.	Factors influencing the efficiency of different fishing gears and different sectors have been identified and data are collected to allow changes in efficiency to be assessed. Factors that influence the switching among species in the multi-species fishery have also been identified and taken into account.

Score:

Mulloway	79
Golden perch	79
Goolwa cockles	79
Yellow-eye mullet	79

Condition 18 (mulloway): As required under the 80 Scoring Guidepost for this indicator, the spatial/temporal resolution of commercial effort statistics, by gear type, should be improved and changes in the distribution of fishing or of the fish assessed appropriately.

This condition should be met by 2010.

Client Action Plan:	WHO	DUE
1. Provide clarification on the spatial scale in the Lakes and Coorong Commercial Fishing Areas 1-16 as reported in the SA Inland Waters Catch and Effort Returns.	SFA	2009 Revised to 2012
2. Ensure reporting on effort incorporates changes to provide more resolution.	SFA, SARDI, PIRSA	2010

Progress on Condition 18: See Progress on Conditions 7, 10 and 14.

Status of Condition 18: Open – On Target

Condition 19 (Golden perch): As required under the 80 Scoring Guidepost for this indicator, the spatial/temporal resolution of commercial effort statistics, by gear type, should be improved and changes in the distribution of fishing or of the fish assessed appropriately.

This condition should be met by 2011.

Client Action Plan:	WHO	DUE
1. Provide clarification on the spatial scale in the Lakes and Coorong Commercial Fishing Areas 1-16 as reported in the SA Inland Waters Catch and Effort Returns.	SFA	2009 Revised to 2012
2. Ensure reporting on effort incorporates changes to provide more resolution.	SFA, PIRSA, SARDI	2010
3. Assess changes in fishing effort or changes in fish abundance and distribution.	SFA, PIRSA, SARDI	2011

Progress on Condition 19: See Progress on Conditions for 4, 11 and 15.

Status of Condition 19: Open – On Target

Condition 20 (Goolwa cockles): As required under the 80 Scoring Guidepost for this indicator:

1. The spatial/temporal resolution of commercial effort statistics should be improved and changes in the distribution of fishing or of cockles assessed appropriately.
2. The effort reported by commercial fishers should be modified to be in sufficient detail to allow determination of traveling time, and time spent locating, catching, sorting, and sieving.

This condition should be met by 2011

Client Action Plan:	WHO	DUE
1. Provide clarification on the spatial scale in the Lakes and Coorong Commercial Fishing Areas 1-16 as reported in the SA Inland Waters and Cockle Catch and Effort Returns.	SFA	2008
2. Review of management arrangements and implementation of quota management regime which will incorporate additional information in the catch and effort log book.	PIRSA, SFA	2008-09
3. Ensure reporting on effort incorporates changes to provide more resolution.	SFA, PIRSA, SARDI	2010
4. Assess changes in fishing effort or in cockle distribution.	SFA, PIRSA, SARDI	2011

Progress on Condition 20: New logbooks have been implemented. Updates include the spatial structuring for data collection in the Lakes and Coorong Area. All commercial fishers utilize the new logbooks under the TACC.

Ph.D. on cockle research is examining the life history characteristics of cockles as well as their temporal and spatial distribution (see Progress on Condition 2).

Status of Condition 20: Open – on target.

Condition 21 (Yellow-eye mullet): As required under the 80 Scoring Guidepost for this indicator, the spatial/temporal resolution of commercial effort statistics, by gear type, should be improved and changes in the distribution of fishing or of the fish assessed appropriately. This condition should be met by 2011.

Client Action Plan:	WHO	DUE
1. Provide clarification on the spatial scale in the Lakes and Coorong Commercial Fishing Areas 1-16 as reported in the SA Inland Waters Catch and Effort Returns.	SFA	2010
2. Assess changes in fishing effort or changes in fish abundance and distribution.	SFA, PIRSA, SARDI	2011

Progress on Condition 21: New logbooks have been drafted to reflect the need for additional and better data on fishing effort. The draft has not been finalized yet

Status of Condition 21: Open – On Target

1.1.3.1		
The rules and procedures for limiting effort or catch are adequately defined and effective.		
SG 60	SG 80	SG 100
Rules exist to constrain exploitation to an appropriate level, where this level has been broadly assessed on the basis of historical catches, indices of abundance, fishing practices and expert opinion.	Explicit harvest control rules and procedures have been defined and implemented. Reference points have been adopted such that when an indicator variable falls beyond the reference points, an appropriate management action is triggered that is designed to maintain the fishery within an acceptable range of catches and abundance indices.	The reference points are well selected and precautionary such that, despite inter-annual variability, abnormal levels of recruitment, spawning stock, exploitation or environmental conditions are likely to be detected.

Score: Goolwa cockles 79

Condition 22 (Goolwa cockles): Provide a considered evaluation as to whether the reference points derived from the 1990/91 to 2000/01 data are appropriately precautionary. This is being required since the 80 Scoring Guidepost for this indicator requires an adequate reference point.

This condition should be met by 2011.

Client Action Plan:	WHO	DUE
The move to a quota managed fishery has made the current management reference and trigger points redundant. New reference and trigger points will have to be developed for the fishery.	PIRSA, SARDI, SFA	2011

Progress on Condition 22: There is a timeline developed for a review of the management plans, including stock status requirements. The plan is to be reviewed to meet statutory requirements by 2010.

Status of Condition 22: Open – On Target.

Principle 2 - Status of Previously Raised Conditions

2.1.1.2		
Information on the trophic relationships and interactions of the target species within the food web is adequate to understand the impacts of the fishery.		
SG 60	SG 80	SG 100
Research projects are underway to study relevant food webs in the area.	The main prey and predators of the target species are known.	Quantitative information is available on the position and importance of the target species within the food web at key life stages, derived from extensive research projects on trophic interactions.

Score: 75

Condition 23:

- a. Prepare a technical review and assessment of the likely interactions between the fishery for the 4 assessed species and the likely predators on each species, focusing on spatial and temporal analysis of risks that the fishery may pose to key predators, particularly piscivorous birds, considering the age/size availability of the assessed species.
 - b. Show evidence of support for enhanced levels of high-quality research on predator-prey relationships in the Coorong, and specifically on linkages with the commercially fished species so that main predators can be better understood.
- 2011 due

Client Action Plan:	WHO	DUE

1) Complete a qualitative ecological risk assessment of the fishery on the environment with key experts from all agencies/universities.	PIRSA, SFA	2010
2) Conduct a workshop with all stakeholders with the outcomes of the risk assessment in order to develop strategies and focus for further research and work.	SFA, L&C Management committee	2011
3) University program (masters or PhD) including the following stages: a) Consult with Adelaide University to develop a research proposal that provides information on the predator-prey relationships with piscivorous birds. b) Source funding for the proposal. c) Advertise for a student to complete the study in the coming 12 months.	SFA	2012 a. 2008 b. 2009/10 c. 2009/10
4) SADEH representation on the Lakes and Coorong Co-management Committee.	SFA	2008

Progress on Condition 23:

The ERA is not finalised, and it is currently scheduled to be completed in November 2010. SFA has consulted with the Adelaide University with regard to relevant student projects. SADEH is now represented on the Lakes and Coorong Co-management Committee.

Status of Condition 23: Open – on target

2.1.3.1		
Information on the nature and extent of the by-catch and incidental mortality of non-target species is adequate to determine the ecosystem risks posed by the fishery.		
SG 60	SG 80	SG 100
The main by-catch species in the fishery have been identified, and there is some knowledge of incidental mortality posed by the fishery.	The risks to bycatch species have been assessed (by relevant authorities) to determine the potential impacts by the fishery or related operations. Where appropriate, formal bycatch monitoring programs are in place to support risk assessments.	Bycatch monitoring is conducted in sufficient detail to assess ongoing mortalities to all bycatch species. For species identified at high risk from fishing operations, reviews are conducted to determine the impact on the conservation status of the affected population(s).

Score: 70

Condition 24: The assessment team was not provided with any data or evidence about the type, level or potential impacts of bycatch in the fishery. However, the FRDC project on bycatch (FRDC SA05-29) now underway is noted as an important mechanism for securing a more objective set of data and knowledge on the bycatch. The client is required to provide evidence of the composition and magnitude of the bycatch in the fishery, completion of an assessment of the risks posed by such bycatch, the level of risks assigned, and establishment of monitoring programs for the catch of any key bycatch species

determined as a result of the FRDC project.

This condition should be met by 2011.

Client Action Plan:	WHO	DUE
1. Bycatch assessment study.	SFA, SARDI	2010
2. Complete an ecological risk assessment of the fishery on the environment.	PIRSA	2010
3. Implementation of the Threatened, Endangered, Protected Species logbooks sheets.	PIRSA	2008
4. Improved cockle logbooks	PIRSA	2008
5. Improved finfish logbooks	PIRSA	2011

Progress on Condition 24: The bycatch assessment study has been finalized (see final FRDC report Project No 2005/061; Ferguson 2010b)

The ecological risk assessment is expected to be completed in November 2010 (minutes from the Lakes and Coorong Consultative Meeting April 2010).

A Wildlife logbook has been developed and is being completed according to instructions from SARDI. Evidence was provided of completion of these logbooks in a section of the fishery, but the design and instructions for completing the logbooks will need to be updated as an outcome of the ecological risk assessment. A minor non-conformance has been raised to ensure that the wildlife logbooks are more appropriately designed and operate effectively as a record of interactions between the fishery and any TEP species.

The finfish logbooks have also been drafted but not yet implemented.

Status of Condition 24: Open – Minor Non-conformance raised.

Minor Non-conformance: The instructions for completion of the wildlife interaction forms shall operate to ensure a daily record of all interactions with TEP species. This shall include a null entry if appropriate. The main species of concern should be identified as part of the risk assessment process, and the anticipated interaction rates, gear types etc relevant to those main species should be used as the basis of the wildlife form. The intention of these forms is to provide for efficient data recording that requires very little time or effort from the fisher to complete, be completed by every fisher at the end of every day of fishing, and to provide verifiable data/evidence of the rate of interactions with TEP species across the whole fishery. The operation of the Wildlife Form will be assessed in the 2011 annual audit.

2.1.5.1

Effects of the fishery on the ecosystem, through the removal of target and non-target species and impacts on habitats, are not unacceptable.

SG 60

SG 80

SG 100

Impacts of the fishery on the ecosystem are thought to be acceptable, based on information on impacts from other comparable fisheries situations.	Impacts of the fishery are acceptable based on data derived from this fishery and on advice from a range of ecological experts and stakeholders.	Impacts of the fishery are assessed in ongoing research projects, and quantified by appropriate comparative and manipulative studies using fished and unfished areas, and found to be within acceptable limits.
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Score: 70

Condition 25: In this Condition, the client needs to provide evidence of a cooperative process that involves the RAMSAR and National Park managers and other stakeholders to assess, and as necessary mitigate, the level of trophic-food web risks of the fishery (from bycatch or the removal of target species) to the ecosystem, habitats and non-target species of the three main fishery areas (freshwater, Coorong lagoons, ocean beach). This might be best achieved through a qualitative risk assessment process conducted cooperatively with the park and fishery management agencies after the FRDC bycatch project has been completed, in a manner consistent with that of the AFMA/CSIRO risk assessment methodology – Level 1 (4 years). Condition 24 will resolve concerns about the impacts of bycatch from the fishery.

This condition should be met by 2010.

Client Action Plan:	WHO	DUE
Complete an ecological risk assessment of the fishery on the environment.	PIRSA	2010

Progress on Condition 25: see condition 24

Status of Condition 25: Open – On Target.

2.2.2.1		
Risks associated with the nature and extent of the by-catch of, or habitat interactions with, protected, endangered, threatened or icon species have been determined.		
SG 60	SG 80	SG 100
The main by-catch of protected, endangered, threatened or icon species in the fishery have been identified.	The catch of, and incidental impacts on, protected, endangered, threatened or icon species is monitored and reported, and the data are routinely synthesized and assessed with assistance of an appropriate range of fishery management, ecological expertise and stakeholders	The bycatch of any protected, endangered, threatened or icon species is monitored and reported in detail, and population status of each such species is regularly assessed.

Score: 75

Condition 26: Conditions 24 and 25 both apply.

The FRDC project on bycatch now underway is noted as an important mechanism for securing a more objective set of data and knowledge on the bycatch.

Client Action Plan:	WHO	DUE
1. Bycatch assessment study.	SFA, SARDI	2010
2. Complete an ecological risk assessment of the fishery on the environment.	PIRSA	2010

Progress on Condition 26: Acceptable Progress; work is ongoing, see previous Conditions.

Status of Condition 26: Open – on target

2.2.2.2

Risks associated with the trophic dependency of the protected, endangered, threatened or icon species on the target species within the food web have been determined.

SG 60	SG 80	SG 100
The main trophic dependencies of the protected, endangered, threatened or icon species that occur in the vicinity of the fishery have been identified.	The potential trophic impacts of removal of the target and bycatch species on protected, endangered, threatened or icon species have been assessed using knowledge from other fisheries/areas, and involving the relevant range of ecological expertise and stakeholders.	The potential trophic impact of removal of the target species and bycatch species on protected, endangered, threatened or icon species has been determined using quantitative research projects in this fishery involving studies comparing fished and unfished areas, or equally effective techniques.

Score: 79

Condition 27: Conditions 23, 24, and 25 apply here.

Client Action Plan:	WHO	DUE
1. Refer to actions from 23, 24 and 25.	SFA, PIRSA, SARDI	2011

Progress on Condition 27: Acceptable Progress; work is ongoing, see previous Conditions.

Status of Condition 27: open – on target

2.2.2.3

Risks associated with the use of fishing gear and associated fishing operations in habitats of importance to

protected, endangered, threatened or icon species have been determined.		
SG 60	SG 80	SG 100
The main usage of gear types, fishing operations and deployment practices have been identified.	The main patterns in deployment of gear types and fishing operations in the main habitats have been identified, including extent, location and frequency of use, and studies are underway to determine risks to protected, endangered, threatened or icon species.	The characteristics of each gear type and their deployment details have been quantified, including details of usage near any habitats sensitive for protected, endangered, threatened or icon species, and deployment patterns are routinely monitored and reported for assessment purposes.

Score: 75

Condition 28: The assessment has not been provided with evidence that the physical impacts of the gear and operations of the fishery have been studied in habitats of importance to protected, endangered, threatened or icon species. The client is required to develop a process (such as risk assessment), in collaboration with the relevant agencies and ecological experts, to identify specific habitats that may be at risk of physical impacts (disturbance) from the fishery or its operations, then, if any moderate or higher level risks are identified, establish any relevant further investigations or mitigation procedures, practices etc that may be agreed between relevant agencies, experts and the fishery. The client should then provide appropriate evidence that the level of the impact has been suitably identified, and that investigations or mitigations of this impact are underway.

This condition should be met by 2011.

Client Action Plan:	WHO	DUE
1. Complete an ecological risk assessment of the fishery on the environment.	PIRSA	2010
2. Update and review all industry best practice documents with latest information and technology.	Industry, SeaNet	2011

Progress on Condition 28: Acceptable Progress; work is ongoing, see previous Conditions.

Status of Condition 28: open – on target

Principle 3 - Status of Previously Raised Conditions

3.4.1		
The management system has measures and strategies that restrict gear and practices to avoid by-catch, minimize mortality of by-catch, and reduce discards		
SG 60	SG 80	SG 100

By-catch reduction has been considered by the management system and fishers cooperate in the implementation.	Specific by-catch reduction methods/strategies are included in the management of the fishery.	There are specific requirements in place to significantly reduce by-catch and discards in the management system and results are measured against a series of agreed goals.
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Score: 75

Condition 29: Improve the understanding of by-catch and any impacts on non-target species (Conditions 23, 24, and 25 apply), and once this understanding is improved, introduce specific management measures to address any issues.

This condition should be met by 2011.

Client Action Plan:	WHO	DUE
1. Complete an ecological risk assessment of the fishery on the environment.	PIRSA	2010
2. Bycatch assessment study.	SFA, SARDI	2010
3. History of the Lakes and Coorong Fishery Management, including why the decisions have been made for the fishery.	SFA	2010
4. Develop a Fisher Introductory Kit to assist fishers understand their roles, responsibilities and how they can minimize their environmental impacts and maintain best practices.	SFA, SAFIC	2011

Progress on Condition 29: Acceptable Progress; work is ongoing; see conditions 23, 24, 25.

Status of Condition 29: open – on target

3.4.2		
The management system has measures and strategies that minimize adverse impacts on the habitat.		
SG 60	SG 80	SG 100
The management system has processes to identify and document fishery impacts on all major habitats.	The management system has processes for gathering of knowledge on sensitive habitats in the area of the fishery, and there are mechanisms in place to assess whether the impacts are significant and to respond accordingly.	The management system requires efforts to identify and document fishery impacts on all habitats and mechanisms have been established to assist fishers in changing fishing operations to reduce habitat damage.

Score: 79

Condition 30: Conditions 25 and 28 apply.

Client Action Plan:	WHO	DUE
1. Complete an ecological risk assessment of the fishery on the environment.	PIRSA	2010
2. Update and review all industry best practice documents with latest information and technology. Ensuring that habitats are incorporated into the documents if not already.	SFA, SeaNet	2011
3. Develop a Fisher Introductory Kit to assist fishers understand their roles, responsibilities and how they can minimize their environmental impacts and maintain best practices.	SFA, SAFIC	2011

Progress on Condition 30: Acceptable Progress; work is ongoing, see conditions 23 through 28.

Status of Condition 30: open – on target

References

Ferguson, G. (2010a). The South Australian Lakes and Coorong Fishery: Fisheries Stock Status Report for PIRSA. SARDI Publication No. F2009/000669-1, SARDI Research Report Series No.421.

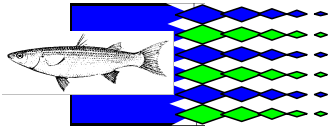
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Sloan, S. (2005). Management Plan for the South Australian Lakes and Coorong Fishery. Adelaide, Primary Industries and Resources South Australia: 122.

Appendix 1: Audit response by client with additional documentation



SOUTHERN FISHERMEN'S ASSOC. INC.

25 June 2010

Sabine Daume
Scientific Certification Systems
Suite 725
2200 Powell Street
Emeryville
CA, 94608, USA

Dear Sabine

Thanks for your time and feedback during the recent audit visit. I apologise for the delay but the last of the compliance reports requested was only received yesterday.

In response to your request for further information as part of this year's audit the following information is provided:

- Condition 4 – The target of the Action Plan was determined from the then research strategy under the Fishery Management Plan. This strategy was not followed due to the need to respond rapidly to what was seen as an urgent need to address a decline in relative biomass in the pipi fishery. A revised Action Plan is attached which is based on the recently agreed revised research strategy for the 2010/11-2014/15 period as agreed at the last Lakes & Coorong Consultative Committee meeting on 23 April 2010 (copy provided during audit visit).
- Condition 6 – An electronic copy of the proposed new finfish logbook has been provided separately by email from Garry Hera-Singh.
- Condition 10 – Updated compliance programs for the current year are attached for activities within the quota managed Pipi fishery and the remainder of the Lakes & Coorong fishery.

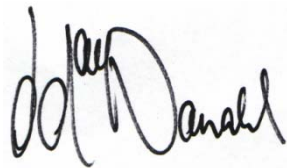
In addition there is a copy of the two quarter reports for activities within the Pipi fishery, with the third quarter report due shortly. Given the seasonal operation of the pipi fishery the reporting is done by quarter. An annual report for the remaining parts of the Lakes & Coorong fishery is included.

- Conditions 11/12/13 – I have been advised that the Minister’s Fisheries Council has not made a decision on when it will next fund a recreational survey. As I understand it, this will be decided once the Council has resolved its resource allocation policy approach.
- Condition 15 – As clarified above, under Condition 4, the lack of a stock assessment for golden perch (callop) will be addressed by the 2011/12 year. We are still seeking information that was collected in conjunction with the CLLAM ecology study which we consider may add to our existing understanding of the resource in advance of the stock assessment.
- Conditions 18 / 19 – A draft revised finfish logbook has been provided under Condition 6. In addition there has been an agreement between industry and SARDI to seek further enhancements to the logbooks and spatial scale of reporting. There is a discussion within industry to further refine the spatial reporting areas within the Lakes in order to better identify areas of fishing, particularly relative to the current changes in water within the Lakes.
- Condition 23 – An electronic copy of the initial project proposed to improve understanding of fishery’s relationships with key bird species is included by email. I have had a preliminary discussion with Qifeng Ye from SARDI over the opportunity to progress this study, through a project to delivered under Murray Futures funding.
- Condition 26 – Copies of Threatened and Protected Species (TEPS) reports are being provided by to Trevor Ward as requested. By definition there are few interactions although fishers do report regular sittings of several species.

The revised Action Plan, taking account of the changes required, due to variations in provision of services is attached by email.

I trust this above is all you require, should there be anything further please do not hesitate to contact me. Once again I apologise for the time it has taken to collect the above information.

Yours sincerely



Neil MacDonald
Executive Officer

Understanding the potential interactions between commercial fishing and piscivorous birds of the Coorong, Lower Lakes and Murray Mouth

Background

In 2006 the Southern Fisherman's Association began a consultative process in an effort to obtain accreditation from the Marine Stewardship Council. Among the principles under which accreditation can be obtained is MSC Principle 2, where "Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends". Under Principle 2, the conditions relevant to piscivorous birds are Conditions 23, 24, 25 and 26. In particular, information regarding the interaction between the fishery and piscivorous birds of the Coorong is required to address the following indicators:

Indicator 2.1.1.2 - Information on the trophic relationships and interactions of the target species within the foodweb is adequate to understand the impacts of the fishery.

Indicator 2.1.5.1 - Effects of the fishery on the ecosystem, through the removal of target and non-target species and impacts on habitats, are not unacceptable.

Indicator 2.2.1.2 - Information on the trophic dependency, habitat use, or other interactions of protected, endangered, threatened or icon species with the target species are adequately understood.

Indicator 2.2.2.2 - Risks associated with the trophic dependency of the protected, endangered, threatened or icon species on the target species within the food web have been determined.

Broadly, an acknowledgement is made that, while the diet and food preferences of key commercial fish species are well known, the main avian predators of these species, particularly on smaller/younger age/size classes, is not well known. In addition, the trophic impacts of the removal of commercial fish on avian predators need to be better understood. More specifically, more information is also required on the impacts of fish removal on "one species of nesting bird" (presumably Fairy Tern *Sterna nereis*). This project proposal aims to address the current shortcomings in knowledge regarding the interaction between commercial fishing and piscivorous birds in the Coorong, thereby addressing the indicators outlined above.

As acknowledged in the MSC Draft Assessment Report for the Fishery, the Fishery currently operates under broad ecological conditions that are currently at an historic low point. The current lack of inflows from the Murray River are primarily responsible for the serious declines that have occurred in the distribution and/or abundance of some piscivorous bird species, as well as ecologically (and commercially) important fish species. While the scale of commercial fishery impacts on piscivorous bird populations is probably small compared to these larger, ecosystem-scale processes, fishery impacts do need to be assessed in the context of the currently poor flow

conditions. In particular, contractions in the distribution of key fish species may have resulted in an increase in the interaction between commercial fishers and piscivorous birds, and may increase competition between the two. Such broader considerations need to be taken into account, especially given the prediction that such poor conditions are unlikely to change in the near future.

This project aims to understand interactions between the Fishery and piscivorous birds using two broad methods: 1) Diet studies, and 2) Targetted studies of foraging behaviour and performance.

Methods

The level to which these species interact with the commercial fishery will be assessed will vary, depending on access to target individuals and availability of resources. Diet studies should be attempted for all of the species listed, with more intensive ecological studies limited to one or two iconic species. These iconic species have been chosen to address the criteria of some of the indicators listed above (related to “protected, endangered, threatened or icon species”), but also act as models for the possible effects of the Fishery on other piscivorous species that don’t necessarily meet these criteria. Details of the life history of these species, and other species on which diet studies should be done, are given below.

1. Diet Assessing the diet of key piscivorous species will be done through the breeding season by visiting breeding colonies and the collection of fish remains from guts (stomach flushes) and regurgitations (adults and chicks). Samples will be analysed for otoliths and other remains, where both fish species and size can be assessed using existing methods. Diet analyses will primarily be performed during the breeding season for those species that breed on and around the Coorong and Lower Lakes (terns, cormorants, pelicans, potentially herons and egrets), when adult and young birds can be accessed for dietary analysis. Supplementary data will be collected directly from behavioural observations of foraging birds, in cases where the fish species that birds prey upon can be determined.

2. Relating foraging performance to breeding success The diet study described above will assist in determining the dependence of piscivorous birds in both commercially-important and non-commercial fish species. However, even if some overlap occurs between the diet of these birds and the commercial fishery, the impacts that the fishery have on birds requires further information. For those species that breed in the Coorong, we require information on how changes in the distribution and abundance of prey fish species affect breeding success (and population viability). Such studies will also provide the minimum thresholds of fish distribution and abundance required to maintain key bird populations in the Coorong. With this information, we can establish “ecological quotas”, that can both assist the commercial fishery in assessing its impact on key piscivorous bird species, and allocate this ecological quota when determining commercial quotas under variable environmental conditions. As discussed above with Fairy Terns, such thresholds need to incorporate fish population processes, to ensure that suitable size classes (eg juveniles) are maintained through recruitment, and that the commercial fishery does not adversely impact on all stages of fish populations that are important to the key bird species.

Information on fish population sizes and processes should be collected as part of a parallel project (see *Concluding Remarks*).

Relating foraging performance to breeding success will be done through a variety of methods. First, the nest sites of breeding bird species will be monitored through the breeding season(s) to determine a range of breeding success variables (eg # eggs laid, # chicks hatched, # successfully fledged, weight of fledglings). For target individuals (see below), these variables will be related to the rate of food delivery, and the nature (species, size) of the food delivered to chicks. This information can be collected in conjunction with the diet study described above, while investigators are visiting breeding sites, and could be collected for all of the breeding bird species.

For two key species (Fairy Tern and Australian Pelican), the variables described above will be related to the foraging performance of breeding adults on feeding grounds. Being central-place foragers during the breeding season, the spatial distribution of foraging performance is not simply related to the distribution and abundance of prey availability, but to this distribution in relation to the position of the nest site (for central-place foragers, individuals need to return to nest sites regularly, and so breeding birds should only travel further for greater return. There is probably a maximum distance which individuals will travel from the nest to feed, beyond which the benefit of the trip does not meet the costs(energy/risk) of the trip). The distribution of foraging performance will be determined through telemetry studies on target individuals (radiotelemetry for Fairy Tern; radiotelemetry and Argos/GPS telemetry for Australian Pelican). These target individuals will form the basis of the relationship between foraging performance and breeding success, but will be compared with the “average” foraging performance of all (non-target) individuals on feeding grounds, and the “average” breeding success of all (non-target) individuals at breeding sites. This study has already begun, through a funded radiotelemetry study of Fairy Terns, to begin in Spring/Summer 2007.

Target Species

Australian Pelican – breeds in the south lagoon of the Coorong, but most likely travels between breeding islands and core areas for commercial fishery. Probably not limited to foraging in Coorong, even during breeding season, also harvesting food from Lower Lakes, including exotic species (Carp and Redfin). Almost certainly takes commercial size fish of commercially important species. Can directly interact with commercial fishers through removal of commercial species from nets, damage to nets, and access to bycatch. Not threatened, but certainly iconic for the Coorong region (perhaps the icon species for the system), and breeding populations have declined severely over the past 20 years.

Fairy Tern – once bred throughout islands in the Coorong (North and South Lagoons); now only breeds on sandy peninsulas immediately south of Murray Mouth. Almost certainly limited to foraging within the Coorong, with the exception of some non-breeding foraging in wetlands around Salt Creek. Unlikely to harvest commercial-sized fish, although probably forages on juveniles of commercial species, thus interacting with the fishery through fish population processes. Should commercial harvesting limit the subsequent recruitment of juveniles of

selected species into the Coorong populations, Fairy Tern breeding success may be impacted on (these impacts need to be done in conjunction with fish population models – see below). However, also takes non-commercial fish species (eg Small-mouth Hardyhead), that are the most numerically abundant species in the Coorong, and probably form the bulk of the Fairy Tern's diet. A threatened and iconic species: listed as Vulnerable under SA legislation; however there are now calls to have the taxa upgraded to Endangered, primarily due to the observed population declines in the Coorong.

As highlighted above for the piscivorous bird community generally, the causes of Fairy Tern decline in the Coorong are most likely linked to a lack of environmental flows through the MDB, resulting in severe declines in the distribution and abundance of prey fish species for Fairy Tern. As a result, the current availability of prey for Fairy Tern in the Coorong is severely restricted (compared to historical levels), and this limitation, under current environmental conditions, may mean that the the impacts of commercial fishing on this species are more severe than under better environmental conditions.

Other species for which diet will be assessed – A range of other piscivorous bird species are found in the Coorong, for which the importance of Coorong fish varies. Crested Tern breed within the Coorong (south lagoon), but typically obtain prey fish from oceanic waters SW of the YHP. A range of cormorant species breed within the Coorong and Lower Lakes (particularly near the Tauwichee Barrage), that potentially harvest prey fish from both the Coorong and Lower Lakes. White-faced Herons, and two egret species have historically bred in the Lower Lakes, and forage in the Coorong. A final species that does not breed in the Coorong is Common Greenshank, one of the larger migratory shorebird species that breeds in the northern hemisphere. This investigation would benefit from targeted studies on this species in addition to those described above, as the species was considered one of the species for which the Coorong is Ramsar-listed, and is one of the Living Murray's Indicator species. Greenshanks are not necessarily obligate piscivores, and are unlikely to harvest commercial species of the same size classes targetted by the Fishery. However, for the reasons given above for Fairy Tern, interactions may still occur and need to be assessed.

Concluding Remarks

Understanding the ecological and trophic interactions between piscivorous birds and the commercial fishery of the Coorong requires knowledge about the diet of key bird species, but also the food levels required to ensure successful breeding and population maintenance. This second point subsequently requires some information on the relationship between food harvesting and reproductive performance and survival. With these two pieces of information, we can make predictions on how the removal of fish by commercial fishers impacts on these population parameters for key species.

The level of interaction between the Fishery and piscivorous birds in the Coorong will partly depend on the environmental context of the interaction. Under current environmental conditions, fish stocks are limited in their distribution, and key non-commercial species (small-mouth hardyhead) have dramatically declined. These ecological shifts may have important ramifications

for the impact that commercial fishing has on piscivorous bird populations, that would not necessarily be felt to the same extent, under more favourable conditions.

Given that at least one of the iconic piscivorous birds (Fairy Tern) may harvest commercial species that are smaller and younger than those individuals taken by commercial fishers, the interactions may not be direct (i.e. the Fishery and the birds are not competing for the same fish individuals). This highlights the need to understand the impact of commercial fishing on fish population dynamics, as a way of predicting the availability of these smaller size classes that are suitable for harvest by birds, as well as for the sake of ensuring that fish populations are sustainable in their own right. The interactions between commercial fishing, fish population dynamics and bird predation are likely to be complex and indirect. We envision that the project described here would thus be done in collaboration with a fish population dynamics project (eg through SARDI), whose primary aim would be to monitor and model the effects of fishing on fish stocks, but whose outputs could also be used to predict the availability of suitable fish size classes for key bird species. Bird predation could then subsequently be incorporated into these population models, improving the predictive

Appendix 2: Minutes of the 5th meeting Lakes and Coorong Consultative Committee

LAKES & COORONG CONSULTATIVE COMMITTEE

Minutes of the Fifth Meeting

At: NRM Office Murray Bridge

On 23 April 2010

Commencing 10:00 AM

1) ATTENDANCE:

Garry Hera-Singh	Southern Fishermen's Association
Tracy Hill	Southern Fishermen's Association
Robert Brooks	Southern Fishermen's Association
Steve Alexander	Southern Fishermen's Association
Dave Riechelt	Southern Fishermen's Association
Alex Gaut	Conservation Council of SA
Lianos Trantafilis	PIRSA Fisheries
Alex Chalupa	PIRSA Fisheries
Greg Ferguson	SARDI Aquatic Sciences
Simon Oster	National Parks & Wildlife Service
Neil MacDonald	Chairman & SFA Executive Officer

2) APOLOGIES

Roger Strother	Coorong Council
Dereck Walker	Ngarrindjeri Community
Trent Rusby	Alexandrina Council
Tim Hartman	Ngarrindjeri Community

Gary Hera-Singh opened the meeting and introduced Neil MacDonald as the Southern Fishermen's Association Executive Officer (part time) and the Chairman of the Lakes & Coorong Consultative Committee.

3) PREVIOUS MINUTES

The minutes of the fourth meeting were not available.

4) BUSINESS ARISING FROM PREVIOUS MINUTES

Nil

5) CORRESPONDENCE

Nil

6) MANAGEMENT PLAN & ERA PROCESS

With competing work demands the management plan has been deferred in order to meet Minister's direction to undertake rocklobster plans.

The ERA will be completed this year once Dr Rick Fletcher from WA Fisheries is available to undertake the ESD framework process. DEWHA EPBC assessment due by 27/11/2010, need to have ERA completed in time to support this process.

ACTION: PIRSA / SFA / SARDI

7) COORONG SALINITY PROJECT – Glynn Richetts, DWLBC

Proposal to pump water from southern lagoon across dunes to the sea to encourage fresher water flow from north lagoon bringing further movement from the mouth south into the Coorong.

Salinity in 2007 200ppt (parts per thousand), max ecologically viable 250ppt for keystone species of concern under RAMSAR. Target is to maintain an open mouth, south lagoon flows from Salt Creek and from fresh sea water inflows from the north to reduce salinity and maintain connectivity. Dredging of the mouth is funded til 2014 from Basin wide funding grant – ecological response to dredging has been positive.

Pumping target of 250 megalitres per day, with construction of facilities beginning in late 2010. Target area for facility from Woods Well to south of Policemen’s Point. Outfall will have a dead zone of 200 meters, with 40ppt up to 2 km and normal salinity levels beyond 2 km.

SARDI will be doing monitoring within impact zone – especially pipi sampling. The marine region was sampled to establish low biodiversity.

It was agreed that the Lakes & Coorong Consultative Committee supports the project and recommends it be adopted given the benefits to the Coorong. – Moved T. Hill Seconded David Reichelt: **CARRIED**

ACTION: SFA

8) STOCK STATUS REPORT

G. Ferguson provided a summary of the latest stock status report, major area of concern is lack of environmental flows to meet ecological needs. Report highlighted:

SPECIES	STATUS – REFERENCE POINTS
Black bream	Below total catch reference point
Golden perch	No reference points breached concerns at potential for hyper-stability of CPUE due to declining water
Flounder	Below total catch reference point
Mulloway	No reference points breached, concerns at potential for hyper-stability of CPUE due to declining water
Pipi	Total catch, CPUE & 3year trend reference points breached.
Mullet	CPUE reference point exceeded

a) Black Bream

Given high recreational catches questions on the status of previous recommendation to extend closures around barrages was raised.

ACTION: PIRSA

Sharp decline of catch and CPUE were raised. Not a target species of commercial fishers given status of flows.

b) Golden Perch

Different stock structures in the lakes and the river. Age classes 1996 & 2000. Need improved spatial reporting in lakes. Locks act as a barrier to movement of larvae. Understanding of stock status is limited by the need for better spatial scale in reporting blocks for the Lakes.

ACTON: SFA / SARDI

c) Flounder

Jason Earl PhD study due. There is little commercial effort due to lack of water.

d) Mulloway

No reference points breach but SARDI are concerned at the impact on fish within the Coorong. High recreational catches substantially exceeds commercial catches. CPUE has remained high despite low levels of effort and catches.

Coorong is considered important to the population in the south east of SA. Last age classes measured in 2003 being 1993, with most fish less than 12 years old.

e) Pipi

Fishery independent research has shown a recent recruitment event, catch rate up on recent years. Evidence shows November key spawning period. Early season high rate of undersize improved over the season. Concern at impact on stocks on the Goolwa beach due to large quantities of undersize seized and returned.

Previous concerns from Minister Garret have been addressed with significant TACC reductions.

2 major upwellings in the last 3 years, need to use water flow and upwellings as an indicator.

f) Mullet

Fishery is in good shape given extended period of mouth being open allowing movement into and from the Coorong. Increased CPUE indicates increased abundance. The presence of seals has lead to changed practices with short sets for large mesh nets. Discussions with DEH National Parks over seal interactions.

SARDI conclusion - Action is needed for black bream and mulloway

9) RESEARCH

a) By-catch Report

The report has been provided to FRDC pending approval. A full discussion is planned for the June meeting with discussion to consider implementation strategies - adaptation and extension and options for management change.

Key issues discard ratios / revised logbooks for better reporting. Discards are seasonal and species dependent SA rates are low compared to NSW (14% v 33%). Low levels of discards likely due to low recruitment of some species in drought conditions. Large mesh nets higher by-catch than small mesh nets, with mesh size and ply rating important factors. Key interaction issue was undersize mulloway in large mesh gill nets, in all seasons and for all targets except Black bream. Reason for this is poor size selectivity of LMGN for mulloway and flounder.

ACTION: SARDI / SFA / PIRSA

b) Murray cod

A discussion paper on options for managing Murray Cod is out for public comment.

The four proposed options for future management arrangements are:

1. Maintain existing fishing regulations;
2. Establish a catch and release fishery;
3. Extend the current fishing closure; and
4. List Murray Cod as a protected species.

Further management arrangements that could be used in conjunction with these options are:

- A. Area closure;
- B. Gear restrictions; and
- C. Stock enhancement.

As part of this process, a review of the feasibility of a stock enhancement program for Murray Cod will be undertaken.

Considering the environmental, social and economic risks and benefits of each approach, PIRSA Fisheries' preferred option is Option 3 until such time as the status of the resource improves.

This consultation process is designed to receive feedback from interested persons and groups about the preferred options, or combination of options. Jonathon McPhail will summarise responses and then coordinate response by the end of June 2010.

ACTION: PIRSA

c) Recreational Survey

The survey has been completed and published. It will be the baseline for determining the recreational share in future allocation decisions. The long awaited review of bag and boat limits and the introduction of possession limits by PIRSA Fisheries continues to be delayed.

ACTION: PIRSA

d) Multi-species stock assessment study

Report is due 30 May. It is expected to be delivered on time and available for consideration in June.

ACTION: SARDI

e) Research Plan

The current plan is now out of date and should be updated as part of the planning by the Committee and in keeping with the normal 5 year management plan cycle.

It was agreed the following be adopted for the period til 2013/14:

Species	10/11	11/12	12/13	13/14	14/15
Mulloway	SA	ST	ST	ST	ST
Pipi	ST	ST	ST	ST	ST
Mullet	ST	ST	SA	ST	ST
Golden perch	ST	SA	ST	ST	ST
Black bream	ST	ST	ST	ST	SA*
Flounder	ST	ST	ST	ST	SA*
Bony bream	ST	ST	ST	ST	ST
Multi-species review				SA	

* - Subject to re-evaluation. Pipi ST is pre-season Stock Status presentation prior to setting TACC.

10) MARINE STEWARDSHIP COUNCIL

Audit completed June 2009, subject to ongoing progress indications are accreditation will be maintained. There is a need for a Golden perch stock assessment – the above plan should meet the reporting obligations. The ERA due by November should also meet another major gap in the assessment.

Auditors are due back in 9 June 2010 to review progress.

ACTION: SFA

11) COST RECOVERY

PIRSA had required a very short response time to the recommendations following the cost recovery meeting. An email reply had been provided seeking clarification on several issues – which had not been replied to. A copy is to be provided to the Fishery Manager for him to follow up a response.

Issues include industry funding 100% of mullockay research when recreational sector take majority of catch (approx 60 - 40) when other sectors with substantial recreational catch have some cost met to meet some commitment from rec sector; Pipi base fee proposed includes charging the FRDC levy as a component of the base fee when it should represent GVP and be a unit cost.

As more and more scientific information is collected, PIRSA expects costs should go down over time.

ACTION: PIRSA

12) STATUS OF PIPI FISHERY

A draft submission has been prepared for the Minister.

A draft Pipi Management Group (PMG) and protocols have been prepared between the SFA and the GPHA which the SFA Executive has endorsed and the GPHA have now sought to delay. PIRSA supports progressing under the protocol. It was suggested the protocol be amended to change the Chairman to the Facilitator.

PIRSA seeks to resolve PMG and to have first meeting by the beginning of August. As it is not intended to be a voting committee then issues of representation should be problematical.

ACTION: PIRSA

13) WTO

The ERA and Murray cod processes are intended to meet DEWHA & WTO requirements. Issues regarding interest in the status of bony bream were discussed – DEWHA insists it is an issue of interest to them.

ACTION: PIRSA

14) MARINE PARKS WITHIN THE COORONG

The SFA understand DEH intendeds to extend the Marine Parks program inside the Coorong – the purpose is unclear given the altered nature of the region. Industry is seeking resolution of the promised displaced effort arrangements. The local advisory group has met in Goolwa with limited industry involvement, it is seeking information on areas of interest to industry.

15) REVIEW OF GEAR & ENTITLEMENTS

Industry continues to seek resolution of flawed regulation relation to amalgamation – the intent of the regulations must be adopted following correction.

There is to be a broad scale review of gear and entitlements undertaken once resources are freed up later in 2010 – this is to be a high priority for the new manager.

16) OTHER BUSINESS

a) PIRSA / CCSA Co-management

The Conservation Council has completed a three year project with the Spencer Gulf Prawn Fishery & PIRSA with a conservation representative (Katherine Warhurst) on the Research sub-committee through funding for 1 day per week from PIRSA.

b) Future Meetings

To assist with planning and attendance it was agreed that the following be the meeting schedule for the next year.

DATE	LOCATION
9 July 2010	NRM Offices, Mannum Road, Murray Bridge
24 September 2010	NRM Offices, Mannum Road, Murray Bridge
10 December 2010	NRM Offices, Mannum Road, Murray Bridge
18 March 2011	NRM Offices, Mannum Road, Murray Bridge

The venue has been booked for the above dates.

NEXT MEETING:

9 July 2010 – NRM Offices Murray Bridge @ 10:00 AM
Key items – Consideration of By-catch report, MSC update,
Presentation on Rotational Harvest report

MANAGEMENT REPORT

LAKES & COORONG CONSULTATIVE COMMITTEE

23 April 2010

TOPIC	ACTION	RESPONSIBILITY	TIMING
Management plan and ERA	Plan delayed but will be supported by ERA for EPBC assessment	PIRSA / SARDI/ SFA	By early November 2010
Coorong salinity project	Letter of support for DWLBC	SFA	End April 2010
Black bream	Follow up on proposed closure extension around barrages	PIRSA	ASAP
Golden perch	Discussion on improved spatial reporting for Lakes	SFA / SARDI	End June 2010
By-catch report	Discussion on recommendations – future options	SARDI / SFA / PIRSA / SeaNet	July 2010 LCCC meeting
Murray Cod	Report on management options / Review of recreational options	PIRSA	June 2010
Recreational survey	Review bag/ boat/ possession limits	PIRSA	??
Rotational Harvest report	Presentation of report , begin discussion on options arising from report	SARDI / SFA / PIRSA	July 2010 LCCC meeting
Marine Stewardship Council	Annual review	SFA / SARDI / PIRSA	June 2010
Cost Recovery	Reply on pipi fee structure, cost sharing - major extractor contribution for mulloway	PIRSA	End April 2010
Pipi management and management group protocol	Endorse protocol and establish group	PIRSA	End of July 2010
Gear Review	Resolution to current regulatory impediment, begin fishery wide review of gear & entitlements	PIRSA / SFA	September 2010