

# THE LAKES & COORONG FISHERIES SOUTH AUSTRALIA

2011 MSC Surveillance Visit Report  
Certificate Number: **SCS-MFCP-F-0075**



Pipi (Goolwa cockles)



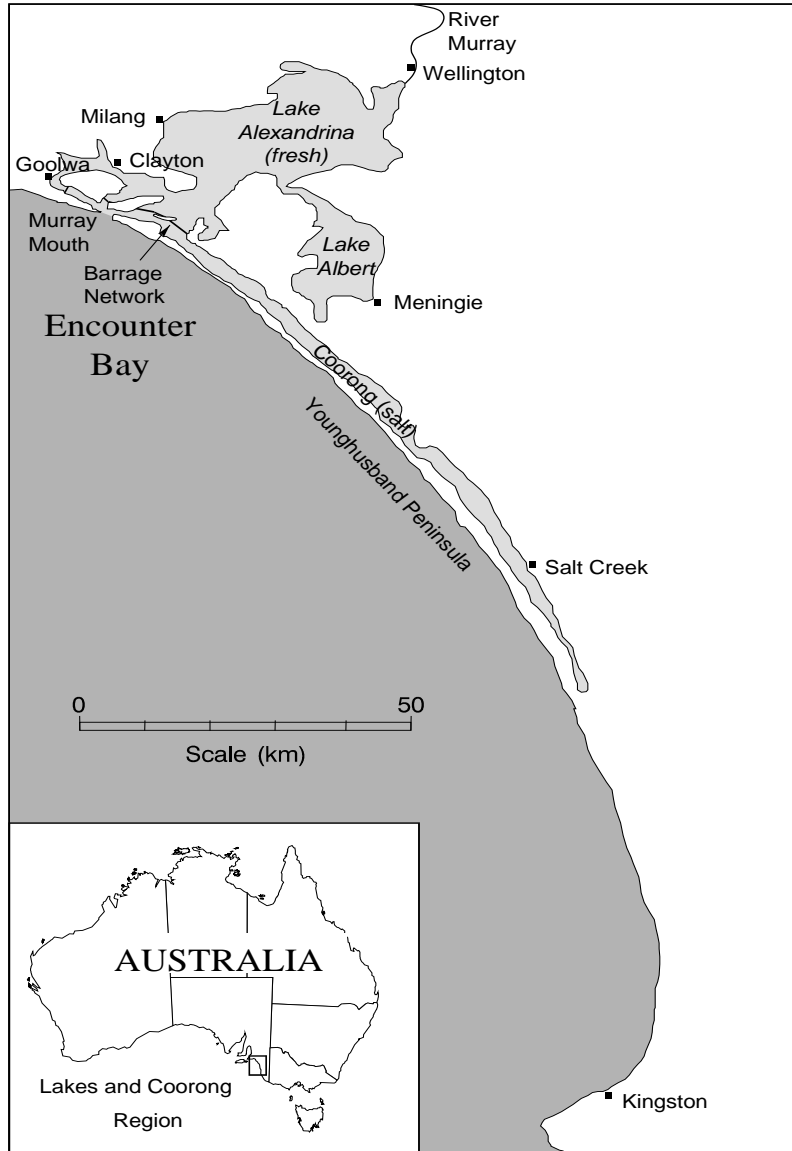
Mulloway



Yellow-eyed mullet



Golden perch



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Surveillance Team	SCS	Sabine Daume, PhD (Lead Assessor) Trevor Ward, PhD (Assessor)
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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 3rd Annual Surveillance Report (2011) (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'. Nine conditions have been closed out at this audit as a result of satisfactory achievement of the client's action plan leading to an outcome that would result in a score of 80 or more on the relevant indicator. SCS issued one new minor non-conformances that needs to be addressed by the time of the next annual audit (2012). 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 deltoides*); mullet (*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, SAFIC (South Australian Fishing Industry Council), SARDI (South Australia Research and Development Institute) and SFA (Southern Fishermen's Association).

## **Assessment process**

The annual surveillance audit process is comprised 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. No comments were received from stakeholders.

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.

### **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).

Barnes, T. PhD Project Outline, University of Adelaide. Unpublished short statement of project objectives.

Ferguson, G. SARDI Stock Status Report 2011. Powerpoint data summary presentation, March 16 2011.

Knight, M. and Vainickis, A. (2011) Interactions with Threatened, Endangered or Protected Species in South Australian Managed Fisheries – 2007/08, 2008/09, and 2009/10. PIRSA South Australia May 2011.

Ward, T.M., Ferguson, G., Payne N. and D. Gorman (2010). Effectiveness of fishery-independent surveys for monitoring the stock status of pipi (*Donax deltoides*) on the Youngusband Peninsula, South Australia. SARDI Publication No. F2010/000824-1 SARDI Research Report Series No. 504. SARDI Aquatic Sciences PO Box 120 Henley Beach SA 5022. October 2010

Lakes & Coorong Fishery activity Q2 report 2010/11. PIRSA, South Australia June 2011.

Pipi Fishery activity Q2 report 2010/11. PIRSA, South Australia June 2011.

Industry based voluntary catch sampling program Golden Perch (Callop). Southern Fishermen's Association June 2011.

Industry based voluntary catch sampling program Mulloway 2010-2014. Southern Fishermen`s Association June 2011.

Ecologically sustainable development (ESD) risk assessment of the Southern Australian Lakes and Coorong Fishery. PIRSA, South Australia March 2011, Draft version.

Lakes and Coorong Fishery Plan 2011 – 2012.  
Pipi Fishery Plan 2011 – 2011.

Lakes and Coorong Consultative Committee meeting minutes 8 and 9.

Objectives for the amalgamated FRDC projects. 2011

## **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 1<sup>st</sup> and 2<sup>nd</sup> June 2011. SCS met with Garry Hera-Singh of the Southern Fisherman`s Association and Neil MacDonald, the 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 (Dr Greg Ferguson of SARDI and Dr Lianos Triantafillos and Mr Mark Spencer of PIRSA).
3. Follow ups by email were conducted in June 2011 to obtain additional documents to complete the surveillance audit.

## **Summary of Conditions/Non-Conformances**

Condition	Indicator	2011 Status of Condition/Non-Conformance
1	1.1.1.2	Open, activity altered and timeframe extended to 2012
2	1.1.1.2	Open, activity altered and timeframe extended to 2012
3	1.1.1.3	Open, activity altered and timeframe extended to 2012
4	1.1.1.3	Open, on target for 2012
5	1.1.1.3	Open, on target for 2012
6	1.1.1.3	Open, activity altered and timeframe extended to 2012
7	1.1.1.4	Open, extended to 2012
8	1.1.1.4	Open, extended to 2012
9	1.1.1.4	Open, extended to 2012
10	1.1.2.1	Closed
11	1.1.2.1	Open, extended to 2012
12	1.1.2.1	Closed

13	1.1.2.1	Closed
14	1.1.2.2	Open, on target for 2012
15	1.1.2.2	Open, Minor Non-conformance extended to 2012
16	1.1.2.2	Closed
17	1.1.2.2	Open, extended to 2012
18	1.1.2.3	Closed
19	1.1.2.3	Closed
20	1.1.2.3	Closed
21	1.1.2.3	Closed
22	1.1.3.1	Closed
23	2.1.1.2	Open, extended to 2012
24	2.1.3.1	Open, extended to 2012
25	2.1.5.1	New Minor Non-conformance raised; to be completed by 2012 audit
26	2.2.2.1	Open, extended to 2012
27	2.2.2.2	Open, extended to 2012
28	2.2.2.3	Open, extended to 2012
29	3.4.1	Open, extended to 2012
30	3.4.2	Open, extended to 2012

## 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 that 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 priority and focus on other species, the timeline for performance indicator were adjusted. One new minor non-conformance was raised against condition 25. The progress against these will be reviewed at the next surveillance audit. 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 status reports have been produced for both freshwater and estuarine species — mulloway (2003), golden perch (2004 and 2008), yellow-eye mullet (2005) and pipi (2003 and 2006).

The 2011 fishery status report for the South Australian Lakes and Coorong (Ferguson 2011) indicated that, of the species under certification, three species breached their Reference Points: pipi, mulloway (both breaching lower RPs) and yellow eye mullet (breaching upper RP).

- In relation to Pipi, the total catch, CPUE and the 3-year catch trend all breached the lower RP, and the stock is considered to be overexploited, with a recovery strategy actively being implemented. This strategy constrained the catch in 2009-10, resulted in an increase on biomass.
- For mullet, the catch low RP was marginally breached (8%) in the lagoon fishery, most likely related to the extent and persistence of freshwater from the flood flows.
- Catch for yellow-eye mullet was 22% above the upper RP, as in the previous fishing year.

Fishery-independent data on distribution and relative abundance of pipis continued to be collected during the 2009-10 season, with 3 surveys of population size conducted in each fishing year. A pipi research program that was initiated during the 2007/08 season continued during the 2009/2010 and 2010/2011 seasons 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)

The pipi (*Donax deltoides*) fishery is now managed by a system that sets a total annual allowable catch and assigns quotas to licence holders in the fishery.

## **Principle 2 – Ecosystems impacts**

The east coast and central Australia has experienced major rainfall events and Murray River flows have been very substantial over the last 2 years. This has resulted in environmental conditions in the Lakes and Coorong system that are very different from those (drought) that dominated during the first 3 years of this certification period. This has heavily influenced the distribution of the fished species and their availability to the fishery. Catch rates for some species also therefore reflect this environmental variability.

A study of the bycatch in the fishery has been completed, indicating that there is a limited range of species that have a direct interaction with the fishery operations, and there are very few direct interactions with protected species. Nonetheless, all license holders are required to record all wildlife interactions using a logbook developed by PIRSA and SARDI in conjunction with the fishing industry, and records are provided to the management agency.

The impacts of the fishery were judged to be broadly within acceptable limits at the time of certification, and type of fishing and the management response to impacts has not changed. Nonetheless, the Coorong is likely to be an important refuge for bird species during drought times. An ecological risk assessment has now been completed for the fishery, and although it did meet the required MSC standard for assessment of indirect ecological risks in relation to ecologically dependent species (and specifically water birds), the assessment found that most of the direct ecological risks were low.

In terms of water management, it is difficult to know how the current flood situation (experienced in the past year) will affect the fishery in terms of the impacts fishing has on the ecosystem. As has been recognized since the time of certification, it is 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. At the time of this surveillance, future water management in the Murray Darling Basin has been deferred to further sets of federal government inquiries, and it remains uncertain how water management arrangements in the future will affect the populations of wildlife species that may depend on the fished species for their survival in the Coorong and Lakes ecosystems. At the previous surveillance 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. This project however has been unable to secure funding and has not been progressed. However, the urgency of this research has now been highlighted by the listing of the Fairy Tern as Vulnerable under the federal EPBC Act (it has been previously listed as Vulnerable by the IUCN Red List). The significance of the Coorong as habitat for this bird will require a specific form of response from the client to improve understanding of how the fishery may have indirect impacts on this species.

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.**

There are major changes proposed to the management of the Lakes & Coorong Fisheries, to move the management system to be consistent with that of the other major fisheries in South Australia. The fishery will continue to be 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. However, the 2007 Act provides for a different system for development and implementation of fishery Management Plan, and a new Management Plan under these arrangements will be developed over the next 2 years. In the interim, the Lakes & Coorong Fisheries will continue to be managed under the existing plan of management. The pipi (Goowla cockle) sector of the fishery is now managed under a TACC setting system and quota allocation to licence holders. This part of the fishery is now represented by two organisations—the SFA with 19 licences harvesting about 40% of the resource (certified here by this process) and the Goolwa Piri Harvesters Association (GPHA) with 4 licences and harvesting about 60% of the resource (not certified by the MSC).

Under the *Fisheries Management Act 2007*, the Minister's Fisheries Council is responsible for the development of a statutory management plan for each commercial fishery. The Plan for the Lakes and Coorong Fishery is to be commenced in the 2011/12. The Plan process includes a review of all existing management arrangements, scientific advice and policies, including fishery performance targets and reference points that support decision making. This process is undertaken with the Fisheries Council establishing a steering committee to oversee the process, chaired by a member of the Council, and a working group to undertake the operational

assessment of the fishery and its existing arrangements. A management plan once approved forms the basis for the issue of fishery licences for the period of that plan (up to 10 years) with periodic reviews of the plan undertaken during that time.

Water regulation in the river and lakes 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. Once the effects of the flood flows subside, on-farm storage, over-allocation and over-extraction will continue to stress the riverine environment. Major changes to water management in the Murray River system are proposed by federal and other states water regulators, which in turn could have significant positive effects on the fisheries. However, the timescale of implementation of any such changes is long, probably a decade or more.

### Principle 1 - Status of Previously Raised Conditions

<b>1.1.1.2</b>		
There is knowledge of the life history and biology of the species.		
<b>SG 60</b>	<b>SG 80</b>	<b>SG 100</b>
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.

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

<p>and sexual maturity size.</p> <ul style="list-style-type: none"> <li>b. Laboratory analysis on otolith microchemistry, population substructure (from otoliths), validate size/age data.</li> <li>c. Final analysis and write up.</li> </ul> <p>2. Pursue FRDC program investigating otolith microchemistry for mulloway population in southern Australia. This would include the following stages:</p> <ul style="list-style-type: none"> <li>a. Develop a proposal in consultation with the key stakeholders and groups.</li> <li>b. Source funding (in-kind plus matching contributions) and partners in the program.</li> <li>c. Tender the research</li> </ul>	<p>SFA, PIRSA, Adel. Uni, SARDI (with WA, Vic, NSW)</p>	
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**Progress on Condition 1:** The SARDI research has made important contributions, but has been unable to effectively resolve the question of the role of the juvenile mulloway that utilise the Coorong. The otolith structure reveals 2 sub-populations in SA waters; the coorong fishery is in the SE substock (Ferguson SARDI ppt presentation). The industry catch sampling may assist with this question to some extent. Mulloway breached the Lower Catch RP in 09-10 year; also the ERA has concluded that the risk (from overcatching of juveniles from the Coorong) is High; this however is based on the local recruitment model, which while a precautionary approach to management has yet to be confirmed.

The initial actions required under this condition are not completed, because the biological research undertaken within the Action Plan did not reach conclusive information about the issue of relationships between the juvenile and adult Mulloway. Further assessment of this condition is deferred until results from the microchemistry of otoliths research (Uni Adel – T. Barnes) are available.

The activity and timeframe is now extended to 2012 to allow this work to be completed, and for the stock assessment to be completed for which this data and information is required.

**Status of Condition 1:** Open - extended to 2012

**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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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PhD program. Aims of the program to: <ol style="list-style-type: none"> <li>a) describe spatial and temporal distribution and develop protocols to determine changes in this distribution pattern over time</li> <li>b) determine the reproductive patterns including the length of larval phase;</li> <li>c) annual and inter-annual recruitment patterns;</li> <li>d) determine the growth patterns including length frequency and validate the results;</li> <li>e) investigate ageing techniques;</li> <li>f) estimate the biomass;</li> <li>g) estimate levels of natural mortality; and</li> <li>h) determine the appropriate management strategies for the fishery.</li> </ol>	Coby Matthews	2011
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**Progress on Condition 2:**

The formal stock assessment is to be conducted in 2012, which will address point (h) in the Clients Action Plan; the PhD program has not been completed, but some parts of this work are now being undertaken at SARDI under the FRDC project, and also supplemented by the industry-supported ongoing catch sampling program. The activity and timeframe is now extended to 2012 to allow this work to be completed, and the stock assessment to be completed for which this data and information is required. Some parts of this are completed, and included in the report on cockle monitoring effectiveness (Ward et al 2010).

**Status of Condition 2:** Open – extended to 2012

<b>1.1.1.3</b>		
There is information to measure trends in abundance of stocks.		
<b>SG 60</b>	<b>SG 80</b>	<b>SG 100</b>
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:**

<b>Mulloway</b>	<b>75</b>
<b>Golden perch</b>	<b>75</b>
<b>Goolwa cockles</b>	<b>70</b>
<b>Yellow-eye mullet</b>	<b>75</b>

**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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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.	SAFIC	2010

**Progress on Condition 3:** The full stock assessment is proposed to be completed at end of 2011, and this will be based on all available estimates of abundance. SFA is implementing a targeted catch sampling of length data in the beach fishery that may provide data to support stock assessment process. The inputs and outcomes of the stock assessment will be audited in 2012, and this condition is extended to 2012

**Status of Condition 3:** Open - extended to 2012

**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 mullocky).

This condition should be met by 2010.

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

**Progress on Condition 4:** a full stock assessment is proposed to be completed by end of 2012, and this will be based on available estimates of abundance. A fishery-independent sampling program by SARDI will be conducted, and SFA is implementing a targeted catch sampling of length data in the b fishery to support stock assessment process. The inputs and early outcomes of the stock assessment process will be audited in 2012.

**Status of Condition 4:** Open – on target for 2012

**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 mullocky) 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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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:** There is a water sampling program by SASQAP from which water quality parameters could potentially be assessed for relationships with cockle abundance; SARDI have a fishery-independent sampling program (3 times each fishing year) for size, gonad status, and abundance which is ongoing. This work indicates that fishery-independent estimates of

relative biomass have increased in 2009-2010 fishing year (Ferguson/SARDI powerpoint data summary presentation, March 16 2011). The upgraded logbook system has been in place for 2 years.

**Status of Condition 5:** Open – on target for 2012

**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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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.	SAFIC	2010

**Progress on Condition 6:** The ERA found that the risk of current harvest strategies and catches is Low. As a low priority species within the stock assessment system (relative to the other more urgent stock issues in the fishery), YEM will have stock status reports for next 3 years, not stock assessments. If the stock status report for 2012 is satisfactory, and has no significant risks to status identified, then condition should be closed at 2012 audit.

**Status of Condition 6:** Open – on target for 2012

<b>1.1.1.4</b>		
There is adequate knowledge of environmental influences on stock dynamics to manage the fishery for the target stock.		
<b>SG 60</b>	<b>SG 80</b>	<b>SG 100</b>
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:**

<b>Mulloway</b>	<b>79</b>
<b>Goolwa cockles</b>	<b>70</b>
<b>Yellow-eye mullet</b>	<b>75</b>

**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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
1. FRDC Freshwater Flow Project - objectives include: <ol style="list-style-type: none"> <li>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.</li> <li>b. Examine aspect of reproductive biology and how environmental influences affect spawning success.</li> <li>c. Investigate influence of habitat, salinity, water quality, food availability etc on critical life stages.</li> <li>d. Investigate the relationship between freshwater flows (timing, quantity and duration) on recruitment success and fisheries productivity.</li> </ol>	Qifeng Ye (SARDI)	2010
2. PhD program (see condition 1)	Greg Ferguson	2009

**Progress on Condition 7:** The work on the CCLAM 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 although the final report was expected in October 2010, this has been again delayed, and a report is not yet available. This condition remains open, awaiting the CCLAM report, and is extended to 2012.

**Status of Condition 7:** Open – extended to 2012.

**Condition 8 (Goolwa 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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
1. PhD program. Aims of the program to: <ol style="list-style-type: none"> <li>a. Describe spatial and temporal distribution and develop protocols to determine changes in this distribution pattern over time.</li> <li>b. Determine the reproductive patterns including the length of larval phase.</li> <li>c. Annual and inter-annual recruitment patterns.</li> <li>d. Determine the growth patterns including length frequency and validate the results.</li> <li>e. Investigate ageing techniques.</li> <li>f. Estimate the biomass.</li> <li>g. Estimate levels of natural mortality.</li> <li>h. Determine the appropriate management strategies for the Clam fisheries.</li> </ol>	Coby Matthews	2011 (if PhD candidate remains fulltime)
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:**

The PhD project has been abandoned, but the data has been supplied to SARDI. Further data is being gathered through the FRDC/SARDI project through industry-supported but fishery independent sampling. This data will also provide a base for further research to examine the influence of river flows, together with the SASQAP water data (see Condition 5). The CCLAM freshwater influence project report is yet to be submitted and assessed (see Condition 7).

**Status of Condition 8:** Open – extended to 2012.

**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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
1. FRDC Freshwater Flow Project (see above)	Qifeng Ye (SARDI)	2010
2. Examination of how freshwater flow variables may affect yellow-eyed mullet catch, CPUE, and life history parameters.		

**Progress on Condition 9:** As for conditions 7 and 8.

**Status of Condition 9:** open – extended to 2012.

<b>1.1.2.1</b>		
All major sources of fishing mortality, including illegal fishing on the target stock, are measured or estimated.		
<b>SG 60</b>	<b>SG 80</b>	<b>SG 100</b>
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:**

<b>Mulloway</b>	<b>65</b>
<b>Golden perch</b>	<b>65</b>
<b>Goolwa cockles</b>	<b>65</b>
<b>Yellow-eye mullet</b>	<b>65</b>

**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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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	PIRSA	Ongoing

conducted in the Lakes and Coorong Fishery.	Compliance	
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. 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

**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. PIRSA compliance risk assessment reports have been completed and provided for audit assessment. The spatial and temporal scales have been clarified in the new logbooks as below.

The Clients Action Plan has therefore been completed. #1 of the clients action plan for this condition is satisfied by: illegal catches can be crudely estimated from compliance activity reports (copies have been provided to SCS for verification); release mortality is estimated in the bycatch study; recreational catch can be adequately estimated from the sampling program in Jones 2009 and by 5 yearly PIRSA phone/diary surveys; #2: ILUA negotiations are ongoing, with outcomes beyond the control/influence of the client; #3: is satisfied by the ongoing 6-mo supply of compliance reports; #4: PIRSA has an audit of net sector by phone survey of catch routinely each 5 years; and this is also one component of the bycatch study; #6: catches from the ocean beach are now recorded in 5km spatial blocks (was a single reporting block, now 13 blocks); Coorong lagoons have 7 reporting blocks (unchanged); the freshwater lakes are now reported in 4 blocks (was one block) - agreed between industry and SARDI (a map of the new reporting blocks for the lakes area has been provided to SCS for verification).

**Status of Condition 10:** Closed

**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:

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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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 survival estimates from field research.	SFA	2012
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

**Progress on Condition 11:** The ERA found that this species is at risk of overfishing, and so addressing all sources of fishing mortality is required for inclusion in the stock assessments and setting of Reference Points. #1 - 4 and #6 of the Clients Action Plan are satisfactorily completed (see Condition 10 above); #5 is open until desktop study is completed or appropriate survival release estimates are completed and used in the forthcoming stock assessment (2011).

**Status of Condition 11:** Open – extended to 2012.

**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:

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.

This condition should be met by 2011.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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:** Each point in the Clients Action Plan has now been satisfactorily completed (see Conditions 2, 5 and 10).

**Status of Condition 12:** Closed

**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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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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

**Progress on Condition 13:** All the points of the Clients Action Plan have now been completed (see Conditions 10, 11 and 12 above).

**Status of Condition 13:** Closed

<b>1.1.2.2</b>		
The size and age structure of catches and sex ratio are measured.		
<b>SG 60</b>	<b>SG 80</b>	<b>SG 100</b>
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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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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 was completed at the end of 2010. This condition is matched to the earlier structure of the reference points and stock assessment. However, a new stock assessment is scheduled for late 2011, and there is likely to be a shift in the types of reference points so the need for and extent of size/age data and any associated monitoring program wont be evident until the assessment is completed, at which time this condition will be reviewed and further assessed.

**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
1. Sampling program gathering data on the length frequency information, size, otoliths, abundance etc.	SFA, SARDI	20010
2. Stock Assessment report	SARDI	2008-09

**Progress on Condition 15:** The stock assessment for golden perch has been postponed until 2011/12 due to re-prioritisation of agency priorities outside the control of the fishery.

**Status of Condition 15:** Open – Minor Non-Conformance maintained until 2012

**Minor non-conformance:** By the next annual surveillance in 2012 SFA shall provide the stock assessment to SCS as soon as it is publicly available as required under the accepted Action Plan.

**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
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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:** On the Clients Action Plan #1; the PhD program was terminated, but the data and information was provided to SARDI (see Conditions 2 and 8); #2 quota management is in place; #3 there is now a detailed population sampling program conducted each year (3 times each fishing year) on the stock.

**Status of Condition 16:** Closed

**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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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:** in the Clients Action Plan, #1 is not being undertaken - YEM has been assessed as a low risk species, and no formal stock assessment is planned in this term of certification (stock status reports only). A new Management Plan is being developed – the draft plan should be available late 2012, which will give guidance on KPIs and data requirements that will need to be developed into an effective subsequent monitoring program; #2 bycatch assessment is completed; #3 is to be completed by SFA for 2012 audit.

**Status of Condition 17:** Open – extended to 2012

<b>1.1.2.3</b>		
Fishing methods and patterns are well understood.		
<b>SG 60</b>	<b>SG 80</b>	<b>SG 100</b>

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.
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**Score:**

<b>Mulloway</b>	<b>79</b>
<b>Golden perch</b>	<b>79</b>
<b>Goolwa cockles</b>	<b>79</b>
<b>Yellow-eye mullet</b>	<b>79</b>

**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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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
2. Ensure reporting on effort incorporates changes to provide more resolution.	SFA, SARDI, PIRSA	2010

**Progress on Condition 18:** The Clients Action Plan is completed: #1 is completed (see Condition 10); #2 the updated logbooks are recording effort at an appropriate scale in spatial blocks and on daily/trip basis.

**Status of Condition 18:** Closed

**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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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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
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:** The Clients Action Plan is completed: #1 has been completed, see condition 10 above; #2 new finfish logbooks are in operation; #3 is completed because the effort is assessed in the existing stock structure reports, and further, a new stock assessment will be completed late 2012.

**Status of Condition 19:** Closed

**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:** The Clients Action Plan is completed: #1 population distribution is assessed in 5km spatial blocks (see condition 16) and new logbooks have been implemented; #2/#3 the quota management system is in place, and all commercial fishers utilise the new logbooks; #4 the TACC setting system assesses fishing effort.

**Status of Condition 20:** Closed.

**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:** The Clients Action Plan has been completed: #1 is completed; #2 the effort is assessed and reported in the Stock Status reports, produced annually for this species; the new finfish logbooks have been agreed and finalized and will come into full effect at the end of 2011.

**Status of Condition 21:** Closed

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
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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
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**Progress on Condition 22:** Moving to quota has resulted in new types of reference points and supporting data collection (derived from fishery-independent population sampling), which are reviewed annually for setting the TACC. The new fishery Management Plan to be developed in July 2011 will result in review of all management reference and trigger points. This Condition is now redundant.

**Status of Condition 22:** Closed

## Principle 2 - Status of Previously Raised Conditions

<b>2.1.1.2</b>		
Information on the trophic relationships and interactions of the target species within the food web is adequate to understand the impacts of the fishery.		
<b>SG 60</b>	<b>SG 80</b>	<b>SG 100</b>
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

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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	SFA SAFIC,	2012

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. 4) SADEH representation on the Lakes and Coorong Co-management Committee.	Adelaide Uni           SFA	a. 2008 b. 2009/10 c. 2009/10           2008
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**Progress on Condition 23: #1:** The ERA is completed but the ecological aspects are superficial and inadequate for even a qualitative assessment, and it lacks detail on indirect trophic interactions between the fishery and the birds and so does not meet the basic standard required of an ERA in this matter; this remains open (see Condition 25). **#2** the meetings with stakeholders occur regularly within the framework of the LCC to discuss these issues about research needs, and is completed; **#3** good scoping document for research on bird interactions was developed but has not been able to be commenced, and this remains open until this research is begun to be undertaken; **#4** is completed.

**Status of Condition 23:** Open – extended to 2012

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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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 Clients Action Plan #1: the bycatch study is complete and is satisfactory; #2 the ERA has been completed (weaknesses are dealt with in Condition 25 below); #3 the TEP logbooks are implemented, and regular data reports are expected to be produced (quarterly reports to SEWPAC), although none are yet available for inspection. #4 improved cockle logbooks are in place; #5 improved finfish reports have been developed and agreed and will be fully implemented by end 2011.

**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 ETP 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.”

**Status of Condition 24:** Open – extended to 2012

<b>2.1.5.1</b>		
Effects of the fishery on the ecosystem, through the removal of target and non-target species and impacts on habitats, are not unacceptable.		
<b>SG 60</b>	<b>SG 80</b>	<b>SG 100</b>
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.

**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.

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

**Progress on Condition 25:** The ERA does not properly consider the trophic impacts of the fishery and does not meet the basic standards of an ERA as required by the Condition (and see Condition 30). Since the last audit, the Fairy Tern has been listed by the EPBC Act as Vulnerable, citing the Coorong as one of the habitats of concern, yet this was not raised (and possibly not considered) in the ERA, which therefore incorrectly found that the risks of the indirect effects of the fishery on birds was Low, cited as a decision with a high level of robustness. There are other birds that also may be affected indirectly by the fishery.

**Minor Non-conformance is raised:**

The client shall conduct an expert workshop to identify the key risks to birds, and to establish a short list of research priorities to address research gaps related to those risks. By the next annual surveillance audit in 2012, the client shall provide evidence that the workshop was conducted with a set of bird ecology experts and a list of research priorities was developed.

**Status of Condition 25:** Open – Minor Non-conformance raised for completion by 2012

<b>2.2.2.1</b>		
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.		
<b>SG 60</b>	<b>SG 80</b>	<b>SG 100</b>
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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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. This condition can be closed after acceptable completion of Conditions 23 and 25.

**Status of Condition 26:** Open – extended to 2012.

### 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.

<b>SG 60</b>	<b>SG 80</b>	<b>SG 100</b>
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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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. This condition can be closed after acceptable completion of Conditions 23, 24 and 25.

**Status of Condition 27:** open – extended to 2012.

### 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:** Evidence provided in the bycatch study and the ERA indicates that there is a limited set of gear type interactions with protected, endangered, threatened or icon species. The condition remains open pending final development of best practice guidelines, and their adoption across all fishers in the fishery.

**Status of Condition 28:** open – extended to 2012.

### 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		
<b>SG 60</b>	<b>SG 80</b>	<b>SG 100</b>
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.

**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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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. Of the Clients Action Plan, #1-#3 completed and in place, and there is good progress on #4 although this remains to be finalised.

**Status of Condition 29:** Open – extended to 2012

<b>3.4.2</b>		
The management system has measures and strategies that minimize adverse impacts on the habitat.		
<b>SG 60</b>	<b>SG 80</b>	<b>SG 100</b>
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.

<b>Client Action Plan:</b>	<b>WHO</b>	<b>DUE</b>
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, and work is ongoing, see Conditions 25 and 28. Of the Clients Action Plan, #1 is completed although there are systematic weaknesses associated with the structure of the ERA process. It appears that the ERA was only weakly designed, did not implement an effective issues-based profiling of experience and expertise of participants, and did not directly address the issues raised in this assessment, resulting in an inadequate set of outcomes (such as the issues discussed in Condition 25). There is good progress on #2 and #3 however, all three aspects of the Clients Action Plan remain to be completed.

**Status of Condition 30:** open – extended to 2012.

### **References and Sources**

Ward, T.M. Ferguson, G. Payne N. and D. Gorman (2010). Effectiveness of fishery-independent surveys for monitoring the stock status of pipi (*Donax deltoides*) on the Younghusband Peninsula, South Australia. SARDI Publication No. F2010/000824-1 SARDI Research Report Series No. 504. SARDI Aquatic Sciences PO Box 120 Henley Beach SA 5022. October 2010