
J. Earl and T.M. Ward

SARDI Publication No. F2009/000669-5
SARDI Research Report Series No. 813

SARDI Aquatics Sciences
PO Box 120 Henley Beach SA 5022

December 2014

Report to PIRSA Fisheries & Aquaculture

Report to PIRSA Fisheries and Aquaculture

J. Earl and T.M. Ward

SARDI Publication No. F2009/000669-5
SARDI Research Report Series No. 813

December 2014
TABLE OF CONTENTS

LIST OF FIGURES ..................................................................................................................... II
LIST OF TABLES ......................................................................................................................... III
ACKNOWLEDGEMENTS ............................................................................................................... IV
1. INTRODUCTION .................................................................................................................. 1
2. METHODS ............................................................................................................................ 3
3. RESULTS .............................................................................................................................. 5
   3.1. Fishery Statistics ............................................................................................................. 5
       Black Bream (Acanthopagrus butcheri) .............................................................................. 5
       Golden Perch (Macquaria ambigua) .................................................................................... 6
       Greenback Flounder (Rhombosolea tapirina) ................................................................. 7
       Mulloway (Argyrosomus japonicus) .................................................................................. 8
       Yelloweye Mullet (Aldrichetta forsteri) ..........................................................................10
       Pipi (Donax deltoides) ...................................................................................................11
       Bony Bream (Nematalosa erebi) .......................................................................................12
   3.2. Other Performance Indicators .......................................................................................13
       Annual commercial catch composition of key finfish species ........................................13
       Net annual freshwater inflow .........................................................................................14
4. SUMMARY ...........................................................................................................................15
REFERENCES ............................................................................................................................17
LIST OF FIGURES

Figure 3.1 (A) Annual catches of Black Bream for the LCF (all gear types) and the recreational sector (2000/01 and 2007/08 only); (B) annual targeted catch and targeted effort (fisher days) using large mesh gill nets; (C) annual CPUE (kg.fisher day\(^{-1}\)). (*) represents confidential data reported by less than five licence holders. ........................................................................................................ 5

Figure 3.2 (A) Annual catches of Golden Perch for the LCF (all gear types) and the recreational sector (2000/01 and 2007/08 only); (B) annual targeted catch and targeted effort (fisher days) using large mesh gill nets; (C) annual CPUE (kg.fisher day\(^{-1}\)). ........................................................................................................ 6

Figure 3.3 (A) Annual catches of Greenback Flounder for the LCF (all gear types) and the recreational sector (2000/01 and 2007/08 only); (B) annual targeted catch and targeted effort (fisher days) using large mesh gill nets; (C) annual CPUE (kg.fisher day\(^{-1}\)). (*) represents confidential data reported by less than five licence holders. ........................................................................................................ 7

Figure 3.4 (A) Annual total catches of Mulloway for the LCF, MSF and the recreational sector (2000/01 and 2007/08 only); (B) annual targeted catch and targeted effort (fisher days) using large mesh gill nets; (C) annual CPUE (kg.fisher day\(^{-1}\)); (D) annual targeted catch and targeted effort (fisher days) using swinger nets; and (E) annual CPUE (kg.fisher day\(^{-1}\)). (*) represents confidential data reported by less than five licence holders. ........................................................................................................ 8

Figure 3.5 (A) Annual catches of Yelloweye Mullet for the LCF (all gear types) and the recreational sector (2000/01 and 2007/08 only); (B) annual targeted catch and targeted effort (fisher days) using small mesh gill nets; (C) annual CPUE (kg.fisher day\(^{-1}\)). ........................................................................................................ 10

Figure 3.6 (A) Annual catches of Pipi for the commercial (LCF and MSF combined) and recreational (2000/01 and 2007/08 only) sectors in South Australia; (B) annual targeted catch and targeted effort (days) for the LCF; (C) annual CPUE for the LCF. Note: (i) total catch was constrained by the TACC from 2009/10 to 2012/13; (ii) total catch for 2012/13 was higher than TACC due to the re-alignment of the quota period from calendar years to financial years. ........................................................................................................ 11

Figure 3.7 (A) Annual catches of Bony Bream for the LCF (all gear types); (B) annual targeted catch and targeted effort (fisher days) using large mesh gill nets; (C) annual CPUE (kg.fisher day\(^{-1}\)). (*) represents confidential data reported by less than five licence holders. ........................................................................................................ 12

Figure 3.8 Annual commercial catch composition (%) of key finfish species for the LCF between 2007/08 and 2012/13. ........................................................................................................ 13

Figure 3.9 Annual freshwater discharge across the Murray River barrages into the Coorong estuary between 1971/72 and 2012/13 (source: MSM BIGMOD Murray hydrological model, Murray Darling Basin Authority, November 2013). Red dashed line indicates the reference point for net freshwater inflow performance indicator. ........................................................................................................ 14
LIST OF TABLES

Table 1.1 Most recent stock assessment reports for each of the six key species in the LCF. .......................... 2
Table 2.1 List of the key species of the LCF considered in this report showing the gear type(s) for which annual targeted catch, effort and CPUE are presented for each species. ......................................................... 3
Table 3.1 Comparison between performance indicators and reference points for Black Bream for 2012/13. Note: LMGN – large mesh gill net. ........................................................................................................... 5
Table 3.2 Comparison between performance indicators and reference points for Golden Perch for 2012/13. Note: LMGN – large mesh gill net. ........................................................................................................... 6
Table 3.3 Comparison between performance indicators and reference points for Greenback Flounder for 2012/13. Note: LMGN – large mesh gill net. ........................................................................................................... 7
Table 3.4 Comparison between performance indicators and reference points for Mulloway for 2012/13. Note: LMGN – large mesh gill net; SWINGER – swinger net. ................................................................. 9
Table 3.5 Comparison between performance indicators and reference points for Yelloweye Mullet for 2012/13. Note: SMGN – small mesh gill net. ................................................................................................. 10
ACKNOWLEDGEMENTS

We gratefully acknowledge Angelo Tsolos and Milly Boyle of the Fisheries Information Services group at SARDI Aquatic Sciences for providing the catch and effort data for the Lakes and Coorong Fishery and the Marine Scalefish Fishery. The report was formally reviewed by Dr. Stephen Mayfield (Science Leader, Fisheries, SARDI Aquatic Sciences) and Dr. Greg Ferguson (SARDI Aquatic Sciences) and Jonathan McPhail (PIRSA Fisheries and Aquaculture). The report was approved for publication by Dr. Stephen Mayfield.
1. INTRODUCTION

This report provides the eighth annual assessment of stock status for key species in the South Australian Lakes and Coorong Fishery (LCF). This includes a historical summary of the commercial and recreational fishery statistics for key species harvested by the LCF from 1984/85 to 2012/13 and considers the recent performance of the fishery by comparing fishery performance indicators (PIs) against reference points (RPs) prescribed in the Management Plan (Sloan 2005). Fishery statistics are presented for five key finfish species: Black Bream (*Acanthopagrus butcheri*), Golden Perch (*Macquaria ambigua*), Greenback Flounder (*Rhombosolea tapirina*), Mulloway (*Argyrosomus japonicus*) and Yelloweye Mullet (*Aldrichetta forsteri*); and one bivalve mollusc species, Pipi (*Donax deltoides*). Fishery data for Bony Bream (*Nematalosa erebi*) are also presented, although no PIs were prescribed for this species in the Management Plan (Sloan 2005).

For the five key finfish species, the fishery PIs are: (i) total annual catch (t); (ii) mean annual catch per unit effort (CPUE; kg.fisher day \(^{-1}\)); (iii) total catch trend (4-year rate of change); and (iv) CPUE trend (4-year rate of change). For total annual catch and mean annual CPUE, the upper and lower RPs were determined based on the three highest and three lowest values during the reference period from 1984/85 to 2001/02, respectively (Sloan 2005). The 4-year rate of change PIs for total catch and CPUE were determined based on the greatest rate of change (±) over four consecutive years for total catch and CPUE during the reference period. Additional details on methods for determining PIs and RPs are included in the Management Plan (Sloan 2005).

For Pipi, a quota management system was introduced in 2007 and constrained catch for the first time in 2009/10. Since then, targeting of larger sized Pipi for the human consumption market has resulted in a degree of uncertainty around the usefulness of the PI based on CPUE as an indicator of population abundance. Consequently, in 2013 a formal harvest strategy was developed for the LCF for Pipi. The harvest strategy includes a new suite of biological performance indicators (BPIs) based on fishery-independent sampling. The BPIs for 2012/13 were presented in the most recent stock assessment report for Pipi (Ferguson 2013) and are not presented in this report.

The PIs based on annual commercial catch composition and net annual freshwater discharge to the Coorong estuary are also presented (Sloan 2005). The PI based on annual catch composition is used to assess whether there has been a significant change in the species composition (key finfish species only) of the commercial catch among years. The PI for net...
annual freshwater inflow is assessed against a RP that is triggered when flow over the barrages is less than 500 GL/year\(^1\) for three consecutive years.

Data presented in this report should be considered within the context of the Management Plan (Sloan 2005) and the most recent stock assessment reports for each species (Table 1.1).

**Table 1.1** Most recent stock assessment reports for each of the six key species in the LCF.

<table>
<thead>
<tr>
<th>Species</th>
<th>Year of most recent stock assessment</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mulloway (<em>Argyrosomus japonicus</em>)</td>
<td>2011</td>
<td>Ferguson and Ward (2011)</td>
</tr>
<tr>
<td>Pipi (<em>Donax deltoides</em>)</td>
<td>2013</td>
<td>Ferguson (2013)</td>
</tr>
<tr>
<td>Yelloweye Mullet (<em>Aldrichetta forsteri</em>)</td>
<td>2013</td>
<td>Earl and Ferguson (2013)</td>
</tr>
</tbody>
</table>
2. METHODS

Commercial catch and effort data are the primary data considered in this report. These data have been collected since 1984 by fishers in the LCF completing a logbook for each fishing day. Daily catch and effort data include catch (kg), effort (days, fisher days, number of nets) for targeted and non-targeted species, and the location at which the fishing activity took place. These data are submitted to SARDI Aquatic Sciences on a monthly basis and provide a time series that constitutes the most fundamental dataset available for assessing the status of the fish stocks harvested by the fishery.

For this report, fishery statistics for each species were extracted from the Lakes and Coorong Fishery Information System (SARDI Aquatic Sciences) and presented for each financial year from 1984/85 to 2012/13. For each species, annual estimates were calculated for: (i) total catch (includes targeted and non-targeted catch for all gear types); (ii) targeted catch; (iii) targeted effort (finfish: fisher days; Pipi: days); and (iv) targeted CPUE for the dominant gear types specified for each species in Table 2.1. For some species, the presentation of data was limited by constraints of confidentiality, i.e. data could only be presented for aggregated data from five or more fishers. Estimates of total annual catch from the Marine Scalefish Fishery are presented for Mulloway from 1984/85 to 2012/13 (Fowler et al. 2013). Estimates of total catch by the recreational fishing sector of South Australia were only available for two years: 2000/01 (Jones and Doonan 2005) and 2007/08 (Jones 2009).

Table 2.1 List of the key species of the LCF considered in this report showing the gear type(s) for which annual targeted catch, effort and CPUE are presented for each species.

<table>
<thead>
<tr>
<th>Species</th>
<th>Dominant gear type(s) used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Bream</td>
<td>Large mesh gill net</td>
</tr>
<tr>
<td>Golden Perch</td>
<td>Large mesh gill net</td>
</tr>
<tr>
<td>Greenback Flounder</td>
<td>Large mesh gill net</td>
</tr>
<tr>
<td>Mulloway</td>
<td>Large mesh gill net, Swinger net</td>
</tr>
<tr>
<td>Pipi</td>
<td>Cockle rake</td>
</tr>
<tr>
<td>Yelloweye Mullet</td>
<td>Small mesh gill net</td>
</tr>
</tbody>
</table>

Estimates of net annual freshwater inflow (GL) to the Coorong estuary were obtained from the regression-based Murray hydrological model (MSM BIGMOD, Murray Darling Basin Authority) for the period from 1971/72 to 2012/13. Inflow data were presented in financial years to align with the fishery catch and effort data.
A range of quality assurance processes were implemented at each stage during the data handling and processing to ensure the accuracy of the final report. These included:

1. commercial catch and effort data were cross-checked by staff from SARDI’s Fisheries – Information Services Group using a number of validation processes that included:
   a. random cross-checking of raw data transferred from commercial catch returns,
   b. random cross-checking of data entered to the database by trained personnel,
   c. automated filters and structured queries built into the commercial catch and effort database (Vainickis 2010);

2. extracted catch and effort data for each species were graphed into their necessary species/gear/time categories and, where possible, cross-checked with the time-series presented in previous stock status reports. For each species, estimates of annual CPUE from 2005 to 2013 were re-adjusted to account for an over-estimation of targeted fishing effort which subsequently led to an under-estimation of annual CPUE for this period;

3. tabulated fishery statistics included in the report were further cross-checked against the computer output before the report was submitted to SARDI’s formal review process; and

4. the report was formally reviewed by two SARDI scientists before approval for publication and release.
3. RESULTS

3.1. Fishery Statistics

Black Bream (*Acanthopagrus butcheri*)

![Graphs showing annual catches, targeted catch, and CPUE for Black Bream.](image)

*Figure 3.1* (A) Annual catches of Black Bream for the LCF (all gear types) and the recreational sector (2000/01 and 2007/08 only); (B) annual targeted catch and targeted effort (fisher days) using large mesh gill nets; (C) annual CPUE (kg.fisher day\(^{-1}\)). (*) represents confidential data reported by less than five licence holders.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Upper reference point</th>
<th>Lower reference point</th>
<th>2012/13 estimate</th>
<th>Within range of reference points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total catch (t)</td>
<td>47</td>
<td>3</td>
<td>1.9</td>
<td>N</td>
</tr>
<tr>
<td>CPUE(_{LMGN}) (kg.fisher day(^{-1}))</td>
<td>21</td>
<td>8</td>
<td>confidential</td>
<td>Y</td>
</tr>
<tr>
<td>4-year total catch trend</td>
<td>15</td>
<td>-15</td>
<td>0.3</td>
<td>Y</td>
</tr>
<tr>
<td>4-year CPUE(_{LMGN}) trend</td>
<td>76</td>
<td>-76</td>
<td>confidential</td>
<td>Y</td>
</tr>
</tbody>
</table>

*Table 3.1* Comparison between performance indicators and reference points for Black Bream for 2012/13. Note: _LMGN_ – large mesh gill net.
Golden Perch (*Macquaria ambigua*)

**Figure 3.2** (A) Annual catches of Golden Perch for the LCF (all gear types) and the recreational sector (2000/01 and 2007/08 only); (B) annual targeted catch and targeted effort (fisher days) using large mesh gill nets; (C) annual CPUE (kg.fisher day\(^{-1}\)).

**Table 3.2** Comparison between performance indicators and reference points for Golden Perch for 2012/13. Note: \(\text{LMGN} \) = large mesh gill net.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Upper reference point</th>
<th>Lower reference point</th>
<th>2012/13 estimate</th>
<th>Within range of reference points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total catch (t)</td>
<td>177</td>
<td>20</td>
<td>33.9</td>
<td>Y</td>
</tr>
<tr>
<td>CPUE(_{\text{LMGN}})\ (kg.fisher day(^{-1}))</td>
<td>40</td>
<td>9</td>
<td>22.7</td>
<td>Y</td>
</tr>
<tr>
<td>4-year total catch trend</td>
<td>56</td>
<td>-56</td>
<td>-5.7</td>
<td>Y</td>
</tr>
<tr>
<td>4-year CPUE(_{\text{LMGN}}) trend</td>
<td>9.6</td>
<td>-9.6</td>
<td>0.9</td>
<td>Y</td>
</tr>
</tbody>
</table>
Greenback Flounder (Rhombosolea tapirina)

Figure 3.3 (A) Annual catches of Greenback Flounder for the LCF (all gear types) and the recreational sector (2000/01 and 2007/08 only); (B) annual targeted catch and targeted effort (fisher days) using large mesh gill nets; (C) annual CPUE (kg.fisher day\(^{-1}\)). (*) represents confidential data reported by less than five licence holders.

Table 3.3 Comparison between performance indicators and reference points for Greenback Flounder for 2012/13. Note: \textit{LMGN} = large mesh gill net.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Upper reference point</th>
<th>Lower reference point</th>
<th>2012/13 estimate</th>
<th>Within range of reference points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total catch (t)</td>
<td>54</td>
<td>4</td>
<td>9.2</td>
<td>Y</td>
</tr>
<tr>
<td>CPUE\textsubscript{LMGN} (kg.fisher day(^{-1}))</td>
<td>36</td>
<td>10</td>
<td>24.2</td>
<td>Y</td>
</tr>
<tr>
<td>4-year total catch trend</td>
<td>22</td>
<td>-22</td>
<td>5.6</td>
<td>Y</td>
</tr>
<tr>
<td>4-year CPUE\textsubscript{LMGN} trend</td>
<td>8.2</td>
<td>-8.2</td>
<td>4.1</td>
<td>Y</td>
</tr>
</tbody>
</table>
Figure 3.4 (A) Annual total catches of Mulloway for the LCF, MSF and the recreational sector (2000/01 and 2007/08 only); (B) annual targeted catch and targeted effort (fisher days) using large mesh gill nets; (C) annual CPUE (kg.fisher day⁻¹); (D) annual targeted catch and targeted effort (fisher days) using swinger nets; and (E) annual CPUE (kg.fisher day⁻¹). (*) represents confidential data reported by less than five licence holders.
Table 3.4 Comparison between performance indicators and reference points for Mulloway for 2012/13.
Note: \textit{LMGN} – large mesh gill net; \textit{SWINGER} – swinger net.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Upper reference point</th>
<th>Lower reference point</th>
<th>2012/13 estimate</th>
<th>Within range of reference points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total catch (t)</td>
<td>118</td>
<td>31</td>
<td>108.2</td>
<td>Y</td>
</tr>
<tr>
<td>CPUE\text{LMGN} (kg.fisher day^{-1})</td>
<td>49.8</td>
<td>11</td>
<td>64.3</td>
<td>N</td>
</tr>
<tr>
<td>CPUE\text{SWINGER} (kg.fisher day^{-1})</td>
<td>61</td>
<td>10</td>
<td>53</td>
<td>Y</td>
</tr>
<tr>
<td>4-year total catch trend</td>
<td>27</td>
<td>-27</td>
<td>28.4</td>
<td>N</td>
</tr>
<tr>
<td>4-year CPUE\text{LMGN} trend</td>
<td>9.5</td>
<td>-9.5</td>
<td>14.1</td>
<td>N</td>
</tr>
<tr>
<td>4-year CPUE\text{SWINGER} trend</td>
<td>16.1</td>
<td>-16.1</td>
<td>3.23</td>
<td>Y</td>
</tr>
</tbody>
</table>
Yelloweye Mullet (*Aldrichetta forsteri*)

**Figure 3.5** (A) Annual catches of Yelloweye Mullet for the LCF (all gear types) and the recreational sector (2000/01 and 2007/08 only); (B) annual targeted catch and targeted effort (fisher days) using small mesh gill nets; (C) annual CPUE (kg.fisher day\(^{-1}\)).

**Table 3.5** Comparison between performance indicators and reference points for Yelloweye Mullet for 2012/13. Note: \(\text{SMGN} \) – small mesh gill net.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Upper reference point</th>
<th>Lower reference point</th>
<th>2012/13 estimate</th>
<th>Within range of reference points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total catch (t)</td>
<td>312</td>
<td>124</td>
<td>217</td>
<td>Y</td>
</tr>
<tr>
<td>(\text{CPUE}_{\text{SMGN}}) (kg.fisher day(^{-1}))</td>
<td>101</td>
<td>57</td>
<td>112.6</td>
<td>N</td>
</tr>
<tr>
<td>4-year total catch trend</td>
<td>45</td>
<td>-45</td>
<td>-6.8</td>
<td>Y</td>
</tr>
<tr>
<td>4 year (\text{CPUE}_{\text{SMGN}}) trend</td>
<td>12</td>
<td>-12</td>
<td>-11.9</td>
<td>Y</td>
</tr>
</tbody>
</table>
**Pipi (Donax deltoides)**

![Graph Image]

**Figure 3.6** (A) Annual catches of Pipi for the commercial (LCF and MSF combined) and recreational (2000/01 and 2007/08 only) sectors in South Australia; (B) annual targeted catch and targeted effort (days) for the LCF; (C) annual CPUE for the LCF. Note: (i) total catch was constrained by the TACC from 2009/10 to 2012/13; (ii) total catch for 2012/13 was higher than TACC due to the re-alignment of the quota period from calendar years to financial years.
Bony Bream (*Nematalosa erebi*)

Figure 3.7 (A) Annual catches of Bony Bream for the LCF (all gear types); (B) annual targeted catch and targeted effort (fisher days) using large mesh gill nets; (C) annual CPUE (kg.fisher day⁻¹). (*) represents confidential data reported by less than five licence holders.
3.2. Other Performance Indicators

Annual commercial catch composition of key finfish species

Annual commercial catch composition is a PI in the Management Plan (Sloan 2005) designed to monitor shifts in targeted fishing effort among key species. Contributions of the key species to the annual total catch of finfish from 2007/08 to 2012/13 are shown in Figure 3.8. No specific management response is prescribed for this PI in the Management Plan (Sloan 2005).

Figure 3.8 Annual commercial catch composition (%) of key finfish species for the LCF between 2007/08 and 2012/13.
Net annual freshwater inflow

Net annual freshwater inflow to the Coorong estuary is a PI in the Management Plan (Sloan 2005) designed to measure the overall condition of the environment. Estimates of mean annual freshwater inflows to the Coorong estuary (MSM BIGMOD, Murray-Darling Basin Commission) from 1971/72 to 2012/13 are shown in Figure 3.8. The RP associated with this PI is reached when freshwater inflow is less than 500 GL/year\(^{-1}\) for three consecutive years (Sloan 2005), although no specific management response is prescribed for this PI in the Management Plan (Sloan 2005).

![Figure 3.9](image_url) Annual freshwater discharge across the Murray River barrages into the Coorong estuary between 1971/72 and 2012/13 (source: MSM BIGMOD Murray hydrological model, Murray Darling Basin Authority, November 2013). Red dashed line indicates the reference point for net freshwater inflow performance indicator.
4. SUMMARY

In this report, the annual commercial fishery statistics were presented for the period from 1984/85 to 2012/13 for key species taken in the LCF. The recent performance of the fishery was assessed using fishery PIs for 2012/13 against RPs prescribed in the Management Plan (Sloan 2005). Of the 22 PIs considered, five were outside of the range of RPs:

- Total catch for Black Bream was 37% below the lower RP;
- Total catch trend for Mulloway was 5% above the upper RP;
- CPUE for Mulloway using large mesh gill nets was 29% above the upper RP;
- CPUE trend for Mulloway using large mesh gill nets was 48% above the upper RP; and
- CPUE for Yelloweye Mullet was 12% above the upper RP.

In 2012/13, the greatest contributions to the total catch of the LCF, across key finfish species were from Yelloweye Mullet (59%) and Mulloway (28%). From 2010/11 to 2012/13, the contribution to the total catch from Yelloweye Mullet declined from 73% to 59%, whilst that of Mulloway increased from 6% to 28%. Over the same period the contribution from Greenback Flounder and Golden Perch declined by 8% and 10%, respectively.

For key finfish species in the LCF, uncertainty exists around the use of CPUE as the only available estimate of relative abundance due to: (i) differences among individual licence holders in the way that fishing effort is reported; and (ii) environmentally-mediated changes in the amount of available habitat, particularly for finfish species in the Coorong estuary, which may potentially affect CPUE as an indicator of relative abundance. Whilst a fishery-independent method for estimating the relative abundance of Pipi has been developed (Ward et al. 2010) and implemented since 2007/08 (Ferguson 2013), it is important to address uncertainty around CPUE for finfish species, because it provides the only long-term (29 years) time-series of relative abundance.

In addition, the structure of the current fishery PIs and RPs for finfish provide limited scope for accurate assessment of stock status because RPs were determined from fishery data collected over a relatively short time period, i.e. from 1984/85 to 2001/02, and do not consider data from the past 12 years. Furthermore, PIs have widely separated upper and lower RPs that do not provide informative criteria for the accurate assessment of the species. Also change in species composition of catches only considers short-term variation and is not compared with a benchmark period.
The Management Plan for the LCF is currently being developed. As part of this process, assessment of the population status of key finfish species in the LCF will be improved through the current development of new PIs that consider key environmental, biological and ecosystem-based parameters that better reflect fishery performance. The new suite of PIs will constitute an assessment framework to support the development and implementation of a new harvest strategy for finfish in the LCF.
REFERENCES


