

Assessment Authors and Year

Broadhurst, M. and Stewart, J. 2021. NSW Stock Status Summary 2019/20 – Dusky Flathead – (*Platycephalus fuscus*). NSW Department of Primary Industries. Fisheries NSW. 9 pp.

Stock Status

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| Current stock status | On the basis of the evidence contained within this assessment, Dusky Flathead is currently assessed as Sustainable for the NSW component of the stock. |
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Stock Structure

The biological stock structure of Dusky Flathead populations is unknown. In the absence of information on biological stock boundaries, the Status of Australian Fish Stocks (SAFS) assessment of stock status is done at the jurisdictional level—Queensland, New South Wales and Victoria.

The data presented in this summary relate only to the NSW part of the stock.

Stock Status – New South Wales

Catch Trends

Commercial fisheries

Almost the entire commercial catch of Dusky Flathead is reported from the Estuary General Fishery using the method of ‘mesh netting’ (or gillnets); with configurations for (1) specifically targeting Dusky Flathead (‘flathead net’, which is a low, bottom-set net), and also (2) various other estuarine species (‘meshing net’, which includes bottom and surface-set nets). Data for annual commercial catches are available for 68 years. Total landed catches (from both methods) fluctuated between 150 and 250 t each year until the early 2000s, after which they declined with considerable inter-annual variability (Fig. 1). During the past few years, total landed catches were initially consistent at 125 t, but peaked at 165 t in 2016, and then reduced to 118 t in 2019.

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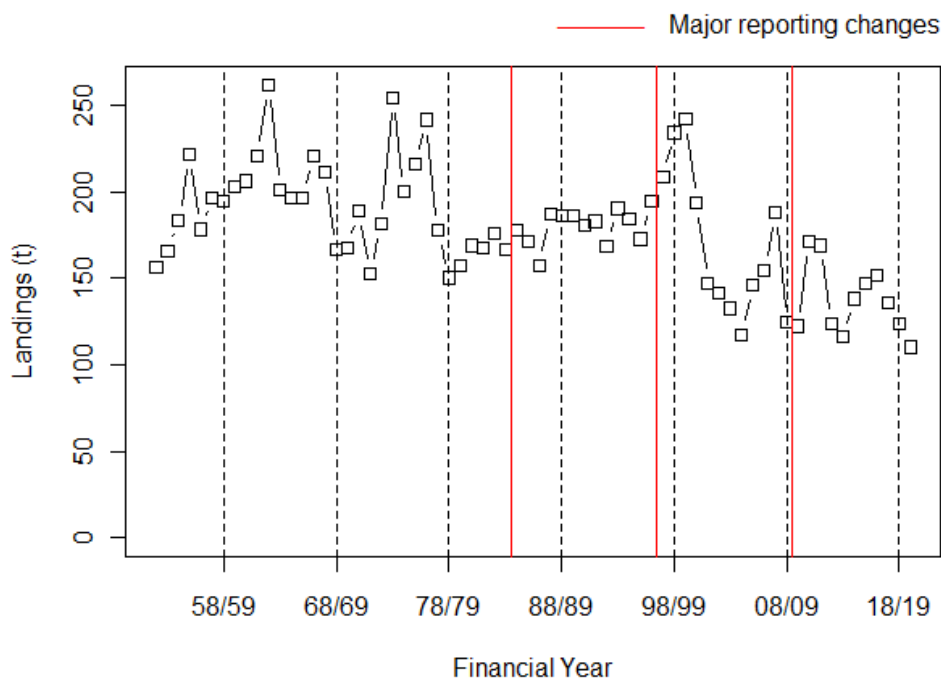


Figure 1. Commercial landings (including available historical records) of Dusky Flathead in NSW from 1952/53 to 2018/19 for all fishing methods.

Recreational

In recent years, the recreational harvest of Dusky Flathead has exceeded commercial landings. The most recent estimate was ~304,000 fish or 190 t harvested during 2017/18 (Murphy et al. 2020). This estimate was based on a survey of recreational fishing licence (RFL) households, which comprised at least one person with a long-term (one or three year) fishing licence, but also included other fishers within the household. A similar survey of RFL households was done in 2013/14 during which a comparable number (481,164) of Dusky Flathead were recreationally harvested.

In addition to these retained catches, large numbers (up to 55% of the total catches) of Dusky Flathead were released at each period (minimum legal size is 360 mm TL, and fishers are allowed only one individual >700 mm TL within a total daily bag limit of 10 fish). The long-term fate of these individuals is unknown, but it is well established that the species has very high short-term survival after being released by anglers (91%; Butcher et al. 2008).

There are no available data describing Aboriginal harvests.

Fishing effort trends

Commercial fishing effort on Dusky Flathead is difficult to estimate prior to 2009/10 because the monthly catch returns listed 'days fished per month' by method and had no direct link to the number of days within a month that a particular species was landed. Nevertheless, the number of days using the method of 'flathead net' (i.e. for specifically targeting Dusky Flathead) have

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declined from more than 4,000 during 1999/00 to fewer 1,500 in recent years (Fig. 3). The number of days reported in a month using the method of ‘meshing net’ when Dusky Flathead were caught along with other species have also declined from around 30,000 in the late 1990s to around 10,000 in recent years (Fig. 4).

More accurate estimates of fishing effort are available after 2009/10 and these show that the number of days using both types of mesh nets have been relatively stable, but with a decline during the most recent four years (Fig. 5).

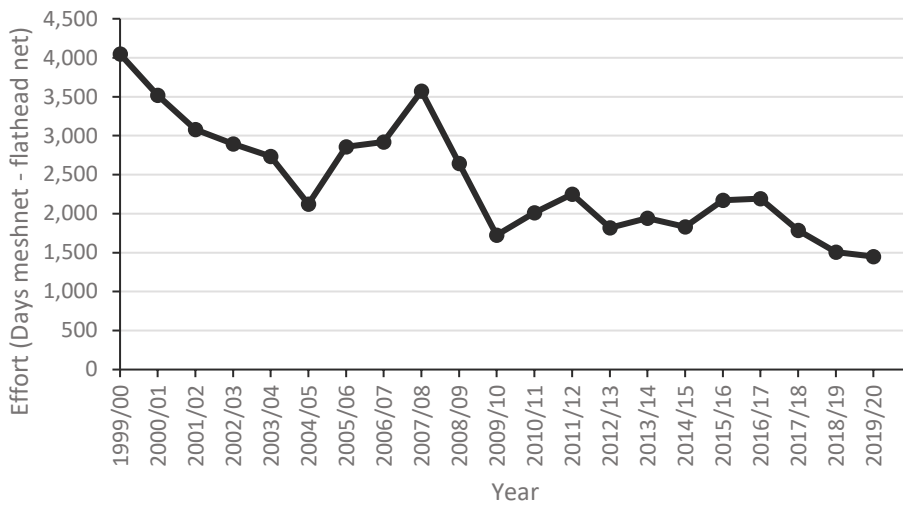


Figure 3 Annual reported days fished for months when Dusky Flathead were landed by fishers using ‘flathead nets’ from 1990/91 to 2019/20.

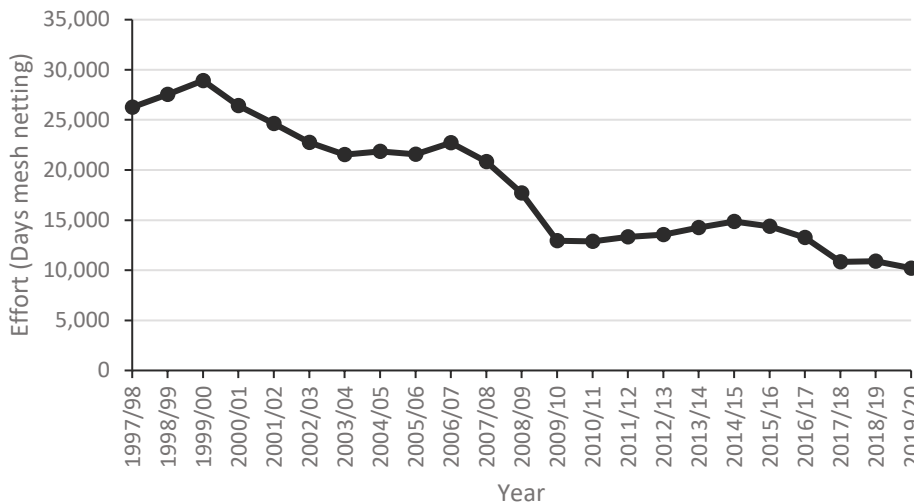


Figure 4. Annual reported days fished when Dusky Flathead were landed by fishers using ‘meshing nets’ from 1997/98 to 2019/20.

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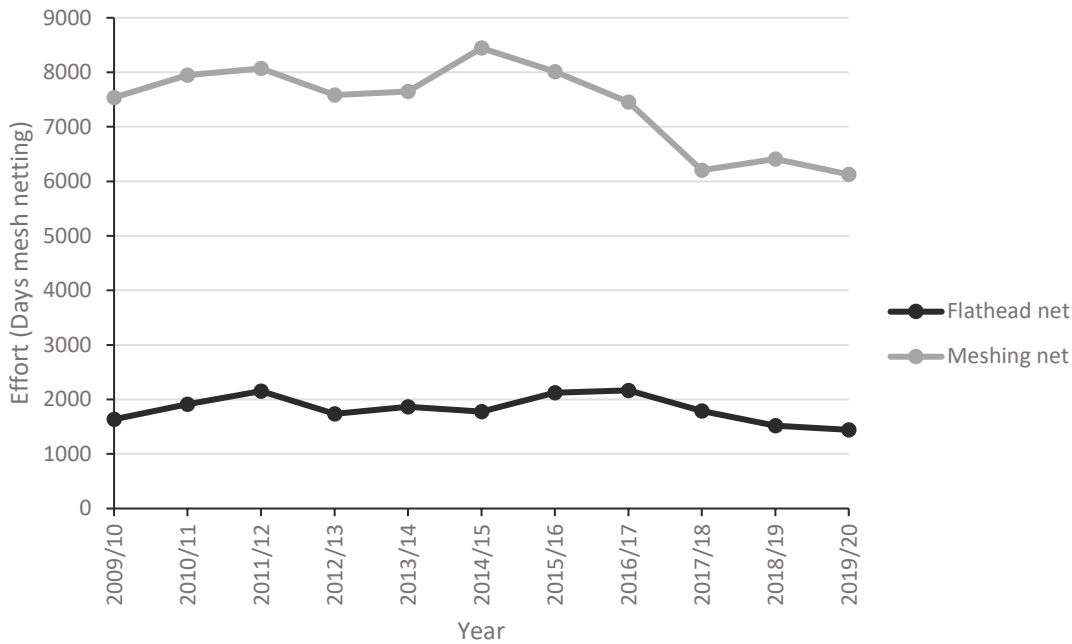


Figure 5. Annual reported days fished when Dusky Flathead were landed by fishers using flathead nets and meshing nets from 2009/10 to 2019/20.

Catch rate trends

Catch rates (median kg/day) of Dusky Flathead using flathead and meshing nets have been relatively stable since 1997/98, with a slight trending increase during recent years (Figs 6 and 7). The spike in catch rates after 2009 was an artefact of a change in logbook reporting in that year.

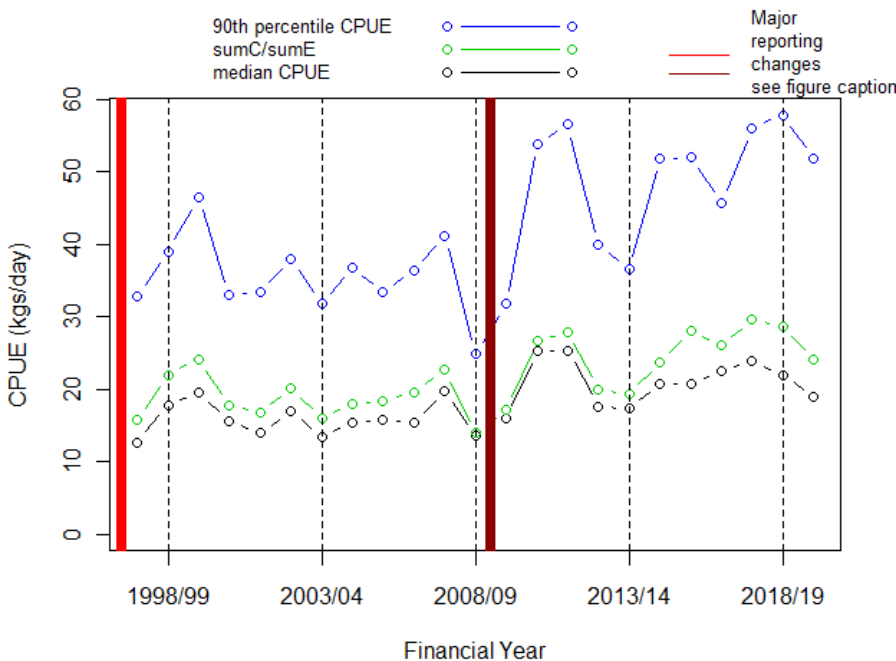


Figure 6. Nominal catch rates (kg/day) of Dusky Flathead using the method of flathead net from 1997/98 to 2019/20.

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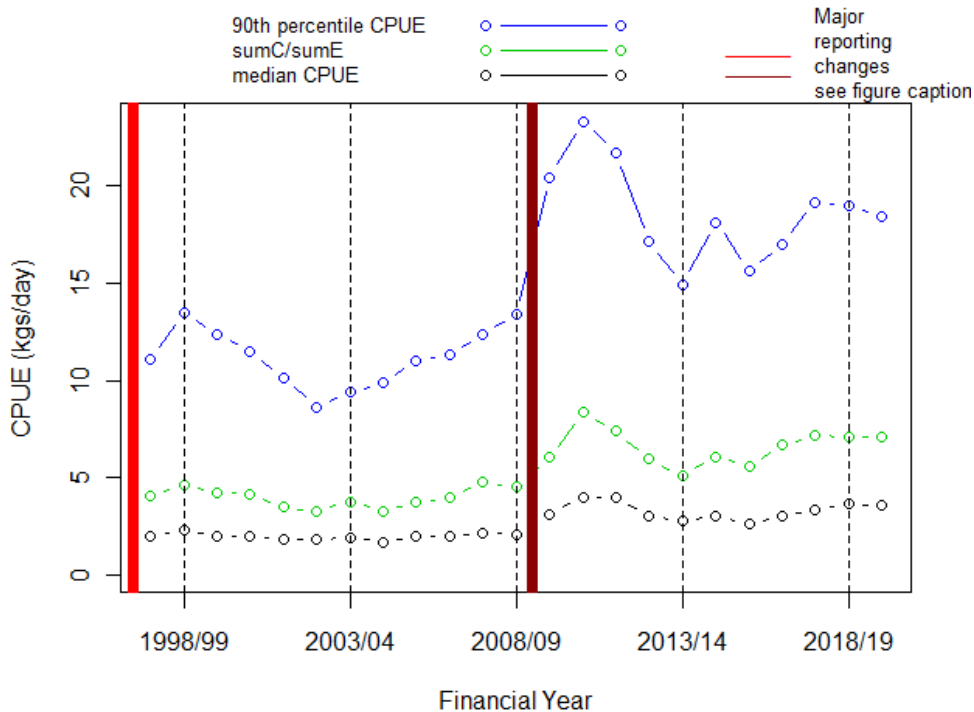


Figure 7. Nominal catch rates (kg/day) of Dusky Flathead using the method of meshing net from 1997/98 to 2019/20.

Stock Assessment Methodology

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| Year of most recent assessment | 2020 |
| Assessment method | Weight of Evidence 1. Catch 2. Effort 3. Catch rates 4. Trends in the size composition of the landed commercial catch from 2007/08 to 2016/17. |
| Main data inputs | 1. Annual total landed catch of Dusky Flathead by the NSW commercial fishery from 1952/53 to 2019/20. Recreational catch estimates from three point surveys. 2. Total landed catch of Dusky Flathead and effort by the NSW commercial fishery from 1997/98 to 2019/20. 3. Size composition in landed commercial catch 2007/08 to 2016/17 derived from a port-monitoring program. |

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| Key model structure and assumptions | <ol style="list-style-type: none">1. Catch and effort data are unbiased.2. Catch rates are an index of relative abundance.3. The spatially and temporally stratified sampling program has resulted in size compositions that are representative of commercial landings. |
| Sources of uncertainty evaluated | N/A |

Status Indicators and Limits Reference Levels

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| Biomass indicator or proxy | <ol style="list-style-type: none">1. Commercial catch rates. |
| Biomass Limit Reference Level | <ol style="list-style-type: none">1. No formal reference level for catch rates; however, trends are assessed. |
| Fishing mortality indicator or proxy | <ol style="list-style-type: none">1. Landed catch.2. Fishing effort.3. Size composition in landed catch. |
| Fishing mortality Limit Reference Level | <ol style="list-style-type: none">1. Landed catch: No formal reference levels determined. Trends in indicator through time are used to estimate trends in fishing mortality.2. Fishing effort: No formal reference levels determined. Trends in indicator through time are used to estimate trends in fishing mortality.3. Size composition in landed catch: No formal reference levels determined. Trends in indicator through time are used to estimate trends in fishing mortality. |

Stock Assessment Results

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| 1. Commercial catch rates of Dusky Flathead have been remarkably stable, implying stability in the relative abundance of the fishable stock. | See Figs 6 and 7. |
| 2 Commercial and recreational harvest and fishing effort has reduced substantially during the past 20 years. | See Figs 1, 3, 4 and 5. |

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| <p>3. The length composition of Dusky Flathead in commercial landings has been relatively consistent since 2007/08.</p> | <p>Figure 8. The length composition of Dusky Flathead in commercial landings from 2007/08 to 2016/17.</p> |
| <p>Biomass status in relation to Limit</p> | <p>Commercial catch rates of Dusky Flathead have been remarkably stable, implying stability in the relative abundance of the fishable stock.</p> |
| <p>Fishing mortality in relation to Limit</p> | <p>Declines in catch by both the commercial and recreational sectors during the past 20 years has reduced mortality substantially. In addition, changes to mesh sizes during the early 2000s (Broadhurst et al., 2003; Gray et al., 2005) and substantial declines in commercial fishing effort using the method of mesh netting will have reduced fishing mortality.</p> <p>Stability in the length composition of Dusky Flathead in commercial landings through time is partly driven by the selectivity of mesh nets, but does indicate no large changes to the composition of the fishable portion of the stock that is vulnerable to mesh netting.</p> |
| <p>Previous SAFS stock status</p> | <p>Stock status for Dusky Flathead reported in SAFS.</p> <p>NSW stock 2012 - Sustainable NSW stock 2014- Sustainable NSW stock 2016 - Undefined</p> |

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| | <p>NSW stock 2018- Sustainable</p> <p>Within the NSW assessment framework, Dusky Flathead were previously assessed as:</p> <table border="1" data-bbox="692 495 1224 1458"> <thead> <tr> <th>Year</th> <th>Exploitation Status</th> </tr> </thead> <tbody> <tr><td>2002/03</td><td>Fully Fished</td></tr> <tr><td>2003/04</td><td>Fully Fished</td></tr> <tr><td>2004/05</td><td>Fully Fished</td></tr> <tr><td>2005/06</td><td>Fully Fished</td></tr> <tr><td>2006/07</td><td>Fully Fished</td></tr> <tr><td>2007/08</td><td>Fully Fished</td></tr> <tr><td>2008/09</td><td>Fully Fished</td></tr> <tr><td>2009/10</td><td>Fully Fished</td></tr> <tr><td>2010/11</td><td>Fully Fished</td></tr> <tr><td>2011/12</td><td>Fully Fished</td></tr> <tr><td>2012/13</td><td>Uncertain</td></tr> <tr><td>2013/14</td><td>Uncertain</td></tr> <tr><td>2014/15</td><td>Uncertain</td></tr> </tbody> </table> | Year | Exploitation Status | 2002/03 | Fully Fished | 2003/04 | Fully Fished | 2004/05 | Fully Fished | 2005/06 | Fully Fished | 2006/07 | Fully Fished | 2007/08 | Fully Fished | 2008/09 | Fully Fished | 2009/10 | Fully Fished | 2010/11 | Fully Fished | 2011/12 | Fully Fished | 2012/13 | Uncertain | 2013/14 | Uncertain | 2014/15 | Uncertain |
|----------------------------------|--|------|---------------------|---------|--------------|---------|--------------|---------|--------------|---------|--------------|---------|--------------|---------|--------------|---------|--------------|---------|--------------|---------|--------------|---------|--------------|---------|-----------|---------|-----------|---------|-----------|
| Year | Exploitation Status | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2002/03 | Fully Fished | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2003/04 | Fully Fished | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2004/05 | Fully Fished | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2005/06 | Fully Fished | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2006/07 | Fully Fished | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2007/08 | Fully Fished | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2008/09 | Fully Fished | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2009/10 | Fully Fished | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2010/11 | Fully Fished | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2011/12 | Fully Fished | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2012/13 | Uncertain | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2013/14 | Uncertain | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2014/15 | Uncertain | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Current SAFS stock status</p> | <p>The stock in NSW is not considered to be recruitment impaired. The current level of fishing mortality is unlikely to cause the biological stock to become recruitment impaired.</p> <p>On the basis of the evidence provided above, Dusky Flathead in New South Wales is classified as a sustainable stock</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

References

Broadhurst, MK, Gray, CA, Young, DJ, and Johnson, DD 2003, Relative efficiency and size selectivity of bottom-set gill-nets for dusky flathead, *Platycephalus fuscus* and other species in New South Wales, Australia, Fishery and Marine Research, 50: 289–302.

Butcher, PA, Broadhurst, MK and Cairns, SC 2008, Mortality and physical damage of angled and released dusky flathead *Platycephalus fuscus*, Diseases of Aquatic Organisms, 81: 127–134.

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Gray, CA, Broadhurst, MK, Johnson, DD and Young, DJ 2005, Influences of hanging ratio, fishing height, twine diameter and material of bottom-set gillnets on catches of dusky flathead *Platycephalus fuscus* and non-target species in New South Wales, Australia, Fisheries Science, 71: 1217–1228.

Murphy, J.J., Ochwada-Doyle, F.A., West, L.D., Stark, K.E. and Hughes, J.M. (2020). The NSW Recreational Fisheries Monitoring Program - survey of recreational fishing, 2017/18. NSW DPI - Fisheries Final Report Series No. 158.

West, L.D., K.E. Stark, J.J. Murphy, J.M. Lyle and F.A. Doyle (2015). Survey of recreational fishing in New South Wales and the ACT, 2013/14. Fisheries Final Report Series.