Stock Status Summary - 2021

NSW Stock Status Summary – Ocean Jackets
(Nelusetta ayraudi)

Assessment Authors and Year

Smoothey, A.F. 2020. NSW Stock Status Summary 2018/19 – Ocean Jackets *(Nelusetta ayraudi).* NSW Department of Primary Industries, Fisheries. 6pp.

Stock Status

Current stock status	Sustainable

Stock Structure

Ocean Jackets are distributed along the southern half of Australia from Cape Moreton in Queensland around to North West Cape in Western Australia, including northern Tasmania [Kailola et al 1993]. The Ocean Jacket stock comprises Ocean Jackets (*Nelusetta ayraudi*), which makes up most of the catch, and unspecified Leatherjackets. Little is known about the biological structure of this multi-species stock. Here, assessment of stock status is presented at the jurisdictional level.

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

Stock Status – New South Wales

Catch trends

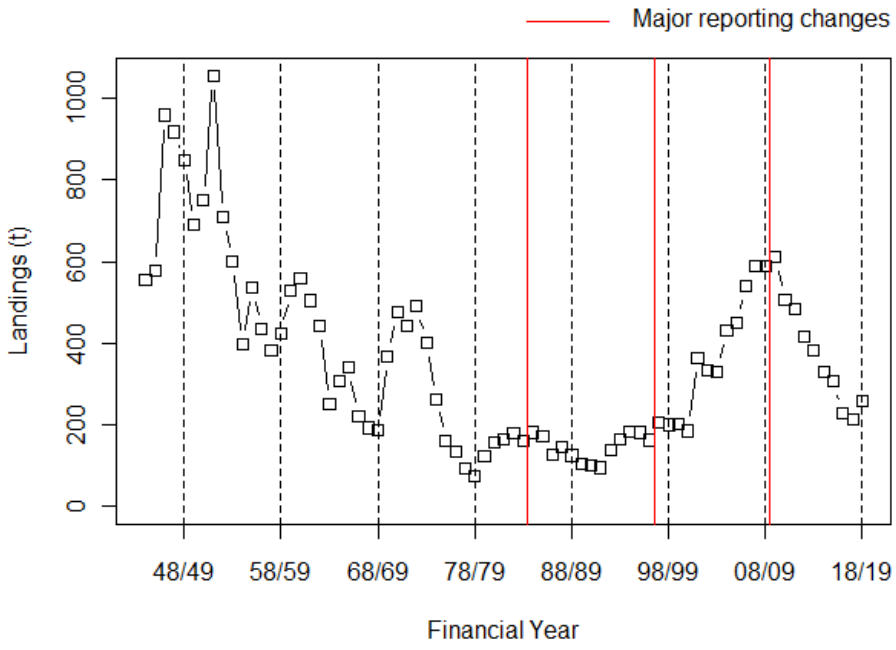


Figure 1. Commercial landings (including available historical records) of Ocean Jackets for NSW from 1944/45 to 2018/19 for all fishing methods.

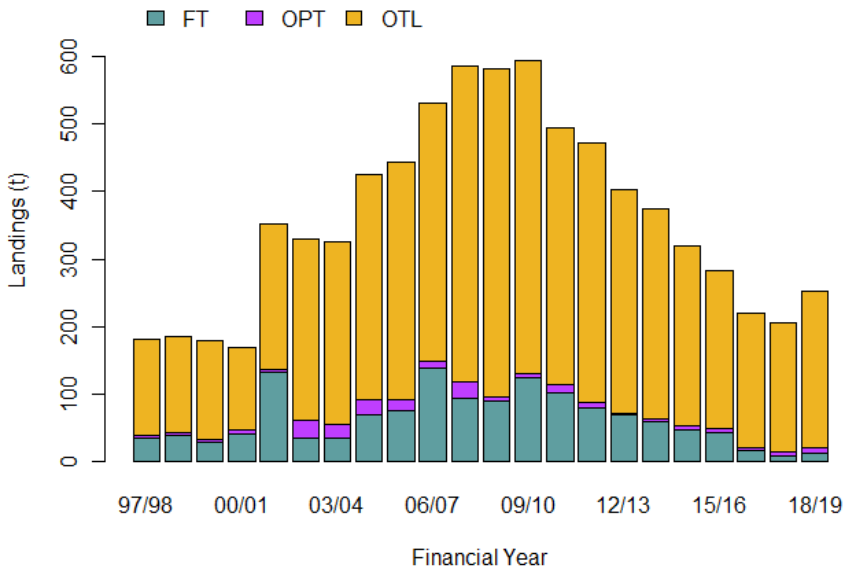


Figure 2. Landings by Fishery (including available historical records) of Ocean Jackets in NSW for years 1997/98 to 2018/19. FT = Fish Trawl; OPT = Ocean Prawn Trawl and OTL = Ocean Trap and Line.

Recreational and Indigenous

The most recent estimate of the recreational harvest of Leather Jackets (all species combined) in New South Wales, based on a survey of Recreational Fishing Licence (RFL) Households, was approximately 53,062 fish caught during 2017-18 with 83% landed using line-bait (Murphy et al. 2020). This estimate only encompasses households with a Recreational Fishing Fee licence holder. Nevertheless, this estimate is lower than the estimated 71,000 and 246, 212 fish harvested during 2013/14 and 2000-01, respectively (West et al., 2015).

There are no data on aboriginal harvest.

Fishing effort trends

Commercial fishing effort on Ocean Jackets is difficult to estimate prior to 2009/10 as 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. The number of days fish trapping reported for when Ocean Jackets were also reported in a month have declined from nearly 13,412 during 1997/98 to fewer than 3,000 during since 2019/20 (Fig. 3). More accurate estimates of fishing effort are available after 2009/10 and show that the number of days using fish trapping on which Ocean Jackets were landed have declined slightly from approximately 4,276 in 2009/10 to 2,772 in 2018/19.

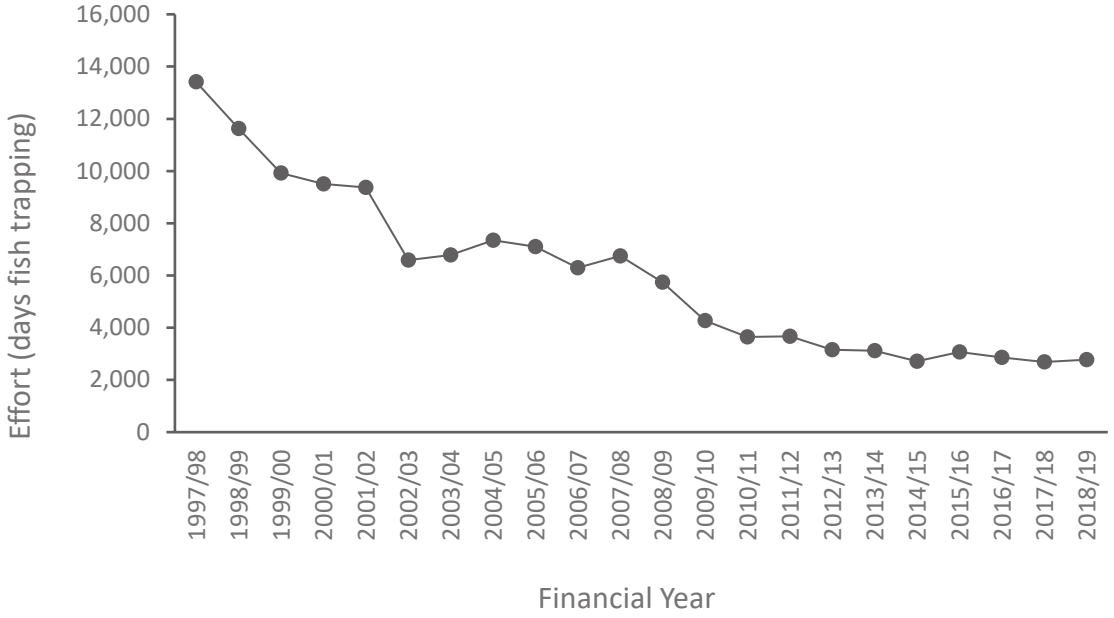


Figure 3. Annual reported days fished for months when Ocean Jackets were landed by fish trapping 1997/98 to 2018/19.

Catch rate trends

Nominal catch rates of Ocean Jackets using the method of fish trapping have increased steadily since 1997/98 peaking in 2009/10 and have declined since 2010/11 with similar catch rates experienced between 2013/14 to 2018/19 (Figure 4). Lower catch rates since 2009 could reflect the introduction of escape panels of 50 x 75 mm welded mesh, resulting in traps selecting ocean jackets at sizes > 35 cm in total length.

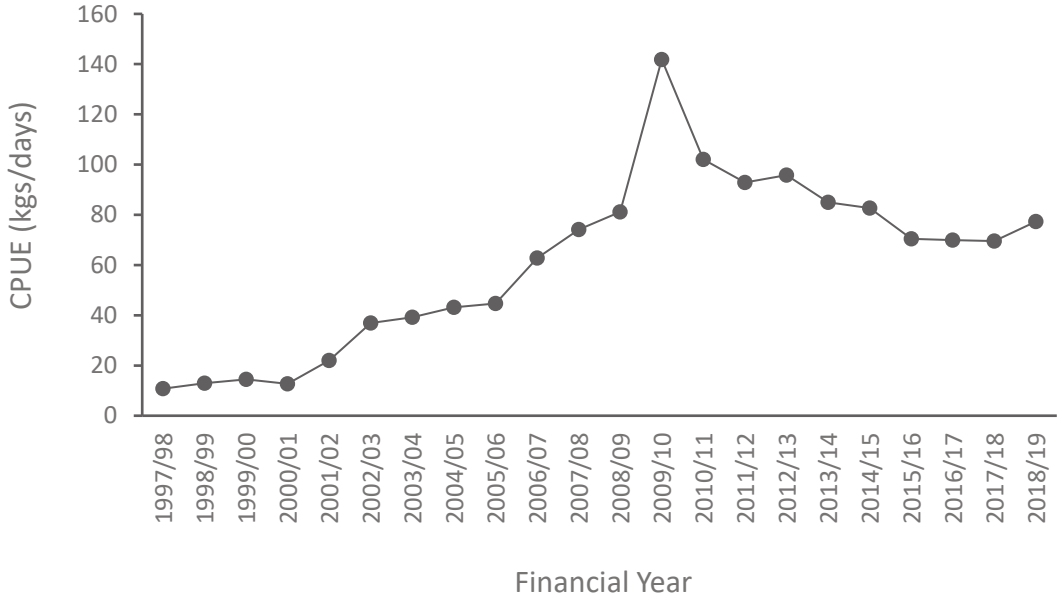


Figure 4. Commercial catch rates of Ocean Jackets using fish trapping for years 1997/98 to 2018/19 in NSW.

Stock Assessment Methodology

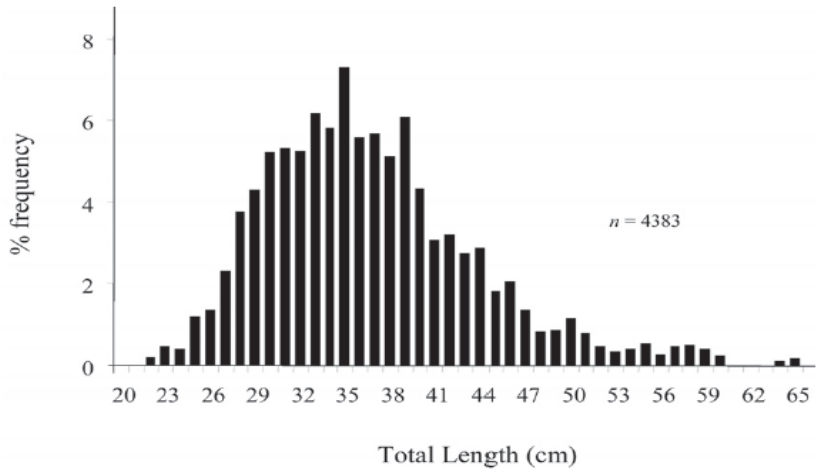
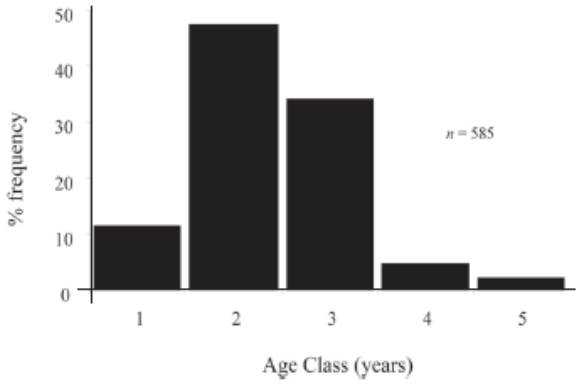
Year of most recent assessment	2020
Assessment method	Weight of Evidence: 1. Catch rates. 2. Size composition in landed commercial catch. 3. Age composition in commercial catch in 2003/04. 4. Mortality estimates.
Main data inputs	1. Annual total landed catch of Ocean Jacket by the NSW commercial fishery from 1944/45 to 2018/19. 2. Catch rates fish trapping 1997/98 to 2018/19. 3. Size composition in landed commercial catch 2003 and 2005. 4. Age composition in commercial catch during 2003/04. 5. Mortality estimates derived from catch curves and empirical equations (Miller et al. 2010).
Key model structure and assumptions	1. Trends in size composition in the landed commercial catch between 2003 and 2005 – assuming these are representative of the fishable stock. 2. Pattern of age composition in commercial 2003/04 – assuming this is representative of the fishable stock. 3. Mortality estimates – assuming the catch curves were based on a sample representative of the fishable stock and that the empirical estimates of natural mortality are accurate.
Sources of uncertainty evaluated	Nil

Status Indicators and Limits Reference Levels

Biomass indicator or proxy	Nominal catch rates
Biomass Limit Reference Level	None defined in a formal harvest strategy
Fishing mortality indicator or proxy	1. Nominal catch rates 2. Landed catch 3. Fishing effort

	4. Size composition in landed catch 5. Age composition 6. Mortality
Fishing mortality Limit Reference Level	None defined in a formal harvest strategy

Stock Assessment Results

1. Catch rates fish trapping 1997 to 2018.	See Figure 4 above.
2. Size composition in landed commercial catch	 Figure 5. The sizes of Ocean Jackets landed by the NSW demersal trap fishery between 2003 and 2005 (Miller and Stewart, 2009).
3. Age composition in commercial catch	 Figure 6. The age composition of Ocean Jackets in landings of the NSW demersal trap fishery during 2003/04 (Miller and Stewart, 2009).

<table>
<tr><td>4. Mortality estimates derived from catch curves</td><td>Miller and Stewart [2009] reported that between 2003 and 2005, Ocean Jacket in New South Wales landings ranged between 220 and 650 mm TL and were fully recruited to the fishery at two years of age, with most of the catch (83%) aged either two or three years. The instantaneous total mortality rate was estimated from an age-based catch curve as 1.1. Natural mortality was estimated at approximately 0.5, based on a maximum age of six years.</td></tr>
<tr><td>Previous SAFS stock status</td><td>SAFS 2018 – Sustainable.
Within the NSW assessment framework, Ocean Jackets were previously assessed as:<table><tr><td>Year</td><td>Exploitation Status</td></tr><tr><td>2014/15</td><td>Fully Fished</td></tr></table></td></tr>
<tr><td>Current SAFS stock status</td><td>Sustainable</td></tr>
</table>

Qualifying Comments

The recent decreases in commercial and recreational catches of Ocean Jackets in NSW, coupled with the boom-bust history of the fishery, may indicate that the biomass is declining. However, the above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, the above evidence indicates that the current level of fishing mortality in New South Wales is unlikely to cause the stock to become recruitment impaired.

Based on the evidence presented above, Ocean Jacket in New South Wales is classified as a **sustainable stock**.

References

Miller, M.E. and J. Stewart (2009). The commercial fishery for ocean leatherjackets (*Nelusetta ayraudi*, Monacanthidae) in New South Wales, Australia, Asian Fisheries Science, 22: 257–264.

Miller, M.E., J. Stewart, and R.J. West (2010). Using otoliths to estimate age and growth of a large Australian endemic monocanthid, *Nelusetta ayraudi* (Quoy and Gaimard, 1824). Environmental Biology of Fishes, 88: 263–271

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.