

Eastern Sea Garfish (2020)

Hyporhamphus australis



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STOCK STATUS OVERVIEW

| Jurisdiction | Stock | Stock status | Indicators |
|-----------------|-------------------|--------------|--|
| New South Wales | Eastern Australia | Sustainable | Spawning stock biomass, fishing mortality rate, age composition, catch, effort |

STOCK STRUCTURE

Eastern Sea Garfish (*Hyporhamphus australis*) is found in sheltered bays, coastal waters, and occasionally in the lower reaches of estuaries from Moreton Bay in Queensland to Eden in New South Wales, including Lord Howe and Norfolk Islands. The stock structure of Eastern Sea Garfish has not been formally examined through genetics. However, based on their limited distribution along south-eastern Australia and predictable seasonal abundance at different latitudes, it is likely to constitute a single biological stock [Stewart et al. 2005].

Here, the stock status of Eastern Sea Garfish is reported at the biological stock level—Eastern Australia.

STOCK STATUS

Eastern Australia

The NSW Ocean Hauling Sea Garfish Fishery transitioned to quota management in 2017–18, with an interim annual catch quota of 45.5 t allocated until 2024. The most recent assessment of Eastern Sea Garfish [Broadhurst et al. 2018, Stewart 2020] estimated that biomass and recruitment levels have increased considerably (approximately tripled) since the stock was assessed as being overfished during the early 2000s [Stewart et al. 2015]. Recruitment in Eastern Sea Garfish is variable, with peaks evident in 2009–10 and 2013–14 and estimated to be very high during 2018–19, noting that this recent spike should be treated with caution as too few data were available for the model to accurately estimate recruitment in the final year [Broadhurst et al. 2018, Stewart 2020]. In addition to the modelled increase in biomass, increases in the proportion of fish older than two years in landings since around 2007–08 indicate that the population was recovering to a more natural state [Broadhurst et al. 2018, Stewart 2020]. However the proportion of fish aged 2+ in landings has declined slightly in recent years which may reflect stronger 1+ cohorts

entering the fishery [Stewart 2020].

Despite the recovery of Eastern Sea Garfish, there remain some minor concerns for the stock. The updated assessment for 2018–19 [Stewart 2020] indicated ongoing highly variable levels of recruitment which may be indicative of insufficient spawning biomass and/or variable environmental conditions. However biomass increased considerably in each of the most recent two years and was estimated to be around 300 t in 2018–19 [Stewart 2020]. Monitoring of the fishery during 2018–19 found landings remained relatively low but with slightly increasing catch rates. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Landings and fishing effort targeting Eastern Sea Garfish have declined considerably since they were overfished during the 1980s and 1990s. Commercial landings peaked at more than 250 t per year during the early 1990s but have averaged less than 45 t per annum during the past decade. Recreational landings are poorly estimated and considered relatively minor (~1.3 t). Reported commercial effort targeting Eastern Sea Garfish has declined from approximately 800 boat days during 2004–05 to approximately 150 boat days during 2017–18 and 2018–19 [Broadhurst et al. 2018, Stewart 2020]. The minimum mesh size in garfish hauling nets was increased to 28 mm during the mid-2000s, reducing fishing mortality on juveniles considerably [Broadhurst et al. 2018]. Fishing mortality on fully recruited age classes declined to below the estimated natural mortality level in 2010–11 and has remained there since [Broadhurst et al. 2018, Stewart 2020]. The reported commercial catch in 2018–19 was approximately 33 t, which is around 11 per cent of the estimated biomass in that year. It is not known whether a harvest fraction at this level is sustainable for Eastern Sea Garfish; however higher harvest fractions have been found to be sustainable for other species with similar life-histories [Smith et al. 2015]. The above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

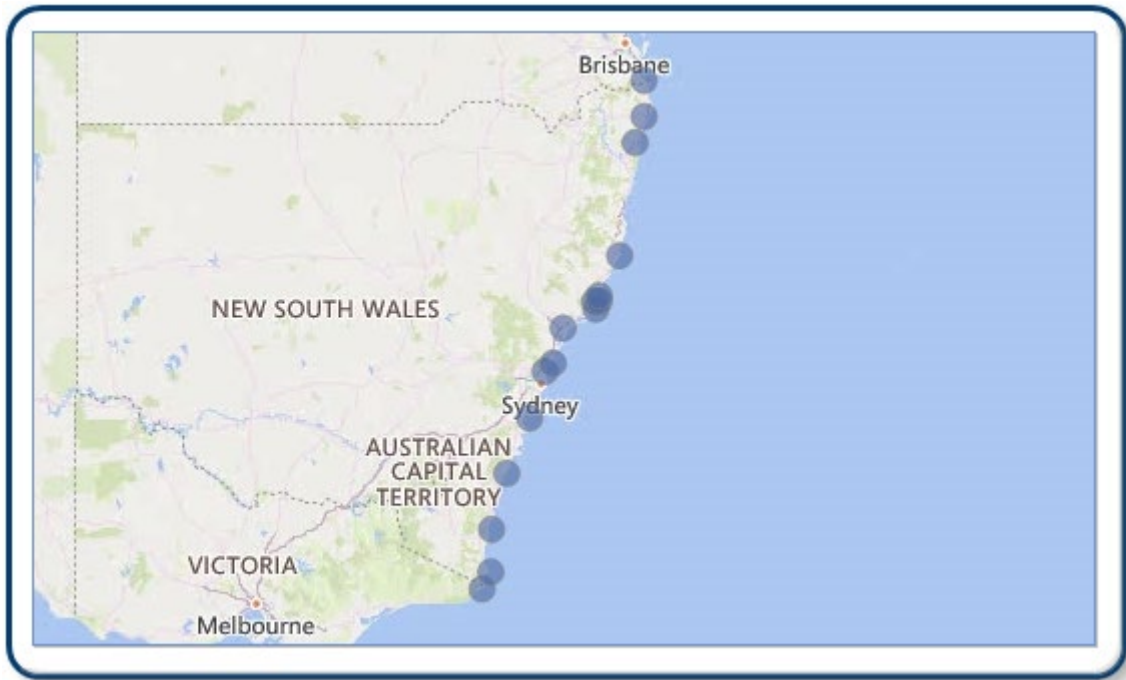
On the basis of the evidence provided above, the biological stock is classified as a **sustainable stock**.

BIOLOGY

Eastern Sea Garfish biology [Broadhurst et al. 2018, Collette 1974, Hughes and Stewart 2006]

| Species | Longevity / Maximum Size | Maturity (50 per cent) |
|---------------------|--------------------------|------------------------|
| Eastern Sea Garfish | 6 years, 398 mm FL | 210 mm FL, 1 year |

DISTRIBUTION



Distribution of reported commercial catch of Eastern Sea Garfish

TABLES

| Fishing methods | |
|------------------------|------------------------|
| | New South Wales |
| Charter | |
| Hook and Line | ✓ |
| Commercial | |
| Net | ✓ |
| Various | ✓ |
| Recreational | |
| Hook and Line | ✓ |

| Management Methods | |
|---------------------------|------------------------|
| | New South Wales |
| Charter | |
| Bag and possession limits | ✓ |
| Bag limits | ✓ |
| Gear restrictions | ✓ |
| Licence | ✓ |
| Marine park closures | ✓ |
| Spatial closures | ✓ |

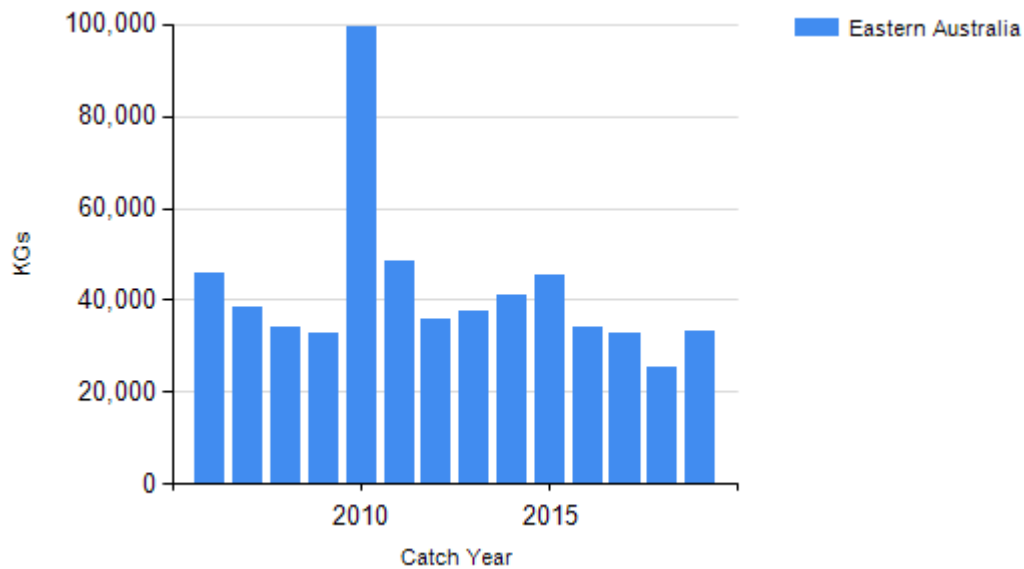
| Commercial | |
|----------------------------------|---|
| Gear restrictions | ✓ |
| Marine park closures | ✓ |
| Mesh size regulations | ✓ |
| Quota | ✓ |
| Spatial closures | ✓ |
| Vessel restrictions | ✓ |
| Recreational | |
| Bag and possession limits | ✓ |
| Bag limits | ✓ |
| Gear restrictions | ✓ |
| Licence | ✓ |
| Marine park closures | ✓ |
| Spatial closures | ✓ |

| Catch | |
|---------------------|-----------------------------|
| | New South Wales |
| Charter | Unknown |
| Commercial | 33.2518 t |
| Indigenous | Unknown |
| Recreational | 9 000 fish, 1.3 t (2017-18) |

New South Wales – Recreational (Catch) Murphy et al. [2020].

New South Wales – Indigenous <https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing>

CATCH CHART



Commercial catch of Eastern Sea Garfish

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