

NSW TOTAL ALLOWABLE FISHING COMMITTEE

OCEAN HAULING FISHERY

- EASTERN SEA GARFISH

DETERMINATION FOR THE 2024/25 FISHING PERIOD

21 May 2024

Executive Summary

Preamble

The New South Wales (NSW) Total Allowable Fishing Committee (T AFC) has statutory responsibilities set out in Part 2A of the *Fisheries Management Act 1994* (the Act) to determine the Total Allowable Commercial Catch (TACC) or Total Allowable Commercial Effort (TACE) by NSW fishers holding the relevant endorsement in some commercial fisheries. Various fishing regulations under the Act also contain provisions requiring the making of fishery determinations.

The T AFC is an independent statutory body established under Schedule 2 of the Act. In making a determination on catch or effort in a commercial fishery, the T AFC must consider the ecological, economic and social issues associated with each fishery and make determinations that 'on balance' pursue the objectives of the Act.

The T AFC is not subject to the control or direction of the Minister as to any determination made. However, the Minister may direct the T AFC on the procedures to be followed and the matters to be taken into account in making a fishing determination.

There is no formal harvest strategy for this fishery.

This determination is for Eastern Sea Garfish in the Ocean Hauling Fishery for the fishing period 1 July 2024 to 30 June 2025.

Management recommendations & supporting actions

The T AFC provides the following recommendations to the Minister, NSW Fisheries and the fishing industry towards improving the management of the fishery:

1. There would seem to be enough data (catch, effort and size composition) to attempt an integrated catch-at-age assessment, to better integrate the multiple CPUE indices and age-composition data. In doing so, consideration needs to be given to appropriate target and limit reference levels for this stock.
2. All commercial catch and effort for ESG should be recorded and used in developing future assessments of the fishery.

Determination

The Total Allowable Fishing Committee, pursuant to Part 2A of the *Fisheries Management Act 1994*, determines that the total allowable commercial catch of Eastern Sea Garfish in the Ocean Hauling Fishery should be controlled and allocated through the following measure:

1. A TACC for Eastern Sea Garfish during the fishing periods 1 July 2024 to 30 June 2025 of 45.50 tonnes.

Introduction

The Ocean Hauling (OH) Fishery targets approximately 20 finfish species using commercial hauling and purse seine nets from sea beaches and in ocean waters within three nautical miles of the NSW coast.

The OH Fishery is divided geographically into seven regions. Not all NSW ocean beaches and ocean waters are open to the OH Fishery, Schedules 1 - 3 of the *Fisheries Management (Ocean Hauling share Management Plan) Regulation 2006* (the Plan) list waters permanently closed, beaches closed on a seasonal basis and other restrictions on areas of operation of the OH Fishery.

Fishing gear used in the OH Fishery consists of a range of hauling nets and purse seine nets used to target finfish. The OH Fishery is categorised into a number of endorsement types that determine the areas and types of fishing gear that may be used. The OH Fishery is managed by a combination of both input and output controls including limited entry, TACC for major target species, boat capacity restrictions, net restrictions and temporal and spatial closures.

Transitional TACC determinations were used to assist the fishery to transition to quota management. For each new fishing period commencing 1 July 2024, the Plan requires the TAFC make a TACC determination for Eastern Sea Garfish in the OH Fishery. This is the first determination to be made by the TAFC since the Interim Total Commercial Access Level (ITCAL) was set in 2017/18 at 45.50 tonnes and maintained at this level for six fishing periods¹.

The TAFC met with DPI Fisheries and shareholders in Sydney on 11 April 2024 to discuss fishery biology, catch and associated management issues concerning the Eastern Sea garfish. DPI Fisheries presented a stock assessment on the fishery.²

Biological considerations

Distribution and stock structure

Eastern Sea Garfish *Hyporhamphus australis* (ESG) is endemic to Australia, distributed from approximately Moreton Bay in Queensland to Eden in NSW, including Lord Howe and Norfolk Islands. Over this range they are considered to be a single biological stock based on genetic evidence³. In NSW, ESG are assessed and managed as the east coast biological stock.

¹ Osterloh, I (2024). Ocean Hauling Fishery – Eastern Sea Garfish Management Report. Total Allowable Catch Determination 2024-25. 23 pp

² Stewart, J. 2024. Stock assessment of Eastern Sea Garfish (*Hyporhamphus australis*) using data to 2022/23. NSW Department of Primary Industries. Fisheries NSW. - Fisheries: 35 pp.

³ Riley, I.J., DiBattista, J.D., Stewart, J., Schilling, H.T. and Suthers, I.M. 2023. Using integrative taxonomy to distinguish cryptic halfbeak species and interpret distribution patterns, fisheries landings, and speciation. *Marine and Freshwater Research*, 74(2), pp.125-143.

Fishery catch and effort

The commercial fishery for ESG in NSW is part of the Ocean Hauling Fishery and uses garfish hauling nets to target garfish, currently mainly from boats, although the nets have previously been used from shore. Complete catch records are available from 1984/85 and total reported landings increased from less than ~100 tonnes in the early 1980s to a peak of 280 tonnes in 1992/93⁴. Landings declined rapidly to ~55 tonnes by 2004/05 and averaged ~42 tonnes over 2004 - 2021. Catch landings have since declined further to less than 20 tonnes per year over 2022/23.

The proportion of landings by the Estuary General Fishery has ranged from ~3% to ~33% since 1998, averaging 13% over the period and currently making up ~6% of total catch. In 2017/18, the ocean hauling component of the fishery transitioned to quota management, with an ITCAL of 45.5 tonnes per year. Estimated quota usage has declined from 100% in 2018/19 to 40% in 2022/23.

Ocean Haul reported fishing effort declined rapidly from ~990 days fished in 2004/05 to 229 days in 2010/11 and has since continued to decline slowly to 83 days in 2021/22 and 74 days in 2022/23, the lowest effort level since 2005.

Stock assessment and stock status

The ESG stock was assessed in 2024 using an update of the age-structured stochastic population model previously applied⁵, using data from 2004/05 to 2022/23. Assessment results indicate that estimated biomass and recruitment of ESG have increased considerably since the stock was assessed as being overfished during the early 2000s. In 2020/21, the model estimated biomass was approximately 192 tonnes and spawning stock biomass has been relatively stable at between 97 tonnes and 130 tonnes since 2013/14, estimated at approximately 97 tonnes in 2022/23².

Estimated fishing mortality rate (F) has decreased rapidly from over 1.5 in 2004/05 to below the value of natural mortality ($M = 0.62$) by 2009/10, continuing to decline to $F = 0.23$ ($< 0.5 M$) in 2020/21. With the recent decrease in catch, F was estimated to be extremely low over the past few years.

As a result of the decline in effort between 2005 - 2011, nominal CPUE increased from ~50 kg/day prior to 2008/09, to average ~200 kg/day over 2014 - 2019, continuing to increase slowly to ~230 kg/day in 2022/23. Standardised CPUE confirms the increase in catch rates since the late 1990s, with catch rates since 2014 fluctuating around recent average levels.

The NSW Eastern Sea Garfish stock is classified as **Sustainable** under the Status of Australian Fish Stocks (SAFS) framework, and the updated assessment results

⁴ Stewart, J. 2024. Stock assessment of Eastern Sea Garfish (*Hyporhamphus australis*) using data to 2022/23. NSW Department of Primary Industries. Fisheries NSW. - Fisheries: 35 pp.

⁵ Broadhurst, M. K., Kienzle, M. and Stewart J. 2018. Natural and fishing mortalities affecting eastern sea garfish, *Hyporhamphus australis* inferred from age-frequency data using hazard functions. Fisheries Research 198: 43-49.

support this classification. All indications are that the stock is well above the historically depleted levels and probably near an appropriate target level.

There is currently no formal harvest strategy in place for ESG and no target reference levels have been adopted. However, $F = M$ has been reported as an implied maximum level for fishing mortality rate. Applying this level of $F = 0.62$ to the current estimate of spawning biomass from the stock assessment, provides an estimate of TACC on spawning biomass of ~50 tonnes. Alternately, if the period 2014 - 2019 (a period of high and stable or increasing CPUE) is used as an illustrative target period for average CPUE and catches, applying the average CPUE over the recent three fishing periods to catches over the reference period would indicate a TACC of ~40 tonnes. These alternative estimates flank the current TACC of 45.5 tonnes.

The current TACC level of 45.5 tonnes is consistent with current stock status and estimates of TACC using alternative harvest control rule approaches. This TACC level should be maintained and stock status indicators (CPUE and estimated biomass) closely monitored to determine whether the stock declines, if catches increase towards this TACC level.

Recommendation

- There would seem to be enough data (catch, effort and size composition) to attempt an integrated catch-at-age assessment, to better integrate the multiple CPUE indices and age-composition data. In doing so, consideration needs to be given to appropriate target and limit reference levels for this stock.

Economic considerations

There are currently 18 fishing businesses that meet the minimum shareholding required to operate in one or more Regions of the Ocean Hauling Garfish Fishery. During the current fishing period (2023/24), seven fishing businesses have reported quota usage for ESG, with 91% of the quota usage being reported by four businesses. There have been six quota transfers this season representing around 33% of the TACC. Most of these are considered to be between related business entities.

Annual quota usage relative to the available quota of 45.5 tonnes since 2017 has ranged from 39.6% to 80.6%. For the current year, quota usage is approximately 49% with 73% of the fishing period completed.

ESG is sold domestically for human consumption, as well as for the recreational bait market. A substantial amount (21.2 tonnes in 2022/23) of the ESG catch is sold through the Sydney Fish Market. There is no price information for ESG in the BDO EconSearch report on economic and social indicators for the Ocean Hauling Fishery (2023).

Overall, there was no compelling economic argument for changing the quota at the current level.

Fishery management considerations

Garfish in NSW waters are assessed as **Sustainable** using the criteria from the *Status of Australian Fish Stocks* (www.fish.gov.au/).

Annual effort in terms of days fished using boat-based methods when ESG were reported have ranged between 243 and 77 since 2009/10. Only 77 days were reported during 2021/22, but that increased to just over 100 days during 2022/23 (Stewart 2024). The highest commercial catch recorded since the ITCAL was introduced in 2017/18 at 45.5 tonnes was in 2018/19 of 44.06 tonnes. There are no reliable estimates of the recreational or Aboriginal harvest of ESG. Recreational fishers are known to catch ESG using small, baited hooks and by dip-netting, but the catch is believed to be negligible in comparison to commercial landings. There has been no reported harvest of ESG in Charter boat logbooks in recent years.

The stock assessment for this fishery is positive. Nominal CPUE was around 230kg/day in 2022/23, the highest catch rates recorded since 2004/05. There is a fundamental policy concern of the TAFC that part of this fishery is not subject to the TACC and this therefore raises a number of questions in relation to the biological stock and the assessment, which is only based on garfish catches using garfish hauling nets. This needs to be addressed to ensure future assessments are robust. However, there is no compelling argument for either decreasing or increasing the current level of catch and the TACC should remain at 45.5 tonnes.

Recommendation

- All commercial catch and effort for ESG should be recorded and used in developing future assessments of the fishery.

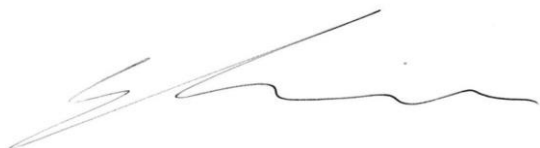
Determination

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1. A TACC for Eastern Sea Garfish during the period 1 July 2024 to 30 June 2025 of **45.50 tonnes**.

Species	Catch Limit (tonnes)
Eastern Sea Garfish (<i>Hyporhamphus australis</i>)	45.50

Signed (for and on behalf of the TAFC)



William Zacharin
Chair, TAFC

Andrew Penney – Deputy Scientific member

Daryl McPhee – Natural Resource Economic member

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