NSW TOTAL ALLOWABLE FISHING COMMITTEE

OCEAN TRAWL FISHERY

- EASTERN SCHOOL WHITING
- STOUT WHITING
- BLUESPOTTED FLATHEAD
- SILVER TREVALLY

DETERMINATION FOR THE 2022/23 AND 2023/24 FISHING PERIODS

14 March 2022

Executive Summary

Preamble

The New South Wales (NSW) Total Allowable Fishing Committee (TAFC) 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 TAFC 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 TAFC must consider the ecological, economic and social issues associated with each fishery and make determinations that 'on balance' pursue the objectives of the Act. As of February 2022, for determinations relating to the Ocean Trawl Fishery, the TAFC is required to make recommendations compatible with the finalised and adopted NSW Trawl Whiting Harvest Strategy.

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

This determination is for the Ocean Trawl Fishery for the period 1 May 2022 to 30 April 2023 and 1 May 2023 to 30 April 2024 (excluding Silver Trevally).

Management recommendations & supporting actions

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

1. To improve reliability of the spatial distribution of ESW catches, shot-by-shot fine spatial scale (latitude and longitude) data, preferably verified using vessel monitoring systems (VMS), should be collected for the NSW northern fish and prawn trawl fleets.
2. NSW should develop a Silver Trevally rebuilding plan and a process to achieve proportional catch reductions in consultation with other relevant NSW fisheries stakeholders and AFMA.
3. In multi-species fisheries, information on the cost and returns of fishing of those businesses catching and/or targeting quota species would be beneficial for economic assessment of those species. More disaggregated analysis of the data collected for the *Economic and Social Indicators for the Ocean Trawl Fishery* report may help in this regard.

Determination

The Total Allowable Fishing Committee, pursuant to Part 2A of the *Fisheries Management Act 1994*, determines that the commercial catch of Eastern School Whiting, Stout Whiting, Bluespotted Flathead and Silver Trevally in the Ocean Trawl Fishery should be controlled and allocated through the following measures:

1. A TACC for Trawl Whiting (ESW & STW) during the fishing periods 1 May 2022 to 30 April 2023 and 1 May 2023 to 30 April 2024 of **1,066 tonnes**;
2. A TACC for Bluespotted Flathead during the fishing periods 1 May 2022 to 30 April 2023 and 1 May 2023 to 30 April 2024 of **108.1 tonnes**; and
3. A TACC for Silver Trevally during the fishing period 1 May 2022 to 30 April 2023 of **20.0 tonnes.**

Introduction

The NSW Ocean Trawl Fishery (OT Fishery) is a share management, multi-method, multispecies fishery with a gross value of production of around $23.6 million for 2020/21 (McKinnon 2022). The OT Fishery is described in Schedule 1 of the *Fisheries Management Act 1994* (the FM Act) as:

a) the use of an otter trawl net (prawns) to take fish from any of the following waters:
   (i) inshore waters (not more than 3 nautical miles from the natural coast line),
   (ii) offshore waters (more than 3 nautical miles from natural coast line) and north of a line drawn due east from Barrenjoey Headland,
   (iii) the waters of Coffs Harbour;
b) the use of an otter trawl net (fish) to take fish from ocean waters (east of the natural coast line) that are north of a line drawn due east from Barrenjoey Headland and south of a line drawn due east from Smoky Cape (other than any waters in which use of an otter trawl net (fish) is prohibited under the regulations); and
c) the use of a Danish seine trawl net (fish) to take fish from ocean waters that are north of a line drawn due east from Barrenjoey Headland.

North of Barrenjoey Headland (Sydney) the OT Fishery extends to the 4,000-metre depth contour, approximately 60 to 80 nautical miles offshore. South of Barrenjoey Headland the OT Fishery extends seaward to three nautical miles offshore.
The OT Fishery is subject to many spatial and temporal closures within these waters. Schedule 2 of the *Fisheries Management (Ocean Trawl Share Management Plan) Regulation 2006* details waters closed to ocean trawling.

The OT Fishery is a share managed fishery. Access to the OT Fishery is limited to shareholders, or their nominated fishers, who hold sufficient shares to satisfy the minimum shareholding levels established for each share class in the Plan. Minimum shareholdings apply to all 'access' share classes in the OT Fishery and are used to determine if a shareholder (or their nominated fisher) is eligible for an endorsement authorising a particular commercial fishing activity in respect of that share class. A summary of the 'access' share classes and associated minimum shareholding is provided in Table 1.

Table 1: Minimum shareholdings and numbers of endorsements

Access share class	Minimum shareholding	No. of endorsements
OT – inshore prawn	50	110
OT – offshore prawn	50	101
OT – deepwater prawn	25	15
OT – fish northern zone	50	28

McKinnon, F 2022. Ocean Trawl Fishery Management Report – Total Allowable Catch Determinations 2022/2023 – Bluespotted Flathead, Eastern School Whiting, Stout Whiting, Silver Trevally. Report to the TAF Committee for the 2022 to 2023 fishing period. NSW Department of Primary Industries, Fisheries NSW, Coffs Harbour, 53 pp.

The TAFC is responsible for making a determination in relation to four of the finfish species taken in this fishery – Trawl Whiting (Eastern School Whiting and Stout Whiting), Bluespotted Flathead and Silver Trevally. A video conference meeting was held with industry shareholders and a representative of the NSW Professional Fishermen's Association on 9 February 2022. A number of industry submissions on

the fishery were received prior to the meeting. The TAFC also met with scientists and managers from NSW DPI (Fisheries) to gain additional information on the stock assessment, management and compliance issues.

Biological considerations

Eastern School Whiting and Stout Whiting

Stock boundaries

Eastern School Whiting (*Sillago flindersi*, ESW) are caught by multiple jurisdictions off south-eastern Australia, predominantly by New South Wales and the Commonwealth, with smaller catches by Victoria and Tasmania. The species continues to be assessed and managed as a single shared stock across its entire range given there is no strong scientific evidence to the contrary (Appendix 1).

The Stout Whiting stock (*Sillago robusta*, SW) is shared with the Queensland Finfish (Stout Whiting) Trawl Fishery, which has been subject to a voluntary catch quota since 1998 and is currently managed under a total allowable catch (TAC) by the Queensland Department of Agriculture and Fisheries (DAF).

Catches

The reported NSW ESW average catch per season over the recent five seasons (2016-17 to 2020-21) has been 991.5 t. The reported catch of ESW in the Commonwealth Trawl Sector (CTS) over 2015-16 to 2019-20 averaged 650.0 t. The NSW proportion of the total NSW plus Commonwealth ESW catch over 2015-16 to 2019-20 was 60.4%. At the time of the last full stock assessment in 2020, annual catches by Victoria and Tasmania were estimated to be 25 t, with the three-year average ESW discards by all fleets estimated to be 378 t.

Queensland and NSW combined Stout Whiting catches have averaged a little under 2,000 t per year over the years 2016 - 2019, with Queensland currently taking about 88% of the annual catch. The NSW northern Trawl Whiting TACC covers both ESW and SW and the NSW ESW catch averaged 228.5 t over 2015-16 to 2019-20. For the 2021 fishing season (based on calendar years), the Queensland TACC for Stout Whiting was set at 1,192 t.

Stock assessment

Eastern School Whiting: The main assessment for ESW is an integrated statistical catch-at-age assessment conducted by the CSIRO under contract to the Australian Fisheries Management Authority (AFMA). State catch data have been included in most of the recent assessments, with substantial NSW data (catch, length data, CPUE) included in the 2017 assessment. The most recent assessment was conducted in 2020[1], substantially updating the 2017 assessment. The 2020 assessment included all available data for the NSW fishery, including discard information and separate NSW fleets. The 2020 assessment was effectively a joint Commonwealth / NSW assessment and the integration of all data for NSW resulted

[1] Day J, Hall K, Bessell-Browne P and Sporcic M (2020) School Whiting (*Sillago flindersi*) stock assessment based on data up to 2019. CSIRO report to AFMA, December 2020, 154 pp.

in a more reliable assessment, with reduced uncertainty in most of the assessment results.

In terms of the recently adopted *NSW Trawl Whiting Harvest Strategy* (NSW DPI 2022), in interim assessment years when a quantitative stock assessment for Eastern School Whiting is not available, the TAC is only to be modified if there is a substantial change in a weighted average of standardised catch rates. Since the most recent full stock assessment was completed, catch rates for the NSW prawn trawl fleet have remained relatively stable, while those of the fish trawl fleet increased by over 50%. Overall, there was a recent weighted average 31.6% increase in the CPUE indices of NSW Ocean Trawl Fishery sectors that target trawl whiting.

Recent catch rates in the two main Commonwealth sectors show opposing trends. Danish seine catch rates declined over the past five years to 50% below the long-term average, whereas the trawl sector catch rates increased rapidly over the last two years. Overall, there was a weighted average decrease of 14.4% in Commonwealth School Whiting CPUE indices.

Stout Whiting: The most recent full assessment for Stout Whiting conducted by QLD DAF in 2021 estimated that the spawning stock biomass was at 42% of unfished biomass in 2020 and was at the level expected to produce maximum sustainable yield[2]. Standardised catch-rate analyses indicated that, following a substantial decline between 2010 and 2016, catch rates for the Queensland part of the stock increased to above the long-term average in 2019 and 2020. Standardised catch rates from the NSW part of the stock have been above or near the long-term average over the last three years and increased to above the long-term average in 2019 and 2020.

Stock status

Eastern School Whiting: The 2020 assessment estimated spawning stock biomass to be at 41% of unexploited spawning stock biomass (B_0) with a 2021 recommended biological catch (RBC) of 2,140 t and a long-term annual yield (assuming average recruitment in the future) of 2,448 t. Assessments for this stock are conducted about every three years, with a multiyear TAC (MYTAC) being set for the Commonwealth CTS fishery between assessments. The average RBC over the three-year period 2021-2023 of 2,237 t, was used as the basis for setting a 3-year MYTAC for the Commonwealth CTS for the seasons 2021-22 to 2023-24 at 917 t per season, after subtraction of State catches and discards.

The ESW stock is assessed to have remained fairly stable over the past two decades, fluctuating between 30% B_0 and 48% B_0 since 1986. Recent recruitment appears to have returned to average or above average levels after a period of below average recruitment over 2006 – 2012. The assumption of average recruitment over the next three years appears reasonable, so that a three-year RBC of 2,237 t per year should be sustainable. The weighted average of recent catch rates for the NSW

[2] Wortmann, J., and K. C. Hall. 2021. Stock assessment of stout whiting (*Sillago robusta*) in eastern Australia. Department of Agriculture and Fisheries, Brisbane, Queensland.

OTF fleet has increased, but the weighted average of the catch rates for the Commonwealth sectors has decreased, indicating the need for caution until the reasons for these changes in catch rates are better understood.

Stout Whiting: The most recent full assessment for Stout Whiting in 2021 estimated that the spawning stock biomass was at 42% of unfished biomass in 2020 and at the level expected to produce maximum sustainable yield. Recent catch rates have increased to above the long-term average.

Total ESW catches by all fleets in all jurisdictions must remain within the recommended three-year RBC of 2,237 t per year. The current NSW TAC of 1,066 t should be appropriate to achieving this and could be continued as a NSW MYTAC for the next two fishing periods.

Recommendation

- To improve reliability of the spatial distribution of ESW catches, shot-by-shot fine spatial scale (latitude and longitude) data, preferably verified using vessel monitoring systems (VMS), should be collected for the NSW northern fish and prawn trawl fleets.

Bluespotted Flathead

Catches

Bluespotted Flathead (*Platycephalus caeruleopunctatus*, BSF) distribution extends from southern Queensland to eastern Victoria. However, the stock is primarily fished in NSW state waters with no landings data available for other jurisdictions. Since 2011-12, catches have remained below 150 t per fiscal year, with the northern OT Fishery component of the catch decreasing to 83.7 t in 2015-16, increasing to 126.1 t in 2017-18 and decreasing again to 58.9 t in 2021-21[3].

Bluespotted Flathead is an important species for recreational and charter boat fishers in NSW and surveys indicate that the recreational catch historically exceeded the commercial catch, accounting for up to 70% of the total NSW SBF harvest when catches by interstate fishers are included. From results of surveys, NSW statewide recreational catches have since declined substantially from an estimated 278 t in 2000-01 to 72 t in 2019-20, with similar quantities to the landed catch being discarded. Estimated charter boat catches have increased from around 7 t in 2008-09 to around 15 t since 2016-17.

Stock Assessment

The BSF stock off NSW has previously been assessed using standardised catch rates and catch-MSY production models. In 2022, a Bayesian state-space production model (BSM) was fitted to five different historical catch and two different CPUE series. Given the importance of recreational catches, substantial effort was put into estimating historical trends in recreational catches, scaled between survey estimates

[3] Hall, K.C. (2022) Stock assessment report 2021/22 – Ocean Trawl Fishery – Bluespotted Flathead (*Platycephalus caeruleopunctatus*). NSW Department of Primary Industries, Coffs Harbour, 69 pp.

using estimates of annual recreational fishing effort derived from coastal population statistics. This allowed the significant recreational catch component to be included in the latest assessment.

Stock status

The results of the 2022 BSM analysis scenario considered to be most likely (including discards, recreational catches scaled to historical effort and monthly and daily CPUE analysed as two separate series) estimated the stock to be at 40% of B_0, although with a wide range across other scenarios from 26% to 72%. Results of this assessment indicate that fishing mortality rates exceeded F_{MSY} over the period 1987 – 2005, when annual catches averaged around 169 t, but has since decreased to about 42% of F_{MSY}. Most of the CPUE series have remained stable or increased to long-term average levels over the past five to ten years indicating that recent catches have been sustainable, and that the stock should continue to rebuild to the target under current catches.

Given the recent increasing trends in many of the CPUE series, the reduction in fishing mortality rates and the apparent rebuilding of the stock to 40% B_0 since 2015, the current TACC of 108.1 t is set at an appropriate level to allow the stock to continue to rebuild to the target.

Silver Trevally

Silver Trevally (*Pseudocaranx georgianus*, ST) are relatively long-lived and slow growing, attaining a maximum age of at least 25 years, although maturing at a relatively early age of 2–4 years at 18 – 24 cm fork length[4]. Stock structure is poorly understood, but adults have been found to have restricted post-settlement movement. For assessment and management purposes, ST off NSW are considered to constitute a single management stock and it is likely that this is shared at least with the Commonwealth Trawl Fishery off NSW.

Catches

Estimated total annual ST catches in all NSW fishing sectors (Ocean Trawl, Ocean Trap and Line, Estuary General, Ocean Hauling) have declined steadily from more than 1,000 t per year over 1984 – 1990, to 452 t in 1997-98, to less than 40 t per year in 2019-20 and 2020-21[5]. OTF catches declined rapidly from more than 200 t in 2007 to 7.6 t in 2020 following introduction of a 30 cm total length minimum legal length (MLL) and increased slightly to 9 t in 2020-21. Fish above the MLL have largely disappeared from the fishery and it is estimated that the northern OTF is currently discarding 16% - 38% of the total ST catch by weight, due to them being under the MLL. There is a moderate recreational catch of ST, with survey results

[4] Rowling, K. R., & Raines, L. P. 2000. Description of the biology and an assessment of the fishery for silver trevally *Pseudocaranx dentex* off New South Wales. NSW Fisheries Research Institute, Cronulla, 70 p.

[5] Fowler, A.M., Liggins, G., and Chick, R. C. 2021. Stock assessment report 2021/22 - Silver Trevally (*Pseudocaranx georgianus*). NSW Department of Primary Industries - Fisheries: 42 pp.

indicating a recreational catch proportion of around 11% - 23% of the NSW total all sectors catch.

Stock assessment and stock status

Several stock assessment approaches have been applied to ST, including standardised catch rate analyses, length-based spawning potential ratio (SPR) and a Bayesian state-space surplus production model (BSM). Results of all of these assessments indicate the ST stock to be depleted. Standardised CPUE catch rates for the OTF during the most recent three years remained the lowest in the time series, even when catches were increased by 38% to account for possible high discarding. SPR estimates for recent time periods ranging between 12% and 14%, below a limit reference level of 20%. The estimate from the fishery-independent survey conducted in 1993-1994 was similar at 16%. F/M estimates increased throughout the series, from 2.0 (± 0.05) in 1993-1995 to 4.0 (± 0.05) during 2019-2021, indicating that fishing mortality rate has substantially exceeded natural mortality for an extended period of time.

BSM model results gave B/B_{msy} that remained stable and above 1.5 between 1950 and the mid-1980s, decreased substantially during the 1990s and 2000s, then continued to decline to recent level of 0.12 for the trawl fishery and 0.31 for the trap fishery, which correspond to biomass estimates of 6% and 16% of unfished biomass, respectively. The trend in F/F_{msy} showed values below 1 until the early 1980s increasing to a peak of 3.7-4.4 in 2014, with values for the model using trawl CPUE peaking at 5.3. Biomass is therefore estimated to be well below the 20% B_0 limit level, with fishing mortality rate well above the level that would allow the stock to rebuild. All available indicators and assessment results for the NSW fisheries therefore indicate this stock to be depleted below a biologically safe limit.

The most recent CPUE assessment for the Commonwealth fishery estimates the portion of the ST stock fished by the Commonwealth have declined rapidly from the CPUE target level in 2017 to below half the target level (corresponding to being below a 20% B_{LIM} proxy) in 2019, increasing again to just above the limit level in 2020[6].

From a biological perspective, the total catch of Silver Trevally should be reduced to its lowest possible level, but the multi-sector, multi-fishery nature of the catch makes this difficult.

Economic considerations

General Considerations

The four species considered in the OTF form part of multi-species catches in several fisheries: the OTF, the Southern Fish Trawl Restricted Fishery (SFT), the Ocean Trap and Line Fishery (OTLF), the Estuary General Fishery (EGF), and the Ocean Hauling Fishery (OHF). The degree to which these species are targeted varies. For

[6] Sporcic, M. (2021). Draft Tier 4 Assessments for selected SESSF Species (data to 2020). Technical paper presented to the SERAG, 19 - 20 October 2021. CSIRO Oceans and Atmosphere, Hobart. 28 p.

example, Stout Whiting and Eastern School Whiting and Bluespotted Flathead are significant by-product for ocean prawn fishers, but are the main target species in the fish trawl sector. Compared to fisheries targeting single species, the economic interactions of multi-species, multi-fleet and mixed-catch fisheries are complex.

To illustrate, a reduction in the TACC for a low value species that is taken as by-product, could result in limiting total fishing activity and thereby reducing total trip revenues. Conversely, it could result in continued fishing after quota has been used, with over-quota catch discarded. The economic value in this case would similarly be reduced, but without any sustainability benefits.

An additional difficulty in understanding the economics of the fishery, is that the TACC to be set for each species will be only a portion of the total catch of the species. In the case of Bluespotted Flathead, the recreational fishing sector takes a significant share of total catch. Without formal catch sharing and joint management arrangements with other jurisdictions, it is difficult to set TACCs in a way that will improve economic performance of the fishery.

Details of the economic characteristics of the four species, namely catch, price, gross value of production (GVP), quota transfers and management charges, are provided in the most recent *Ocean Trawl Fishery Management Report – Total Allowable Catch Determinations 2022/2023*[7]. Information on factors directly affecting the economic performance of the fishery, namely catch, effort, catch rate and number of active fishers, is provided in *NSW Stock assessment and status summary report 2020 – Eastern School Whiting and Stout Whiting*[8]*, Silver Trevally*[9]*,* and *Bluespotted Flathead*[10]*.*

Eastern School Whiting and Stout Whiting

Annual average catch of Stout Whiting almost doubled from the three years ending 2011/12 to the three years ending 2020/21, increasing from 70 tonnes/year (t/yr) to 120 t/yr. Landings have, however, varied greatly in recent years, with the annual catch ranging from 173 tonnes in 2019/20 to just 80 tonnes in 2020/21.

Annual average catch of Eastern School Whiting declined over the same period, by a little over 25 per cent. As with Stout Whiting, landings of Eastern School Whiting have also shown great year on year variability. For example, in the most recent 3-year period, annual catch of Eastern School Whiting fell from 1,200 tonnes in 2018/19 to 502 tonnes in 2020/21. This has been due to a combination of factors including the introduction of a TAC, the effect of Covid-19 on markets and individual business operations, and inclement weather conditions. Regarding price, for Stout

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[7] McKinnon, F. 2022. Ocean Trawl Fishery Management Report – Total Allowable Catch Determinations 2022/2023 – Bluespotted Flathead, Eastern School Whiting, Stout Whiting, Silver Trevally. Report to the TAF Committee for the 2022 to 2023 fishing period. NSW Department of Primary Industries, Fisheries NSW, Coffs Harbour, 53 pp.

[8] Hall, K.C. 2022. NSW Stock assessment report 2021/22 – Eastern School Whiting and Stout Whiting (*Sillago flindersi* and *Sillago robusta*). NSW Department of Primary Industries, Coffs Harbour 88 pp.

[9] Fowler, A.M., Liggins, G., and Chick, R.C. 2022. Stock Assessment report 2021/22 - Silver Trevally (*Pseudocaranx georgianus*), NSW Department of Primary Industries - Fisheries, 42 pp.

[10] Hall, K.C. 2022. Stock assessment report 2021/22 – Ocean Trawl Fishery – Bluespotted Flathead (*Platycephalus caeruleopunctatus*). NSW Department of Primary Industries, Coffs Harbour 69 pp.

Whiting the real price over the past three years has been similar to that of 10 years ago, despite a slight dip of 10-15% for some of the years in between. By contrast, the average price for Eastern School Whiting was almost 20% higher over the past three years than a decade earlier. While the average prices in the 3 years to 2009/10 saw Stout Whiting receive a premium of around $0.35/kg ($3.80/kg vs $3.55/kg), the reverse has been true over the most recent 3-year period with the average price of Eastern School Whiting approximately $0.45/kg higher ($4.24/kg vs $3.78/kg).

Reflecting the above trends in catch and price, average annual GVP for Stout Whiting experienced an increase of almost 70% over the past decade ($0.27m/yr to $0.45m/yr). Average annual GVP for Eastern School Whiting in the most recent three years was (around $2.9m/yr), well below that of the previous years in the series. The lift in average price over the past three years was insufficient to offset the decline in catch, resulting in a drop in average annual GVP of around 15%.

There appears to be little correlation between the quantity of product landed and reported prices, particularly in recent years without conducting a more thorough analysis of prices, landings across jurisdictions and the export sector.

Economic performance indicators for the NSW Ocean Trawl Fishery have been recently published[11] for the financial year 2019/20. The report shows that, overall, the fishery performed poorly in that year generating a net economic return[12] of minus $7.4m.

At an individual fishing business level, the average rate of return on total capital for all fishing businesses was reported to be minus 0.1%, with significant variation across the fishery.

From the management report, it's clear that the majority of the Stout and Eastern School Whiting catch is taken by shareholders in the OT – Fish Northern share class (Fig 27) and together these species comprise the majority of the quota species GVP for the OT – Fish Northern shareholders (Table 10). Given this information and the way the financial performance data are presented in the BDO EconSearch report, information on the number of days fished (total and trawl whiting reported), catch (total and trawl whiting) by active shareholders in the OT-FN fishery has been used to draw some inferences around the financial performance of those targeting Stout and Eastern School Whiting[13].

A more detailed analysis of catch and effort enables a better understanding of relative financial performance across the fishery (Appendix 2). From this we can infer that the variability in financial performance of the Ocean Trawl Fish Northern fishery, which accounts for a majority of the OT Fishery Trawl Whiting catch, is similar to the variability observed in the OT fishery overall. That is to say, the high catch Trawl Whiting fishers, who in some cases catch significant quantities of other

[11] BDO EconSearch 2022. Economic and Social Indicators for the NSW Ocean Trawl Fishery in 2019/20. A report for the Department of Primary Industries, 36pp.

[12] Net economic return is the long-run profit from a fishery after all costs have been met, including fuel, crew costs, repairs, the opportunity cost of family and owner labour, fishery management costs, depreciation and the opportunity cost of capital (excluding endorsement)

[13] To align with the BDO EconSearch report, these data were provided for 2019/20.

species, are likely to be operating relatively profitable fishing businesses. By contrast, medium and low catch businesses in the OT-FN fishery are less likely to be operating profitably, particularly the low catch businesses which, on average, caught just 6.9 t in total of which less than 1 t was Trawl Whiting.

The analysis above suggests that, at a fishing business level, any increase in TACC would improve the profitability of high catch fishers and reduce the losses of low and medium catch operators. A moderate increase in TACC is unlikely to create downward pressure on prices received, unless the increased supply to market was concentrated over relatively short time periods. As well as negatively impacting profitability, a reduction in TACC is likely to have implications for the level of discarding in the fishery or further constrain the catch of high value species (e.g., prawns). For these reasons, any increase in the TACC would almost certainly improve the economic position of the fishery, but must be within the limits of what is biologically sustainable.

While recognising the value of data and analysis provided in the BDO EconSearch (2022) report on the Ocean Trawl Fishery, no information is available on the cost and returns of fishing of those businesses catching and/or targeting quota species. This information would allow analysis of the economic position of those sectors of the fishery for which TACC determinations need to be made.

Recommendation

- In multi-species fisheries, information on the cost and returns of fishing of those businesses catching and/or targeting quota species would be beneficial for economic assessment of those species. More disaggregated analysis of the data collected for the *Economic and Social Indicators for the Ocean Trawl Fishery* report may help in this regard.

Bluespotted Flathead

Economic trends in the key indicators are as follows:

- Annual average catch of Bluespotted Flathead has declined over the past 12 years. There have been some year-to-year fluctuations although catch has declined in each of the past three years and was just 59 t in 2020/21.
- The real price has improved from 12 years ago, but has been relatively stable for the last decade. The price edged back above $7.00/kg in the past 3 years and in 2020/21 averaged just over $8.00/kg.
- Reflecting the above trends in catch and price, average annual GVP has experienced a fall, in line with the decline in catch. In 2020/21, GVP was $479,000, 20 per cent below the 3-year average.

The quota usage in 2020/21 was 55% and after 8.5 months of the current fishing year (up to 17 January 2022) usage was approximately 47%, suggesting an annual usage similar to or slightly greater than 2019/20 is likely to be achieved. This suggests an increase in the TACC would not result in any material economic benefit.

For these reasons, it is recommended to retain the TACC at its current level.

The 2020-21 fishing period marked the second full year of operation of the quota market in the OTF. Although the third full year of operation is almost complete, it is still relatively early days for the quota market and for fishers to fully adjust their fishing businesses. As was the case in 2021, comments from industry to the TAFC indicated a number of difficulties with the market, particularly in identifying who held un-used quota and knowing how much quota was available in aggregate.

Silver Trevally

Economic trends in the key indicators are as follows:

- Annual average catch of Silver Trevally was less than one-quarter in the three years ending 2020/21 compared to each of the previous three 3-year periods.
- The real price over the past 12 years has almost doubled from $4.63/kg to $8.22/kg.
- Reflecting the above trends in catch and price, average annual GVP experienced a fall of more than 50 per cent over the past 12 years ($0.12m/yr to $0.05m/yr). In 2020/21, GVP was just $42,000.

As noted elsewhere in this report, all available indicators and assessment results suggest the Silver Trevally stock is depleted. The current economic contribution of Sliver Trevally to the OTF is negligible. The long-term economic performance of the fishery will be enhanced if immediate action is taken to allow the stock to recover.

Fishery management considerations

Management Overview

The Ocean Trawl Fishery (OTF) comprises two main sectors, Ocean Prawn Trawl and Ocean Fish Trawl north of Barrenjoey Point. The regulatory scheme along with current issues and the most recent fishery data can be found in the *Ocean Trawl Fishery Management Report Total Allowable Catch Determinations 2022/2023* (NSW DPI 2022). This management report covers several key species/species groups; trawl whiting (Eastern School Whiting & Stout Whiting), Bluespotted Flathead and Silver Trevally.

While the fishery has been subject to TACC/ITQ management for almost three years much of this has been during the COVID pandemic, which has materially affected the performance of the fishery and its regulation. As a result, the transition to a TACC/ITQ management system that is fully effective and efficient remains a work in progress. However, there have been several developments in the last 12 months with a harvest strategy for trawl whiting being finalised and a draft socio-economic assessment of the fishery being completed. The TAFC has taken into consideration the recently adopted NSW Trawl Whiting Harvest Strategy in making its determinations for the 2022-23 and 2023-24 fishing periods.

In relation to compliance, the TAFC has worked closely with NSW DPI to make compliance reporting more relevant to TACC/ITQ managed fisheries. This takes a risk-based approach, with quota evasion the major risk of concern to the TAFC. Currently, NSW DPI has no means of knowing where many of the boats in the OTF are operating, as they are not required to carry either VMS or AIS. In such

circumstances transhipment at sea, landing fish without declaring them or reporting catch from areas where no TACC applies, are all quota evasion risks. The lack of verifiable spatial data is also a risk for the stock assessment with industry logbooks the only significant source of this information.

Progress Report Against TAFC Recommendations from 2021/22

The TAFC made recommendations in 2021 to support the improved management of the fishery. They are stated below with a response on progress from the Department.

1. *NSW Fisheries works collaboratively with the fishing industry to introduce a Vessel Monitoring System (VMS) to the Ocean Trawl Fishery to support improved fisheries assessments and industry compliance reporting.*

NSW DPI has participated in a competitive grant funding program by Parks Australia aimed at increasing the adoption and use of electronic and vessel monitoring systems on commercial fishing vessels that may transit or operate in Australian Marine Parks. This funding application was submitted in response to Parks Australia's advice that they will require all commercial fishing vessels transiting or conducting fishing activities in Australian Marine Parks to carry an operating vessel monitoring system from early 2024. In addition to this, NSW DPI is further considering the suitability of a broader application of these systems for NSW commercial fisheries.

2. *NSW Fisheries should take immediate action in all its fisheries and fishing sectors that harvest Silver Trevally to reduce fishing mortality to unavoidable bycatch levels to support stock recovery. Furthermore, NSW needs to work closely with other jurisdictions to immediately reduce Silver Trevally catches, particularly in the Commonwealth fishery.*

Approval of the NSW Trawl Whiting Harvest strategy will allow prioritisation of other trawl species to be undertaken to develop a fishery level harvest strategy. Clarification of management arrangements between NSW and the Commonwealth for the Southern Fish Trawl Restricted Fishery will assist any rebuilding management actions proposed for this species.

3. *Given the increase in discards and the decrease in the mean size and proportion of mature fish in Silver Trevally landed catches, options should be explored to obtain length-frequency composition information for retained and discarded fish, perhaps by means of a cooperative industry sampling program, to monitor any stock recovery.*

The NSW DPI fishery monitoring program includes stock assessment work on key commercial species; use of scientific observers to record information on catches of target species and by-catch; collection of catch and effort data; and port monitoring of landed fish products (e.g., collecting data on fish length and age). Port monitoring involves the collection of length (and age samples where relevant) of a set of commercially targeted species. Silver trevally is currently a

component of the port monitoring program. Further information is provided in the NSW DPI Silver Trevally Stock Assessment Report 2021.

4. *Bluespotted Flathead fishing effort reporting requirements need to be clearly defined and understood, so that fishing effort is correctly and consistently reported by all fishers in future. NSW Fisheries should work closely with industry representatives to ensure that this happens.*

No progress to report.

5. *Facilitation of information exchange around the quota market would help with quota lease and quota transfer and improve the economic potential of the fishery. Promotion of the FishOnLine noticeboard may help in this regard.*

NSW DPI recognises that promotion of quota transfer options within industry and ongoing industry education is required to promote the benefits and access to quota trading.

The TAFC regards all five recommendations as still relevant to the OTF and encourages NSW DPI to complete them or commence them as soon as practicable.

Trawl Whiting

While the trawl whiting stocks are below the harvest strategy target reference point (TRP) of 48% of initial biomass they are above the 35% trigger and continue to rebuild. It was noted in the TAFC's 2021-22 determination that a multi-year NSW TACC for 2022-23 and 2023-24 would align the NSW and Commonwealth Eastern School Whiting assessments, the two major harvesting jurisdictions. Given the current evidence for one stock in SE Australia, such an alignment provides both cost and efficiency benefits to the jurisdictions and greater catch certainty for industry. However, no agreement on catch sharing has been reached, which remains an essential component of providing industry with that certainty.

As there is no catch sharing arrangement agreed between NSW and QLD, the OTF Stout Whiting share remains based on the proportion of the total Stout Whiting catch taken in NSW waters averaged over the years 2014 to 2018. This was 217 t. Recently NSW agreed to adopt QLDs preferred TRP of 60% of B_0 for this stock, noting it is unclear how this may affect future TACC decisions when the TRPs for the two whiting species differs.

Notwithstanding that catch sharing remains unresolved and that COVID has affected catches and the fishery dependent data series for a second year, there is no evidence of any increased risk to the continued rebuilding of whiting stocks to their TRPs. As such, the TAFC is confident that the current TACC of 1,066 t can remain in place for the next two fishing periods. The TAFC also considered whether the TACC could be raised, but had no new evidence on which to base such a decision.

Bluespotted Flathead

Stock indicators for Bluespotted Flathead remain stable and biomass remains around the level supporting maximum sustainable yield (MSY), noting this is below the TRP of 48%Bo used in other NSW harvest strategies. The catch of Bluespotted

Flathead overall has declined in 2021-22 due to COVID restrictions affecting the recreational fishery in particular. In the circumstances, the TAFC decided there was no evidence to vary the current TACC of 108.1 t for the next two fishing periods.

Silver Trevally

The TAFC determined an OTF Silver Trevally TACC of 20 t in 2021-22 and the continuing impact of COVID has meant the catch and effort data for the 2021-22 fishing year to date is of limited value as a basis for varying this amount. However, the Silver Trevally stock remains around 10% of initial biomass, which is well below a limit reference point (LRP) of 20% commonly used in Australian fishery harvest strategies. In such circumstances, a rebuilding plan is required to recover the stock to at least the LRP. If developed, the plan would need to account for all sources of Silver Trevally mortality from the OTF, Estuary General, Ocean Trap & Line and Southern Fish Trawl commercial fisheries, along with the charter and recreational fisheries. A recovery plan would be best done in conjunction with the Commonwealth (AFMA) that shares the SE Australia Silver Trevally stock with NSW. The OTF accounts for less than 20% of the Silver Trevally catch from all fisheries and jurisdictions, so preparing a fishery level rebuilding plan would be of limited effect. For the same reason, lowering the OTF TACC for Silver Trevally to less than 20 t (only about half of this amount is recorded as landed) would be unlikely to aid stock recovery, unless all relevant fisheries, harvesting sectors and jurisdictions took similar action to reduce catch.

Due to the depleted state of this species, the determination is recommended for only one fishing period. This provides greater flexibility in developing options for stock recovery.

Recommendation

- NSW develops a Silver Trevally rebuilding plan and a process to achieve proportional catch reductions in consultation with other relevant NSW fisheries stakeholders and AFMA.

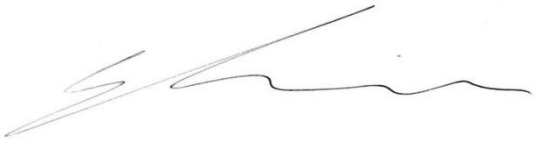
Determination

The Total Allowable Fishing Committee, pursuant to Part 2A of the *Fisheries Management Act 1994*, determines that the commercial catch of Eastern School Whiting, Stout Whiting, Bluespotted Flathead and Silver Trevally in the Ocean Trawl Fishery should be controlled and allocated through the following measures:

4. A TACC for Trawl Whiting (ESW & STW) during the fishing periods 1 May 2022 to 30 April 2023 and 1 May 2023 to 30 April 2024 of **1,066 tonnes**;
5. A TACC for Bluespotted Flathead during the fishing periods 1 May 2022 to 30 April 2023 and 1 May 2023 to 30 April 2024 of **108.1 tonnes**; and
6. A TACC for Silver Trevally during the period 1 May 2022 to 30 April 2023 of **20.0 tonnes.**

Species	**Catch Limit (tonnes)**
Trawl Whiting (ESW & STW) 2022-2023 2023-2024	1,066
Bluespotted Flathead 2022-2023 2023-2024	108.1
Silver Trevally 2022-2023 (only)	20.0

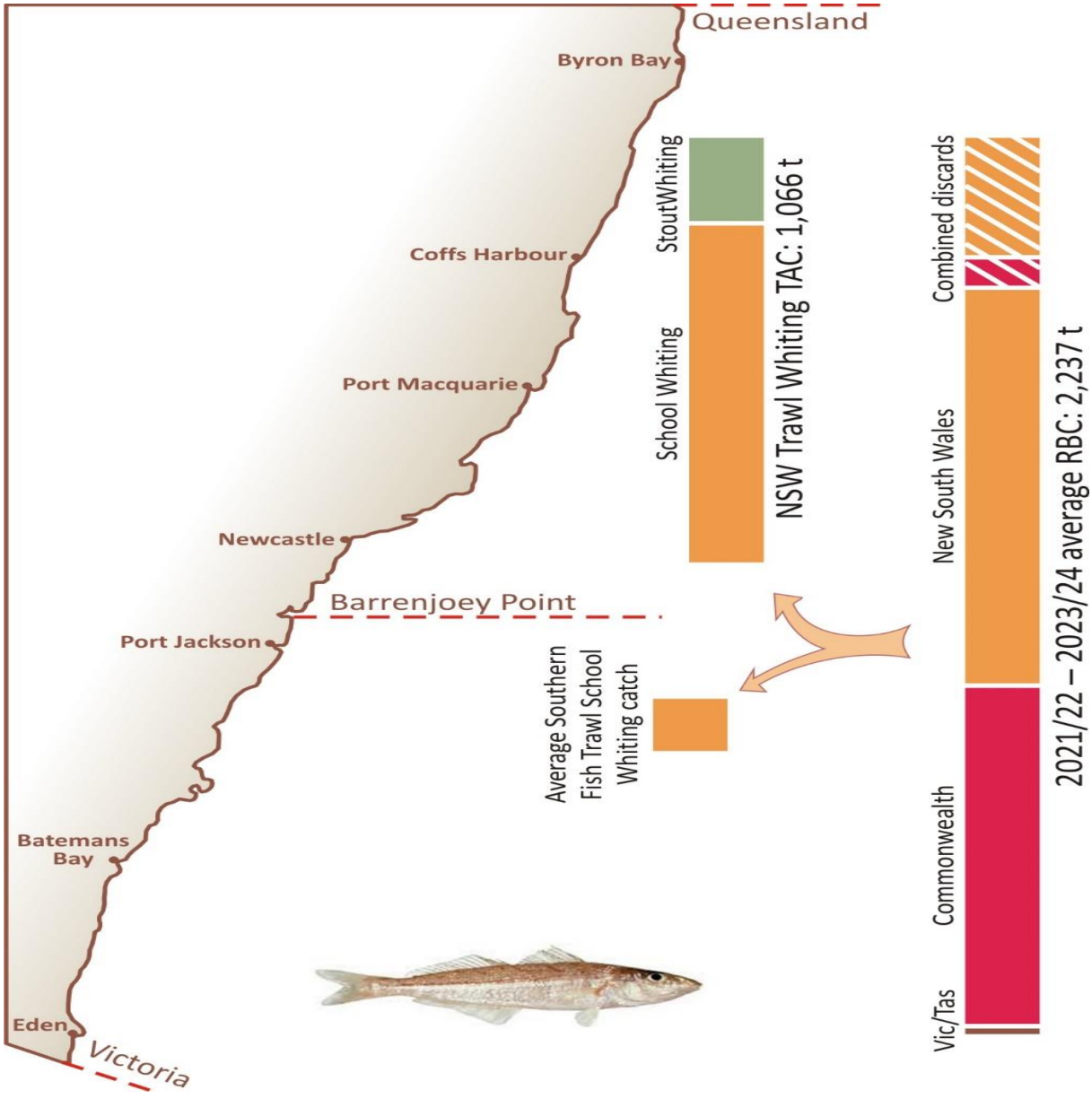
Signed (for and on behalf of the TAFC)



William Zacharin
Chair, TAFC

14 March 2021

Appendix 1: Diagram illustrating the determination of the New South Wales Whiting TAC for the Ocean Trawl Fishery. The recommended biological catch (RBC) from the latest stock assessment average 2,237 tonnes over the three fishing years 2021-22 to 2023-24. The NSW catch share of this RBC was based on average catch proportions by the NSW and Commonwealth fleets over the calendar years 2014 to 2018. From this, the average School Whiting catch in the Southern Trawl fishery over those years was subtracted and the average Stout Whiting in the northern Ocean Trawl Fishery over those years was added, to arrive at the Ocean Trawl Whiting TAC of 1,066 t.



Appendix 2: Financial performance across the Ocean Trawl fishery and inferences for the Ocean Trawl Fish Northern fishery

Table 2 shows the financial performance of fishing businesses in the OT fishery for each “days fished” quartile, where quartile 1 (Q1) businesses were the least active (average 10 days fished) and Q4 were the most active (132 days). As would be expected, average catch and average gross income increase in line with days fished, with the largest average catch and highest average gross income being fishing businesses in Q4. Financial performance, measured here by rate of return (ROR) on total capital, also increases in line with days fished, with Q4 fishing businesses the only group to record an average positive ROR.

Table 2: Summary financial performance in the Ocean Trawl fishery in 2019/20, average business in each days fished quartile

Days Fished Quartile	Active FB in OT fishery (no.)	Average days fished (no.)	Average catch - all species (t)	Average gross Income ($'000)	ROR on total capital
Q1	24	10	6.5	45	-12.9%
Q2	25	46	24.6	217	-5.2%
Q3	24	76	34.9	317	-3.9%
Q4	23	132	46.2	527	15.8%

Source: BDO EconSearch 2022, Table 4-3, p.9.

Table 3 provides information on the number of days fished (total and trawl whiting reported) and catch (total and trawl whiting) by active shareholders in the OT-FN fishery in 2019/20. The data for the 17 active fishing businesses in the fishery have been aggregated into three categories according to their Trawl Whiting catch: low (< 1t), medium (1~20t) and high (>20t).

Table 3: Summary characteristics and probable financial performance of active fishing businesses (FB) in the Ocean Trawl Fish Northern fishery in 2019/20 by Trawl Whiting catch.

FB categories by Trawl Whiting catch	No. of active FB in OT Fish North	Average days fished		TW days/ total days	Average catch		TW catch/ total catch	Probable Financial Performance[a]
		All species	Trawl Whiting reported		All species (t)	Trawl Whiting (t)		
Low (<1t)	6	18	8	44%	6.9	0.6	9%	Q1
Medium (1-20t)	5	54	28	53%	33.2	4.5	14%	Q2-Q3
High (>20t)	6	84	79	94%	156.8	129.7	83%	Q4

[a] Financial performance as reported in Table 2 for quartiles Q1 to Q4 of the Ocean Trawl fishery.

Source: NSW DPI

The OT-FN “low catch” fishing businesses fished more days on average (18) than the Q1 fishing business (10) but far fewer than the Q2 average (46). The average catch of all species is very similar (6.9t for low catch OT-FN compared with 6.5 t for Q1). As indicated in the last column of Table 2, it is likely the financial performance of the low catch OT-FN fishing businesses is similar to that of operators in quartile 1 of the OT fishery overall which were estimated to have a ROR on total capital of -12.9%.

The OT-FN “medium catch” fishing businesses reported average days fished (54 days) and average catch (33.4 t) that lie between the averages for Q2 (46 days and 24.6 t) and Q3 (76 days and 34.9 t). It is likely the financial performance of the medium catch OT-FN fishing businesses is similar to that of operators in quartiles 2 and 3 of the OT fishery overall, which recorded average ROR’s of -5.2% and -3.9%, respectively.

The OT-FN “high catch” fishing businesses fished more days on average (84) than the Q3 fishing business (76) but fewer than the Q4 average (132). However, the average catch of all species was much higher (156.8 t) than that of Q4 in the OT fishery overall (46.2 t). Even allowing for the relatively low value of Trawl Whiting, it is likely, as indicated in the last column of Table 2, the financial performance of the high catch OT-FN fishing businesses is similar to that of operators in quartile 4 of the OT fishery overall which were estimated to have a ROR on total capital of 15.8%.