

Rebuilding Programs for New South Wales Fish Stocks

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Executive Summary

Overview

Currently there are eleven marine fish species harvested in NSW that have had their stock status classified as ‘depleted’ or ‘recovering’ under the national Status of Australian Fish Stocks (SAFS) framework.

A stock is classified as depleted when its biomass (total abundance or weight) is too low and fishing pressure is too high, or fishing pressure has been reduced but recovery has not yet been detected. A stock is classified as recovering when its biomass is too low, adequate management measures are in place, and there is some sign of recovery.

Under the NSW Fisheries Harvest Strategy Policy, “serious management actions” need to be taken for any stock classified as depleted, including “appropriate reductions in fishing intensity or catch levels, and possible fishery closure”, to ensure there is a high probability of rebuilding the stock.

These principles also apply where additional management action is required to support increasing stock biomass from low levels to improve stock health and reduce sustainability risks.

For four species - Grey Morwong, Silver Trevally, Redfish and Pearl Perch - NSW takes a significant proportion of total catch, or they are considered key commercial or recreational species, and further management support is required to support stock recovery within appropriate timeframes.

New management measures have been established for the commercial, recreational and charter fishing sectors to provide additional support for these stocks by substantially reducing harvest.

These measures have been tailored for each species and sector based on the:

- Status of the species
- NSW share of take
- Rules in adjacent jurisdictions
- Different sectors and methods where it is caught
- Measures in place or available to manage harvest within each sector
- Need to share the impact equitably across sectors.

The remaining seven species (Mulloway, Gemfish, Blue Warehou, School Shark, John Dory, Jackass Morwong and Spanish Mackerel) have appropriate harvest controls, a harvest strategy in development, and/or are caught in low numbers compared to other jurisdictions.

Rebuilding programs are established under this framework including:

- Specific management changes designed to promote stock rebuilding
- Monitoring measures to assess the effect of changes on catch levels, progress against rebuilding, and subsequent revision of management changes as stock health improves.

Rebuilding programs focus on applying measures appropriate to support rebuilding of stock biomass in accordance with recent NSW proportions of harvest (Table 1), noting in some cases depletion has been largely driven by fishing pressure from adjacent jurisdictions, including historically.

Table 1: Summary of stocks, status and rebuilding actions

Species	Stock status (2024)	NSW approximate proportion of biological harvest*	Objective	Actions
Grey Morwong	Depleted	Majority (58%)	Targeted rebuilding	Management changes to reduce fishing mortality
Mulloway	Recovering	Majority (100%)	Manage under harvest strategy	Manage rebuilding under Mulloway Harvest Strategy
Silver Trevally	Recovering	Significant (37%)**	Support further rebuilding	Management changes contributing to reduce fishing mortality
Pearl Perch	Depleted	Significant, historically minor (35%)	Support rebuilding	Management changes to reduce fishing mortality and promote recruitment
Redfish	Depleted	Significant, historically uncertain (29%)	Support rebuilding	Management changes to reduce fishing mortality and promote recruitment
Spanish Mackerel	Depleted	Minor (9.5%)***	Monitor and contribute to rebuilding	Existing measures in place to contribute to rebuilding
Gemfish	Depleted	Minor (0.4%)	Monitor and contribute to rebuilding	Existing measures in place to contribute to rebuilding
School Shark	Depleted	Minor (1.3%)	Monitor and contribute to rebuilding	Existing measures in place to contribute to rebuilding
Blue Warehou	Depleted	Minor (4.7%)	Monitor and contribute to rebuilding	Existing measures in place to contribute to rebuilding
Jackass Morwong	Depleted	Minor (3.9%)	Monitor and contribute to rebuilding	Existing measures in place to contribute to rebuilding
John Dory	Depleted	Minor (3.7%)	Monitor and contribute to rebuilding	Existing measures in place to contribute to rebuilding

Species	Stock status (2024)	NSW approximate proportion of biological harvest*	Objective	Actions
*Calculations based on SAFS reports including NSW proportion of relevant biological stock and NSW relevant classification, based on commercial catch levels and the most recent recreational survey estimates (where more than one reported in SAFS), unless otherwise specified. ** Based on Burch et al. 2023 ***Based on the Tanimoto et al. 2021				

Management actions, including changes to bag, boat and minimum size limits have been designed – based on the best available data – to deliver reductions in retained catch that are both effective (i.e. substantial enough to support stock recovery) and equitable (i.e. relatively consistent across each fishing sector).

Rebuilding objectives, indicators and reference points, and decision rules are also established for focus species to assess the effect of management changes, progress against the rebuilding objectives, and future revision of management actions in accordance with changes in biomass levels. Supporting actions by jurisdictions with shared responsibility will in most cases be important to support successful rebuilding for shared stocks, dependent on historical and/or current catch levels.

The intent of the rebuilding programs and management actions is to support rebuilding of stock biomass within biologically appropriate timeframes, being the lesser of the mean generation time plus 10 years, or three times the mean generation time. In the case of Redfish, the rebuilding timeframe is consistent with the existing Commonwealth rebuilding strategy.

Initial management actions for Recreational and Charter fisheries

- Proposed management actions/options for Grey Morwong, Silver Trevally, Pearl Perch and Redfish are provided in relevant species sections.
- Initial management actions will be finalised following consultation.

Initial management actions for Commercial fisheries

- Proposed management actions for Grey Morwong, Silver Trevally, Pearl Perch and Redfish are provided in relevant species sections.
- Initial management actions will be finalised following consultation.

Part 1: Introduction

Purpose

Rebuilding programs have been developed, consistent with the *Fisheries Management Act 1994* (the FM Act) and the NSW Fisheries Harvest Strategy Policy and Guidelines, for NSW fish stocks classified as depleted or recovering where specific management action is required to rebuild and return stocks to levels supporting ongoing sustainable harvest.

Stock status determinations are made based on information provided in NSW Department of Primary Industries – Fisheries (DPIRD Fisheries) stock assessment reports or stock status summary reports and follow the national Status of Australian Fish Stocks (SAFS) classification framework.

Species are classified as **depleted** when “Biomass (or proxy) has been reduced through catch and/or non-fishing effects, such that recruitment is impaired. Current management is not adequate to recover the stock, or adequate management measures have been put in place but have not yet resulted in measurable improvements.”

Species are classified as **recovering** when “Biomass (or proxy) is depleted and recruitment is impaired, but management measures are in place to promote stock recovery, and recovery is occurring.”

Species are classified as **sustainable** when “Biomass (or proxy) is at a level sufficient to ensure that, on average, future levels of recruitment are adequate (recruitment is not impaired) and for which fishing mortality (or proxy) is adequately controlled to avoid the stock becoming recruitment impaired (overfishing is not occurring).”

The rebuilding programs identify management and research actions to reduce fishing mortality and support the rebuilding and monitoring of depleted stocks or, in the case of recovering stocks, management and research actions that are being taken to strengthen and monitor recovery.

The rebuilding programs primarily adopt the default target of Maximum Sustainable Yield (MSY) and limit (20% of unfished biomass) reference points of the NSW Harvest Strategy Policy for these species, noting that initial management measures primarily focus on rebuilding stocks above the limit reference point within specified biologically appropriate timeframes.

Scope

Rebuilding programs apply to the following species based on stock status classifications published in 2024:

- Depleted species: Grey Morwong, Pearl Perch, Redfish
- Recovering species: Silver Trevally

The framework also includes additional species classified as depleted, which are primarily managed by other jurisdictions, for which current or additional actions (where needed) may be specified to support the rebuilding efforts of the primary jurisdiction:

- Gemfish
- School Shark
- Blue Warehou

- John Dory
- Jackass Morwong
- Spanish Mackerel

The NSW Mulloway stock has recently been reclassified from depleted to recovering, with further rebuilding to be addressed through the NSW Mulloway Harvest Strategy.

For each species, the framework outlines basic biology, current stock status, and existing fisheries management controls, and identifies specific rebuilding objectives and programs, including additional actions to achieve the broad objective of this framework. The rebuilding objectives have been adopted largely in the absence of predictive modelling, and therefore adopt timeframes based on generational timeframes that may be revised as data and modelling further develops.

The recovery programs have been developed based on the best available current evidence, recognising existing data and modelling limitations. Departure from these programs should only be undertaken when clear justification (e.g. significant new information, interpretation or application of data uncertainties) is available, or it is likely the program principles or objectives may not be achieved.

Part 2: Existing actions to rebuild fish stocks in NSW

This part summarises existing management arrangements that apply to NSW commercial and recreational fisheries, noting that additional rebuilding measures are identified in Parts 3 and 4 pending the longer-term assessment of changes against the rebuilding measures or development of species-specific harvest strategies.

In addition to the arrangements specified for each species, the NSW commercial fishing industry has been through a program of continuous improvement over the past 15 years. The Commercial Fisheries Business Adjustment Program, with changes implemented between 2017-2019, has resulted in the rationalisation and reduction of commercial fishing businesses and endorsements across all commercial fisheries, including a reduction of over 30% in the Ocean Trawl and Ocean Trap and Line fisheries.

Harvest strategies

Harvest strategies are the preferred approach to manage key NSW fish stocks, noting that ongoing or interim rebuilding measures may be established for depleted stocks prior to or during development.

The *NSW Fisheries Harvest Strategy Policy and Guidelines* (2021) establish a framework for developing harvest strategies in NSW. Harvest strategy development has focused on ensuring appropriate and effective development through engaging all sectors, building stakeholder capacity and understanding and obtaining guidance through independent fisheries management, scientific and economic experts. Development has focused on fisheries or stocks with particular characteristics, progressively developing approaches for managing increasing stock complexities, including single/multi species, multi-sector, shared, quota/input managed and depleted stocks.

Since establishing the harvest strategy program, harvest strategies have been completed for the NSW Trawl Whiting, Eastern Rock Lobster and Spanner Crab fisheries. Additional harvest strategies for Mulloway, Snapper and Kingfish are currently in development.

Rebuilding programs are established to support management and monitoring actions appropriate to the scale of NSW harvest for each species, including key harvest strategy elements, interim to the development of any future species-specific harvest strategies.

Data collection

Stock assessment and fisheries management are underpinned by the following sources of data:

- **Commercial catch and effort logbooks** (or FisherDirect online portal) – fishing business owners or their nominee are required to record details of all fishing activity including date, location, endorsement, method, species and catch weight. Log sheets must be submitted within 28 days of the end of each calendar month.
- **Commercial real-time quota reporting** – fishers in quota managed fisheries are required to report their activity in ‘real time’ via the FisherMobile application. The requirements vary by fishery and include pre- and post-land reports and quota usage.
- **Scientific observer surveys** – a scientific observer program is in place to inform composition and levels of bycatch in NSW commercial fisheries, focusing on one fishery or fishing method at a

time (informed by risk). The program was initially funded by the Commercial Fishing Trust and was expanded as part of the NSW Marine Estate Management Strategy 2018-2028 to better understand threats associated with bycatch and interactions with threatened, endangered and protected (TEP) species in high and moderate risk commercial fisheries. See for example Johnson & Barnes (2022) for the Ocean Trap & Line – Line Fishing West Zone and Johnson & Barnes (2023) for the Ocean Trawl – prawn trawl sector. Additional analysis is being completed using spatial-temporal joint species modelling to estimate unobserved discards and multi-species models to explore the value of spatial-temporal management in the Ocean Trawl Fishery using data collected from the observer programs.

- **Recreational Fishing Monitoring Program (RFMP)** – the biennial RFMP consists of two components: State-wide 12-month telephone diary survey of long-term (1 & 3 year) recreational fishing licence holders and their households, and a logbook and on-board observer program to monitor the NSW Charter Fishery. The RFMP surveys were initiated and undertaken after the National Recreational and Indigenous Fishing Survey (Henry and Lyle 2003) and the Survey of Recreational Fishing in New South Wales and the ACT, 2013/14 (West et al. 2015). The first survey of this type was completed in 2017/18 (Murphy et al. 2020), followed by further surveys in 2019/20 (Murphy et al. 2022) and 2021/22 (unpublished). The telephone diary survey engages with the entire ‘household’, this includes other household members (aged 5 years and older) who may be exempt from holding a RFL as well as any other long-term and short-term licence holders and non-fishers that reside within the household. However, the catch estimates do not include estimates from fisher households comprised exclusively of short-term and/or exempt fishers. Therefore, these catch estimates are considered to be underestimates of the total recreational harvest within NSW waters.
- **Point in time research projects** – Much of the foundational understanding of species biology, stock structure and population dynamics, in addition to species interactions with fishing operations (e.g. gear selectivity), responses to environmental change and interdependence on important habitats are available and built on through relatively short-term (1-3 year) research projects. These sources of information form a critical baseline of data to inform assessments and management decision making.

Assessment and performance monitoring

DPIRD Fisheries monitors the performance of fisheries and fished stocks using fishery-dependent and independent data from across all fishing sectors. Stock status is assessed relative to management objectives specified in the FM Act, Share Management Plans, Fisheries Management Strategies and increasingly, within Harvest Strategies.

Stock status is defined in accordance with the national SAFS classification framework. Stock Assessment reports and associated Stock Status Summary reports are typically produced annually for stocks subject to quota management and Stock Status Summary reports underpin biennial SAFS reporting for many additional stocks.

NSW Commercial Fisheries Port Monitoring - Data Summary Reports are produced annually, describing fishery-dependent, commercial fishing sector data, collected to maintain a time series of information supporting assessments for priority species and providing a status summary for those species.

In addition, a number of research projects are developed and supported directly by DPIRD Fisheries and through successful state and nationally competitive funding calls, with objectives delivering across priority areas for DPIRD Fisheries, including filling knowledge gaps that limit more comprehensive assessments of key stocks, including depleted stocks in NSW.

Fisheries management controls

The commercial fishing sector in NSW is made up of ten distinct commercial fisheries. Of these, the Ocean Trawl (OT), Southern Fish Trawl (SFT), Ocean Trap & Line (OTL), Ocean Hauling (OH), Estuary General (EG) and Lobster fisheries are key fisheries with varying levels of harvest of some, or all of the species subject to this rebuilding strategy.

The OT, OTL, OH, EG and Lobster fisheries are share management fisheries. The FM Act requires that a share management plan (SMP) be developed and implemented for all share management fisheries. The primary role of a share management plan is to provide the legislative framework for the fishery.

SMPs are available for each fishery:

- [Fisheries Management \(Ocean Trawl Share Management Plan\) Regulation 2006](#)
- [Fisheries Management \(Ocean Trap and Line Share Management Plan\) Regulation 2006](#)
- [Fisheries Management \(Ocean Hauling Share Management Plan\) Regulation 2006](#)
- [Fisheries Management \(Estuary General Share Management Plan\) Regulation 2006](#)
- [Fisheries Management \(Lobster Share Management Plan\) Regulation 2000](#)

The SMPs prescribe a range of fishery specific management controls that are in place to manage harvest and support ongoing sustainability. Examples of these include limited access, the species that may be taken, the areas for taking fish, the times or periods during which the fishery may operate, the protection of fish habitat and the use of boats and fishing gear in the fishery. Many of these, described below, are relevant to all species. Other controls apply to particular species and are described in Parts 3 and 4.

The recreational fishing sector includes recreational fishers and the charter fishing sector. A range of management arrangements are established under the FM Act and the Fisheries Management (General) Regulation 2019 (FM (G) Regulation), including use of fishing gear, bag and possession limits and spatial and temporal restrictions.

There is a broad suite of existing management arrangements in place to support fishing by Aboriginal peoples under the NSW fisheries management framework.

These include the [Aboriginal Cultural Fishing Interim Access Arrangement](#), which provides extended take and possession limits in recognition of the importance of fishing for cultural purposes by Aboriginal peoples and communities. The limits are generally double the current recreational fishing limits, with extended limits for some culturally important species. When proposing any changes to take and possession limits under this program that may impact Aboriginal cultural fishing, a separate consultation process with relevant Aboriginal advisory bodies should take place to determine an appropriate management response.

Currently all other fishing rules (e.g. size limits; gear restrictions; fishing closures/orders; marine protected areas, prohibited activities and other rules; fish and waters protected from fishing) apply

to Aboriginal cultural fishing activities. Any activity that would contravene these rules would require a specific permit or order under the FM Act and/or the MEM Act.

Limited entry

For each of the share management fisheries, access is limited to endorsement holders (or their nominated fishers) who hold sufficient shares to satisfy the minimum shareholding for each share class in the relevant SMP. Minimum shareholdings 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.

The SFT fishery, which operates in state waters south of Barrenjoey Head, is a restricted fishery and access is limited to business owners (or their nominated fishers) who hold an existing endorsement in the fishery.

Controls on fishing boats

Boat length restrictions for each commercial fishery are enacted through the SMPs, and, for the SFT fishery, the FM (G) Regulation.

Controls on fishing gear

The SMPs and FM (G) Regulation prescribe limits and/or restrictions on fishing gear used in each commercial fishery. The FM (G) Regulation prescribes lawful recreational fishing methods and gear requirements.

OT and SFT Fishery: Part 4A (Fishing gear) of the SMP and Part 3 (Fishing gear) of the FM (G) Regulation prescribe current limits and/or restrictions on fishing gear used in the OT and SFT fisheries including the mandatory requirement that all otter trawl net (prawns) be fitted with a bycatch reduction device (BRD) that has been approved for use in the OT fishery. Information on BRDs approved for use in the OT fishery may be found on the NSW DPIRD website at www.dpi.nsw.gov.au/fishing/closures/ocean-trawl-bycatch-reduction-devices

Some modifications to otter trawl net (prawns) and otter trawl net (fish) are permitted for use in the OT fishery, including to trial gear modifications that may support reduced bycatch and improved efficiencies. Refer to www.dpi.nsw.gov.au/fishing/commercial/fisheries/ocean-trawl

OTL Fishery: Part 4A (Fishing gear) of the SMP and the [Fisheries Management \(Trap, Hook and Crew Limits Guidelines\) Approval 2017](#) prescribe current limits and/or restrictions on fishing gear used in the OTL fishery.

In addition, a number of gear restrictions apply in or near critical habitat of Grey nurse sharks (Part 5A of the SMP) and under the [Fisheries Management \(Ocean Trap and Line Fishery Export Approval – North & South Solitary Islands, Fish Rock, Green Island and Magic Point Fishing Closure\) Notification 2021](#)

OH Fishery: Part 6A (Fishing gear) of the SMP prescribe current limits and/or restrictions on fishing gear used in the OH fishery.

EG Fishery: Part 7 (Fishing gear) of the SMP and the [Fisheries Management \(Trap, Hook and Crew Limits Guidelines\) Approval 2017](#) prescribe current limits and/or restrictions on fishing gear used in the EG fishery.

Lobster Fishery: Part 7 (Fishing gear) of the SMP prescribe current restrictions on fishing gear used in the Lobster Fishery.

Recreational: Part 3 (Fishing gear) and Part 6 (General fisheries management) of the FM (G) Regulation prescribe current restrictions on fishing gear for the recreational fishing sector.

Temporal and spatial closures

The SMPs, the FM (G) Regulation and the Fisheries Management (Supporting Plan) Regulation 2006 outline a range of spatial and temporal closures relevant to the commercial and recreational fishing sectors, including waters closed permanently to all fishing or classes of fishing.

These closures serve various purposes including refuge for stock, protection of juvenile stock, resource sharing between sectors, and protection of the biophysical environment.

Given the significant spatial and temporal variability in bycatch in the OT fishery, an adaptive closure program is also used to respond to short-term bycatch issues (e.g. off river entrances following flood events, and to protect juvenile mulloway and prawns).

Fishing closures specific to each fishery can be found on the DPIRD Fisheries website at <https://www.dpi.nsw.gov.au/fishing/closures>

Total Allowable Catch / Effort

Commercial catch or effort quota management applies to a range of species or share classes in NSW. A total allowable catch (TAC) is determined for each catch quota managed species in NSW for each new fishing period. A share of the TAC is allocated (as quota) to owners of species quota shares in proportion to the number of shares they hold. Similar to a TAC, a total allowable effort (TAE) is the maximum amount of fishing effort (e.g. days) that can be used by commercial fishers during a fishing period.

A TAE is determined for each fishing effort quota managed fishery in NSW for each new fishing period and a share of the TAE is allocated (as days or units) to owners of relevant shares in proportion to the number of shares they hold.

A TAC/TAE determination is made by either the independent Total Allowable Fishing Committee or the Secretary for the Department of Regional New South Wales. The Total Allowable Fishing Committee consists of members and deputy members with significant experience and knowledge in fisheries science, economics and management. Further information can be found on the DPIRD Fisheries website at <https://www.dpi.nsw.gov.au/fishing/commercial/total-allowable-fishing>

Catch limits and restrictions

Commercial catch limits are implemented for each fishery either via fishing closures under the FM Act or established under relevant SMPs as daily and possession limits. Details of up-to-date commercial catch limits applying to each fishery can be found in SMPs and on the DPIRD Fisheries website at <https://www.dpi.nsw.gov.au/fishing/closures/commercial>

Recreational catch limits are implemented either by fishing closures under the FM Act or established under the FM (G) Regulation as daily and possession limits. A summary of recreational catch limits can be found on the DPIRD Fisheries website at <https://www.dpi.nsw.gov.au/fishing/recreational/fishing-rules-and-regs>

The FM Act and FM (G) Regulation also prescribe a range of fish that are protected for conservation reasons or protected from commercial fishing for resource sharing reasons.

Marine Protected Areas

It should be noted there are a range of spatial closures that have been established under a comprehensive network of marine protected areas including state and Commonwealth marine parks and aquatic reserves which apply additional commercial and recreational fishing restrictions for the primary purpose of biodiversity conservation. While marine protected areas have not been designed to enhance stock, they provide important refugia for species and complement the Fisheries Management Act objectives to conserve fish stocks and their habitats.

In NSW, Marine Parks has been established with spatial zoning including habitat protection and sanctuary zones, and in most cases, buyouts of commercial fishing effort. These include the Solitary Islands Marine Park (1998), Jervis Bay Marine Park (1998), Lord Howe Island Marine Park (1999), Cape Byron Marine Park (2002), Port Stephens-Great Lakes Marine Park (2005) and Batemans Bay Marine Park (2006).

Consultation

DPIRD Fisheries actively involves a wide range of stakeholders in the process of developing and implementing fisheries management arrangements. This approach is supported by specific consultative bodies and processes provided for in legislation and undertaken as part of effective fisheries management practices. Four Ministerial advisory councils provide expert advice, which complements other consultation processes:

- Ministerial Fisheries Advisory Council
- Commercial Fishing NSW Advisory Council
- Recreational Fishing NSW Advisory Council
- Aboriginal Fishing Advisory Council

Part 3: Rebuilding programs for focus species

Grey Morwong

Biology

Grey Morwong (*Nemadactylus douglasii*) belong to the family Cheilodactylidae (Morwongs, Trumpeters).

Table 2: Grey Morwong biology – from SAFS Status Report 2023 (Stewart et al. 2023)

Species	Longevity/Maximum size	Maturity (50 per cent)
Grey Morwong	22 years or longer, 810 mm TL (approximately 670 mm FL)	3 years, 240 mm FL

Distribution & stock structure

Grey Morwong inhabit the continental shelf waters from Moreton Bay, Queensland in the north to Wilsons Promontory in Victoria and can be found as far south as Tasmania. They inhabit reefs and adjacent sandy areas in water depths of 10-100 m. Juveniles usually occur at shallower depths than larger fish. The stock structure has not been formally examined through genetics; however based on their reasonably limited distribution along south-eastern Australia, the complex but southerly flowing Eastern Australian Current and an extended pelagic larval phase, it is likely to constitute a single stock (Stewart et al. 2023).

Stock status

Stock status under the SAFS classification framework is determined for the Eastern Australia biological stock, shared with the Commonwealth, NSW and Queensland.

The weight of evidence (Stewart 2023) is that:

- Surplus production model stock assessment indicates unfished biomass in 2021-22 is 11.5%
- The biomass of Grey Morwong declined rapidly during the 1970s and 80s to be below 20% of virgin (unfished) biomass in 2000
- The biomass has continued to decline since that time and is currently well below the limit reference point (~10%)
- Fishing mortality was excessive during the 1970s to early 2000s. Since that time fishing mortality has declined, however not to the level to allow the biomass to recover to above the limit reference point.

On this basis, Grey Morwong is classified as Depleted and recruitment is likely to be impaired (Stewart et al. 2023).

Retained catch by jurisdiction and sector

Grey Morwong from the Eastern Australia biological stock are harvested in jurisdictions including the Commonwealth, NSW and Queensland by commercial and non-commercial fishing sectors. Little

or no recorded catch comes from Queensland, and stock status is derived using data from the New South Wales- and Commonwealth-managed fisheries (Table 3).

Table 3: Grey Morwong harvest estimates – from SAFS Status Report 2023 (Stewart et al. 2023)

	Commonwealth	Queensland	NSW
Commercial	25.34 t	60.2 kg	25.93 t
Recreational		Unknown	9.9 t (2019/20)
Charter		Unknown	
Indigenous		Unknown	Unknown

In NSW commercial fisheries, Grey Morwong are primarily caught as a byproduct when targeting Snapper using demersal fish traps (average of 88% total catch and an average of 95% OTL catch for 2018-19 to 2023-24 financial years) in the OTL fishery (Figure 1).

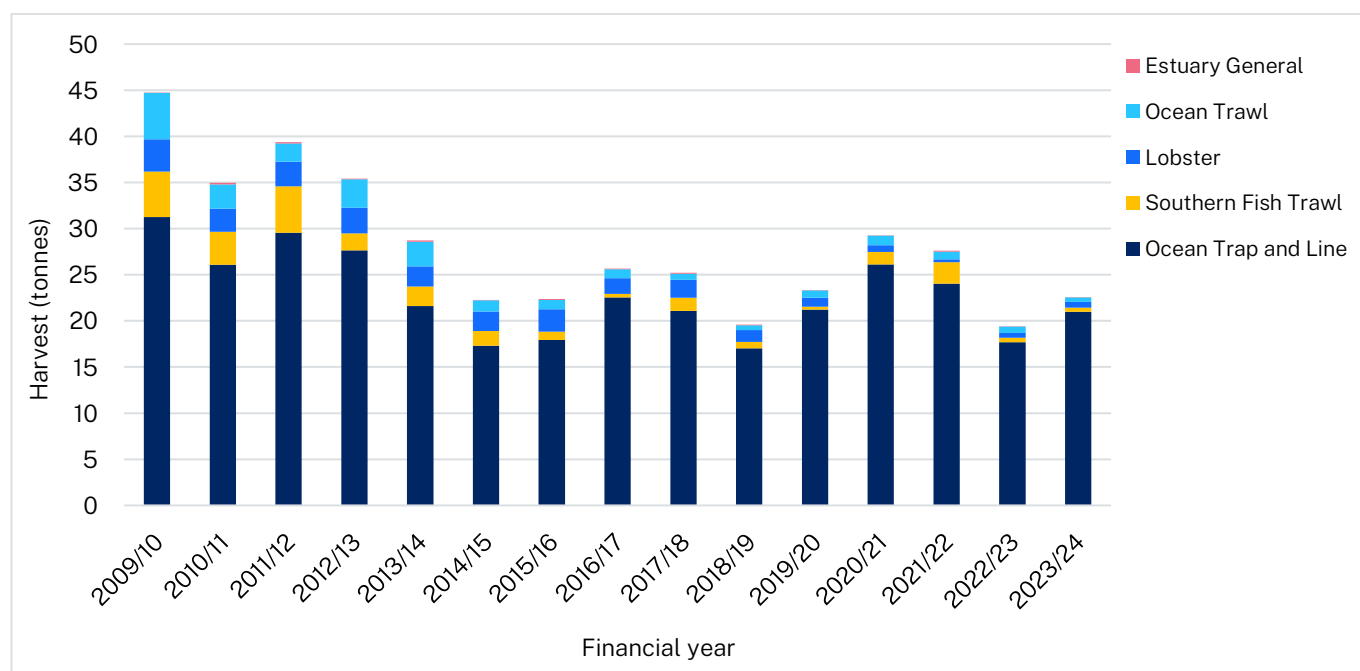


Figure 1: NSW Grey Morwong recorded commercial landings by fishery (tonnes)

Total NSW commercial landings have declined from over 160 tonnes (t) in 1997/98 to less than 30 t each year since 2013/14. Standardised catch rates for demersal fish trapping have also declined steadily since 1997/98, and in 2018/19 were approximately one third of the 1997/98 level (Stewart 2020a).

Based on a national recreational fishing survey in 2000/01 and four state-wide recreational fishing surveys since that time, retained landings by recreational fishers resident in NSW have also declined (Table 4).

Table 4: Estimated retained catch of Grey Morwong (number and weight) from surveys of recreational fishing households

Survey year	Est. retained fish	Est. total weight ¹	Source
2000/01	130,000	156 t	Henry & Lyle 2003

Survey year	Est. retained fish	Est. total weight ¹	Source
2013/14	30,000	24.5 t	West et al. 2015
2017/18	27,000	21.8 t	Murphy et al. 2020
2019/20	13,000 ²	9.9 t	Murphy et al. 2022
2021/22	10,500 ³	8.4 t	DPIRD unpublished data
¹ Based on average body weight for the species (see for example Murphy et al. 2020). ² Relative standard error 50% ³ Reported by less than 20 households			

In the Commonwealth, Grey Morwong is taken as a bycatch or byproduct species in the Trawl and Gillnet Hook and Trap sectors of the Southern and Eastern Scalefish and Shark Fishery (SESSF) and to a lesser extent in the Coral Sea Fishery (CSF) in some years (Stewart et al. 2023).

In Queensland, Grey Morwong are a non-target species in the East Coast Inshore Fishery and reported as part of a mixed species category, and therefore catch and effort data are not considered reliable. Recreational catch is similarly reported and unreliable. Low catch levels constitute a negligible portion of total annual catch. Despite the unreliable reporting, these low catch levels represent a minimal share of the total annual catch from the stock (Stewart et al. 2023).

Rebuilding Program

The Grey Morwong rebuilding program is established to support recovery of stock biomass in accordance with the rebuilding objectives. Interim objectives, reference points and decision rules align with key elements of the NSW Harvest Strategy Policy, providing an initial framework to support implementation and assessment of measures designed to assist stock recovery, interim to the development of any future harvest strategy.

Rebuilding Objectives

Strategic objectives

1. To proportionally reduce fishing mortality from those sectors which have an impact, either directly or indirectly, on the Eastern Australia Grey Morwong stock, to support rebuilding of stock biomass to sustainable levels
2. To support progression of the Eastern Australia Grey Morwong stock to biomass levels appropriate to support ongoing sustainable harvest
3. To assess the effect of management changes and biomass responses, and adjust actions if required to achieve the rebuilding objectives

Operational objectives

1. To rebuild the Eastern Australia Grey Morwong stock above 20% of unfished biomass (B_{20}) or reasonable proxy with high probability, within a biologically reasonable timeframe, being approximately 11 years (three generation times)
2. To progress biomass to 40% of unfished biomass (B_{40}) or reasonable alternative within a biologically reasonable timeframe once initial rebuilding has been achieved

Management actions to achieve the objectives

In addition to the fisheries management measures outlined in Part 1, including limited entry, controls on fishing boats and gear, spatial and temporal closures, specific measures have previously been implemented to support the recovery of Grey Morwong (Table 5).

To further promote recovery of stock biomass, additional management actions have been designed to prevent targeted fishing whilst allowing retention of some incidental catch (unavoidable bycatch), and maintain an overall low fishing mortality while continuing to monitor and assess catch trends and stock status (Table 5).

Although Grey Morwong can be targeted, it is generally caught as a byproduct species when fishing for other species. Estimates of discard survival rates of Grey Morwong from commercial fish trapping, or commercial and recreational line fishing are currently unavailable, however anecdotal reports suggest some level of survival and support implementation of incidental catch limits.

Whilst the current minimum size limit of 30 cm is considered biologically appropriate (as this protects almost all fish through to sexual maturity), increase to the recreational minimum size limit is designed to assist reducing fishing mortality in the recreational sector, noting limited effects of bag limit reductions as bag limits are rarely taken.

Management actions are focused on immediate reductions in fishing mortality and providing consistent contributions towards stock recovery between fishing sectors, also providing an adjustable framework in accordance with changes in fishery performance.

Previous and additional actions are provided in Table 5.

Table 5: Grey Morwong - Specific management and recovery actions

Sector	Measure	Previous management actions	Rebuilding strategy management actions
Commercial	Minimum Size limit	30 cm (increased from 28 cm in 2007)	No change
	Bag/possession limit	-	Ocean Trawl and Southern Fish Trawl: 50 kg Ocean Trap and Line: 10 kg All other commercial: 0 kg
	Other	Demersal fish trap escape panels (introduced in 2008)	No change
Recreational	Minimum Size limit	30 cm (increased from 28 cm in 2007) 10 (reduced from 20 in 2007)	Option 1: • Bag/possession limit 2 • Size limit 35 cm

Sector	Measure	Previous management actions	Rebuilding strategy management actions
	Bag/possession limit		Option 2: • Maintain 30 cm size limit • Bag/possession limit 1 • Recreational boat limit 5 • Charter limit 10

In addition, DPIRD Fisheries will:

- Continue research into trawl gear selectivity to help with minimising bycatch. Refer to the current project: *Refining and promoting technologies to reduce bycatch and habitat impacts while increasing efficiencies throughout NSW fisheries*
- Conduct an awareness raising campaign to encourage all fishing sectors to avoid Grey Morwong wherever possible and to encourage the recreational fishing sector to practice catch-and-release
- Undertake independent observer programs to validate commercial catch and discard data
- Review options for improving data collection (including harvest levels and discard mortality), stock assessments and management actions
- Investigate options to identify and determine a biologically appropriate timeframe to progress biomass to levels appropriate to supporting ongoing sustainable harvest once the rebuilding objective has been met.

Indicators and reference points

Indicators and their reference points are used to measure fishery and strategy performance, with operational objectives structured around:

1. A biomass indicator derived from Grey Morwong stock assessments to monitor rebuilding of stock biomass to sustainable levels ($>B_{20}$), and
2. A catch trigger to monitor changes in catch levels to support assessment against the biomass indicator and rebuilding management actions.

Biomass rebuilding target reference point: 20% of unfished biomass (B_{20})

Catch trigger reference point: 37 tonnes, being the sum of average annual total commercial catch inclusive of 2018/19 to 2022/23 and the average of the 2017/18, 2019/20 and 2021/22 recreational survey estimates

Monitoring and assessment

Monitoring includes collection of data on commercial and recreational landings, as well as fishing effort, lengths and ages primarily derived from commercial catch. This data used in the assessment and is collected on an ongoing basis. There is no data on the Indigenous harvest of Grey Morwong (Stewart, J. 2023).

Assessment is primarily based on surplus production modelling to classify the biological status of the Grey Morwong biological stock (Stewart, J. 2023).

Performance against the biomass reference point will be derived from periodic stock assessments.

Performance against the catch trigger reference point will be derived from NSW commercial catch data and recreational survey estimates.

Rebuilding decision rules

Decision rules are provided as review provisions structured around a management trigger and biomass conditions. This approach is undertaken as the effect of management changes will need to be assessed, noting the intention for significant reductions below current catch levels in order to promote stock recovery within the objective timeframes.

The decision rules will be applied on availability of a NSW assessment assessing performance against the objectives, indicators and reference points at intervals of approximately 2 years, and not exceeding 5 years, from commencement of the rebuilding program.

The rebuilding management actions will be reviewed, and adjusted if required to meet the rebuilding objectives or intent of the management actions:

1. 5 years from commencement of the rebuilding program,
2. If biomass projections (where available) indicate that the rebuilding target will not be achieved within the specified timeframe,
3. If 5-year financial year average total commercial catch + average of 3 most recent recreational harvest survey estimates exceeds the trigger reference point (37 tonnes) using this criteria.

Silver Trevally

Biology

Silver Trevally (*Pseudocaranx georgianus*) belong to the family Carangidae (Trevallies).

Table 6: Silver Trevally biology – from Description of the biology and an assessment of the fishery for Silver Trevally *Pseudocaranx dentex* off New South Wales (Rowling and Raines 2000).

Species	Longevity/Maximum size	Maturity (50 per cent)
Silver Trevally	13–24 years, 510–570 mm LCF	190–200 mm LCF (<1-4 years)

Distribution & stock structure

Silver Trevally inhabit estuarine and coastal waters to depths of up to 200 m and are moderately long lived with a maximum observed age of 24 years (as cited in Rowling and Raines 2000). They are moderately fecund and mature at a relatively early age (2–4 years). The species is a broadcast spawner, with pelagic eggs and larvae distributed by currents prior to settlement on soft sediment habitat. Silver Trevally are fast swimmers, but the majority of individuals may not move long distances in the adult phase (as cited in Fowler et al. 2018) (DPIRD 2024).

Silver Trevally have a relatively contiguous distribution from northern NSW to Western Australia, south of 25°S latitude (as cited in Bearham et al. 2020). Their continuous distribution, the dominance of the East Australian Current, and a recent genetic study, suggest Silver Trevally are likely genetically homogenous on Australia’s east coast (as cited in Bearham et al. 2020). Tagging studies in Australia and New Zealand suggest that movement after settlement is limited, so there is potential for finer-scale population structure within the east coast population (as cited in Fowler et al. 2018) (DPIRD 2024).

Stock status

The stock status for Silver Trevally in NSW is based on a recent model-based stock assessment conducted jointly by NSW and the Commonwealth (hereafter “the assessment”; as cited in Burch et al. 2023). The assessment assumes a single biological stock spanning the mainland jurisdictions of NSW, the Commonwealth and Victoria. This reflects likely stock structure (see above) and the fact that the two jurisdictions responsible for greatest catch historically (NSW and the Commonwealth) are primarily separated in an onshore-offshore direction (DPIRD 2024). The NSW Silver Trevally stock is currently assessed as Recovering (DPIRD 2024) having been previously classified as Depleted.

The Stock Status under SAFS for the Commonwealth and NSW are in review and will be updated once completed (FRDC, 2024).

Retained catch by jurisdiction and sector

Silver Trevally from the biological stock are harvested in jurisdictions including the Commonwealth, NSW and Victoria by commercial and non-commercial fishing sectors (Table 7).

Table 7: Silver Trevally harvest estimates – NSW Stock Status Summary – 2023/24 (DPIRD 2024)

	Commonwealth	NSW	Victoria
Commercial	35.7 t	22.7 t	19.8 t
Recreational	Unknown	27 t (2013/14) 8 t (2017/18) 13 t (2019/20)	42.9 t (2000/01)
Indigenous	Unknown	Unknown	Unknown

In NSW, Silver Trevally are predominantly caught in the OT, SFT, OTL and EG fisheries, with occasional catches taken in the OH fishery (Figure 2). During the period 1998 – 2022, the OT and SFT fisheries accounted for 58% of catch by weight (range: 22-86%), OTL for 24% (range: 9 – 49%) and EG for 13% (range: 4-36%) (Fowler et al. 2023).

Note that 58 t of reported SFT fishery catch from a single operator during 2019/20 (red outline, Figure 2) is assumed misreporting. These catches were not apparent in fish sale records and were associated with disproportionately small effort quantities (Fowler & Chick 2021).

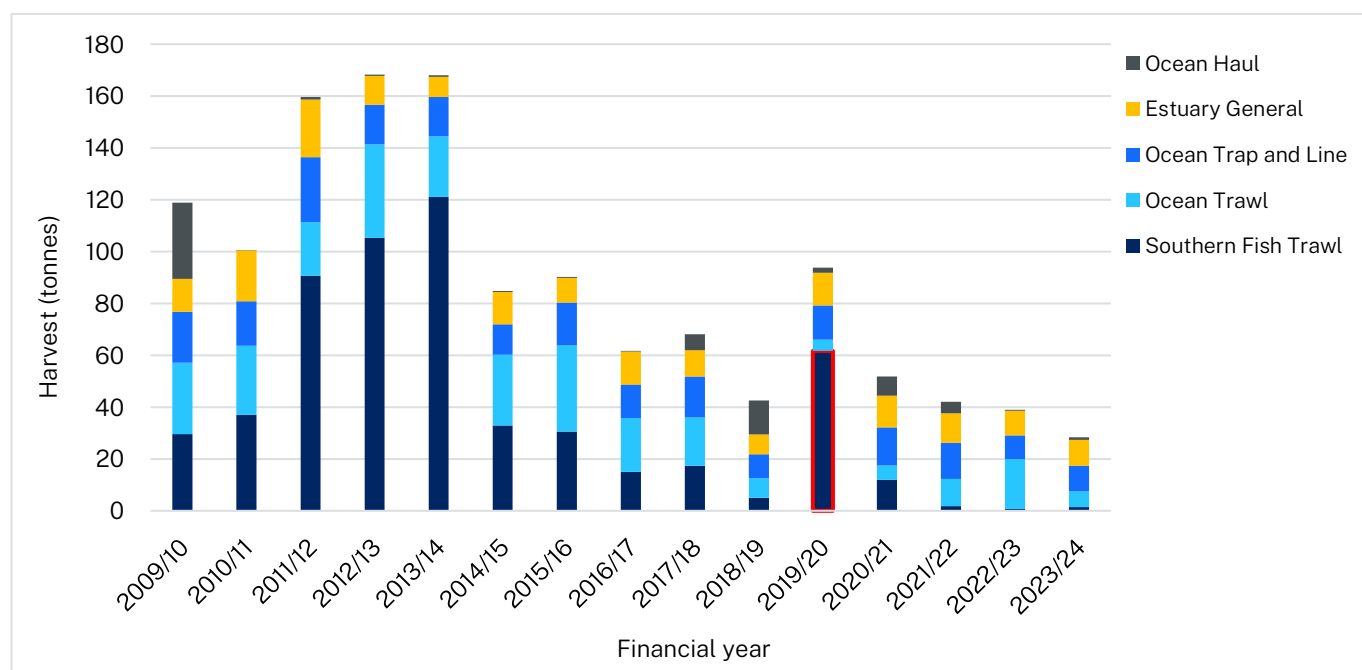


Figure 2: NSW Silver Trevally recorded commercial landings by fishery (tonnes)

During the 1980s commercial catches exceeded 1,000 t per year but have declined steadily since that time. This included a decline in the trawl sector from more than 200 t during 2007 to a low of 7.6 t during 2020, although part of this decline is attributable to the introduction of a minimum size limit and the establishment of the Batemans Marine Park and other areas closed to commercial fishing (Fowler & Chick 2021).

Discarding was negligible prior to 2007 when the minimum size limit was introduced in NSW. After that year, an average discard rate of 27% by weight was estimated for NSW fish trawl from an onboard observer study (DPIRD, unpublished).

Based on a national recreational fishing survey in 2000/01 and four state-wide recreational fishing surveys since that time, retained landings by recreational fishers resident in NSW have also generally declined (Table 8).

Table 8: Estimated retained catch of Silver Trevally (number and weight) from surveys of recreational fishing households

Survey year	Est. retained fish	Est. total weight ¹	Source
2000/01	140,000	100 t	Henry & Lyle 2003
2013/14	49,000	27 t	West et al. 2015
2017/18	15,000	8.4 t	Murphy et al. 2020
2019/20	24,500	13.4 t	Murphy et al. 2022
2021/22	20,500	11.2 t	DPIRD unpublished data
¹ Based on average body weight for the species (see for example Murphy et al. 2020).			

In the Commonwealth, Silver Trevallies (assumed to be *P. georgianus*) are managed as a Tier 1 stock under the Commonwealth SESSF Harvest Strategy Framework (AFMA 2024a). Until 2018, the Trawl sector of the SESSF was the primary source of mortality outside NSW. However, over the last few years the Commonwealth TAC for Silver Trevally has been progressively reduced (down to 25 t in the 2024/25 fishing season) and catches have also declined. In response to lowered TAC's for at risk stocks in the SESSF, a buyback of 21 boat statutory fishing rights was completed May 2023 (DAFF 2023). In 2022/23 the landed catch in the Commonwealth was 38.6t Butler (2023).

In Victoria, large quantities of Silver Trevallies (*P. georgianus*) were landed in Bass Strait using mesh nets up until 1991, however the offshore mesh net fishery is now managed by the Commonwealth and has largely ceased. Since then, landings have been predominantly from seine nets in Gippsland Lakes and Corner Inlet-Nooramunga with a declining catch trend through time as effort with this gear has declined in both fisheries (Conron et al. 2020).

Rebuilding Program

The Silver Trevally rebuilding program outlines measures to contribute to rebuilding stock biomass in accordance with the rebuilding objectives. Interim objectives, reference points and decision rules align with key elements of the NSW Harvest Strategy Policy, providing an initial framework to support implementation and assessment of measures designed to assist stock recovery, interim to the development of any future harvest strategy.

Rebuilding Objectives

Strategic objectives

1. To reduce fishing mortality from those sectors which have an impact, either directly or indirectly, on the Silver Trevally stock, to support continued rebuilding of stock biomass
2. To support progression of the biological Silver Trevally stock to biomass levels appropriate to support ongoing sustainable harvest

3. To assess the effect of management changes and biomass responses, and adjust actions if required to achieve the rebuilding objectives

Operational objectives

1. To support progression of the Silver Trevally stock to above 20% of unfished biomass (B_{20}) or reasonable proxy with high probability, within a biologically reasonable timeframe, being approximately 15 years (mean generation time + 10 years)

Management actions to achieve the objectives

In addition to the fisheries management measures outlined in Part 1, including limited entry, controls on fishing boats and gear, spatial and temporal closures, specific measures have previously been implemented to support the recovery of Silver Trevally (Table 9).

To further promote recovery of stock biomass, additional management actions have been designed to prevent targeted fishing whilst allowing retention of some incidental catch (unavoidable bycatch), and maintain an overall low fishing mortality while continuing to monitor and assess catch trends and stock status (Table 9).

The current minimum size limit of 30 cm total length is considered appropriate as this protects almost all fish through to sexual maturity.

The Silver Trevally TAC applying to the NSW Ocean Trawl fishery was reduced from 26.8 t in 2020/21 to 12 t in 2023/24. Additional management actions are focused on providing consistent contributions towards stock recovery in additional fishing sectors, also providing an adjustable framework in accordance with changes in fishery performance.

Previous and additional actions are provided in Table 9.

Table 9: Silver Trevally - Specific management and recovery actions

Sector	Measure	Previous management actions	Rebuilding strategy management actions
Commercial	Minimum Size limit	30 cm (introduced in in 2007)	No change
	Catch limits	Ocean Trawl fishery TAC and ITQ (introduced in 2019, TAC reduced over several years from 26.8 t (19/20) to 12 t (23/24))	Southern Fish Trawl and Ocean Hauling: 300 kg Estuary General: 70 kg Ocean Trap and Line: 40 kg All other commercial: 0 kg
	Other	Closure to trawling of approx. 85,000 hectares of the Batemans Marine Park where Silver Trevally were previously targeted	-
Recreational	Minimum Size limit	30 cm (introduced in in 2007) 10	Option 1: • Maintain 30 cm size limit • Bag/possession limit 1

Sector	Measure	Previous management actions	Rebuilding strategy management actions
	Bag/possession limit		Option 2: • Size limit 33 cm • Bag/possession limit 5 Option 3: • Maintain 30 cm size limit • Bag/possession limit 2 • Boat limit 2 • Charter boat limit 10

In addition, DPIRD Fisheries will:

- Continue research into trawl gear selectivity to help with minimising bycatch. Refer to the current project: *Refining and promoting technologies to reduce bycatch and habitat impacts while increasing efficiencies throughout NSW fisheries*
- Conduct an awareness raising campaign to encourage all fishing sectors to avoid Silver Trevally wherever possible and to encourage the recreational fishing sector to practice catch-and-release
- Undertake independent observer programs to validate commercial catch and discard data, including to validate species reporting for trevallies in the NSW Estuary General Fishery
- Review options for improving data collection (including harvest levels and discard mortality), stock assessments and management actions.

Indicators and reference points

Indicators and their reference points are used to measure fishery and strategy performance, with operational objectives structured around:

1. A biomass indicator derived from Silver Trevally stock assessments to monitor rebuilding of stock biomass to sustainable levels ($>B_{20}$), and
2. A catch trigger to monitor changes in catch levels to support assessment against the biomass indicator and rebuilding management actions.

Rebuilding target reference point: 20% of unfished biomass (B_{sp20})

Catch trigger reference point: 54.6 tonnes, being the sum of average annual total commercial catch inclusive of 2018/19 to 2022/23 and the average of the 2017/18, 2019/20 and 2021/22 recreational survey estimates.

Monitoring and assessment

Monitoring includes collection of data on commercial and recreational landings, as well as lengths and ages of commercial catch. This data used in the assessment and is collected on an ongoing basis. Aboriginal cultural catch of Silver Trevally has not been quantified, yet has been assumed to

be at a consistent or low level such that it would not substantially influence assessment outcomes (DPIRD 2024).

Assessment is undertaken using an age- and size-structured integrated assessment model to determine the biological status of the Silver Trevally biological stock (Burch et al. 2023).

Performance against the biomass reference point will be derived from periodic stock assessments.

Performance against the catch trigger reference point will be derived from NSW commercial catch data and recreational survey estimates.

Rebuilding decision rules

Decision rules are provided as review provisions structured around a management trigger and biomass conditions. This approach is undertaken as the effect of management changes will need to be assessed, noting the intention for significant reductions below current catch levels in order to promote stock recovery within the objective timeframes.

The decision rules will be applied on availability of a NSW assessment assessing performance against the objectives, indicators and reference points at intervals of approximately 2 years, and not exceeding 5 years, from commencement of the rebuilding program.

The rebuilding management actions will be reviewed, and adjusted if required to meet the rebuilding objectives or intent of the management actions:

1. 5 years from commencement of the rebuilding program,
2. If biomass projections indicate that the rebuilding target will not be achieved within the specified timeframe,
3. If 5-year financial year average total commercial catch + average of 3 most recent recreational harvest survey estimates exceeds the trigger reference point (54.6 tonnes) using this criteria.

Pearl Perch

Biology

Pearl Perch (*Glaucosoma scapulare*) belong to the family Glaucosomatidae (Pearl Perches).

Table 10: Pearl Perch biology – from SAFS Status Report 2023 (Garland & Stewart 2023)

Species	Longevity/Maximum size	Maturity (50 per cent)
Pearl Perch	27 years, 700 mm TL, 7.3 kg	Females 4.42 years, 373 mm TL

Distribution & stock structure

Pearl Perch are endemic to eastern Australia, from Rockhampton (Qld) to Sydney (NSW), but rarely occur south of Coffs Harbour. They often form small to medium-sized schools around submerged reefs, pinnacles and rough rocky seabed in moderately deep water (up to 150 m) but may also move into shallow coastal waters throughout the day (Roelofs & Stewart 2021). Young (<1 yr) Pearl Perch are typically associated with the sandy substrates utilised by penaeid prawns (Stewart et al. 2013). There is some evidence that Pearl Perch move northwards to spawn as no maturing fish have been observed in NSW waters (Stewart 2020b).

Climate-driven increases in sea surface temperatures (SST) have been shown to cause poleward shifts in species distributions. Anecdotal reports suggest Pearl Perch have been caught by recreational fishers as far south as Montague Island in southern NSW (36°15'S) in recent years. This poleward shift is a result of the EAC strengthening and penetrating further south and these changes are likely to influence the dispersal of Pearl Perch larvae (Campbell et al. 2022).

Due to their limited distribution and influence of the prevailing southerly flowing Eastern Australian Current in distributing larvae across this area, Pearl Perch are considered to be a single biological stock (Stewart 2020b).

Stock status

Stock status under the SAFS classification framework is determined for the Eastern Australia biological stock, shared between NSW and Queensland.

The most recent integrated stock assessment for the Eastern Australia Pearl Perch stock (Queensland and New South Wales combined; including data up until 2019) estimated spawning biomass had declined to 22% (base case; 14– 46% range across scenarios), relative to unfished levels (as cited in Lovett et al. 2022) (Garland & Stewart, 2023). Fishery-dependent monitoring in both states shows truncated commercial and recreational age frequencies with an absence of larger fish, while in NSW, monitoring of commercial landings over the decade to 2014/15 showed a lack of small fish, indicating poor recruitment (Garland & Stewart, 2023).

The most recent stock assessment (data up to end of 2019) indicates fishing mortality was exceeding sustainable levels. Since then, the combined harvest from Queensland and NSW has been at historically low levels. In NSW the number of days reported when Pearl Perch were landed in both trap and line fisheries are at or near historically low levels (As cited in Stewart 2020; DPIRD Unpublished data) (Garland & Stewart 2023).

The Eastern Australia Pearl Perch stock is currently classified as Depleted (Garland & Stewart 2023).

Retained catch by jurisdiction and sector

Pearl Perch from the Eastern Australia biological stock are harvested in jurisdictions including NSW and Queensland by commercial and non-commercial fishing sectors (Table 11).

Table 11: Pearl Perch harvest estimates – from SAFS Status Report 2023 (Garland & Stewart 2023)

	Queensland	NSW
Commercial	8.53 t	6.14 t
Recreational	14.3 t (2019/20)	7,508 fish (2019/20)
Indigenous	Unknown	Unknown

While NSW currently accounts for around 40% of annual retained catch of Pearl Perch, the majority of catch has occurred in Queensland (Figure 3).

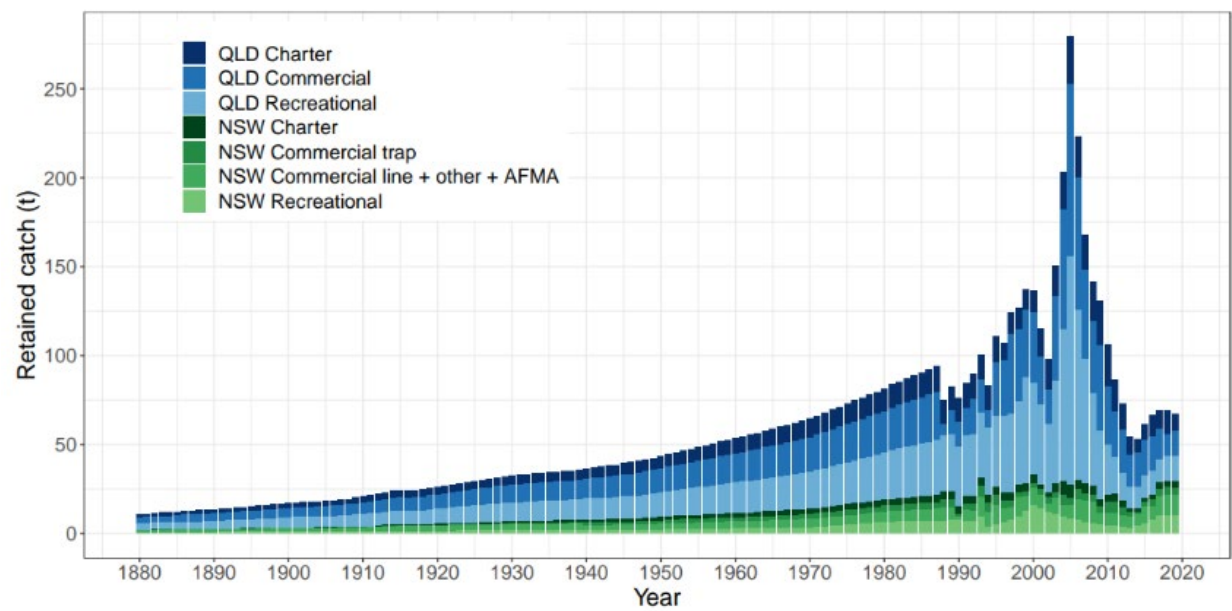


Figure 3: Annual estimated retained catch from commercial, recreational and charter sectors (Source: Lovett et al. 2022)

In NSW, Pearl Perch are primarily taken in the OTL fishery on hook and line (Figure 4).

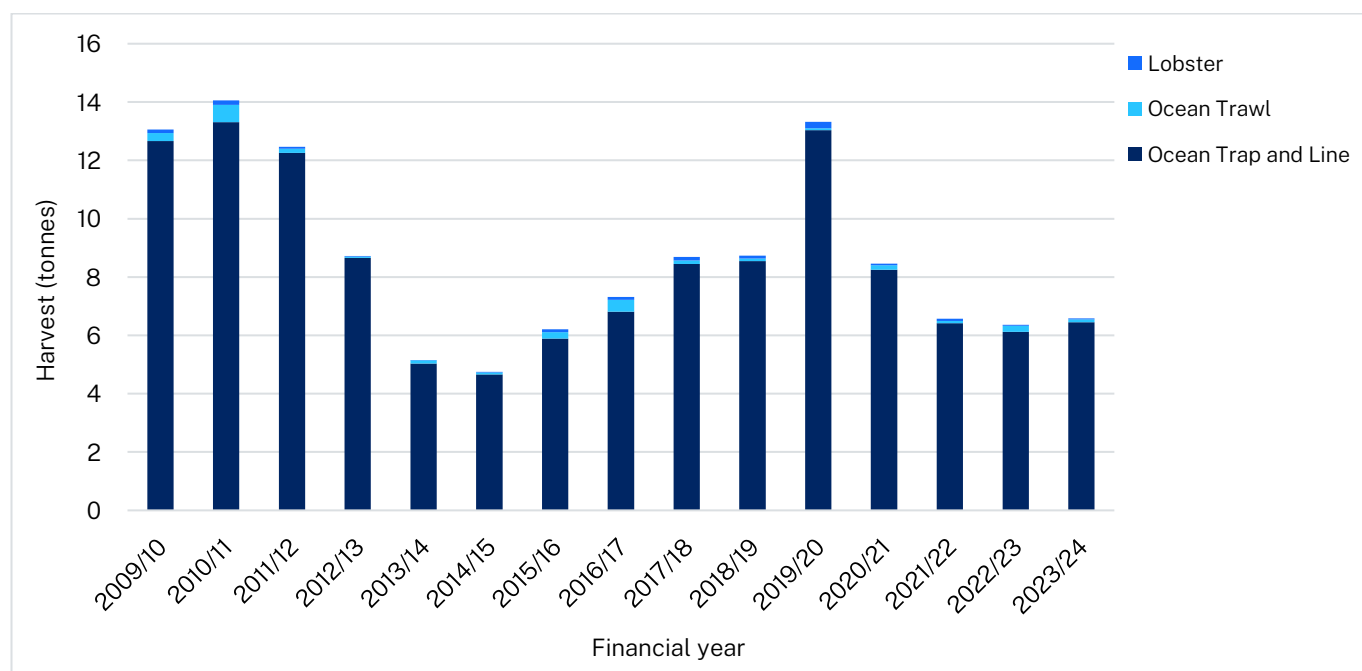


Figure 4: NSW Pearl Perch recorded commercial landings by fishery (tonnes)

NSW commercial landings peaked at approximately 17 t in 1995/96. Since that time landings have fluctuated but have declined overall (Stewart 2020b). Length-based monitoring of commercial landings showed a steady increase in average lengths of the moderate sized fish between 2004–05 and 2014–15, with a lack of small fish observed in landings, indicative of poor recruitment during the decade (Stewart 2020b). A pulse of just legal-sized Pearl Perch was detected in landings during 2016–17 indicative of an improved recruitment; however there are no indications that the available biomass has yet increased above the limit (Garland & Stewart 2023).

Standardised catch rates show differing trends in each state. For Queensland, a consistent decrease is evident. For NSW, trap and line sectors declined to a low in 2014, after which a recovery in catch rates is shown. The different signals in the NSW and Queensland catch rates suggest that localised depletion in Queensland is likely to have occurred (Lovett et al. 2022).

Pearl Perch were not identified in the National Recreational and Indigenous Fishing Survey (Henry & Lyle 2003). Estimated retained landings by recreational fishers resident in NSW, based on four state-wide surveys of recreational fishing in NSW, are shown in Table 12.

Table 12: Estimated retained catch of Pearl Perch (number and weight) from surveys of recreational fishing households

Survey year	Est. retained fish	Source
2013/14	4,500	West et al. 2015
2017/18	14,000	Murphy et al. 2020
2019/20	7,500	Murphy et al. 2022
2021/22	6,000 ¹	DPIRD unpublished data
¹ Relative standard error >50% - reported by less than 20 households.		

Rebuilding Program

The Pearl Perch rebuilding program outlines measures to contribute to rebuilding stock biomass in accordance with the rebuilding objectives, to complement rebuilding measures in Queensland.

Interim objectives, reference points and decision rules align with key elements of the NSW Harvest Strategy Policy, providing an initial framework to support implementation and assessment of measures designed to assist stock recovery, interim to the development of any future harvest strategy.

Rebuilding Objectives

Strategic objectives

1. To proportionally reduce fishing mortality from those sectors which have an impact, either directly or indirectly, on the Eastern Australia Pearl Perch stock, to support rebuilding of stock biomass to sustainable levels
2. To assist progression of the Eastern Australia Pearl Perch stock to biomass levels appropriate to support ongoing sustainable harvest
3. To assess the effect of management changes and biomass responses, and adjust actions if required to achieve the rebuilding objectives

Operational objectives

1. To assist rebuilding the Eastern Australia Pearl Perch stock above 20% of unfished spawning biomass (B_{sp20}) or proxy with reasonable certainty and within a biologically reasonable timeframe, being approximately 15.5 years (mean generation time + 10 years)

Management actions to achieve the objectives

In addition to the fisheries management measures outlined in Part 1, including limited entry, controls on fishing boats and gear, spatial and temporal closures, specific measures have previously been implemented to support the recovery of Pearl Perch (Table 13).

To further promote recovery of stock biomass, additional management actions have been designed to reduce targeted fishing and maintain an overall low fishing mortality while continuing to monitor and assess catch trends and stock status (Table 13).

Although Pearl Perch can be targeted, it is generally caught as a byproduct species when fishing for other species. Discard survival rates for line-caught Pearl Perch have estimated at >91% (Campbell et al. 2014). This suggests implementation of incidental catch limits and an increase to the minimum size limit are likely to be effective tools to support recovery of Pearl Perch in NSW.

The increase to a more biologically appropriate minimum size limit aligned with maturity is designed to both reduce fishing mortality and support enhanced stock recruitment.

Management actions are focused on immediate reductions in fishing mortality and providing consistent contributions towards stock recovery between fishing sectors, also providing an adjustable framework in accordance with changes in fishery performance.

Previous and additional actions are provided in Table 13.

Table 13: Pearl Perch - Specific management and recovery actions

Sector	Measure	Previous management actions	Rebuilding strategy management actions
Commercial	Minimum size limit	30 cm	38 cm
	Other	Demersal fish trap escape panels (introduced in 2008)	No change
Recreational	Minimum size limit	30 cm	38 cm
	Bag/possession limit	Bag/possession limit: 5	Bag/possession limit: 4

In addition, DPIRD Fisheries will:

- Conduct an awareness raising campaign to encourage all fishing sectors to avoid Pearl Perch wherever possible and to encourage the recreational fishing sector to practice catch-and-release
- Undertake independent observer programs to validate commercial catch and discard data
- Review options for improving data collection (including harvest levels and discard mortality), stock assessments and management actions.

Indicators and reference points

Indicators and their reference points are used to measure fishery and strategy performance, with operational objectives structured around:

1. A biomass indicator derived from Pearl Perch stock assessments to monitor rebuilding of stock biomass to sustainable levels ($>B_{20}$), and
2. A catch trigger to monitor changes in catch levels to support assessment against the biomass indicator and rebuilding management actions.

Biomass rebuilding target reference point: 20% of unfished biomass (B_{20})

Catch trigger reference point: 18.5 tonnes, being the sum of average annual total commercial catch inclusive of 2018/19 to 2022/23 and the average of the 2017/18, 2019/20 and 2021/22 recreational survey estimates

Monitoring and assessment

Monitoring programs include collection of data on commercial and recreational landings, as well as lengths and ages of commercial and recreational catch. This data used in the assessment and is collected on an ongoing basis. The extent of Indigenous fishing activity on the fishery is unknown (as cited in Roelofs et al. 2018) (Lovett et al. 2022)

Assessment is undertaken using an integrated model to classify the biological status of the Eastern Australia Pearl Perch biological stock (Garland and Stewart, 2023).

Performance against the biomass reference point will be derived from periodic stock assessments.

Performance against the catch trigger reference point will be derived from NSW commercial catch data and recreational survey estimates.

Rebuilding decision rules

Decision rules are provided as review provisions structured around a management trigger and biomass conditions. This approach is undertaken as the effect of management changes will need to be assessed, noting the intention for significant reductions below current catch levels in order to promote stock recovery within the objective timeframes.

The decision rules will be applied on availability of a NSW assessment assessing performance against the objectives, indicators and reference points at intervals of approximately 2 years, and not exceeding 5 years, from commencement of the rebuilding program.

The rebuilding management actions will be reviewed, and adjusted if required to meet the rebuilding objectives or intent of the management actions:

1. 5 years from commencement of the rebuilding program,
2. If biomass projections (where available) indicate that the rebuilding target will not be achieved within the specified timeframe,
3. If 5-year financial year average total commercial catch + average of 3 most recent recreational harvest survey estimates exceeds the trigger reference point (18.5 tonnes) using this criteria.

Redfish

Biology

Redfish (*Centroberyx affinis*) belong to the family Berycidae (Alfonsinos).

Table 14: Redfish biology – from SAFS Status Report 2023 (Emery et al. 2023)

Species	Longevity/Maximum size	Maturity (50 per cent)
Redfish	Males 11 years, 330 mm FL Females 16 years, 380 mm FL	4 years, 200–250 mm

Distribution & stock structure

Redfish occur in continental shelf and upper slope waters in depths from 10 to 450 m from eastern Tasmania (including Bass Strait) to southern Queensland off Fraser Island. Juvenile fish occur in deeper bays and estuaries and over inshore reefs. Redfish is predominantly a schooling species, generally occurring over hard bottom types and other structures (e.g. shipwrecks) (Emery et al. 2021b).

No stock delineation studies of Redfish have been undertaken in Australia. Tagging studies suggested a single stock of Redfish off NSW. However, studies of mean length at age suggest differences in growth rates of Redfish from the ‘northern’ and ‘southern’ areas of the fishery off eastern Australia. Previous Redfish assessments have assumed that the fishery exploits two separate populations, with the boundary between these being 36°S (immediately north of Montague Island in NSW) (see Emery et al. 2021b for relevant references). However, the most recent stock assessment (Bessell-Browne & Tuck 2020) assumes a single stock across regions.

Stock status

Stock status under the SAFS classification framework is determined for a single South Eastern Australia biological stock, shared with the Commonwealth, NSW and Tasmania (Emery et al. 2023a).

Status is determined based on the assessment undertaken by the Commonwealth, noting that NSW catches are primarily taken in areas immediately adjacent to the Commonwealth SESSF, and the assessment includes NSW catch data.

Redfish have been assessed by the Commonwealth to be depleted to below the limit reference point (0.2B₀) since 1992. The latest assessment estimated that relative spawning biomass was as low as 3% in 2019 (Bessell-Browne & Tuck 2020).

The South Eastern Australian Redfish biological stock is currently classified as Depleted (Emery et al. 2023a).

Redfish are being considered for listing as a threatened or conservation dependent species under the Environment Protection and Biodiversity Conservation Act 1999 (DCCEW 2024).

Retained catch by jurisdiction and sector

Redfish are harvested in jurisdictions including the Commonwealth, NSW and Tasmania (Table 15).

Table 15: Redfish harvest estimates – from SAFS Status Report 2023 (Emery et al. 2023a)

	Commonwealth	NSW	Tasmania
Commercial	19.57 t	3.99 t	
Recreational		4 t (2019/20)	Unknown
Indigenous		Unknown	Unknown

Redfish are predominantly taken in the Commonwealth SESSF and are currently managed under the Redfish (*Centroberyx affinis*) Stock Rebuilding Strategy 2016-2021 (AFMA 2016).

In the Commonwealth, Redfish landings peaked in the late 1970s and early 1980s, with significant discards recorded on top of landed catch. Following these significant catches, catch steadily declined in the 1990s and 2000s as total allowable catches (TACs) were steadily reduced but the stock continued to decline and became subject to an incidental catch allowance in the 2015–16 fishing season and managed through a rebuilding strategy (as cited in AFMA 2016) (Emery et al. 2023a)

The annual commercial catch from New South Wales waters has declined from 15.3 t in 2012–13 to 4.1 t in 2021–22. These catches have represented between 12% and 23% of total commercial landings during this period (Emery et al. 2023a). Total commercial catches in NSW have averaged about 6.4 tonnes from 2018-19 to 2023-24 financial periods. NSW commercial Redfish harvest was estimated to account for 16% of average annual total commercial harvest for the period 2005 to 2019 (Bessell-Browne & Tuck 2020).

From 2009-10 to 2017-18 financial periods, approximately 58% of catch on average was taken from the OT fishery, with approximately 92% of this taken by otter fish trawl. Catches from the OTL and SFT fisheries was approximately 26% and 15% on average respectively with about 1% on average taken from the Lobster fishery for the same period.

In contrast, from 2018-19 to 2023-24, annual catches from the OTL fishery have averaged about 56% of NSW commercial landings from 2018-19 to 2023-24. The majority of catch from the OTL fishery in this period was by handline (83%). Catches from the OT and SFT averaging about 32% and 12% of total catches respectively for the same period.

The majority of commercial catches from NSW waters (Figure 5) come from areas adjacent to the Commonwealth fishery, inside 3 nm on the south coast of NSW and to the north of Barrenjoey Headland on the mid-north coast of NSW.

Note that 8 t of reported SFT fishery catch from a single operator during 2019/20 (red outline, Figure 5) is assumed misreporting by a single operator.

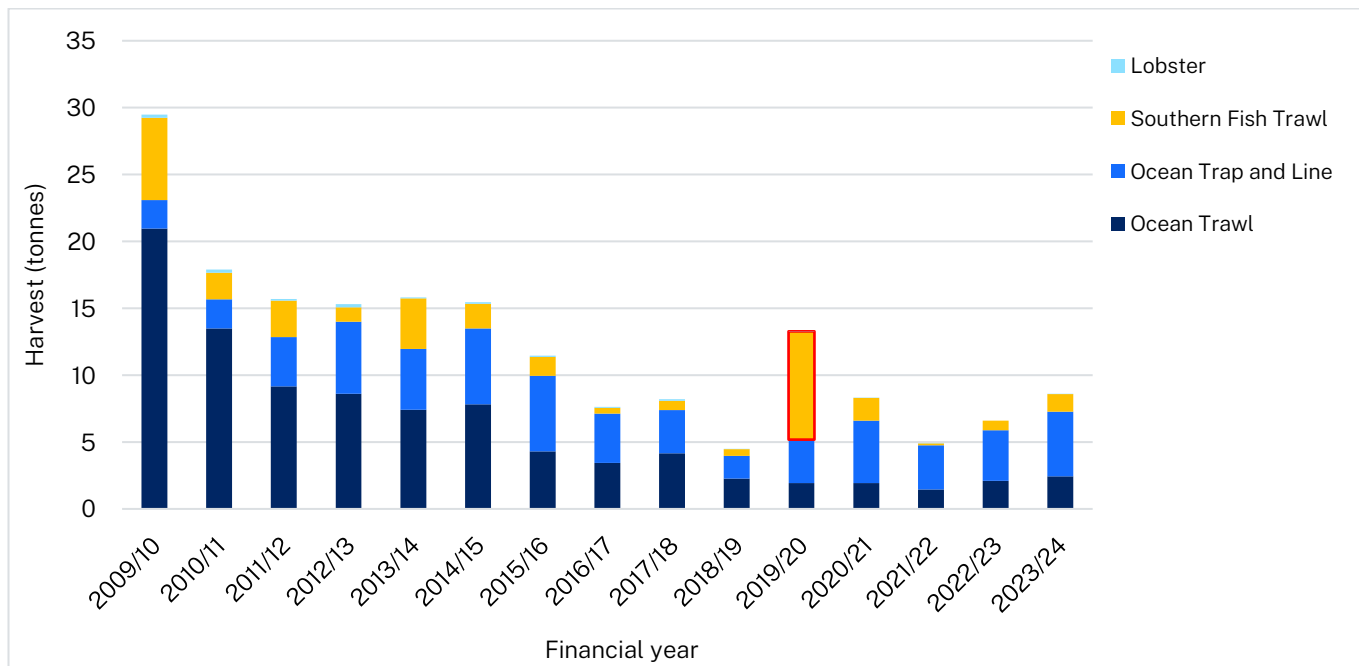


Figure 5: NSW Redfish recorded commercial landings by fishery (tonnes)

Based on four state-wide surveys of recreational fishing in NSW, recent retained landings by recreational fishers resident in NSW have decreased from around 21,500 fish (~ 6.5 t) during 2013/14 (West et al. 2015) to around 17,000 in 2017/18 (Murphy et al. 2020), around 10,000 (~2.9 t) in 2019/20 (Murphy et al. 2022) and around 1000 in 2021/22 (DPIRD unpublished data). However, recent estimates may not be robust as catches have only been reported by a small number of households.

Redfish has only been sporadically fished in Tasmanian waters, with confirmed catches of *C. affinis* available only from the 2018–19 season. These first species-level records of catch were very low but remain confidential. Annual catches for unspecified Redfish species in previous years, which include but are not restricted to *C. affinis*, were generally below 300 kg (Emery et al. 2021b). Redfish is not harvested recreationally in Tasmania.

Rebuilding program

The Redfish rebuilding program outlines measures to contribute to rebuilding the South Eastern Australian Redfish stock in accordance with the NSW rebuilding objectives, to complement measures under the Commonwealth’s Redfish (*Centroberyx affinis*) Stock Rebuilding Strategy 2016-2021.

Interim objectives, reference points and decision rules align with key elements of the NSW Harvest Strategy Policy, providing an initial framework to support implementation and assessment of measures designed to assist stock recovery, interim to the development of any future harvest strategy.

Rebuilding objectives

Strategic objectives

1. Proportionally reduce fishing mortality from those sectors which have an impact, either directly or indirectly, on the South Eastern Australian Redfish stock.
2. To assist progression of the South Eastern Australian Redfish stock to biomass levels appropriate to support ongoing sustainable harvest

3. To assess the effect of management changes and biomass responses, and adjust actions if required to achieve the rebuilding objectives

Operational objectives

1. To assist rebuilding the South Eastern Australian Redfish biological stock above 20% of unfished biomass (B_{20}) or proxy by 2042¹

Management actions to achieve the objectives

In addition to the fisheries management measures outlined in Part 1, including limited entry, controls on fishing boats and gear, spatial and temporal closures, specific measures have previously been implemented to support the recovery of Redfish (Table 16).

To further promote recovery of stock biomass, additional management actions have been designed to prevent targeted fishing whilst allowing retention of some incidental catch (unavoidable bycatch), and maintain an overall low fishing mortality while continuing to monitor and assess catch trends and stock status (Table 16).

Although Redfish can be targeted, it is generally caught as a byproduct species when fishing for other species. Estimates of discard survival rates of Redfish are currently unavailable, however anecdotal reports suggest some level of survival and support implementation of incidental catch limits.

Given the substantial and long-standing stock depletion and relatively long life history, introduction of a biologically appropriate minimum size limit is designed to both reduce fishing mortality and support enhanced stock recruitment.

Management actions are focused on immediate reductions in fishing mortality and providing consistent contributions towards stock recovery between fishing sectors, also providing an adjustable framework in accordance with changes in fishery performance.

Previous and additional actions are provided in Table 16.

Table 16: Redfish - Specific management and recovery actions

Sector	Measure	Current	Change
	Minimum Size limit	-	25 cm
Commercial	Bag/possession limit	Trip limits for Otter trawl net (fish) in Ocean Trawl & Southern Fish Trawl:	
		100kg south of Barrenjoey Head	Ocean Trawl, Southern Fish Trawl and Ocean Trap and Line: 40 kg
		250 kg north of Barrenjoey Head (1 November – 30 June)	All other commercial: 0 kg
		1000 kg north of Barrenjoey Head (1 July – 31 October)	

¹ Consistent with the Redfish (*Centroberyx affinis*) Stock Rebuilding Strategy 2016-2021, pending outcomes of assessment on EPBC Act listing.

Sector	Measure	Current	Change
	Other	Demersal fish trap escape panels (introduced in 2008)	No change
Recreational	Minimum Size limit	-	25 cm
	Bag/possession limit	20	Bag/possession limit: 1

In addition, DPIRD Fisheries will:

- Continue research into trawl gear selectivity to help with minimising bycatch. Refer to the current project: *Refining and promoting technologies to reduce bycatch and habitat impacts while increasing efficiencies throughout NSW fisheries*
- Conduct an awareness raising campaign to encourage all fishing sectors to avoid Redfish wherever possible and to encourage the recreational fishing sector to practice catch-and-release
- Undertake independent observer programs to validate commercial catch and discard data
- Review options for improving data collection (including harvest levels and discard mortality), stock assessments and management actions.

Indicators and reference points

Indicators and their reference points are used to measure fishery and strategy performance, with operational objectives structured around:

1. A biomass indicator derived from Redfish stock assessments to monitor rebuilding of stock biomass to sustainable levels ($>B_{20}$), and
2. A catch trigger to monitor changes in catch levels to support assessment against the biomass indicator and rebuilding management actions.

Biomass rebuilding target reference point: 20% of unfished biomass (B_{20})

Catch trigger reference point: 8.7 tonnes, being the sum of average annual total commercial catch inclusive of 2018/19 to 2022/23 and the average of the 2017/18, 2019/20 and 2021/22 recreational survey estimates

Monitoring and assessment

Monitoring programs include collection of data including catch, discard, CPUE, length and age data. Stock assessments are undertaken on a regular basis to monitor stock status and the recovery of Redfish. Redfish are currently assessed using a full quantitative Tier 1 assessment undertaken by the Commonwealth, using a stock synthesis model to classify the biological status of South Eastern Australia biological stock (Emery and Liggins 2023).

Performance against the biomass indicator reference point will be derived from periodic stock assessments.

Performance against the catch trigger reference point will be derived from NSW commercial catch data and recreational survey estimates.

Rebuilding decision rules

Decision rules are provided as review provisions structured around a management trigger and biomass conditions. This approach is undertaken as the effect of management changes will need to be assessed, noting the intention for significant reductions below current catch levels in order to promote stock recovery within the objective timeframes.

The decision rules will be applied on availability of a Commonwealth assessment of biomass levels, supported by NSW assessment of performance against the objectives, indicators and reference points at intervals of approximately 5 years.

The rebuilding management actions will be reviewed, and adjusted if required to meet the rebuilding objectives or intent of the management actions:

1. 5 years from commencement of the rebuilding program,
2. If biomass projections (where available) indicate that the rebuilding target will not be achieved within the specified timeframe,
3. If 5-year financial year average total commercial catch + average of 3 most recent recreational harvest survey estimates exceeds the trigger reference point (8.7 tonnes) using this criteria.

Part 4: Background and management actions for other depleted species

Spanish Mackerel

Biology

Spanish Mackerel (*Scomberomorus commerson*) belong to the family Scombridae (Mackerels).

Table 17: Spanish Mackerel biology – from SAFS Status Report 2023 (Langstreth et al. 2023)

Species	Longevity/Maximum size	Maturity (50 per cent)
Spanish Mackerel	26 years, 2400 mm FL	2 ² years, 800 mm FL

Distribution & stock structure

Genetic evidence indicates that there are three biological stocks of Spanish Mackerel across northern Australia; however, evidence from otolith microchemistry, parasite analysis and limited adult movement indicates that there are likely to be a number of smaller biological stocks with limited interaction. Each jurisdiction is likely to have multiple biological stocks within its boundaries. See Roelofs et al. (2021) for relevant references.

Stock status

Stock status under the SAFS classification framework is determined at the biological stock level – Torres Strait Spanish Mackerel Fishery (Commonwealth), East Coast (Queensland and NSW); management unit level – Mackerel Managed Fishery (Western Australia), Gulf of Carpentaria (Queensland); and jurisdictional level – Northern Territory (Roelofs et al. 2021).

Stock status for the East Coast biological stock has been established using combined information from Queensland and NSW. The previous stock assessment for the East Coast Spanish Mackerel biological stock estimated spawning biomass had declined to 17% (± 4%) (base case; 14 – 57% range across scenarios), relative to unfished levels (Tanimoto et al. 2021). The East Coast biological stock is currently classified as Depleted (Langstreth et al. 2023).

An updated stock assessment has identified a median biomass estimate of 34% of unfished levels (range 17 – 62%) (Sumpter et al. 2025.)

Retained catch by jurisdiction and sector

Harvest from the East Coast biological stock is taken in Queensland and NSW (Table 18). The majority of catch is taken within Queensland waters (90.5 per cent) with a smaller catch during late summer–autumn in northern NSW waters.

² Maturity estimated 2-4 years (Tanimoto et al. 2021)

Table 18: Spanish Mackerel harvest estimates – from SAFS Status Report 2023 (Langstreth et al. 2023)

	Commonwealth	Western Australia	Northern Territory	Queensland	NSW
Commercial	53.20 t	228.50 t	307.06 t	483.97 t	7.19 t
Charter		14 t	8.6 t	Unknown	
Recreational		56 t (+/- 11 t se, 2020–21)	45 t (+/- 14 t se, 2018–19)	171 t (2019–20)	26 t (in 2013–14), 171 fish (2019–20)
Indigenous		Unknown	Unknown	Negligible	Unknown

From 2016 to 2020, the total East Coast Spanish Mackerel annual harvest by all fishing sectors (515 t) has averaged approximately half the annual harvest compared to 1973–2004 (Tanimoto et al. 2021).

Fishing pressure for Spanish Mackerel has historically concentrated on a small area of important spawning grounds off the coast of Townsville (as cited in Tobin et al. 2013, Tobin et al. 2014). Long term reductions were in both the number of Spanish Mackerel spawning aggregations and in commercial catch rates in the region (as cited in Buckley et al. 2017 and Tobin et al. 2014) (Langstreth et al. 2023).

In NSW, Spanish Mackerel are predominantly taken in the OTL fishery, with an average annual total catch of 17.1 t between 2009/10 and 2023/24 (Figure 6). Note that fish above ~10–11kg are generally not retained due to market restrictions.

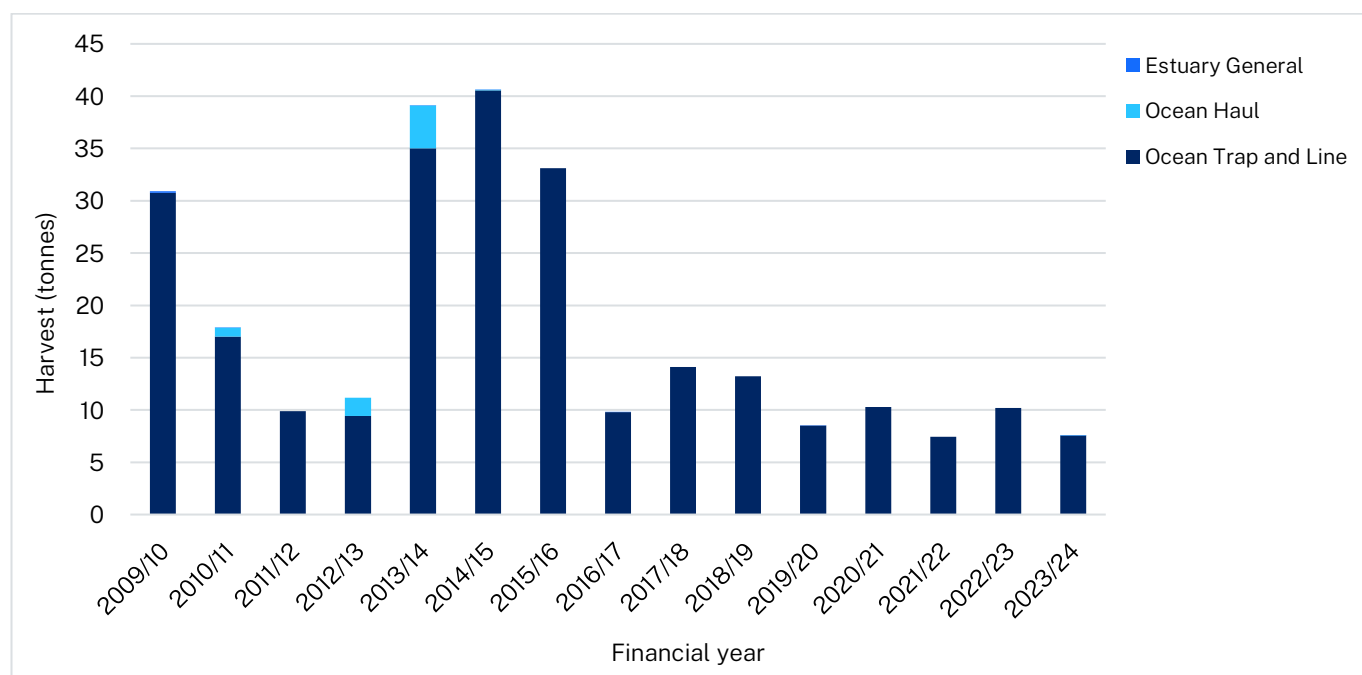


Figure 6: NSW Spanish Mackerel recorded commercial landings by fishery (tonnes)

Spanish Mackerel were not identified in the National Recreational and Indigenous Fishing Survey as they were captured in a 'Mackerels' species group (Henry & Lyle 2003). Estimated retained landings by recreational fishers resident in NSW, based on four state-wide surveys of recreational fishing, indicated a decrease in recreational catch from approximately 5,300 individuals in 2013/14 (West et al. 2015) to 2,400 individuals in 2017/18 (Murphy et al. 2020) and less than 1,000 individuals in

2019/20 (Murphy et al. 2022) and 2021/22 (DPIRD unpublished data). However, recent estimates may not be robust as catches have only been reported by a small number of households.

Management measures to support stock rebuilding

In addition to the fisheries management measures outlined in Part 1, including limited entry, controls on fishing boats and gear, spatial and temporal closures, the following specific measures have been implemented to support the recovery of Spanish Mackerel:

- A minimum size limit of 75 cm applies to all sectors
- Recreational harvest is limited by a combined bag/possession limit (Spanish and Spotted Mackerel combined) of 5.

Management actions

At this stage, no new measures are proposed, given that (a) NSW accounts for a small proportion of total harvest, (b) Spanish Mackerel are subject to various existing management measures to reduce fishing mortality.

Gemfish

Biology

Gemfish (*Rexea solandri*) belong to the family Gempylidae (Snake Mackerels).

Table 19: Gemfish biology – from SAFS Status Report 2023 (Moore et al. 2023a)

Species	Longevity/Maximum size	Maturity (50 per cent)
Gemfish	Males 13 years, up to 1 060 mm TL , 15 kg Females 17 years, up to 1 160 mm TL, > 15 kg	Males 4–5 years, 600 – 660 mm TL, Females 5–6 years, 710 – 740 mm TL

Distribution & stock structure

Gemfish are mesopelagic and inhabit deeper continental shelf and upper slope waters from 100 – 700 m but are concentrated in 350 – 450 m depths on the continental slope.

There are two biologically distinct stocks of Gemfish in Australia, Eastern and Western biological stocks, separated by a boundary at the western edge of Bass Strait. Studies suggest that there are no genetic differences between Gemfish in eastern Australia and New Zealand. For the purposes of management and assessment, the eastern Australian population is treated as a single biological stock, independent of the New Zealand population.

The eastern stock is distributed from Cape Moreton in southern Queensland to waters off Tasmania.

See Emery et al. (2021a) and Liggins (2023) for relevant references.

Stock status

Stock status under the SAFS classification framework is determined for the Eastern Australia biological stock, shared with the Commonwealth and NSW. Stock status is assessed based on the modelling and assessment done for the eastern stock of this species by the Commonwealth (Liggins 2023).

The Eastern Gemfish biological stock is currently classified as Depleted (Emery et al. 2021a).

The Eastern Gemfish biological stock has been listed as Conservation Dependent under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) since 2009.

Retained catch by jurisdiction and sector

Gemfish are harvested in jurisdictions including the Commonwealth, Western Australia and NSW, predominantly by commercial fishing sectors (Table 21).

Table 20: Gemfish harvest estimates – from SAFS Status Report 2023 (Moore et al. 2023)

	Commonwealth	Western Australia	NSW
Commercial	141.74 t	46.89kg	617.35 kg
Recreational		Negligible	Negligible (2019-20)

	Commonwealth	Western Australia	NSW
Indigenous		Unknown	Unknown

In the 1970s and 1980s, eastern gemfish were fished by trawlers in southeastern Australia. By the late 1980s, the impact of fishing led to smaller fish and lower catch rates. A Total Allowable Catch (TAC) of 3,000t was set for the Commonwealth fishery in 1988, but due to poor recruitment, it was cut to zero by 1993. Relatively strong recruitment was observed in 1996, allowing a 1,000t TAC in 1997, but only 300t were caught. Analysis at the time indicated biomass was well below target levels. Since 1998, a smaller incidental bycatch TAC has been in place, starting at 300 t and then reduced to 100 t, where it remains today. (AFMA 2015a).

Eastern Gemfish are now predominantly taken in the Commonwealth SESSF and are currently managed under a rebuilding strategy (AFMA 2015a). Commercial landings in New South Wales (NSW) have declined over the past decade from 11.1 t in 2012–13 to 0.7 t during 2021–22, with nearly all catch coming from the Ocean Trap and Line fishery (Figure 7). NSW landings represent a small proportion of annual fishing mortality (Moore et al. 2023).

NSW commercial catches over the last 5 years have averaged approximately 700 kg. The Trawl sector of the Commonwealth SESSF is managed through an incidental catch allowance under the Eastern Gemfish Stock Rebuilding Strategy 2015 set at 100 t since 2002 (AFMA 2015a).

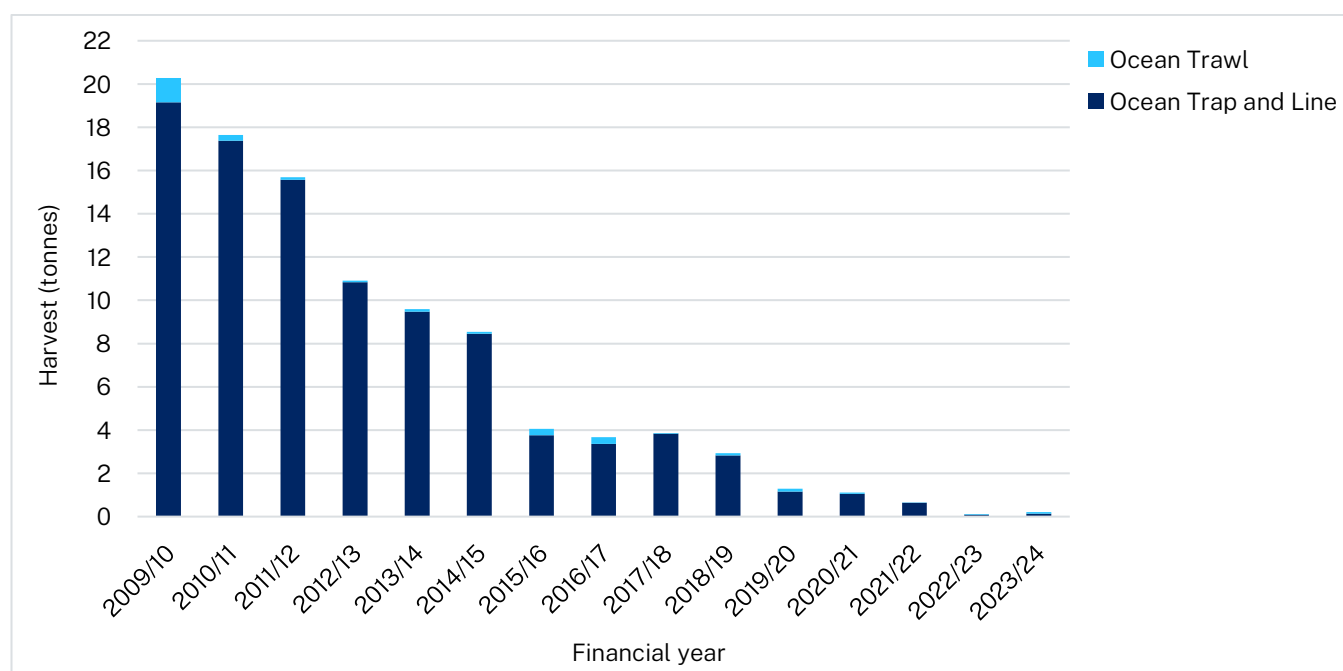


Figure 7: NSW Gemfish recorded commercial landings by fishery (tonnes)

Gemfish have not been reported in state-wide surveys of recreational fishing in NSW, suggesting negligible recreational catch, with high uncertainty.

Management measures to support stock rebuilding

In addition to the fisheries management measures outlined in Part 1, including limited entry, controls on fishing boats and gear, spatial and temporal closures, the following specific measures have been implemented to support the recovery of Gemfish:

- The Commonwealth Eastern Gemfish (*Rexea solandri*) Stock Rebuilding Strategy was implemented in 2008 (subsequently revised in 2015) with the goal of rebuilding stocks to, or above, the limit reference point by or before 2027 (1 mean generation time plus 10 years) (AFMA 2015a)
- In NSW, trip limits have historically applied to the commercial fishing sector and bag, possession and boat limits to the recreational fishing sector
- Gemfish became a quota managed species in the OTL and OT fisheries from May 2019 under the Commercial Fisheries Business Adjustment Program
- Take of Gemfish is prohibited in all commercial share management fisheries except the OTL and OT fisheries, and prohibited in the SFT fishery
- The TAC for the OT fishery is currently zero, with incidental harvest governed through a 50 kg whole weight trip limit. The TAC for the OTL fishery is currently 7.1 tonnes (2025/26)
- Recreational harvest is limited by a combined bag and possession limit of 5 for deep sea fish (Hapuku, Banded Rock Cod, Bass Groper, Gemfish and Blue-eye Trevalla), with no more than 2 Gemfish and a Gemfish boat trip limit of 10. Take of Gemfish by recreational fishers is prohibited in state waters south of Barrenjoey Head.

Management actions

At this stage, no new measures are proposed, given that (a) NSW accounts for a very small proportion of total harvest, (b) most Gemfish is taken in the OTL fishery which is subject to a TAC, and (c) there is negligible recreational harvest.

Note:

- The scientific observer program for the prawn trawl sector of the OT fishery suggests negligible discarding of Gemfish by this sector. Gemfish were caught on 13 (~3%) of the 435 fishing trips that were monitored, with the 50kg trip limit exceeded on one trip (total catch 57.8kg) (Johnson & Barnes 2023).

Blue Warehou

Biology

Blue Warehou (*Seriolella brama*) belong to the family Centrolophidae (Trevallas).

Table 21: Blue Warehou biology – from SAFS Status Report 2023 (Wright et al. 2023)

Species	Longevity/Maximum size	Maturity (50 per cent)
Blue Warehou	25 years, ~760 mm TL and 4 kg	3-4 years, mean length at female maturity is about 330 mm LCF

Distribution & stock structure

Blue Warehou is highly mobile with a patchy distribution and a wide range of spawning areas. Genetic studies have indicated that there are two separate stocks east and west of Bass Strait. The Eastern stock extends offshore from southern NSW to southern Tasmania and the Western stock extends offshore from western Tasmania northward to western Victoria. Eastern and Western biological stocks are assessed separately (see Wright et al. 2023 for relevant references).

Stock status

Stock status under the SAFS classification framework is determined for Eastern and Western biological stocks. The Australian Bureau of Agricultural and Resources Economics and Sciences (ABARES) has classified Blue Warehou in Commonwealth waters as overfished since 1999 and the species is currently subject to a stock rebuilding strategy that commenced in 2008 (AFMA 2022).

The Eastern and Western stocks are currently classified as Depleted (Wright et al. 2023).

Blue Warehou have been listed as Conservation Dependent under the EPBC Act since 2015.

Fishing mortality is considered to have had a significant impact on Blue Warehou stocks and if fishing again approached the levels seen in the early years of the fishery, this could threaten the species into the future. While fishing is considered to have had a significant impact, long term and short-term environmental variability, including climate change, can also affect fish population dynamics and may also impact upon the recovery of Blue Warehou (AFMA 2022).

Retained catch by jurisdiction and sector

Blue Warehou from the Eastern and Western stocks are harvested in jurisdictions including the Commonwealth, NSW, Victoria, Tasmania and South Australia (Table 23).

Blue Warehou are predominantly taken in the Commonwealth SESSF and are currently managed under the Blue Warehou (*Seriolella brama*) Stock Rebuilding Strategy (AFMA 2022). Minor harvest from the Eastern stock is also taken in NSW, Tasmania and Victoria.

Table 22: Blue Warehou harvest estimates – from SAFS Status Report 2023 (Wright et al. 2023)

	Commonwealth	NSW	Victoria	Tasmania	South Australia
Commercial	2.06 t	452.7 kg	5.42t	873.66kg	
Recreational		Unknown	Unknown	15.4 t (2012–13) 0.8t (2017-18)	Unknown
Indigenous		Unknown	Unknown	Unknown	Unknown

Blue Warehou landings in the Commonwealth SESSF peaked in 1991 at nearly 2500 t. Catches then declined rapidly to below 500 t through the early 2000s (Wright et al. 2023).

In NSW, Blue Warehou catches of 21.7 t (1998-99) and 10.2 t (1999-2000) were reported across all NSW commercial fisheries. From 2000–01 to 2018–19, the total reported commercial catch of Blue Warehou was < 2.5 t per year, with < 1 t being reported in 15 of those 17 years (Wright et al. 2023).

Since 2009/10, low level sporadic bycatch has been taken in the SFT and OTL fisheries, with an average annual total catch of 0.5 t to 2023/24 (Figure 8).

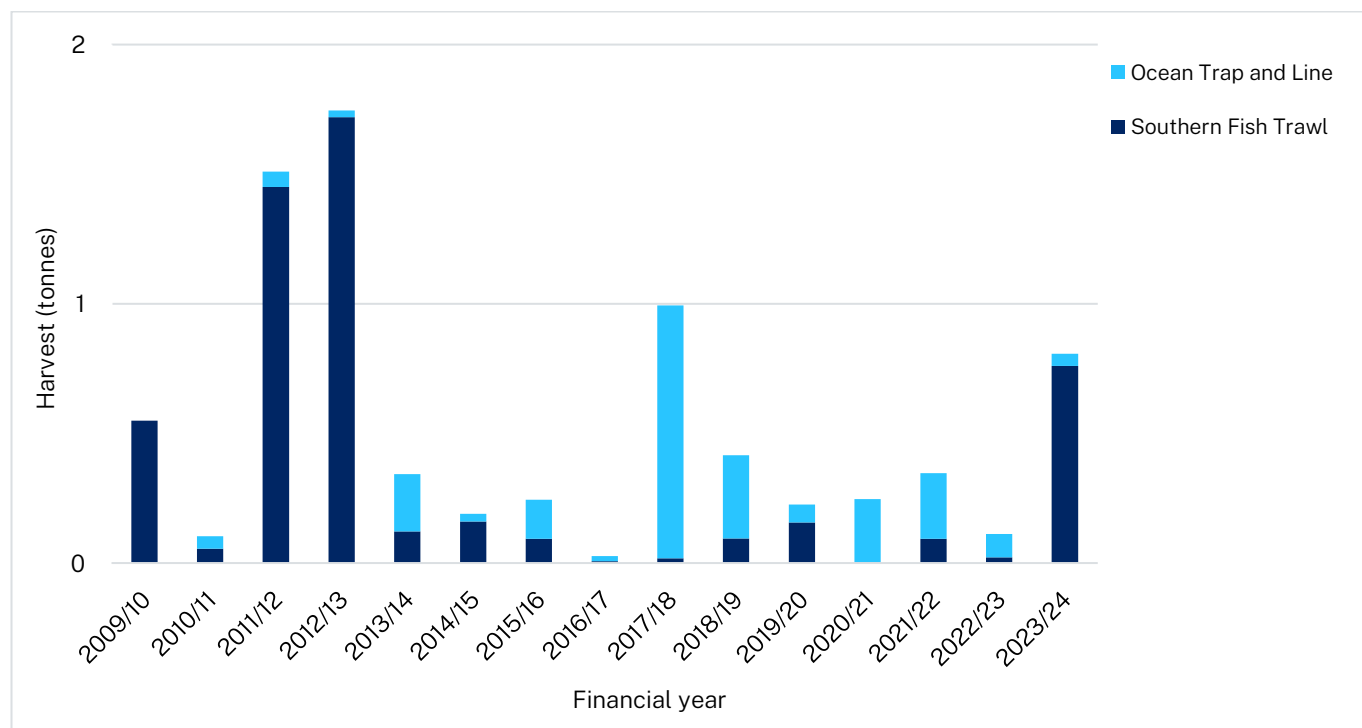


Figure 8: NSW Blue Warehou recorded landings by commercial fishery (tonnes)

Surveys of recreational and Indigenous catches have either not specified catches of Warehou species (West et al. 2015, Murphy et al. 2020) or reported them into a broader ‘finfish-- other’ category (Henry and Lyle 2003).

Blue Warehou landings in the Tasmanian Scalefish Fishery peaked in 1991–92 at 318 t and have since decreased to 1.8 t in 2018–19, with around two thirds of this catch assumed to be from the eastern stock. Recreational catches in Tasmania are estimated periodically with estimates of 32.5 t in 2010, 15.4 t in 2012–13 and 0.8t in 2017–18, with the majority of catches assumed to be from the Eastern stock (Wright et al. 2023).

Management measures to support stock rebuilding

In addition to the fisheries management measures outlined in Part 1, including limited entry, controls on fishing boats and gear, spatial and temporal closures, the following specific measures have been implemented to support the recovery of Blue Warehou:

- Blue Warehou are currently subject to the Blue Warehou (*Seriolella brama*) Stock Rebuilding Strategy (AFMA 2022), with NSW catch comprising a minor component of total catch
- In NSW, 100kg trip limits apply for Blue Warehou taken in the OT, OTL and SFT fisheries
- Blue Warehou are covered by the general recreational bag limit of 20 fish (that applies for any species without a specific bag limit).

Management actions

At this stage, no new measures are proposed, given that (a) NSW accounts for a very small proportion of total harvest, (b) most Blue Warehou is taken in the OTL fishery which is subject to trip limits, and (c) there is likely negligible recreational harvest.

School Shark

Biology

School Shark (*Galeorhinus galeus*) belong to the family Triakidae (Hound sharks).

Table 23: School Shark biology – from SAFS Status Report 2023 (Woodhams et al. 2023)

Species	Longevity/Maximum size	Maturity (50 per cent)
School Shark	50 years, ~1750 mm TL, 32.5 kg	12–16 years, mean length at female maturity and pupping are 1240 and 1420 mm TL, respectively

Distribution & stock structure

School Shark has a broad distribution throughout temperate waters of the eastern North Atlantic, western South Atlantic, and north-eastern and south-eastern Pacific, off South Africa, New Zealand and southern Australia. There is some uncertainty about the stock structure for School Shark in Australia. While a single Australian biological stock has historically been assumed for assessment and management purposes, there is some emerging information to suggest multiple stocks may occur in Southern Australia (Woodhams et al. 2023).

Stock status

Stock status under the SAFS classification framework is determined for a single Southern Australia biological stock, shared with the Commonwealth, NSW, South Australia, Tasmania, Victoria and Western Australia.

The Southern Australia biological stock is currently classified as Depleted (Woodhams et al. 2023).

School Shark have been listed as Conservation Dependent under the EPBC Act since 2009.

Retained catch by jurisdiction and sector

School Shark are harvested in jurisdictions including the Commonwealth, Western Australia, NSW, Victoria, Tasmania and South Australia (Table 25).

Table 24: School Shark harvest estimates – from SAFS Status Report 2023 (Woodhams et al. 2023)

	Commonwealth	Western Australia	NSW	Victoria	Tasmania	South Australia
Commercial	185.56 t	30.10 t	3.28 t	232.9kg	1.54 t	23.74 t
Recreational		Undetermined, likely negligible	Unknown	Unknown	Unknown	Estimated 9.14 t retained (2021–22)
Indigenous		Undetermined, likely negligible	Unknown		Unknown	Unknown

Commercial fishing began in 1927, with catches rising until the mid-1930s. In the 1940s and 1960s, demand grew, particularly in eastern Bass Strait, eastern South Australia, and Tasmania, peaking at over 2,500 tons in 1969 after gillnets were introduced. A ban on large School Sharks due to mercury concerns in 1972 shifted fishing efforts to gummy sharks. After the mercury ban was lifted, catches increased again, mainly from Tasmania and South Australia. Today, School Sharks are primarily caught as bycatch in gummy shark fisheries (DCCEEW 2009).

School Shark are predominantly taken as bycatch in the Gillnet Hook and Trap sector of the Commonwealth SESSF (Woodhams et al. 2023), and are currently managed under the School Shark (*Galeorhinus galeus*) Stock Rebuilding Strategy (AFMA 2015b).

In NSW, minor amounts of School Shark are predominantly taken as bycatch in the OT and OTL fisheries, with an average annual catch (across all commercial fisheries) of 3.8 t between 2009/10 and 2023/24 (Figure 9).

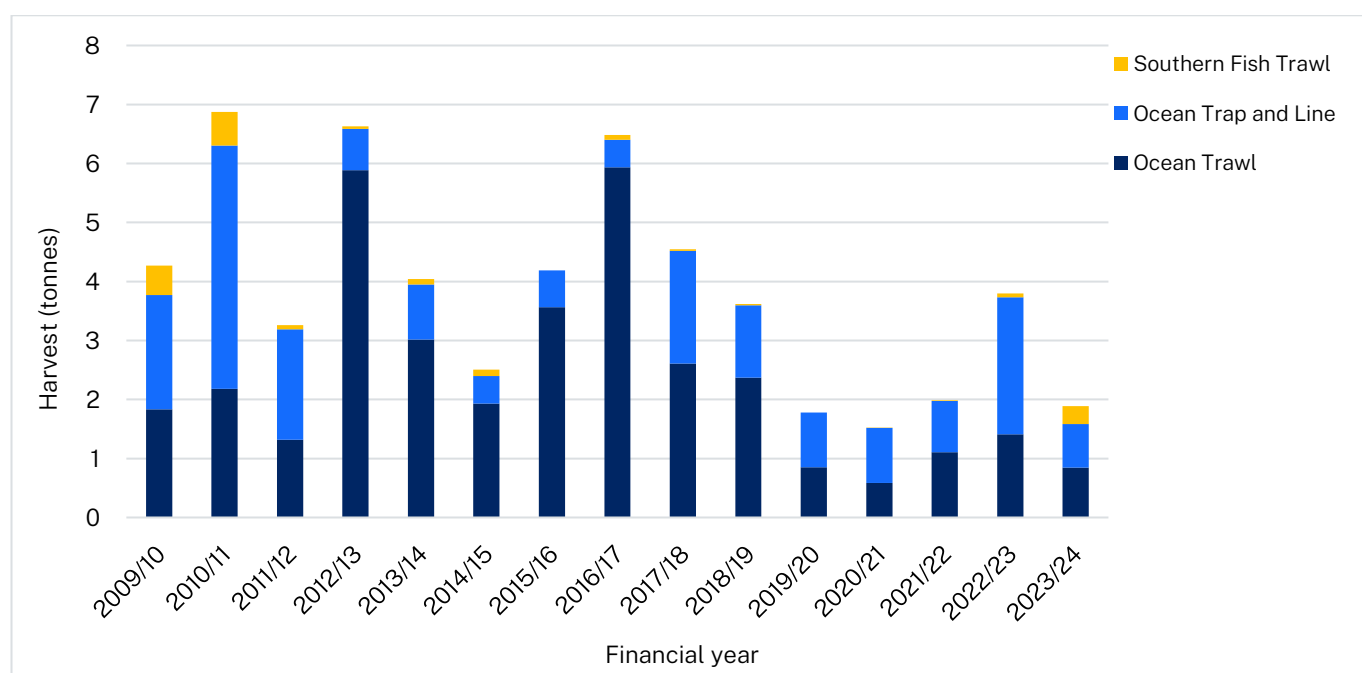


Figure 9: NSW School Shark recorded commercial landings by fishery (tonnes). Note: Estuary General and Ocean Hauling recorded landings have been excluded as presumed misreporting

Surveys of recreational and Indigenous catches have either reported School Shark into a broader 'sharks/rays' category (Henry & Lyle 2003) or identified negligible catches of 386 (West et al. 2015) and 164 individuals (Murphy et al 2020).

Management measures to support stock rebuilding

In addition to the fisheries management measures outlined in Part 1, including limited entry, controls on fishing boats and gear, spatial and temporal closures, the following specific measures have been implemented to support the recovery of School Shark:

- School Shark are currently subject to the School Shark (*Galeorhinus galeus*) Stock Rebuilding Strategy (AFMA 2015b), with NSW catch comprising a minor component of total catch taken mostly in the Ocean Trap & Line and Ocean Trawl Share Management fisheries
- The primary objective of the School Shark (*Galeorhinus galeus*) Stock Rebuilding Strategy is to rebuild School Shark in the area of the Commonwealth SESSF to the default limit reference

biomass level (B_{lim}) of 20% of unfished levels within a biologically reasonable time frame; three times the mean generation time (66 years) from the date of the 2008 Strategy (AFMA 2015b)

- In NSW School Shark is one of a group of commercially harvested shark species in the OTL fishery subject to weekly and annual catch limits (NSW DPIRD 2024a)
- In NSW, a minimum size limit of 91 cm applies to all sectors
- A number of measures relating to gear restrictions and selectivity, and area closures effectively minimise commercial catches of School Shark in NSW (e.g. hook limits, mandatory use of circle hooks on unattended lines, prohibition of wire traces on bottom setlines inside 3nm)
- Under the OTL SMP, School Shark cannot be taken by line fishing western zone or line fishing eastern zone endorsement holders south of the Moruya River
- Recreational harvest is limited by a combined bag and possession limit of 5 for sharks and rays.

Management actions

At this stage, no new measures are proposed, given that (a) NSW accounts for a very small proportion of total harvest, (b) School Shark are subject to various existing management measures to reduce fishing mortality, and (c) there is negligible recreational harvest.

While NSW DPIRD has done significant work with OTL fishers to improve shark identification and reporting, there appear to be issues with misreporting in other sectors (which are more likely to be taking other shark species, such as small whalers). DPIRD Fisheries will continue to work with fishers to improve shark identification and reporting in the EG, OH and OT fisheries.

Jackass Morwong

Biology

Jackass Morwong (*Nemadactylus macropterus*) belong to the family Cheilodactylidae (Morwongs).

Table 25: Jackass Morwong biology – from SAFS Report 2023 (Emery et al. 2023)

Species	Longevity/Maximum size	Maturity (50 per cent)
Jackass Morwong	20-35 years, 700 mm TL	3 years, 230–270 mm FL

Distribution & stock structure

Jackass Morwong is distributed around southern Australia including Tasmania. Genetic studies have found no evidence of separate stocks, although otolith microstructure analyses have shown some differences between fish in southern Tasmania, New South Wales, and Victoria. A recent review of stock structure found limited evidence support the existence of separate stocks east and west of Tasmania (From Emery et al. 2023b).

Stock status

To maintain consistency with the approach taken for SAFS 2018 and 2020 in which the species was considered to comprise two biological stocks (Eastern and Western), and with the current stock assessment and management approach within the Commonwealth managed Southern and Eastern Scalefish and Shark Fishery (SESSF), the species is assessed as two management units (Eastern and Western) (Emery et al. 2023b).

Eastern Jackass Morwong is primarily caught by the SESSF, with small catches from State jurisdictions. Stock status classification is based on stock assessments conducted for the SESSF, which include reported State catches.

The Eastern biological stock is currently classified as Depleted (Emery et al. 2023b).

Retained catch by jurisdiction and sector

Jackass Morwong are harvested in jurisdictions including the Commonwealth, NSW, Victoria, Tasmania and South Australia (Table 27).

Table 26: Jackass Morwong harvest estimates – from SAFS Status Report 2023 (Emery et al. 2023)

	Commonwealth	NSW	Victoria	Tasmania	South Australia
Commercial	86.3 t	4.02 t		3.34 t	
Recreational		Negligible (2019–20), Negligible (2017–18)	Unknown	16.1 t (in 2012–13), 8.4 t (2017–18)	None (2021–22)

Commonwealth	NSW	Victoria	Tasmania	South Australia
Indigenous	Unknown, Negligible (2013–14)	Unknown (No catch under permits)	Unknown	Unknown

In New South Wales, the commercial catch is principally taken in the Ocean Trap and Line Fishery, with smaller quantities taken by other fisheries (Figure 10). Annual commercial catch from New South Wales waters has been between 3.4 t and 10.3 t during the last 10 years, representing between 1.8% and 7.4% of the total cross-jurisdictional catch annually.

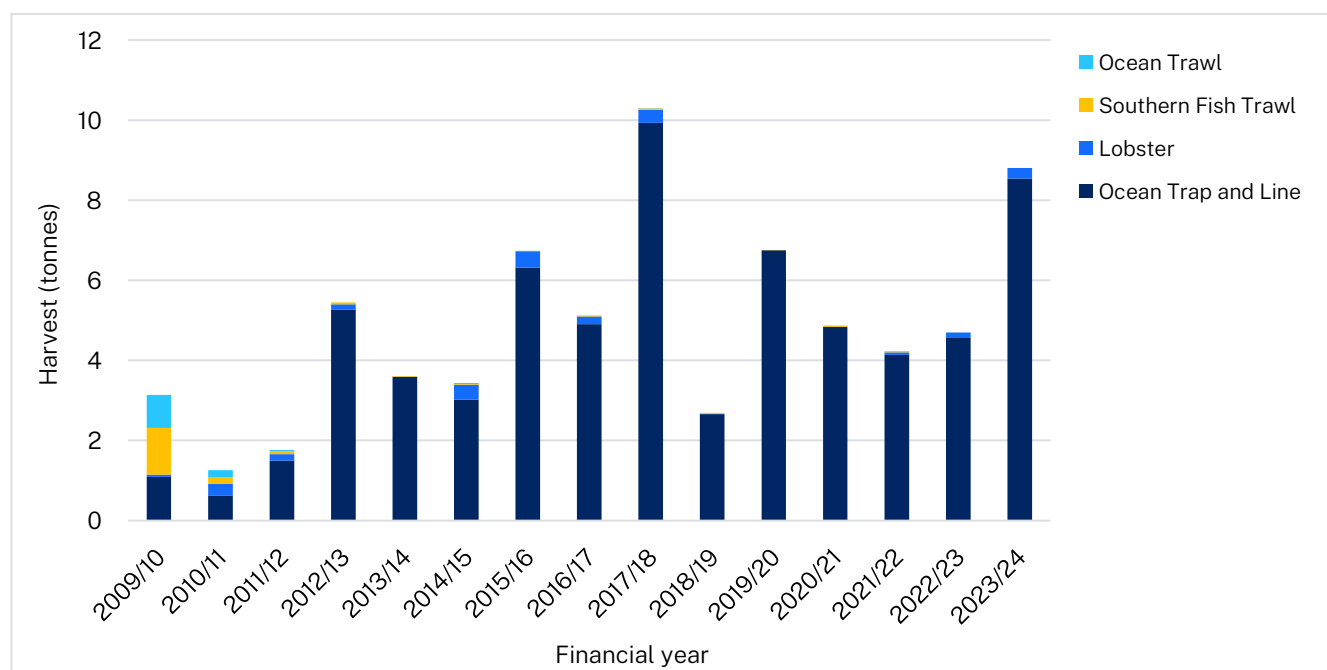


Figure 10: NSW Jackass Morwong recorded commercial landings by fishery (tonnes)

In the Commonwealth, catches of Jackass Morwong (Eastern and Western) peaked at more than 2,500 t in the mid-1960s and have declined since the 1980s. Commonwealth catch in the Commonwealth Trawl and Gillnet, Hook and Trap sectors (CTS and GHTS) of the SESSF was 79.3 t in the 2021–22 fishing season based on the percentage split east/west from logbook data [Emery et al. 2022].

For Victoria, annual commercial Jackass Morwong catch from has been less than 1 t for over 25 years, being zero in many years. Although recreational catch has occurred it is believed to be small compared to other sources of fishing mortality.

In Tasmania, Jackass Morwong (predominantly the Eastern stock) are taken in the multi-gear, multi-species Tasmanian Scalefish Fishery (TSF). Maximum records of commercial TSF catches occurred in the late 1990s, peaking at 33.2 t in 1997–98 [Sharples et al. 2023]. Total catches from Tasmanian waters, including Commonwealth reports, peaked at 126.8 t in the same year. Since 2011–12, catches have been below 5 t, with a total catch of 3.4 t recorded in 2021–22 [Sharples et al. 2023]. Recreational catches in Tasmanian waters are generally notably higher than those of the commercial sector. Peak catches estimated for the recreational sector have historically exceeded 30 t (31.9 t in 2000–01) with more recent (2017–18) records of 8.4 t [Lyle et al. 2019; Sharples et al. 2023].

Jackass Morwong have not been reported in state-wide surveys of recreational fishing in NSW. Estimates for all morwongs were included in the 2003 survey (Henry and Lyle 2003), with later surveys (West et al. 2015, Murphy et al. 2020, Murphy et al. 2022) identifying no or negligible catches of morwongs other than Grey and Red Morwong, indicating negligible recreational catch for Jackass Morwong.

Management measures to support stock rebuilding

In addition to the fisheries management measures outlined in Part 1, including limited entry, controls on fishing boats and gear, spatial and temporal closures, the following specific measures have been implemented to support the recovery of Jackass Morwong:

- Trip limits of 50 kg north of Barrenjoey Head and 350 kg south of Barrenjoey Head apply for Jackass Morwong taken in the OT, OTL and SFT fisheries
- A minimum size limit of 30 cm applies to all sectors
- Recreational harvest is limited by a bag/possession limit of 10.

Management actions

At this stage, no new measures are proposed, given that (a) NSW accounts for a very small proportion of total harvest, (b) Jackass Morwong are subject to various existing management measures to reduce fishing mortality, and (c) there is likely negligible recreational harvest.

John Dory

Biology

John Dory (*Zeus faber*) belong to the family Zeidae (Dories).

Table 27: John Dory biology – from SAFS report 2023 (Emery, T. et al 2023c)

Species	Longevity/Maximum size	Maturity (50 per cent)
John Dory	12–15 years, 500–650 mm TL	3–5 years

Distribution & stock structure

John Dory inhabits coastal and continental-shelf waters around most of Australia. The main distribution stretches from Moreton Bay in southern Queensland south and west to Cape Cuvier in Western Australia, with a limited distribution in eastern Bass Strait. John Dory are solitary as adults (Stergiou and Fourtouni 1991) and are reported to inhabit depths from 5 to 360 m. The stock structure of this species off Australia is poorly understood (Staples 1995). Along the eastern and south-eastern coasts, John Dory is considered to constitute a single biological stock for assessment and management purposes (Emery et al. 2023c).

Stock status

Stock status under the SAFS classification framework is determined for a single South Eastern Australia biological stock, shared with the Commonwealth, NSW and QLD and VIC (Emery et al. 2023c). Stock status classification is based on combined catches conducted for the Commonwealth SESSF.

The South Eastern Australia biological stock is currently classified as Depleted (Emery. et al 2023c).

Retained catch by jurisdiction and sector

John Dory taken from the South Eastern Australia stock is largely taken in the in the Commonwealth managed SEFFF with small amounts taken in state jurisdictions (Table 29).

Table 28: John Dory harvest estimates – from SAFS status reports 2023 (Emery et al. 2023c).

	Commonwealth	Western Australia	Northern Territory	Queensland	New South Wales	Victoria
Commercial	55.98t	24.90kg		1.65t	2.25t	505.70kg
Charter			0	Unknown		
Indigenous			Unknown	Unknown	Unknown, Negligible (2013–14)	Unknown (No catch under permit)
Recreational			0	Unknown	Negligible (2019–20)	

Commercial catch in NSW is primarily taken by the OT and SFT fisheries (99% of all NSW catch) as a by-product species which represents about 4% of the total commercial catch from the South Eastern Australia stock (Emery, T. et al 2023c). Average commercial catch in NSW since 2018/19 is 4.3 tonnes (Figure 11).

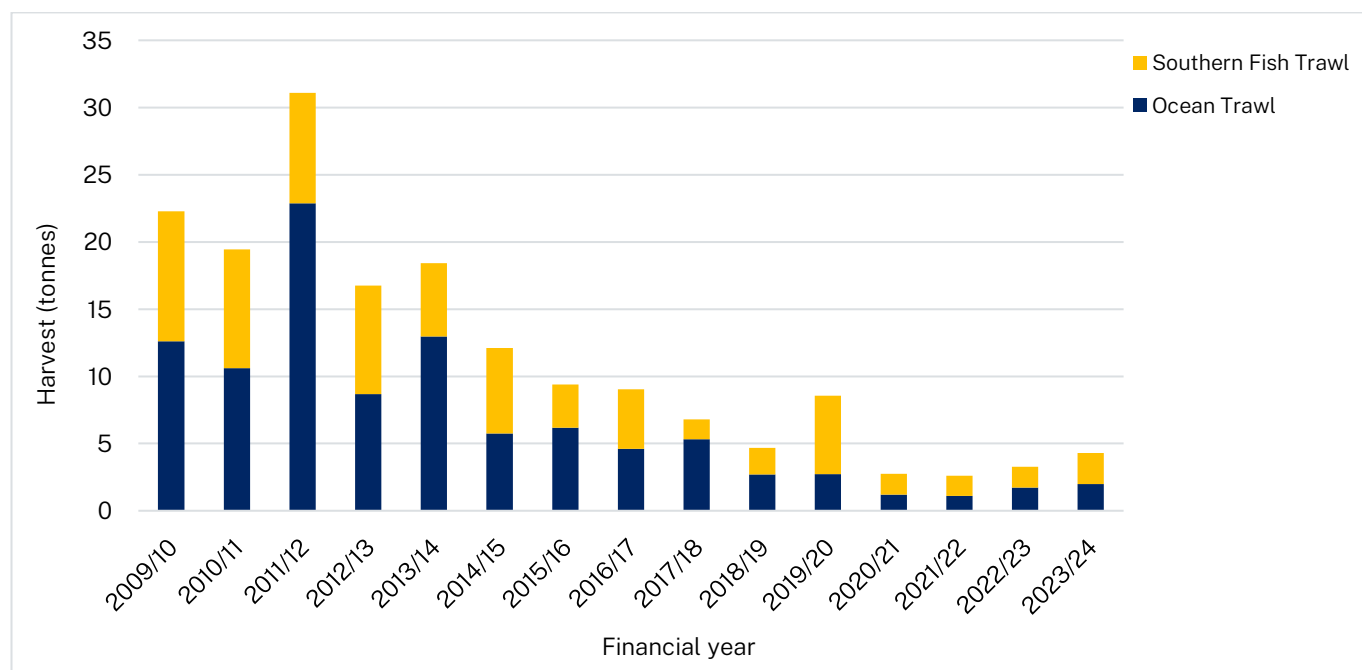


Figure 11: NSW John Dory recorded commercial landings by fishery (tonnes)

Commercial harvest of John Dory from the South Eastern Australia stock in the Commonwealth SESSF is predominantly caught incidentally by trawl and Danish seine. Commonwealth catches peaked in the mid 1990s at about 400 tonnes and has declined since with catch averaging less than 100 tonnes over the past decade (Emery, T. et al 2023c & AFMA 2024b). For the 2020/21 season, the Commonwealth set a catch limit of 60 tonnes, down from 452 tonnes the previous season (AFMA 2024c). A 60 tonnes incidental catch limit remains for the 2024/25 season (AFMA 2024b).

John Dory have not been reported in state-wide surveys of recreational fishing in NSW, indicating negligible NSW recreational catch.

Management measures to support stock rebuilding

In addition to the fisheries management measures outlined in Part 1, including limited entry, controls on fishing boats and gear, spatial and temporal closures, the following specific measures have been implemented to support the recovery of John Dory:

- Recreational harvest is limited by a bag/possession limit of 20.

Management actions

At this stage, no new measures are proposed, given that (a) NSW accounts for a very small proportion of total harvest, (b) John Dory are subject to various existing management measures to reduce fishing mortality, and (c) there is likely negligible recreational harvest.

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