

Eastern Australian Salmon (2023)

Arripis trutta



John Stewart: New South Wales Department of Primary Industries, **Katie Cresswell:** Institute for Marine and Antarctic Studies, University of Tasmania, **Justin Bell:** Victorian Fisheries Authority

STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
New South Wales, Victoria, Tasmania	Eastern Australia	Sustainable	Depletion estimates, Age and size composition, Catch, Effort, Catch rates, Fishing mortality

STOCK STRUCTURE

The Eastern Australian Salmon (*Arripis trutta*) biological stock is distributed from southern Queensland down the east coast of Australia to western Victoria and Tasmania [Macdonald 1983]. This Eastern Australian biological stock overlaps with the closely related Western Australian Salmon (*Arripis truttaceus*) in Victorian and Tasmanian waters; however, each species has differing life-histories [Stanley 1978]. Both species have spawning areas that allow eggs and larvae to be dispersed by the prevailing currents—southwards and then eastwards by the Leeuwin Current (Western Australian Salmon) and southwards by the East Australian Current (Eastern Australian Salmon). The fish then grow and mature before moving back towards their spawning areas which occur at the northern (up-current) parts of their distributions. The two species are morphologically very similar; however, landings of “Australian Salmon” can be partitioned into species based on where they are caught [Macdonald, 1983].

Here, assessment of stock status is presented at the biological stock level—Eastern Australia.

STOCK STATUS

Eastern Australia This cross-jurisdictional biological stock has components in New South Wales, Victoria and Tasmania. Each jurisdiction assesses the part of the biological stock that occurs in its waters. The status presented here for the entire biological stock has been established using evidence from all jurisdictions.

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Eastern Australian Salmon (2023)

A modified Catch-Maximum Sustainable Yield (MSY) analysis [Martell and Froese 2013; Haddon et al. 2018] using commercial landings data from 1936 to 2016–17 from the entire biological stock (NSW, QLD and TAS combined) indicated that the biomass in 2016–17 was at 0.36 of unfished levels, well above the limit reference point of 0.2 [Stewart 2020]. The model indicated that biomass declined following the early 1980s when landings regularly exceeded the estimated MSY of approximately 1 600 tonnes (t) per year.; however subsequent reduced catches saw the biomass increase. Commercial landings in NSW have declined further since reporting on this species in the previous (fifth) SAFS edition (Stewart et al. 2021) due to a lack of market demand and changed operations within the Ocean Hauling fishery, averaging less than 800 t p.a. The most recent estimate of the recreational harvest in NSW was 42.3 t during 2019–20 [Murphy et al. 2022]. These reduced landings are unlikely to have further depleted the population in NSW waters.

Stability in size and age composition between the 1960s and the early 2000s, during periods of high catches, which time biomass was estimated to have declined considerably, also indicate that the biomass has not declined below any lower threshold by 2016–17 [Stewart et al. 2011; Stewart 2020]. No new size or age composition has been collected in NSW since that time. The above evidence indicates that the biomass of the NSW part of the stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Catch-MSY analyses using data for the entire biological stock estimated that the mean harvest rate regularly exceeded F_{targ} during the early 2000s but then declined to well below the level that would ultimately drive biomass below the limit reference level [Stewart 2020]. For the previous 9 years, the reported landed commercial catch across the entire biological stock has been below the approximately 1,600 t per year that would produce MSY. Eastern Australian Salmon in northern New South Wales are lightly fished commercially as fishing in this area is restricted to servicing the commercial bait market with an annual catch limit of 224 t in place. Fishing effort by beach hauling targeting Australian Salmon has continued to decline steadily with the 147 days reported during 2021–22 being the lowest on record. The size and age compositions in the landed catch in NSW indicated no obvious changes to the adult part of the stock between the 1960s and early 2000s, suggesting that fishing had not markedly altered the population structure. The above evidence indicates that the current level of fishing pressure is unlikely to cause this part of the stock to become recruitment impaired.

In Victoria, the Eastern Australian Salmon stock is targeted by the commercial purse seine ocean fishery, mostly off eastern Victoria, with small catches also taken from Corner Inlet and the Ocean Fishery. No commercial landings are taken from other bays and inlets as a result of removal of the commercial sector. Total commercial landings since 2000 have varied widely from less than 100 t to nearly 850 t per year, declining in recent years to historic lows as a result of greatly reduced targeted effort [Bell et al. 2023] likely driven by low market demand and purse seiners targeting a variety of other schooling pelagic species. There is no current information available on recreational landings, but the species is targeted by recreational fishers in estuaries, bays and inlets, beaches, and opportunistically when schools are located.

During the early years of the Ocean Purse Seine Fishery, CPUE was high before fishing ceased temporarily between 1988 and 1995. When fishing recommenced, CPUE was lower than it had previously been, and remained low for around a decade. During the last decade CPUE returned to the high levels observed during

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Eastern Australian Salmon (2023)

the 1980s, other than in 2021–22, when CPUE was low due to reduced targeted effort [Bell et al. 2023]. It should be noted that CPUE of purse seine fishing is generally a poor indicator of biomass as this species schools heavily and purse seine shots are only undertaken when a school is located. Nevertheless, the fact that large quantities are being taken in each shot (10–20 t) indicates that the size of Eastern Australian Salmon schools has not declined noticeably since the development of the fishery in the 1980s, implying that biomass is likely to still be relatively high. The above evidence indicates that the biomass of this part of the stock is unlikely to be depleted and that recruitment is unlikely to be impaired. The above evidence also indicates that the current level of fishing mortality from the Victorian fleet is unlikely to cause the stock to become recruitment impaired.

For the Tasmanian part of the biological stock, the most recent assessment investigated catch and effort (but not biomass) up to the end of June 2022 [Sharples et al. 2023]. There are two distinct sectors in the commercial fishery: a small number of large vessels specifically equipped to capture and store large quantities of Eastern Australian Salmon, and a large number of smaller vessels which target this species on an opportunistic basis or take them as by-product, usually in small quantities. Typically, the majority of the landings (more than 85%) have been caught using beach seine methods. However, over the last 6 years, catch and effort for this sector has been at historically low levels, likely reflecting shifts in target species and low market demand for Eastern Australian Salmon rather than changes in abundance. In the 2021–22 fishing season, the commercial catch of Australian Salmon in Tasmanian State waters fell significantly to 7.1 t [Sharples et al. 2023]. This was driven by a decline in beach seining. Recreational catch is likely to be at a similar level to recent commercial catches with the last recreational catch estimate being 35 t in 2017–18. This total combined fishing pressure is well below historical levels in Tasmania, which reached up to 500 t in the late 1990s and early 2000s. The above evidence indicates that the biomass of this part of the stock is unlikely to be depleted and that recruitment is unlikely to be impaired. The above evidence also indicates that the current level of fishing mortality is unlikely to cause this part of the stock to become recruitment impaired.

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

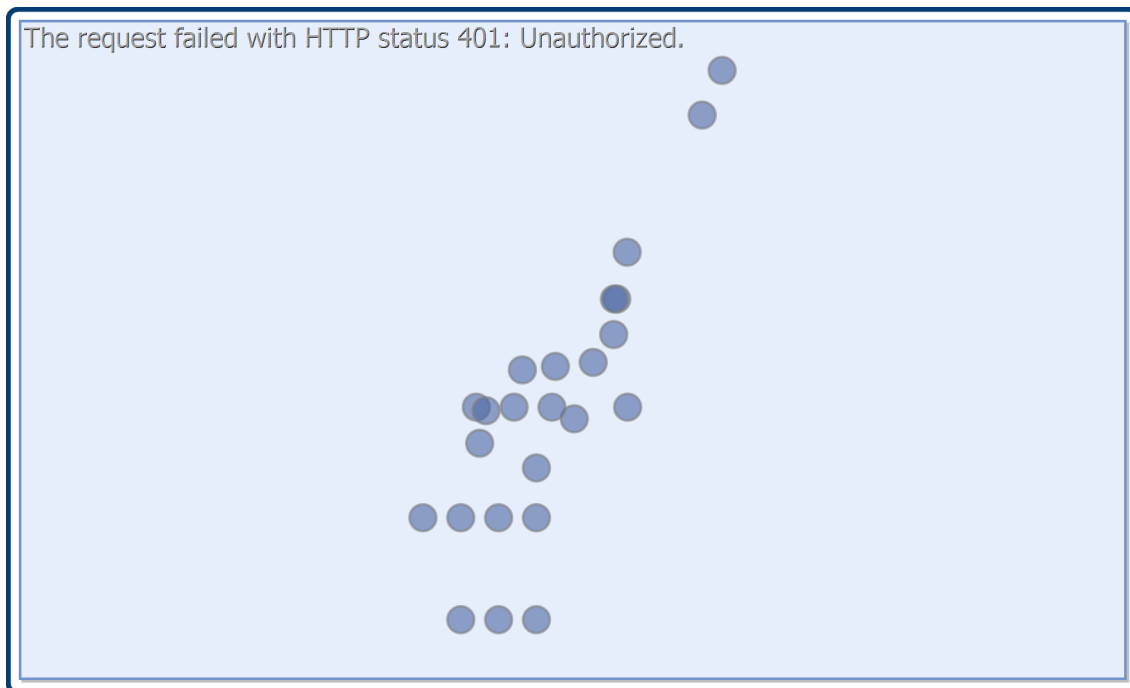
BIOLOGY

Eastern Australian Salmon biology [Kailola et al. 1993; Stewart et al. 2011]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Eastern Australian Salmon	12 years, 810 mm FL	2-4 years, 300–400 mm FL

DISTRIBUTION

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Eastern Australian Salmon (2023)



Distribution of reported commercial catch of Eastern Australian Salmon

TABLES

Fishing methods	New South Wales	Tasmania	Victoria
Charter			
Hook and Line	✓		✓
Commercial			
Gillnet		✓	
Hand Line, Hand Reel or Powered Reels		✓	
Haul Seine	✓		
Hook and Line			✓
Mesh Net		✓	
Net			✓
Purse Seine	✓		
Unspecified		✓	
Various	✓		
Recreational			
Gillnet		✓	

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Eastern Australian Salmon (2023)

Hand held- Implements			✓
Handline		✓	
Hook and Line	✓	✓	✓

Management Methods			
	New South Wales	Tasmania	Victoria
Charter			
Bag limits	✓		✓
Gear restrictions	✓		✓
Licence	✓		✓
Marine park closures	✓		
Possession limit	✓		
Size limit			✓
Spatial closures			✓
Spatial zoning	✓		
Commercial			
Effort limits			✓
Gear restrictions	✓	✓	✓
Licence			✓
License		✓	
Limited entry	✓	✓	✓
Size limit		✓	✓
Spatial closures	✓	✓	✓
Vessel restrictions	✓		
Recreational			
Bag and possession limits		✓	
Bag limits	✓		✓
Fishing gear and method restrictions		✓	

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Eastern Australian Salmon (2023)

Gear restrictions	✓	✓	✓
Licence	✓	✓	✓
Marine park closures	✓	✓	
Possession limit	✓		
Size limit		✓	✓
Spatial closures	✓		✓

Catch			
	New South Wales	Tasmania	Victoria
Charter			Unknown
Commercial	640.315 t	7.0565 t	80.2682 t
Indigenous	Unknown	Unknown	
Recreational	42.3 t (2019–20)	35 t (2017–18)	Unknown

New South Wales – Recreational (Catch). Murphy et al. [2022]

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

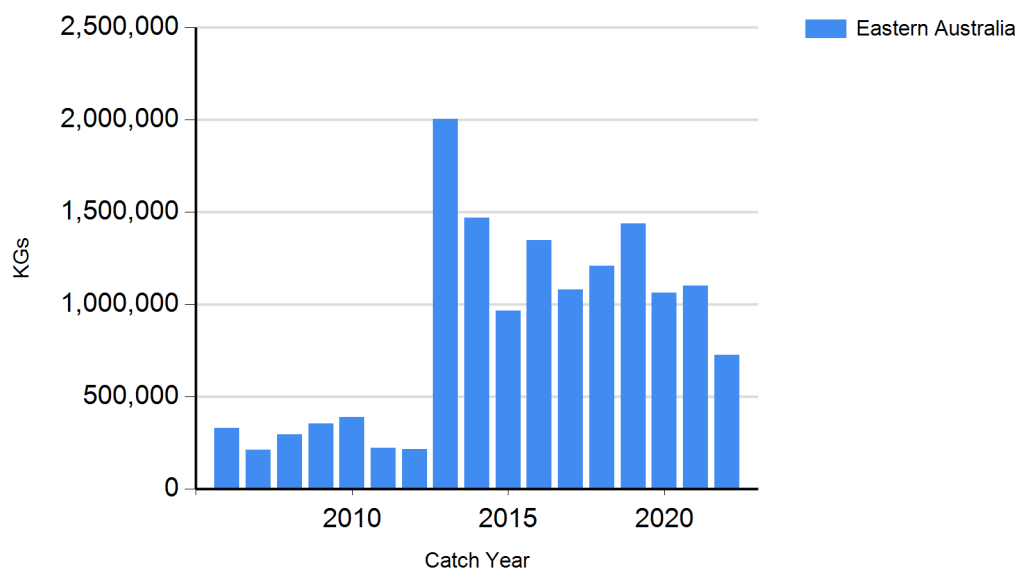
Victoria – Indigenous (Management Methods). A person who identifies as Aboriginal or Torres Strait Islander is exempt from the need to obtain a Victorian recreational fishing licence, provided they comply with all other rules that apply to recreational fishers, including rules on equipment, catch limits, size limits and restricted areas. Traditional (non-commercial) fishing activities that are carried out by members of a traditional owner group entity under an agreement pursuant to Victoria's *Traditional Owner Settlement Act 2010* are also exempt from the need to hold a recreational fishing licence, subject to any conditions outlined in the agreement. Native title holders are also exempt from the need to obtain a recreational fishing licence under the provisions of the Commonwealth's *Native Title Act 1993*.

Tasmania - Indigenous (management methods). In Tasmania, Indigenous persons engaged in traditional fishing activities in marine waters are exempt from holding recreational fishing licences, but must comply with all other fisheries rules as if they were licensed. For details, see the policy document 'Recognition of Aboriginal Fishing Activities" (<https://fishing.tas.gov.au/Documents/Policy%20for%20Aboriginal%20tags%20and%20alloting%20an%20UIC.pdf>).

Tasmania – Commercial (Catch). Catches reported for the Tasmanian Scalefish Fishery are for the period 1 July to 30 June the following year. The most recent assessment available is for 2021-22.

Tasmania – Recreational (Management Methods). In Tasmania, a recreational licence is required for fishers using dropline or longline gear, along with nets, such as gillnet or beach seine. A minimum size limit of 200 mm total length is in place for Eastern Australian Salmon in Tasmanian waters. A bag limit of 15 individuals and a possession limit of 30 individuals is in place for recreational fishers.

CATCH CHART



STATUS OF AUSTRALIAN FISH STOCKS REPORT
Eastern Australian Salmon (2023)

Commercial catch of Eastern Australian Salmon—note confidential catch not shown

References	
MacDonald 1983	MacDonald, CM 1983, Population, taxonomic and evolutionary studies on marine fishes of the genus <i>Arripis</i> (Perciformes: Arripidae). <i>Bulletin of Marine Science</i> , 33(3): 780–780.
Stanley 1978	Stanley, C 1978, Area of Distribution, Movements, Age Composition and Mortality Rates of the Australian Salmon Population in Tasmania, Victoria and New South Wales. <i>Australian Journal of Marine and Freshwater Research</i> 29:417-433.
Murphy et al. 2022	Murphy, JJ, Ochwada-Doyle, FA, West, LD, Stark, KE, Hughes, JM and Taylor, MD 2022, Survey of recreational fishing in NSW, 2019/20 – Key Results. NSW DPI – Fisheries Final Report Series No. 161. ISSN 2204-8669.
Bell et al. 2023	Bell, JD, Ingram, BA, Gorfine, HK and Conron SD 2023, Review of key Victorian fish stocks—2022, Victorian Fisheries Authority Science Report Series No. 38, First Edition, June 2023. VFA: Queenscliff. 85pp
Stewart 2020	Stewart, J 2020. Status of Australian Fish Stocks 2020—NSW Stock status summary—Eastern Australian Salmon (<i>Arripis trutta</i>).
Haddon et al. 2018	Haddon M, Punt A and Burch P 2018, simpleSA: A package containing functions to facilitate relatively simple stock assessments. R package version 0.1.18.
Martell and Froese 2013	Martell S, Froese R 2013, A simple method for estimating MSY from catch and resilience. <i>Fish Fish</i> 14:504–514
Stewart et al. 2011	Stewart, J, Hughes, JM, McAllister, J, Lyle, J and MacDonald, M 2011, Australian salmon (<i>Arripis trutta</i>): population structure, reproduction, diet and composition of commercial and recreational catches, Fisheries Final Report Series 129, Industry and Investment New South Wales, Sydney.
Kailola et al. 1993	Kailola, PJ, Williams, MJ Stewart, PC, Reichelt, RE, McNee, A and Graive, C 1993, Australian Fisheries Recourses. Canberra, Australia. Vol. Australian Fisheries Resources pp.18–320 (Bureau of Resource Sciences, Fisheries Research and Development Corporation; Brisbane).
Sharples et al. 2023	Sharples, R., Cresswell, K, Sharples, R., Hartmann, K., Krueck, N., 2023, Tasmanian Scalefish Fishery Assessment 2021/22. Institute for Marine and Antarctic Studies, University of Tasmania.