

Yellowtail Scad (2020)

Trachurus novaezelandiae



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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Commonwealth, Queensland, New South Wales	Eastern Australia	Sustainable	Historical catch and effort data, natural mortality, fishing mortality, fishing gear selectivity
Western Australia	Western Australia	Undefined	Catch

STOCK STRUCTURE

Yellowtail Scad have an Australian distribution from southern Queensland to northern Western Australia [Stewart and Ferrell 2001], and also occur off New Zealand [Horn 1993]. The biological stock structure of Yellowtail Scad remains unknown; but in New South Wales there is evidence of spatial differences in growth rates which might indicate subpopulations [Stewart and Ferrell 2001]. Similar population variability has been observed for Yellowtail Scad in New Zealand [Horn 1993].

Here, assessment of stock status is presented at the biological stock level—Eastern Australia; and jurisdictional—Western Australia

STOCK STATUS

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

In Queensland, Yellowtail Scad are caught by net and line in the East Coast Inshore Fin Fish Fishery and the Stout Whiting Trawl Fishery. No assessment of Yellowtail Scad has been completed in Queensland, with specific reporting of catch unreliable because the species is often reported as “scad–unspecified”. A peak catch of 86 tonnes (t) and effort of 284 days were reported in 2002; of which 60 t was specifically reported as Yellowtail Scad [QFISH 2020]. Annual

commercial catches have reduced to an average of 19 t since 2010. Effort has displayed the same trend, reducing from a peak of 502 days in 2006 to 242 days in 2019 [QFISH 2020]. The overall catch of Yellowtail Scad in Queensland contributes only a minor portion of the total Eastern Australia catch. Estimates of the recreational harvest of Yellowtail Scad in Queensland are unavailable, with only a few households reporting catch in a recent recreational fishing survey [Webley et al. 2015]. No recreational size limit exists for Yellowtail Scad, although a bag limit of 20 applies to all members of its family (Carangidae).

Most of the national landed catches of Yellowtail Scad are restricted to New South Wales, and typically have been between 327 and 650 t per year—up to 70 per cent of which is harvested by small boats (5–15 m long) deploying purse seines with variable mesh sizes (stretched mesh openings) between 10 and 150 mm and headline lengths from 275 to 1 000 m long [Stewart and Ferrell 2001].

The Commonwealth catch of Yellowtail Scad is relatively small. During 2018–19, there were 18 and 4 t reported in the Southern and Eastern Scalefish and Shark Fishery and Small Pelagic Fishery, respectively. Operators in the Commonwealth-managed Eastern Tuna and Billfish Fishery take Yellowtail Scad as bait off New South Wales, but this is managed under permit, and with catches included in the NSW data below. The species is also caught in small quantities as a by-product by ocean prawn and fish trawlers [Kennelly et al. 1998].

The New South Wales recreational harvest of Yellowtail Scad (often used as live bait; Lowry et al. [2006]) is substantially less at ~16 to 30 t per year [Henry and Lyle 2003, West et al. 2015, Murphy et al. 2020]. The most recent estimate was ~166 000 fish or ~30 t during 2017–18 [Murphy et al. 2020]. This estimate was based on a survey of recreational fishing licence (RFL) households, which comprised at least one person with a long-term (one or three year) fishing licence, but also included other fishers within the household. A similar survey of RFL households was done in 2013–14 during which an estimated 61 000 Yellowtail Scad were recreationally harvested. There is no legal size for the species, although like for Queensland, recreational fishers in New South Wales are restricted to a generic daily personal bag limit of 20 fish.

Few Australian studies have assessed population parameters for Yellowtail Scad, and all work is limited to south eastern stocks [Stewart et al. 1999, Stewart and Ferrell 2001, Neira 2009, Neira et al. 2015, Broadhurst et al. 2018, Broadhurst et al. 2020]. Spawning is assumed to occur along continental shelf waters during early spring, and potentially in response to discrete water masses with specific temperatures [Neira et al. 2015]. Size-at-age data derived from otoliths suggest that the species grows more slowly off southern than northern New South Wales, with mean sizes of 189 and 204 mm FL at two years and 231 and 272 mm FL at eight years, respectively [Stewart and Ferrell 2001]. Such growth variation is supported by a recent study on bioenergetics which showed an exponential increase in metabolic rate with temperature, implying twice the consumption requirements for northern vs southern fish [Dawson et al. 2020]. The estimated asymptotic fork lengths are 238 and 308 mm, respectively [Stewart and Ferrell 2001].

Most of the purse-seine catch is based on fish aged two or three years [Stewart and Ferrell 2001, Broadhurst et al. 2018]. There has been a broad temporal reduction in effort from a peak of approximately 2 289 boat days in 1999–2000 to 923 boat days in 2018–19, but an increase in nominal catch per unit effort from around 200 kg per boat day to between 300 and 400 kg per boat day in the most recent years [Broadhurst 2020]. As part of recent fisheries reforms, the stock is now subject to a total allowable catch (864 t for 2019–20). The above evidence indicates that the biomass of the stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Based on historical catches, along with size-at-age data, Broadhurst et al. [2018] modelled fishing mortality as low, while fleet selectivity was estimated to increase from nil at age zero to 100 per cent at age seven, and with a 50 per

cent selection at age five. Natural mortality was estimated at 0.22 per year, comprising most of the total mortality [i.e. low fishing mortality; Broadhurst et al. 2018]. The above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

The available data are few, and are limited to preliminary modelling that has precluded estimating biomass and recruitment. But, assuming accurate reporting of catches and effort, the Eastern Australian population of Yellowtail Scad appears to be stable. On the basis of the evidence provided above, the Eastern Australia biological stock is classified as a **sustainable stock**.

Western Australia

The biology and demography of Yellowtail Scad in Western Australia have not been studied. The large majority of the WA catch is taken by the commercial purse-seine sector which targets other species. This sector's annual Yellowtail Scad catch has averaged around 11 t since 2000. These low catches appear due primarily to factors unrelated to stock abundance, such as economic return. The largest annual south coast catch on record, 104 t in 1999, which is at least four times greater than any other year, was associated with a sudden mass mortality of the primary target species, Australian Sardine. Catch and catch rates therefore do not adequately indicate stock status. There is insufficient information available to classify the status of the Western Australia biological stock, and so it is considered an **undefined stock**.

BIOLOGY

Yellowtail Scad biology [Stewart and Ferrell 2001, Broadhurst et al. 2018]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Yellowtail Scad	24 years, 330 mm FL	2–4 years, 200–220 mm FL

DISTRIBUTION



Distribution of reported commercial catch of Yellowtail Scad

TABLES

Fishing methods				
	Commonwealth	New South Wales	Queensland	Western Australia
Charter				
Hook and Line		✓		
Rod and reel				✓
Various		✓		
Commercial				
Beach Seine				✓
Danish Seine			✓	
Gillnet				✓
Hand Line, Hand Reel or Powered Reels				✓
Haul Seine		✓		✓
Hook and Line		✓		
Line			✓	
Net			✓	
Otter Trawl	✓	✓		
Purse Seine	✓	✓		✓
Trawl			✓	
Various		✓		
Recreational				
Hook and Line		✓	✓	
Various		✓		

Management Methods			
	New South Wales	Queensland	Western Australia
Charter			
Bag limits	✓		✓
Fishing gear and method restrictions	✓		
Gear restrictions	✓	✓	
Licence	✓		✓
Limited entry	✓		✓
Possession limit	✓	✓	
Spatial closures	✓		✓
Commercial			
Fishing gear	✓		✓

and method restrictions			
Gear restrictions		✓	
Limited entry	✓	✓	✓
Spatial closures	✓	✓	
Spatial zoning			✓
Temporal closures		✓	
Total allowable catch	✓	✓	✓
Vessel restrictions		✓	✓
Recreational			
Bag limits	✓		✓
Fishing gear and method restrictions	✓		
Gear restrictions		✓	
Licence (boat-based sector)			✓
Possession limit		✓	✓
Spatial closures	✓		✓

Catch				
	Commonwealth	New South Wales	Queensland	Western Australia
Charter		Unknown		
Commercial	21.5285 t	566.697 t	11.3123 t	13.297 t
Indigenous		Unknown	Unknown	Unknown
Recreational		16–30t	Unknown	Insufficient data

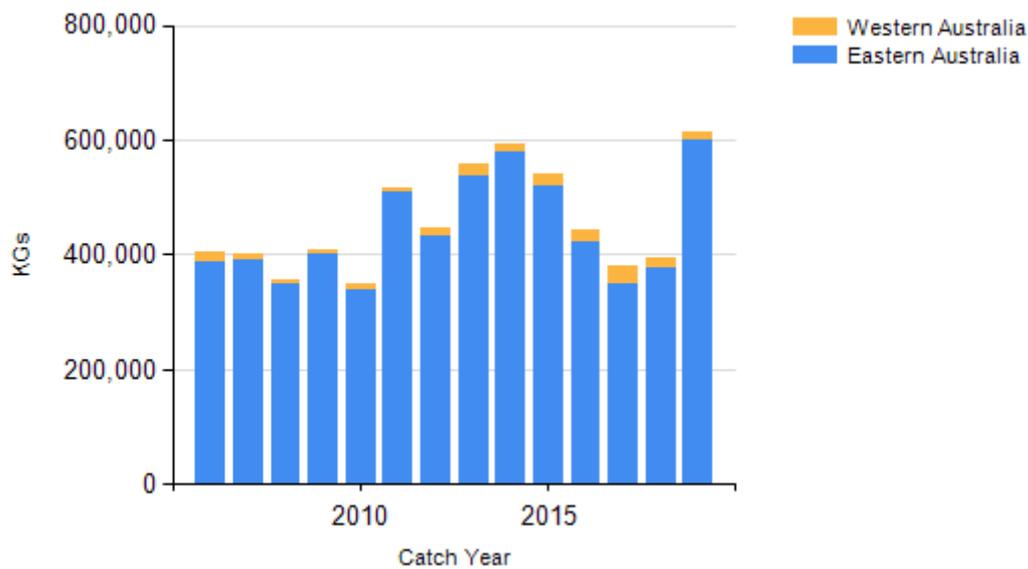
Western Australia – Recreational (management methods) A ‘recreational-fishing-from-boat license’ is required when using a powered boat to fish, or transport catch or fishing gear to or from a land-based fishing location. Shore based catches are largely unknown.

Queensland – Indigenous (Management methods) for more information see <https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing>

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

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

CATCH CHART



Commercial catch of Yellowtail Scad - note confidential catch not shown

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