

# Bluespotted Flathead (2023)

*Platycephalus caeruleopunctatus*



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## STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
New South Wales	Eastern Australia	Sustainable	Catch, effort, standardised CPUE, length and age compositions, biomass depletion and harvest rate estimates

## STOCK STRUCTURE

Bluespotted Flathead is distributed along eastern Australia between southern Queensland and eastern Victoria, inhabiting deep estuarine and ocean waters to depths of about 100 m. The stock structure of Bluespotted Flathead has not been formally investigated and remains unknown. However, a review of the species' taxonomy that examined specimens from along the New South Wales coast and Lakes Entrance, Victoria, identified no significant variation in morphological characters within the species [Imamura 2015]. Limited tagging data also suggest that, while some individuals show high site fidelity in estuarine habitats, other individuals cover large distances within a short period [Fetterplace et al. 2016], so some longshore mixing of populations is possible [Lennox et al. 2023].

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

## STOCK STATUS

### Eastern Australia

Bluespotted Flathead is a key species for recreational and charter boat fishers in New South Wales, with estimated total catches by these sectors often exceeding commercial landings in years for which data are available. Commercial landings of Bluespotted Flathead in New South Wales are primarily (98%) taken by fish and prawn trawlers in the Ocean Trawl Fishery (OTF) [Hall 2020]. Small quantities of commercial catch are also reported by the Estuary General Fishery (mostly using mesh nets) and Ocean Trap and Line Fishery (mostly using handlines).

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Annual commercial catches of Bluespotted Flathead in NSW state waters are available from 1947–48 to present [Hall 2023]. Early catches fluctuated considerably and then stabilised during the 1990s and 2000s at around 100–200 tonnes (t) per year. Over recent years, catches decreased from 210 t in 2010–11 to 95 t in 2014–15 and then increased again to 146.2 t in 2017–18 and 123.5 t in 2018–19 before a TACC was introduced for the northern part of the fishery [Hall 2020]. In the three years since quota introduction, catches have decreased again to an historic low of 56.6 t in 2021–22 [Hall 2023]. Standardised catch rates for the fish trawl sector, which take most of the commercial catch, were stable in the early 2000s, increased in the late 2000s, decreased in the early 2010s and have been stable over the last six years near the long-term average [Hall 2023]. In contrast, catch rates in the prawn trawl sector were above average during the early 2010s, but have decreased consistently over the three years since quotas were introduced to less than 50% of the long-term average [Hall 2023]. Anecdotal evidence from industry members suggests that the decline in the prawn trawl catch rates may relate to increased discarding following quota introduction; however, the continued decline over subsequent years suggests some contraction of the stock may be occurring at the northern extremity of the species distribution, possibly in relation to climate change and a poleward range shift [Gervais et al. 2021].

The quantities of Bluespotted Flathead taken by fisheries in other jurisdictions are unknown but assumed to be small. These are generally reported against an undifferentiated flathead group code or included with catches of another sympatric flathead species (e.g., Tiger Flathead, *Platycephalus richardsoni* in Commonwealth waters and Southern Bluespotted Flathead, *Platycephalus speculator* in Victorian waters).

The most recent estimate of the recreational harvest of Bluespotted Flathead (combined with other ocean sand flatheads) in NSW was approximately 158,386 fish or around 72 t during 2019–20 [Murphy et al. 2022]. This estimate was based on a survey of Recreational Fishing Licence (RFL) households, comprised of at least one fisher possessing a long-term (1 or 3 years duration) fishing licence and any other fishers resident within their household. The equivalent estimates from previous surveys in 2017–18 and 2013–14 were larger at around 281,844 and 416,195 fish, respectively [Murphy et al. 2020]. Relative to the commercial catch, the estimated statewide harvest of 210 t in 2013–14 accounted for approximately 64.6% of the total harvest of Bluespotted Flathead from NSW waters [Hall 2020]. Charter boat catches remained at less than 10 t in most years since data collection started in 2000–01, but recently increased to 15.6 t in 2016–17, following improved reporting compliance. In 2021–22, the catch was smaller again at 7.9 t. Statewide estimates of the annual Aboriginal harvest of Bluespotted Flathead in NSW waters are unknown.

Catch rates in the recreational sector (in number of fish per fisher day) are only available for combined flathead species, of which sand flatheads are likely to comprise approximately 93% of the total catch from ocean waters. These data indicate that there was a slight increase in catch rates of ocean flathead between surveys done in 2001–01 and in 2013–14, from 1.1 to 1.3 fish per fisher day [West et al. 2015]. Over the same period, standardised catch rates in the charter boat sector slightly increased but have decreased over the last three years [Hall 2023].

Results of a Bayesian state-space production model (BSM) analyses [Froese et al. 2017] using 12 different historic scenarios of catches (1947–48 to 2021–22), discards and standardised CPUE indices (1997–98 to 2021–22) produced varying

biomass depletion estimates ranging from 26 to 72% of unfished biomass [Hall 2022]. The most likely scenario, involving recreational catches scaled to past NSW population sizes or estimated recreational participation rates [Kleisner et al. 2015] combined with historical monthly and recent daily standardised catch rate series for the commercial fish trawl sector, produced biomass depletion estimates of around 40% of unfished biomass, with lower confidence bounds that were well above the limit reference point [Hall 2022]. Annual length frequencies of fish sampled from the commercial catch over a period spanning 52 years also indicate that the length structure of the population has remained stable [Hall 2022]. The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired.

Reported effort in total days fished for Bluespotted Flathead by OTF fishers increased from 13,785 days in 1997–98 to a maximum of 15,946 days in 2002–03, before declining rapidly until 2009–10. Reported effort in 2021–22 was just 2,379 days, which represents 14.9% of the amount of effort that was reported historically in 2002–03 [Hall 2023]. The most recent statewide recreational survey in 2013–14, estimated that recreational fishing participation rates have also decreased by 30% from over 1 million participants (16.6% of population) in 2000–01 to 836,632 (11.7%) in 2013–14 [West et al. 2015]. Concurrently, estimated fishing effort for all species combined decreased by 37% from over 5 million fisher days (and 5.6 days per fisher) in 2000–01 to 3.2 million (and 4.3 days per fisher) in 2013–14. The BSM analyses, irrespective of historical catch and index combination used, suggested that the current harvest rate of Bluespotted Flathead in NSW waters is below that required to maintain the biomass at the level for MSY [Hall 2022]. Relative fishing mortality estimates ( $F/F_{msy}$ ) ranged between 0.23 and 0.72 depending on the historical catch and CPUE series selected and was estimated to be 0.42 for the most likely scenario. Catch-curve analyses of numbers-at-age data supported this result, with fishing mortality showing little variation across the 52 years (ranging from 0.4 to 0.7) and were approximately equal to an average estimate of natural mortality of  $M=0.49$  in most years [Hall 2023]. Although, recent estimates since 2015 have all been above the long-term average and these results depend on the accuracy of the estimated value for  $M$ , which varied (0.45 and 0.65) according to the method of empirical estimation used [modified Hoenig and Pauly equations, respectively, as recommended in Then et al. 2014]. Collectively, the above evidence indicates that the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

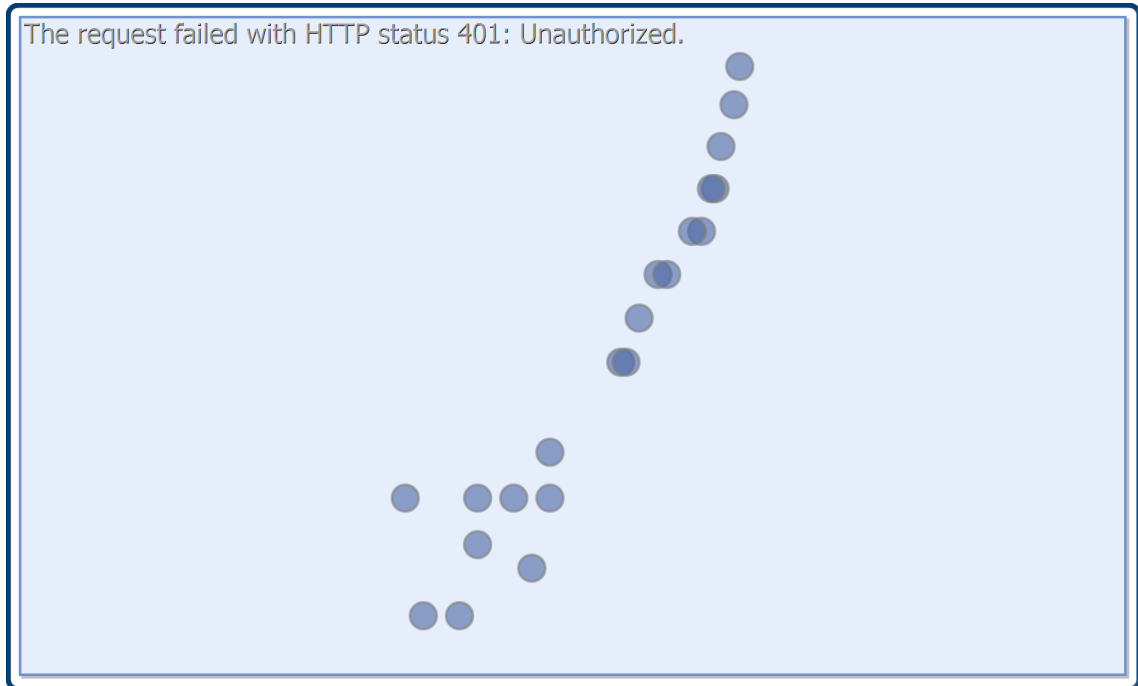
On the basis of the evidence provided above, the Eastern Australia biological stock of Bluespotted Flathead is classified as a **sustainable stock**.

## BIOLOGY

**Bluespotted Flathead biology** [Barnes et al. 2011, 2022; Barnes 2012;]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Bluespotted Flathead	9 years, 680 mm TL	Males: 1.0–1.1 years, 212–231 mm TL Females: 1.8–3.0 years, 272–354 mm TL

## DISTRIBUTION



Distribution of reported commercial catch of Bluespotted Flathead

**TABLES**

<b>Fishing methods</b>	
	<b>New South Wales</b>
<b>Charter</b>	
Handline	✓
<b>Commercial</b>	
Danish Seine	✓
Otter Trawl	✓
Various	✓
<b>Recreational</b>	
Handline	✓

<b>Management Methods</b>	
	<b>New South Wales</b>
<b>Charter</b>	
Bag and possession limits	✓
Gear restrictions	✓

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Licence	✓
Marine park closures	✓
Size limits	✓
<b>Commercial</b>	
Effort limits	✓
Gear restrictions	✓
Limited entry	✓
Size limits	✓
Spatial closures	✓
Total allowable catch	✓
Vessel limits	✓
<b>Recreational</b>	
Bag and possession limits	✓
Gear restrictions	✓
Licence	✓
Marine park closures	✓
Size limits	✓

Catch	New South Wales
Charter	7.9 t (2020–21)
Commercial	56.6494 t
Indigenous	Unknown
Recreational	199 t (2013–14)

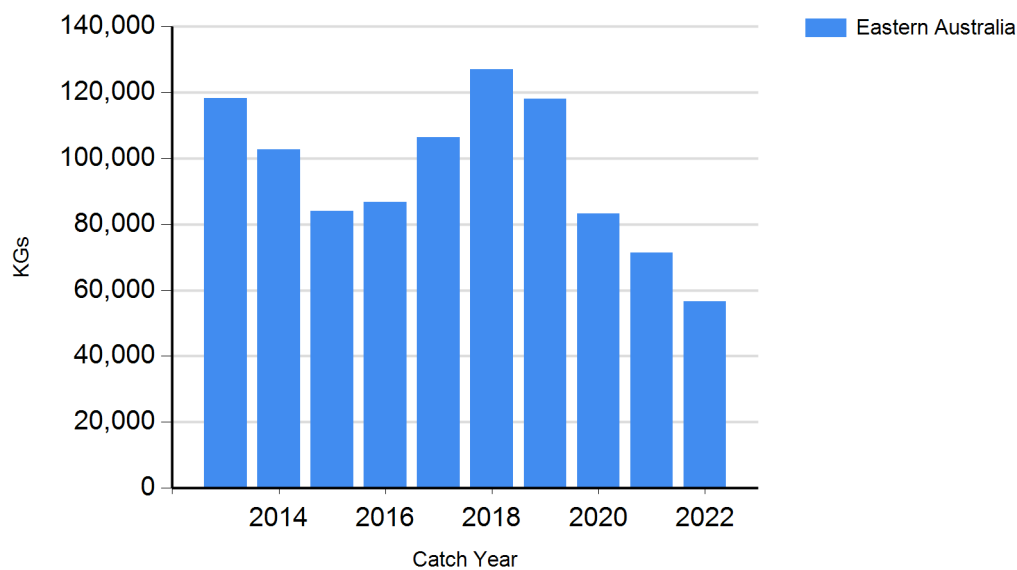
**New South Wales – Commercial (Catch).** Data are provided in financial years.

**New South Wales – Recreational (Catch).** Estimates from Murphy et al. [2020, 2022], based on a survey of Recreational Fishing Licence households.

**New South Wales – Indigenous (Management Methods).**

<https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing>

## CATCH CHART



Commercial catches of Bluespotted Flathead, in financial years and aligned according to end year.

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