Blue-eye Trevalla (2023)

Hyperoglyphe antarctica

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STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Commonwealth, Queensland, New South Wales, Tasmania	Eastern Australia	Sustainable	CPUE, catch
Western Australia	Western Australia	Sustainable	Catch, fishing mortality

STOCK STRUCTURE

Three lines of evidence, based on phenotypic variation in age and growth, otolith chemistry and potential larval dispersal, suggest spatial patterns that may delineate natural subpopulations of Blue-eye Trevalla [Williams et al. 2017]. This research identified four geographically distinct subpopulations around the Australian coast: ‘West’—comprising continental slope fishing grounds off Western Australia, South Australia and western Victoria to western Tasmania; ‘South’—continental slope grounds around Tasmania and north eastwards to eastern Bass Strait; ‘East’—fishing grounds on the NSW continental slope and Tasmanian seamounts; and ‘Offshore’—fishing grounds on the Lord Howe Rise [Williams et al. 2017].

Here, stock status is presented at the management unit level—Eastern Australia and Western Australia.

STOCK STATUS

Eastern Australia

Catches of Blue-eye Trevalla in Eastern Australia are currently taken in the Commonwealth Trawl and Gillnet, Hook and Trap sectors of the Southern and Eastern Scalefish and Shark Fishery (CTS and GHTS) (SESSF), the Deep Water Fin Fish Fishery (Queensland) (DWFFF) and the Ocean Trap and Line Fishery (New South Wales) (OTLF). Prior to 1998, catches were also taken in the Scalefish Fishery (Tasmania).

Commonwealth fisheries (primarily the SESSF) have taken 85–95% of the historical catch. Status is therefore based primarily on analyses undertaken for the SESSF, which include available state catches. Blue-eye Trevalla catch peaked at more than 800 tonnes (t) in 1997. Since then, catches have generally declined to 225–375 t between 2012 and 2020.

Blue-eye Trevalla caught off south-east Queensland are at the northern-most limit of their distribution [Kailola et al. 1993]. They were a key species in the DWFFF up until 2012. Effort in the DWFFF declined markedly from 2012 to 2017 with the fishery registering low levels of annual effort over the post-2017 period (< 40 days per year). Blue-eye Trevalla continue to be caught as an incidental harvest in the DWFFF and, more rarely, in the East Coast Inshore Fishery.

In Queensland, commercial catch and effort for Blue-eye Trevalla peaked in 2008–09 with an estimated catch of 72 t and 185 fishing days and declined from 2009–10 to 2011–12, dropping to below 10 t and 52 days effort. Commercial catch has remained low for the past 10 years; in 2021–22 the estimated catch was 0.4 t and 16 days effort. No recreational harvest of Blue-eye Trevalla has been recorded in recent surveys suggesting catch is likely low, and very low charter catch has been recorded averaging less than 1 t from 2010 to 2020 [Webley et al. 2015; Teixeira et al. 2021].

In NSW, catches of more than 90 t per year were made in the OTLF in the late-1900s. The total commercial catch of Blue-eye Trevalla peaked at about 120 t in 1999. Since then, total commercial catches have declined steadily to about 5.6–14.8 t in 2022 [Smoothey 2023]. Since 2017–18, an average of 45 (range: 11–150 fish) Blue-eye Trevalla (*Hyperoglyphe antarctica* & *Schedophilus labyrinthica*) have been caught per annum in the charter boat fishery [NSW DPI unpublished data]. Recreational and Indigenous catches of Blue-eye Trevalla in New South Wales are unknown. Surveys of recreational and Indigenous catches have either not specified catches of Blue-eye Trevalla [West et al. 2015; Murphy et al. 2022; Hughes et al. 2023] or reported them into a broader 'finfish—other' category [Henry and Lyle 2003]. No separate assessments have been done for New South Wales Blue-eye Trevalla.

Blue-eye Trevalla in Commonwealth fisheries is managed under the SESSF Harvest Strategy Framework (HSF) [AFMA 2021a] and assessed using both Tier 4 and 5 methods. Although the 2020 Tier 4 analysis [Sporcic 2020] and 2018 tier 5 analyses [Haddon and Sporcic 2018a, b] informed the management of the stock for the 2021–22 fishing season, new Tier 4 [Sporcic 2021] and Tier 5 [Thomson and Haddon 2021] analyses were undertaken in 2021.

Based on recent evidence of stock structure [Williams et al. 2017], the stock is split into 2 regions (slope and seamount populations) and analysed separately to inform a combined recommended biological catch (RBC). A Tier 4 analysis is conducted for the slope population and 2 Tier 5 analyses are conducted for the seamount population [AFMA 2021c].

The 2020 Tier 4 analysis on the slope population, excluding data from the Great

Australian Bight Trawl Sector (GABTS) [Sporcic 2020], suggested that standardised catch-per-unit-effort (CPUE) had declined since 2014 but remained between the target reference point (TRP) and the limit reference point (LRP) as defined by the SESSF HSF [AFMA 2021a]. This analysis produced an RBC of 227 t for the 2021–22 fishing season.

In 2021, a new Tier 4 analysis on the slope population [Sporcic 2021], indicated that the standardised CPUE was between the TRP and the LRP. This analysis included previously omitted data from the Great Australian Bight [Sporcic 2021], as recommended by the South East Resource Assessment Group [AFMA 2021b]. An RBC of 349 t was produced for the 2022–23 fishing season. The increased RBC, when compared with that output from the previous analysis, was largely driven by the inclusion of data from the GABTS.

The 2018 Tier 5 age-structured stock reduction analysis of the seamount population predicted that constant catches of around 25 t for lower-productivity scenarios and 48 t for higher-productivity scenarios would lead to relative stability in depletion [Haddon and Sporcic 2018b]. Although highly uncertain, a maximum sustainable yield (MSY) analysis for the seamount population produced an MSY of 46–50 t, with a depletion estimate of 33% of the unfished biomass [Haddon and Sporcic 2018a]. Modelling based on the catch–MSY method suggested that constant catches of 40 t or less would lead to relative stability in depletion [AFMA 2018a, b]. Based on the output of the 2018 age-structured stock reduction analysis and catch–MSY analysis [Haddon and Sporcic 2018a, b], SERAG recommended an RBC of 36 t for the seamount population, which remained in place for the 2021–22 fishing season. Combining RBCs from the slope and seamount populations resulted in a total RBC of 263 t for the 2021–22 fishing season.

In 2021, a new Tier 5 age-structured stock reduction analysis of the seamount population predicted that constant catches of around 30–40 t would lead to relative stability in depletion [Thomson and Haddon 2021]. A catch–MSY analysis of the seamount population, considered highly uncertain by SERAG, generated an MSY of about 45–60 t if biomass is at or above 50% of the unfished biomass [Thomson and Haddon 2021]. Taken together, the analyses suggested that an annual catch of around 30–40 t would lead to relative stability in depletion [Thomson and Haddon 2021]. However, SERAG agreed that there was no need to alter previous RBC advice based on the 2018 Tier 5 analyses for the seamount population [AFMA 2021c]. For the 2022–23 fishing season, SERAG agreed to recommend an RBC of 385 t, comprising 36 t for the seamount population and 349 t for the slope population [AFMA 2021c].

Commonwealth-landed catch in 2021–22 was 242.7 t based on catch disposal records, comprising 17.9 t for the seamount population and 224.8 t for the slope population [Emery et al. 2022]. The weighted average of four calendar years (2017–2020) was calculated and used to estimate discards and state catches of 8.2 t and 12.3 t, respectively [Althaus et al. 2021]. For the 2021–22 fishing season, total catch and discards were estimated to be 263.2 t. The total catch and discards were therefore slightly (200 kg) above the combined RBC for 2021–22, but substantially below the updated RBC calculated for 2022–23.

The above evidence indicates that the stock biomass is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, current fishing mortality is unlikely to result in the stock becoming recruitment impaired.

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

Western Australia

Stock assessment for Blue-eye Trevalla in Western Australia is based on an assessment of fishing mortality derived from a catch-curve analysis of representative samples of the age structure in the state-managed demersal fisheries (West Coast Demersal Scalefish Interim Managed Fishery, Joint Authority Southern Demersal Gillnet and Demersal Longline Managed Fishery and Wet Line Fishery (South Coast, Western Australia)). These assessments use reference levels (target, threshold and limit) based on ratios of natural mortality for each species [DPIRD 2017]. The assessments indicated that the estimated fishing mortality rate on Blue-eye Trevalla in this biological stock was stable at close to the threshold level in 2011 and 2014 [Wakefield unpub.]. This assessment of Blue-eye Trevalla is also supported by the results of a data-limited Catch-MSY assessment, where recent catches are compared to median model estimates for maximum sustainable yield (MSY).

The total catch of Blue-eye Trevalla in WA has been variable over the last 10 years (2013–2022) ranging from 1.8–13.5 t, with a mean annual catch of 7.8 t. This is slightly lower than the average catches across the previous 10 years of 10.3 t. Recreational and charter catch are relatively low compared to the commercial catch and have averaged 25% of the total catch over the last ten years. Analyses using a Catch-MSY model applied to data on annual catches for this species demonstrated that the annual catches since 2008 have remained below or within the 95% CI of the median model estimate for MSY. The predicted values for biomass since 2012 have remained above BMSY, and fishing mortality has remained below FMSY. However, it is important to recognise that Catch-MSY is a data-limited technique with strong assumptions, dependent on user inputs. For this assessment, these included specified ranges for initial depletion (0.4–0.8), based on the relative high catch at the beginning of the time series, final depletion (0.15–0.7), based on recent catches relative to maximum recorded annual catch and as catches are limited to localised areas in WA and the species is not exploited continually across the entire distribution, and low resilience (r=0.1–0.6, consistent with species longevity, of approximately 65 years). The above evidence indicates that current fishing pressure is not having an unacceptable impact on the age structure of the population and that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, current fishing mortality is unlikely to result in the stock becoming recruitment impaired.

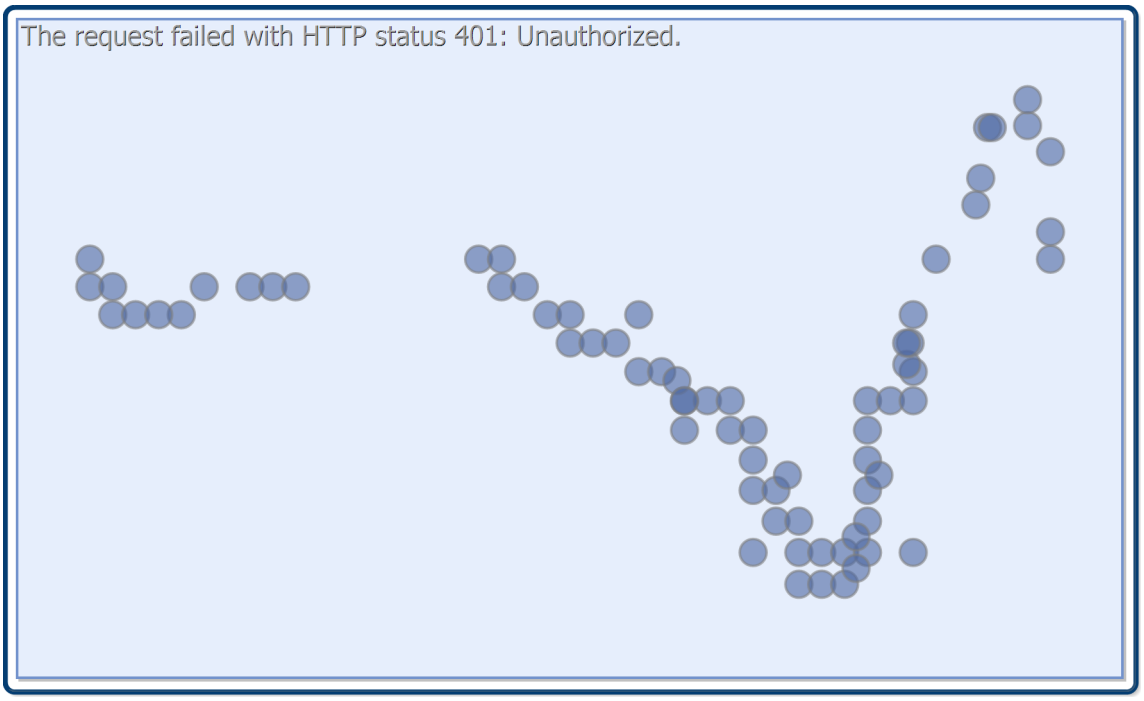
On the basis of the evidence provided above, the Western Australia management unit is classified as a **sustainable stock**.

BIOLOGY

Blue-eye Trevalla biology [Baelde 1995; Stobutzki et al. 2009]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Blue-eye Trevalla	Eastern Australia: 42 years, 1,400 mm TL Western Australia: 65 years, 1,300 mm TL	Males 620 mm TL, females 720 mm TL Males 8–9 years, females 11–12 years

DISTRIBUTION



Distribution of reported commercial catch of Blue-eye Trevalla

TABLES

Fishing methods					
	Commonwealth	New South Wales	Queensland	Tasmania	Western Australia
Charter					
Hand Line, Hand Reel or Powered Reels		✓			
Handline					✓
Hook and Line			✓		
Rod and reel					✓
Commercial					
Demersal Longline	✓	✓			
Dropline	✓	✓			✓
Fish Trap					✓
Hand Line, Hand Reel or Powered Reels					✓
Handline (mechanised)	✓				

Hook and Line		✓			
Line			✓		✓
Longline (Unspecified)					✓
Midwater Trawl	✓				
Otter Trawl	✓				
Trawl	✓				
Unspecified				✓	
Various		✓			
Recreational					
Handline		✓	✓	✓	✓
Hook and Line			✓		
Setline				✓	

Management Methods					
	Commonwealth	**New South Wales**	**Queensland**	**Tasmania**	**Western Australia**
Charter					
Bag limits		✓			✓
Bag/possession limits			✓		
Gear restrictions		✓	✓		
In possession limits		✓			
License		✓			
Limited entry					✓
Marine park closures		✓			
Passenger restrictions					✓
Possession limit		✓			
Seasonal or spatial closures			✓		
Size limit		✓			
Spatial closures		✓			✓

Spatial zoning					✓
Commercial					
Gear restrictions	✓	✓	✓	✓	✓
Harvest Strategy			✓		
Limited entry	✓	✓	✓	✓	✓
Marine park closures	✓				
Quota	✓				
Seasonal or spatial closures			✓		
Spatial closures	✓	✓			✓
Spatial zoning					✓
Total allowable catch	✓				✓
Vessel restrictions			✓		✓
Recreational					
Bag limits		✓		✓	✓
Bag/possession limits			✓		
Gear restrictions		✓	✓		
Licence		✓		✓	
Licence (Recreational Fishing from Boat License)					✓
Seasonal or spatial closures			✓		
Spatial closures		✓		✓	✓
Trigger limits		✓		✓	

Catch					
	Commonwealth	New South Wales	Queensland	Tasmania	Western Australia
Charter		Unknown	0.01 t (2019–20)		Unknown
Commercial	242.23 t	5.61785 t	0.4058 t	0 t	4.79107 t
Indigenous		Unknown	Unknown	Unknown	Unknown
Recreational	Unknown	Unknown	Unknown	12.5 t (2011–12)	5.5 t ± 3.16 t se

Commonwealth – Commercial (Management Methods/Catch). Data provided for the Commonwealth align with the Commonwealth Southern and Eastern Scalefish and Shark Fishery for the 2021–22 financial year.

Commonwealth – Recreational. The Australian government does not manage recreational fishing in Commonwealth waters. Recreational fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those waters, under its management regulations.

Commonwealth – Indigenous. The Australian government does not manage non-commercial Indigenous fishing in Commonwealth waters, with the exception of Torres Strait. In general, non-commercial Indigenous fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those waters.

Western Australia – Recreational (Catch). Boat-based recreational catch is from 1 September 2020–31 August 2021. These data are derived from those reported in Ryan et al. [2022].

Western Australia – Recreational (Management Methods). A Recreational Fishing from Boat License is required for the use of a powered boat to fish or to transport catch or fishing gear to or from a land-based fishing location.

Western Australia – Indigenous (Management Methods). Subject to application of Section 211 of the *Native Title Act 1993* (Cth), and the exemption from a requirement to hold a recreational fishing licence, the non-commercial take by Indigenous fishers is covered by the same arrangements as that for recreational fishing.

New South Wales – Commercial. Dropline cannot be automated in New South Wales.

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

New South Wales – Indigenous (Management Methods). https://www.dpi.nsw.gov.au/fishing/aboriginal-fishing.

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

Queensland – Recreational Fishing. Data with high uncertainty (Residual Error > 50 %) have been excluded and listed as unknown. More information available at: https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/monitoring-reporting/statewide-recreational-fishing-surveys

Queensland – Commercial. Queensland Commercial and charter data have been sourced from the commercial fisheries logbook program. Further information available through the Queensland Fisheries Summary Report https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/data/queensland-fisheries-summary-report

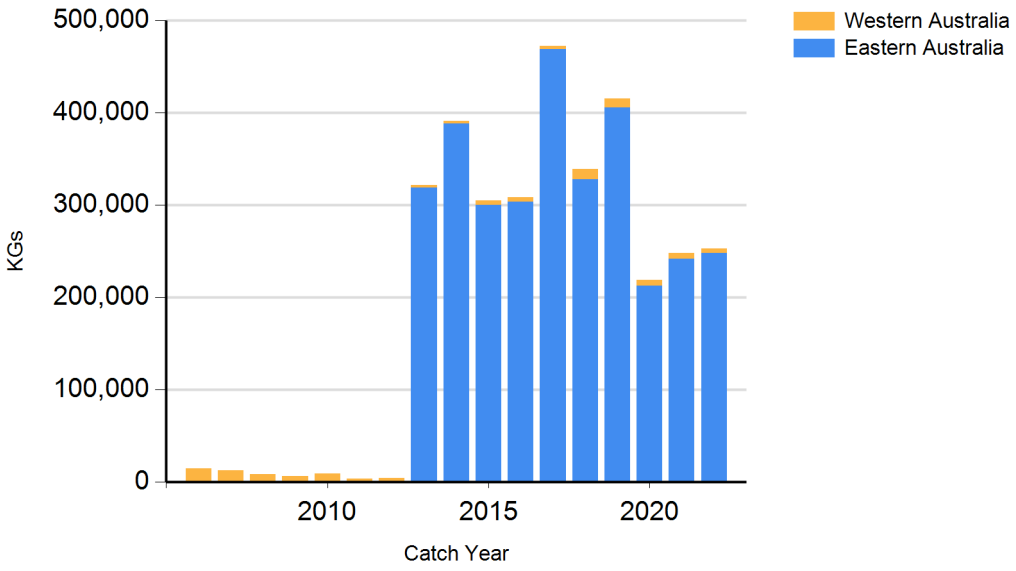
Queensland – Commercial (Management Methods). Harvest strategies are available at: https://www.daf.qld.gov.au/business-priorities/fisheries/sustainable/harvest-strategy.

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.

Tasmania – Charter (Management Methods). In New South Wales there are four charter boat endorsement categories (Estuarine Fishing; Nearshore Bottom Fishing and Sportfishing; Gamefishing; and Deep Sea Bottom Fishing). The different categories have limitations on the species of fish they can access.

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).

CATCH CHART



Commercial catch of Blue-eye Trevalla - note confidential catch not shown

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