

Blue Grenadier (2023)

Macruronus novaezelandiae



Daniel Wright: Australian Bureau of Agricultural and Resource Economics and Sciences

STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Commonwealth	Commonwealth Trawl Sector	Sustainable	Spawning stock biomass, fishing mortality
Commonwealth	Great Australian Bight Trawl Sector	Sustainable	Current and historical fishing pressure

STOCK STRUCTURE

Comparative analysis of otolith chemistry and shape indicates two biological stocks of Blue Grenadier: one in the region of the Commonwealth Trawl Sector (CTS) of the Southern and Eastern Scalefish and Shark Fishery (SESSF), and the other in the region of the Great Australian Bight Trawl Sector (GABTS) of the SESSF [Hamer et al. 2009]. There is some evidence that Blue Grenadier from the western Tasmanian and eastern Bass Strait regions of the SESSF (CTS) may constitute separate sub-stocks, but these are currently assessed and managed as a single CTS stock.

Here, assessment of stock status is presented at the biological stock level—Commonwealth Trawl Sector (Commonwealth) and Great Australian Bight Trawl Sector (Commonwealth).

STOCK STATUS

Commonwealth Trawl Sector Blue Grenadier in the Commonwealth Trawl Sector (CTS) is managed as a Tier 1 stock under the SESSF Harvest Strategy Framework [AFMA 2021]. Although the 2018 assessment [Castillo-Jordán and Tuck 2018] informed the management of the stock for the 2021–22 fishing season, a new tier 1 assessment was undertaken in 2021 [Tuck and Bessell-Browne 2021].

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Blue Grenadier (2023)

The 2018 assessment [Castillo-Jordán and Tuck 2018] estimated the spawning stock biomass at the start of 2018 to be 83% of the unfished level, which was above the target reference point of 48% of the unfished level and limit reference point of 20%. The biomass was estimated to have increased in recent years because of above-average recruitment between 2010 and 2014. This led to a single-year (2021) recommended biological catch (RBC) of 11,052 t and a 3-year average RBC of 12,183 t.

In 2021, a new tier 1 assessment [Tuck and Bessell-Browne 2021] estimated spawning stock biomass in 2020 to be 123% of the unfished level, and projected spawning stock biomass in 2022 to be 155% (assuming that catches in 2021 were the same as in 2020). This resulted in a single-year RBC of 23,777 t (including 245 t of discards) for the 2022–23 fishing season and a long-term RBC of 7,100 t (including 183 t of discards) [Tuck and Bessell-Browne 2021]. The increase in the spawning stock biomass since the 2018 assessment continues to be driven by the relatively large estimates of recruitment since 2010. The stock is therefore not considered to be recruitment impaired.

Commonwealth-landed catch in 2021–22 was 10,958.2 t, based on catch disposal records. Data on discards are not yet available for 2021–22. The model-based estimate of discards for 2020 was 362 t [Tuck and Bessell-Browne 2021]. There is no state catch. Total catch and discards for the 2021–22 fishing season is estimated to be 11,320.2 t [Emery et al. 2022] and below the 3-year average RBC of 12,183 t calculated in the 2018 assessment [Castillo-Jordán and Tuck 2018] and the single-year (2021) RBC of 12,341 t calculated from the 2021 assessment [Tuck and Bessell-Browne 2021]. This level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

On the basis of the evidence provided above, the Commonwealth Trawl Sector (Commonwealth) biological stock is classified as a **sustainable stock**.

**Great
Australian
Bight Trawl
Sector**

There have been no stock assessments for Blue Grenadier in the Great Australian Bight Trawl Sector (GABTS) of the Southern and Eastern Scalefish and Shark Fishery (SESSF) (Commonwealth). There are three catch triggers in place under the SESSF Harvest Strategy Framework [AFMA 2021]. The first is a trigger of 400 t and if this is exceeded, data collection and the development of an assessment plan are required. The second is a trigger of 500 t, which if exceeded in a single year leads to a cessation of fishing. Furthermore, an acoustic survey is triggered if a spawning aggregation is found. The final is a trigger of 1,000 t caught over a three-year period, resulting in a stock assessment being undertaken.

Blue Grenadier in the GABTS was historically caught on the upper continental slope (around 200–700 m depth). Fishing effort on the Great Australian Bight continental slope has decreased since 2005, with commercial catches of Blue Grenadier reducing from a peak catch of 423 t in the 2005–06 fishing season to 32.8 t in the 2021–22 fishing season, based on catch disposal records. There are large areas of slope habitat across the Great Australian Bight and Western Australia, with fishing generally limited to a small area [Pitcher et al. 2018]. It is therefore likely that parts of this biological stock remain unfished.

The above evidence indicates that the biomass of this stock is unlikely to be depleted and that recruitment is unlikely to be impaired. Furthermore, the current level of fishing mortality is unlikely to cause the stock to become recruitment impaired.

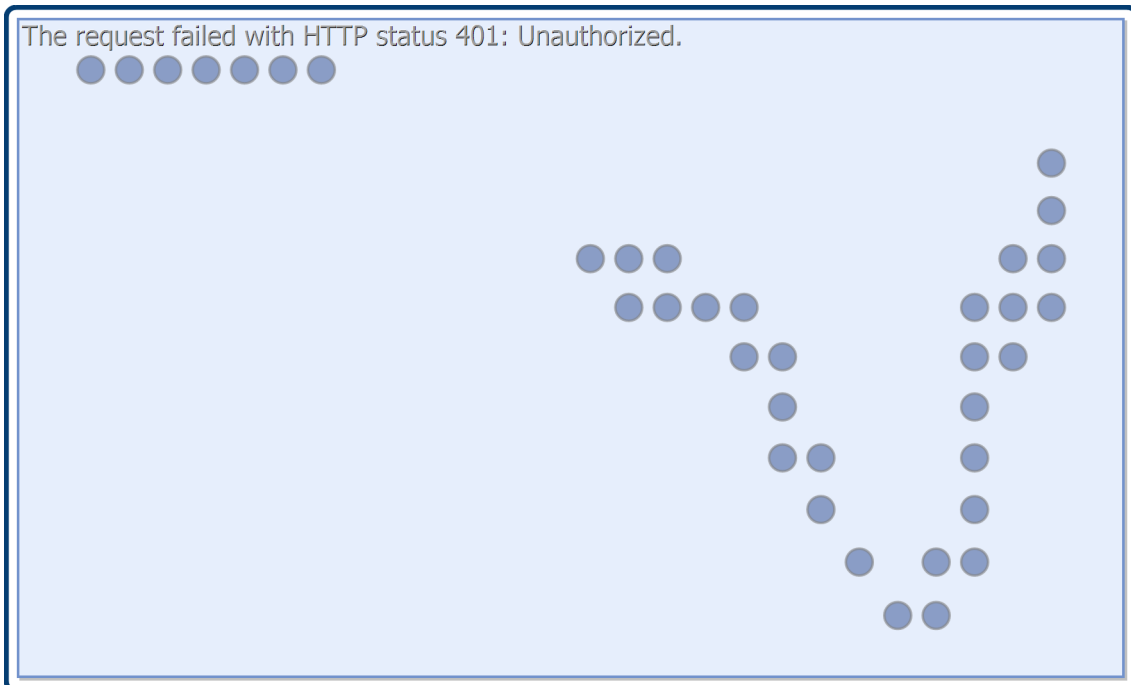
On the basis of the evidence provided above, the Great Australian Bight Trawl Sector (Commonwealth) biological stock is classified as a **sustainable stock**.

BIOLOGY

Blue Grenadier biology [Hamer et al. 2009; Tuck and Punt 2006]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Blue Grenadier	25 years, 1,100 mm TL, weight 6 kg	4–5 years, females 640 mm TL, males 570 mm TL

DISTRIBUTION



Distribution of reported commercial catch of Blue Grenadier

TABLES

Fishing methods	Commonwealth
Commercial	
Danish Seine	✓
Midwater Trawl	✓
Otter Trawl	✓
Trawl	✓

Management Methods	
	Commonwealth
Commercial	
Gear restrictions	✓
Limited entry	✓
Marine park closures	✓
Spatial closures	✓
Total allowable catch	✓
Trigger limits	✓

Catch	
	Commonwealth
Commercial	10844.1 t

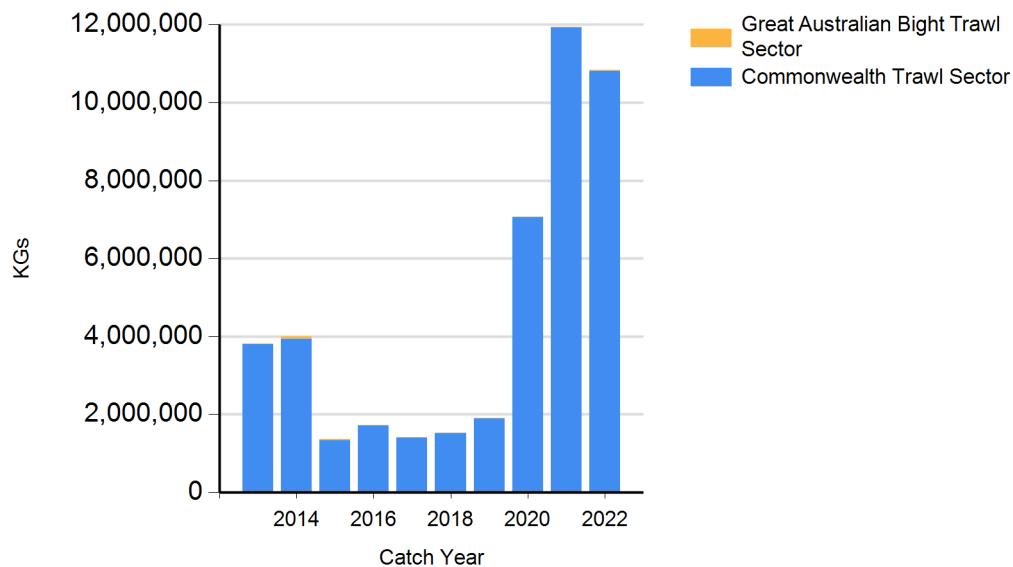
Commonwealth – Commercial (Management Methods/Catch). Data provided for the Commonwealth align with the Commonwealth Southern and Eastern Scalefish and Shark Fishery for the 2021–22 financial year.

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.

CATCH CHART

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Blue Grenadier (2023)



Commercial catch of Blue Grenadier - note confidential catch not shown

References	
Hamer et al. 2009	Hamer, P, Kemp, J, Robertson, S and Hindell, J 2009, Use of otolith chemistry and shape to assess the stock structure of Blue Grenadier (<i>Macruronus novaezelandiae</i>) in the Commonwealth Trawl and Great Australian Bight fisheries, final report to the Fisheries Research and Development Corporation, project 2007/030, Fisheries Research Branch, Queenscliff.
Pitcher et al. 2018	Pitcher, CR, Rochester, W, Dunning, M, Courtney, T, Broadhurst, M, Noell, C, Tanner, J, Kangas, M, Newman, S, Semmens, J, Rigby, C, Saunders T, Martin, J and Lussier, W 2018, Putting potential environmental risk of Australia's trawl fisheries in landscape perspective: exposure of seabed assemblages to trawling, and inclusion in closures and reserves / FRDC project; no. 2016/039, FRDC.
Castillo-Jordán and Tuck, 2018	Castillo-Jordán, C and Tuck, G 2018, Blue grenadier (<i>Macruronus novaezelandiae</i>) stock assessment based on data up to 2017, CSIRO Oceans and Atmosphere, Hobart.
Tuck and Punt, 2006	Tuck, G and Punt, A 2006, Updated stock assessment of blue grenadier <i>Macruronus novaezelandiae</i> based on data up to 2005: application of new base-case models, harvest control rules and decision analysis, CSIRO Marine and Atmospheric Research, Castray Esplanade, Hobart 7000.
AFMA 2021	AFMA 2021, Harvest strategy framework for the Southern and Eastern Scalefish and Shark Fishery: amended (2021), Australian Fisheries Management Authority, Canberra.
Tuck and Bessell-Browne 2021	Tuck, G and Bessell-Browne, P 2021, Blue grenadier (<i>Macruronus novaezelandiae</i>) stock assessment based on data up to 2020, CSIRO Oceans and Atmosphere, Hobart.
Emery et al. 2022	Emery, T, Wright, D, Davis, K, Keller, K, Woodhams, J and Curtotti, R 2022, Commonwealth Trawl and Scalefish Hook sectors, in Patterson, H, Bromhead, D, Galeano, D, Larcombe, J, Timmiss, T, Woodhams, J and Curtotti, R (eds), Fishery status reports 2022, Australian Bureau of Agricultural and Resource Economics and Sciences, Canberra.