

Burrowing Blackfish (Sea Cucumber) (2023)

Actinopyga spinea



Jenny Keys: Department of Agriculture and Fisheries, Queensland

STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Queensland	East Coast Queensland	Undefined	Catch, effort, nominal catch rate

STOCK STRUCTURE

Burrowing Blackfish has a Western Central Pacific distribution and is found in Australia, New Caledonia, Palau and Micronesia [Conand 1998]. In Queensland, it is found along the east coast in depths from 10 to 50 m. It appears to be locally abundant in some locations (deep reef lagoons) in the Great Barrier Reef (GBR). The genetic stock structure is poorly known.

Here, assessment of stock status is presented at the jurisdictional level—East Coast Queensland.

STOCK STATUS

East Coast Queensland Burrowing Blackfish are collected by commercial divers on the Queensland east coast within the Great Barrier Reef Marine Park (GBRMP). Catches of Burrowing Blackfish are constrained by spatial yearly catch limits set at conservative estimates of Maximum Sustainable Yield (MSY, approximately 10% of unfished biomass). The annual catch limits apply to three discrete Burrowing Blackfish zones. The limits were developed with advice from a scientific advisory group and based on population surveys completed prior to commencement of fishing. While Burrowing Blackfish can be harvested outside these zones, catches in these areas are subject to a rotational harvest strategy that constrains fishing effort to 158 zones. Each zone is available for harvesting in the fishery once every three years for 15 days of fishing.

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Burrowing Blackfish (Sea Cucumber) (2023)

The Queensland Sea Cucumber Fishery has retained an average of 179 tonnes (t) (range 115–230 t) of Burrowing Blackfish each year since 2006. Annual catch in this fishery has decreased through time and, in 2021–22, operators retained a historic low catch of 115 t. Notable declines in the Burrowing Blackfish catch are partly attributed to the influence of confounding factors including the introduction of management reforms to constrain fishing effort, the loss of skilled fishers, and changing market demand. For example, the decline in catch observed in 2011–12 has been linked with broader reforms which reduced the total number of Burrowing Blackfish zones from five to three [Queensland Department of Agriculture, Fisheries, and Forestry 2014]. Similarly, declines detected in 2017–18 and 2018–19 have been attributed to the loss of skilled fishers and declining participation rates.

Nominal catch rates for this species have remained relatively stable despite declining catches. In 2021–22, the fishery reported a nominal catch rate of 535 kg per day compared to a longer-term average of 632 kg per day with a range of 437 to 774 kg per day. The relatively stable state of the nominal catch rates lends support to the inference that external factors contributed to the observed decline in annual catches. It also suggests that the biomass of this stock is more likely to be above the limit reference point of 20% unfished biomass. This however cannot be confirmed without a detailed stock assessment and a more definitive account of the overall biomass.

Outside of the commercial fishery, there are limited data on the take of this species in the recreational and indigenous fishing sectors. No recreational data is available for this species [Teixeira et al. 2021]; although Burrowing Blackfish are highly unlikely to be collected in this sector due to the location and depths that this species occurs. A limit of five sea cucumbers per person or ten sea cucumbers per boat (with two or more people on board) is applied to this sector in waters north of latitude 20° south (near Bowen) and waters east of longitude 142°31'49" east (Gulf waters). This limit includes Burrowing blackfish but excludes White Teatfish and Black Teatfish which are no-take.

The above evidence suggests that the biomass of this management unit is unlikely to be depleted and that recruitment is unlikely to be impaired. However, the absence of a biomass estimate and recruitment data increases the level of uncertainty and makes it difficult to confidently assign a stock status.

Fishing effort for Burrowing Blackfish has steadily decreased since 2006, with the species averaging 288 fishing days per year over the 2006 to 2022 period (range 187 to 424). In 2021–22, a total of 215 fishing days were recorded for Burrowing Blackfish. Harvest levels, outside the three Burrowing Blackfish zones, are constrained by effort limits under the rotational harvest strategy and an annual catch trigger that, if exceeded, initiates a series of management actions ranging from harvest closures to conducting resource assessments. Legislation also limits the number of vessels and divers that may operate in the fishery, as well as a minimum size limits.

A management strategy evaluation (MSE) has previously been completed for the Queensland Sea Cucumber Fishery [Skewes et al. 2014]. This assessment considered the rotational zoning scheme and predicted that there was a low risk of the fishery depleting the Burrowing Blackfish biomass below 40% of unfished biomass. However, the authors also noted that the risk was higher for Burrowing Blackfish when compared to other species due to information gaps in their distribution throughout the GBRMP, especially for areas closed to fishing.

The long-term management of the Burrowing Blackfish harvest is guided by the

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Burrowing Blackfish (Sea Cucumber) (2023)

Queensland Sea Cucumber Fishery Harvest Strategy 2021–2026 (Queensland Department of Agriculture and Fisheries 2021). The harvest strategy includes decision rules and harvest trigger limits to guide the management of the stock. This harvest strategy is supported by fisheries independent surveys, the results of which will be incorporated into a Burrowing Blackfish stock assessment currently in preparation. This stock assessment will further clarify the status of the Queensland Burrowing Blackfish stock.

It is anticipated that fishing pressures within the current management regime are unlikely to cause the stock to become recruitment impaired. However, information levels (at this point) were not considered sufficient to confidently classify the status of this stock. This situation is likely to improve with the completion of the ongoing Burrowing Blackfish stock assessment and additional fishery independent surveys.

On the basis of the evidence provided above, Burrowing Blackfish in East Coast Queensland is classified as an **undefined stock**.

BIOLOGY

Burrowing Blackfish biology [Conand 1998; Skewes et al 2014]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Burrowing Blackfish (Sea Cucumber)	Longevity unknown, 38 cm TL	3 yrs (est.)

DISTRIBUTION

The request failed with HTTP status 401: Unauthorized.

TABLES

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Burrowing Blackfish (Sea Cucumber) (2023)

Fishing methods	
	Queensland
Commercial	
Diving	✓
Recreational	
Diving	✓

Management Methods	
	Queensland
Commercial	
Gear restrictions	✓
Harvest Strategy	✓
Individual transferable quota	✓
Limited entry	✓
Processing restrictions	✓
Rotational closures	✓
Seasonal or spatial closures	✓
Vessel restrictions	✓
Recreational	
Bag/possession limits	✓
Boat limits	✓
Gear restrictions	✓
Seasonal or spatial closures	✓

Catch	
	Queensland
Commercial	0 t
Indigenous	Unknown
Recreational	Unknown

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Burrowing Blackfish (Sea Cucumber) (2023)

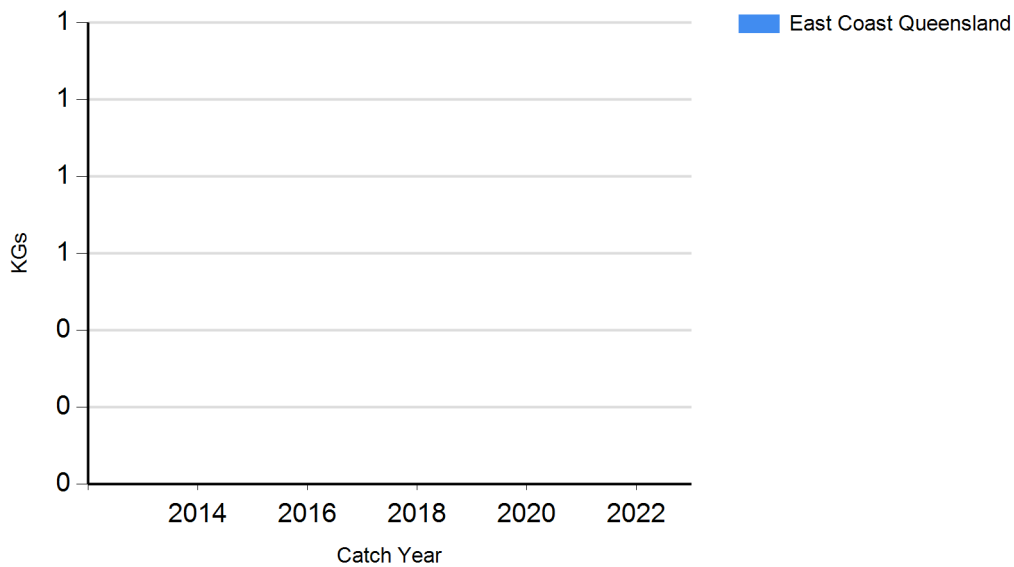
Queensland – Indigenous (Management methods). For more information see <https://www.daf.qld.gov.au/business-priorities/fisheries/traditional-fishing>

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

Queensland - Commercial Catch (weight). Catch weight totals are for 'boiled and frozen' product which is comparable to gutted weight.

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

CATCH CHART



References	
Conand 1998	Conand, C 1998, Holothurians (sea cucumbers, Class Holothuroidea), p. 1157-1190, In Carpenter, KE and VH Niem (eds.), FAO Species Identification Guide for Fishery Purposes, The Living Marine Resources of the Western Central Pacific. Vol. 2. Cephalopods, crustaceans, holothurians and sharks, FAO Rome.
Skewes et al. 2014	Skewes, T, Plaganyi, E, Murphy, N, Pascual, R and Fischer, M 2014, Evaluating rotational harvest strategies for sea cucumber fisheries, CSIRO, Brisbane.
Queensland Department of Agriculture and Fisheries 2021	Queensland Department of Agriculture and Fisheries 2021, Sea Cucumber Fishery Harvest Strategy, State of Queensland
Teixeira et al. 2021	Teixeira, D, Janes, R and Webley, J 2021, 2019/20 Statewide Recreational Fishing Survey Key Results. Project Report. State of Queensland, Brisbane.

STATUS OF AUSTRALIAN FISH STOCKS REPORT
Burrowing Blackfish (Sea Cucumber) (2023)

Queensland Department of Agriculture, Fisheries and Forestry 2014	Queensland Department of Agriculture, Fisheries and Forestry 2014, Sea Cucumber Fishery (East Coast) 2014: progress against EPBC Act approval conditions and recommendation.
---	--