

# White Teatfish (Sea Cucumber) (2023)

*Holothuria fuscogilva*



**Jenny Keys:** Department of Agriculture and Fisheries, Queensland, **Ian Butler:** Australian Bureau of Agricultural and Resource Economics and Sciences, **Ben Kelly:** Department of Industry, Tourism and Trade, Northern Territory

## STOCK STATUS OVERVIEW

Jurisdiction	Stock	Stock status	Indicators
Commonwealth	Coral Sea Fishery	Undefined	Catch, effort
Commonwealth	Torres Strait Beche-de-mer Fishery	Sustainable	Catch
Northern Territory	Northern Territory	Undefined	Nil
Queensland	East Coast Sea Cucumber Fishery	Sustainable	Stock Assessment, MSE

## STOCK STRUCTURE

White Teatfish is broadly distributed throughout the tropical Indo-Pacific [Conand 1990]. There are likely to be multiple populations in all northern Australian states and territories. However, there is very little information on the distribution, abundance and stock structure of White Teatfish in northern Australia. Current taxonomic records indicate that its distribution extends from Ningaloo in Western Australia to Brisbane, Queensland [ALA 2018]. The known depth range of this species is 0–40 m, but most animals are caught between 15 m and 30 m [Conand et al. 2013].

Here, assessment of stock status is reported at the management unit level—Torres Strait Beche-de-mer Fishery, Coral Sea Fishery (Commonwealth), Trepang Fishery (Northern Territory) and East Coast Sea Cucumber Fishery (Queensland).

## STOCK STATUS

### **Coral Sea Fishery**

There are no reliable indicators of current White Teatfish biomass for the Coral Sea Fishery, nor are there any reliable indicators of the impact of recent and historical catches on the successful recruitment of the stock [Noriega et al. 2022]. There is therefore insufficient information available to confidently classify the status of this stock. Annual catch of White Teatfish in the Coral Sea Fishery has averaged < 2 tonnes (t) over the last decade (2013–2022).

On the basis of the evidence provided above, the Coral Sea Fishery (Commonwealth) management unit is classified as an **undefined stock**.

### **East Coast Sea Cucumber Fishery**

White Teatfish in Queensland is only harvested commercially. Nominal catch rates for White Teatfish have stabilised after a minor peak in 2010–11 and are now close to the average catch rate over the past 10 years [Roelofs et al. 2018]. Decreases in reported harvest over the past 15 years (from 131 t in 2003–04 to 53 t in 2019–20) are due to reductions in the quota for White Teatfish and do not reflect biomass declines. This inference is supported by a 2021 stock assessment which estimated the White Teatfish stock to be around 80% of the unfished biomass (1995) (Helidoniotis 2021). The above evidence indicates the biomass of this management unit is unlikely to be depleted and that recruitment is unlikely to be impaired.

Longer-term management of White Teatfish is guided by the Queensland Sea Cucumber Fishery Harvest Strategy 2021–2026 t [Queensland Department of Agriculture and Fisheries 2021]. Current harvest levels do not exceed the primary harvest strategy goal of maintaining the stocks at a target biomass reference point of 60%. The species is also managed under a rotational zoning scheme (RZS) with fishing pressure further constrained under a Total Allowable Commercial Catch (TACC) limit. Catches have been at or just below the 53 t TACC since its introduction in 2011–12. Management strategy evaluation (MSE) of the RZS determined that the risk of the fishery depleting White Teatfish biomass to below 40% of unfished biomass was very low under Queensland Sea Cucumber (East Coast) Fishery management arrangements [Skewes et al. 2014]. Spatial closures in the Great Barrier Reef Marine Park protect an estimated 30% of the White Teatfish spawning biomass and commercial catch quotas are in place to restrict catches to sustainable levels. Recreational harvest of White Teatfish is not allowed in Queensland waters. The above evidence indicates 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 East Coast Sea Cucumber Fishery (Queensland) management unit is classified as a **sustainable stock**.

### **Northern Territory**

Northern Territory Trepang Fishery licensees are permitted to harvest White Teatfish, but have not done so in the last 10 years. This is because much of the area of the fishery (from the high-water mark to three nautical miles beyond the territorial sea baseline) is shallower than the apparent depth preference for this species (15–30 m), as well as lack of suitable reef habitat at this depth within the declared fishery. All six Northern Territory Trepang Fishery licenses are owned by a single entity, with only a subset of licenses being active in any given year.

White Teatfish have been caught in the Northern Territory outside of the

STATUS OF AUSTRALIAN FISH STOCKS REPORT  
White Teatfish (Sea Cucumber) (2023)

Trepang Fishery under a single special research permit. Exploratory fishing undertaken through this permit was subject to stringent harvest and reporting conditions.

There are no accounts, formal or otherwise, of the harvest of White Teatfish by charter boat clients, Indigenous fishers or recreational fishers in the Northern Territory. The small, sporadic and exploratory commercial harvest of White Teatfish in this jurisdiction means that there is insufficient information available to confidently classify the status of this stock.

On the basis of the evidence provided above, the Trepang Fishery (Northern Territory) management unit is classified as an **undefined stock**.

**Torres Strait Beche-de-mer Fishery**

The Torres Strait White Teatfish stock was last surveyed in 2019–20 [Murphy et al. 2021]. The estimated 4-zone average density in 2019–20 (1.8 individuals per hectare) was larger than the estimates in 1995–96 (1.2 individuals per hectare), 2005 (1.6 individuals per hectare) and 2009 (0.8 individuals per hectare), but lower than the 2002 estimate (2.5 individuals per hectare). Density of White Teatfish was variable across zones, ranging from 0 individuals per hectare (Great North East Channel) to 9.4 individuals per hectare (Don Cay). Estimated densities in waters deeper than 20 m (average 13.9 individuals per hectare) were consistently higher than the average densities for other shallower strata (the highest other stratum, the reef edge, was estimated to average 4.4 individuals per hectare). Estimated length frequency was similar to other survey years, with most individuals below the minimum legal length (320 mm).

The current TAC (15 t) was calculated through surveys in 2002 [Skewes et al. 2004]. It is likely that density for this stock (and therefore biomass) is underestimated because of the broad depth range of the species (up to 37 m) [Murphy et al. 2021] and the 20 m safety limit imposed on diving during surveys. Deep water (20–50 m) represents 31% of the survey area, and 72% of the estimated White Teatfish biomass. This indicates that a large proportion of the stock is afforded some protection from fishing.

Murphy et al. [2021] estimated the total biomass of White Teatfish in eastern Torres Strait, including the deeper waters, to be 1,493 t (lower 90th percentile 880 t); the lower 90th percentile of available biomass (biomass of animals larger than the minimum legal size of 320 mm) was estimated to be 143 t. Biomass estimates are gutted wet weight.

Catch of White Teatfish in 2021 was 2.0 t, up from 1.8 t in 2020, which are below the TAC and a small proportion of the estimated available biomass from 2019–20 surveys [Butler et al. 2022]. The stock has never been considered to have been reduced to below the limit reference point, and surveys in 2019–20 estimate densities that are similar to previous surveys.

The above evidence indicates that the biomass of this stock is unlikely to be depleted, that recruitment is unlikely to be impaired, and 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 Torres Strait Beche-de-mer Fishery management unit is classified as a **sustainable stock**.

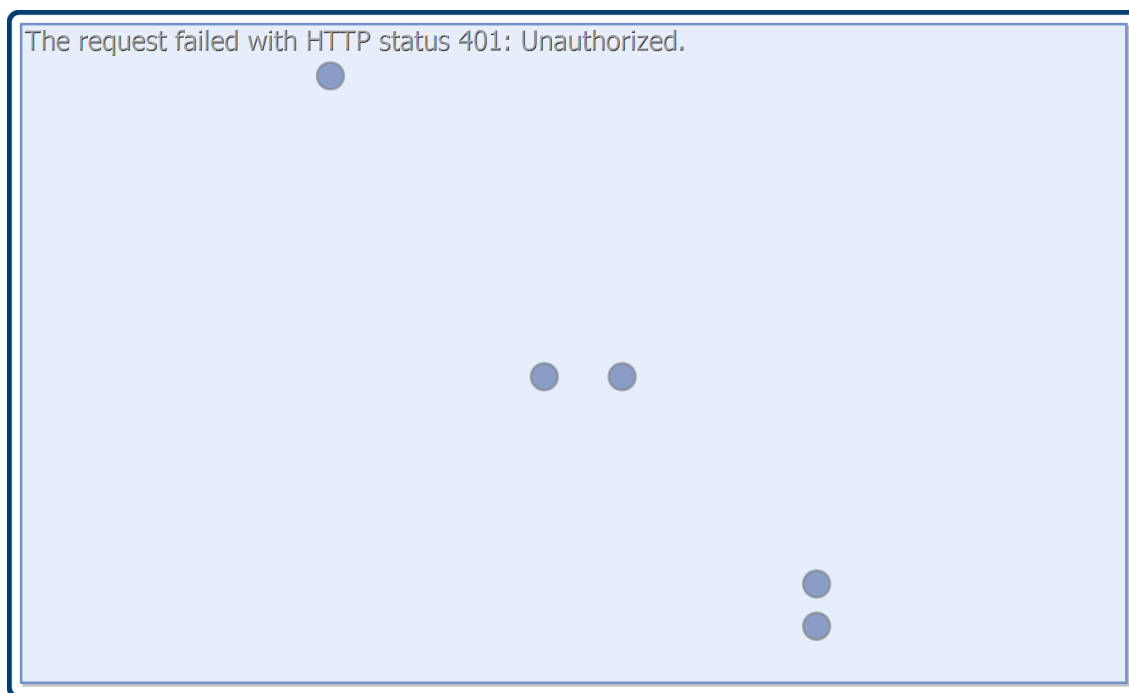
**BIOLOGY**

STATUS OF AUSTRALIAN FISH STOCKS REPORT  
White Teatfish (Sea Cucumber) (2023)

**White Teatfish (Sea Cucumber) biology** [Purcell et al. 2012]

Species	Longevity / Maximum Size	Maturity (50 per cent)
White Teatfish (Sea Cucumber)	12+ years, 570 mm TL	320 mm TL, 4 years

**DISTRIBUTION**



Distribution of reported commercial catch of White Teatfish. Due to confidentiality constraints, catches from the Northern Territory are not shown.

**TABLES**

Fishing methods	Commonwealth	Northern Territory	Queensland
<b>Charter</b>			
Diving		✓	
<b>Commercial</b>			
Diving	✓		✓
Hand		✓	
<b>Recreational</b>			
Diving			✓

STATUS OF AUSTRALIAN FISH STOCKS REPORT  
White Teatfish (Sea Cucumber) (2023)

Management Methods	Commonwealth	Northern Territory	Queensland
<b>Commercial</b>			
Effort limits		✓	
Gear restrictions			✓
Harvest Strategy			✓
Individual transferable quota			✓
Limited entry	✓	✓	✓
Processing restrictions			✓
Rotational closures			✓
Seasonal or spatial closures			✓
Size limit	✓	✓	
Spatial closures	✓	✓	
Total allowable catch	✓		✓
Vessel restrictions	✓	✓	✓

Catch	Commonwealth	Northern Territory	Queensland
<b>Commercial</b>	2.714 t	0 t	0 t
<b>Indigenous</b>			Unknown
<b>Recreational</b>			Unknown

STATUS OF AUSTRALIAN FISH STOCKS REPORT  
White Teatfish (Sea Cucumber) (2023)

**Northern Territory – Indigenous (Management methods).** The *Fisheries Act 1988* (NT), specifies that “...without derogating from any other law in force in the Territory, nothing in a provision of this Act or an instrument of a judicial or administrative character made under it limits the right of Aboriginals who have traditionally used the resources of an area of land or water in a traditional manner from continuing to use those resources in that area in that manner”.

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

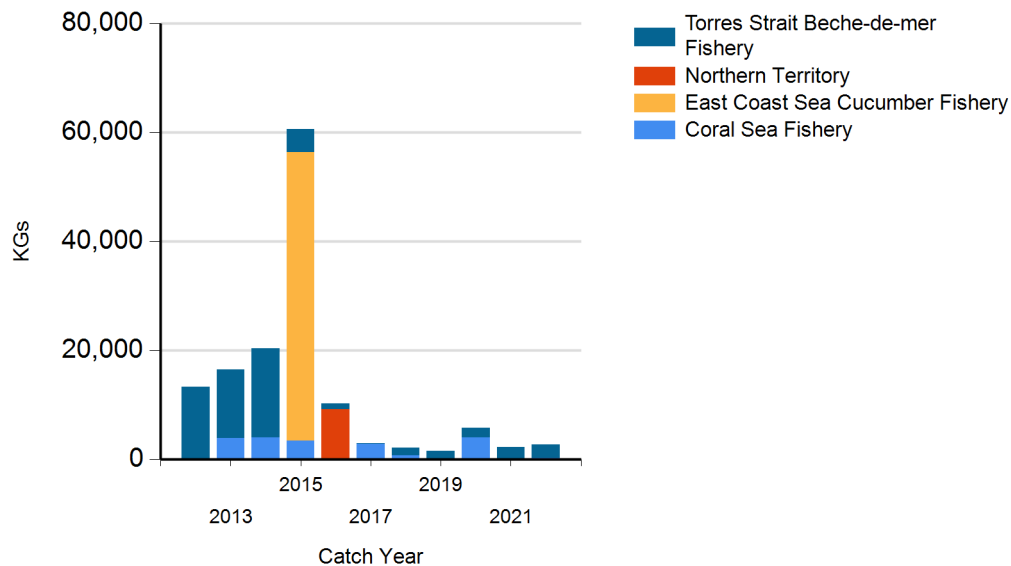
**Queensland - Commercial (Catch).** Queensland commercial and charter data have been sourced from the commercial fisheries logbook program. Further information available through the Queensland Fisheries Summary Report <https://www.daf.qld.gov.au/business-priorities/fisheries/monitoring-research/data/queensland-fisheries-summary-report>

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

**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 – Commercial (Catch).** Catch is by calendar year. All catch is Indigenous in Torres Strait.

**CATCH CHART**



Commercial catch of White Teatfish - note confidential catch not shown

References	
ALA 2018	Atlas of Living Australia (ALA) 2018, <i>Holothuria (Microthele) fuscogilva</i> Cherbonnier, 1980.
Conand 1990	Conand, C 1990, The fishery resources of Pacific island countries. Part 2. Holothurians, FAO, Rome.
Conand et al. 2013	Conand, C, Purcell, S and Gamboa, R 2013, <i>Holothuria fuscogilva</i> . The IUCN Red List of Threatened Species 2013: e.T200715A2681354. Downloaded on 27 July 2018.

STATUS OF AUSTRALIAN FISH STOCKS REPORT  
White Teatfish (Sea Cucumber) (2023)

Purcell et al. 2012	Purcell, S, Samyn, Y and Conand, C 2012, Commercially important sea cucumbers of the world, FAO Species Catalogue for Fishery Purposes. No. 6, Rome, 150 pp.
Skewes et al. 2014	Skewes, T, Plagányi, E, Murphy, N, Pascual, R and Fischer, M 2014, Evaluating rotational harvest strategies for sea cucumber fisheries, CSIRO, Brisbane.
Roelofs et al. 2018	Roelofs, A, Woodhams, J and Grubert, M 2018, White Teatfish (Sea cucumber) <i>Holothuria fuscogilva</i> , in Stewardson, C, Andrews, J, Ashby, C, Haddon, M, Hartmann, K, Hone, P, Horvat, P, Mayfield, S, Roelofs, A, Sainsbury, K, Saunders, T, Stewart, J, Nicol, S and Wise, B (eds) 2018, Status of Australian fish stocks reports 2018, Fisheries Research and Development Corporation, Canberra.
Murphy et al. 2021	Murphy, NE, Plagányi, EE, Edgar, S, Salee, K and Skewes, TD 2020, Stock survey of sea cucumbers in East Torres Strait. Draft final report. December 2020. CSIRO, Australia. 120 pp.
Helidoniotis 2021	Helidoniotis, F 2021, Stock assessment of white teatfish ( <i>Holothuria fuscogilva</i> ) in Queensland Australia. Department of Agriculture and Fisheries, Queensland Government. Brisbane, Queensland.
Queensland Department of Agriculture and Fisheries 2021	Queensland Department of Agriculture and Fisheries 2021, Sea Cucumber Fishery Harvest Strategy: 2021–2026.
Butler et al. 2022	Butler, I, D'Alberto, B and Tuynman, H 2022, Torres Strait Bêche-de-mer and Trochus fisheries, 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.
Skewes et al. 2004	Skewes, T, Dennis, DM, Koutsoukos, A, Haywood, M, Wassenberg, T and Austin, M 2004, Stock survey and sustainable harvest strategies for Torres Strait bêche-de-mer, AFMA project R01/1345, CSIRO Marine and Atmospheric Research, Cleveland, Queensland.
Noriega et al. 2022	Noriega, R, Keller, K, Butler, I and Curtotti, R 2022, Coral Sea Fishery, 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.