

# Patagonian Toothfish (2016)

*Dissostichus eleginoides*



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## STOCK STATUS OVERVIEW

Jurisdiction	Stock	Fisheries	Stock status	Indicators
Commonwealth	Heard Island and McDonald Islands	HIMIF	Sustainable	Spawning stock biomass, projected biomass
Commonwealth	Macquarie Island	MITF	Sustainable	Spawning stock biomass, projected biomass

HIMIF Heard Island and McDonald Island Fishery (CTH), MITF Macquarie Island Toothfish Fishery (CTH)

## STOCK STRUCTURE

Genetic studies have found that Patagonian Toothfish at Macquarie Island, and at Heard Island and the McDonald Islands, are two distinct biological stocks[1]. However, there is some level of exchange between the Heard Island and McDonald Islands stock and the Kerguelen Plateau stock[2].

Here, assessment of stock status is presented at the management unit level—Heard Island and McDonald Islands; and at the biological stock level—Macquarie Island.

## STOCK STATUS

### Heard Island and McDonald Islands

The Heard Island and McDonald Islands Fishery (Commonwealth) (HIMIF) falls within the Convention Area of the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR). This inter-governmental organisation was established to conserve and manage the Southern Ocean Antarctic ecosystem. CCAMLR employs precautionary harvest strategies that consider the role of target species within the larger ecosystem. For Patagonian Toothfish, the CCAMLR harvest strategy reference points require that the median escapement of the spawning biomass at the end of a 35-year projection period be 50 per cent of median pre-exploitation level and that the probability of the spawning biomass dropping below 20 per cent of the pre-exploitation median level is less than 10 per cent. Although the HIMIF falls within the CCAMLR area, the HIMIF is an Australian territory and is fished by Australian vessels only.

The most recent assessment of HIMIF Patagonian Toothfish[2,3 ]estimates that biomass in 2015 was 64 per cent of pre-exploitation levels[2,3]. The management unit is not considered to be recruitment overfished[4]. A catch limit of 3405 tonnes (t), which meets the CCAMLR harvest strategy requirements, was recommended by CCAMLR[3,5]. It is estimated that the projected biomass will not fall below 50 per cent of the pre-exploitation level after a 35-year projection period under that catch limit. This level of fishing mortality is unlikely to cause the stock to become recruitment overfished[4].

Based on the evidence provided above, the Heard Island and McDonald Islands management unit is classified as a **sustainable stock**.

**Macquarie Island** Macquarie Island is an Australian territory that lies adjacent to, but not within, the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) area. Although not under CCAMLR jurisdiction, for consistency the Macquarie Island Toothfish Fishery (Commonwealth) is managed using the CCAMLR harvest strategy with the same decision rules used in the Heard Island and McDonald Islands Fishery (Commonwealth).

The most recent assessment[6] of Macquarie Island Patagonian Toothfish estimates that biomass in 2015 was 69 per cent of pre-exploitation levels. The biological stock is not considered to be recruitment overfished[7,8]. The CCAMLR decision rules were used to calculate the catch limit of 460 t. This ensures that the projected biomass is not below 50 per cent after a 35-year projection period under that catch limit. This level of fishing mortality is unlikely to cause the stock to become recruitment overfished[7,8].

Based on the evidence provided above, the Macquarie Island biological stock is classified as a **sustainable stock**.

## BIOLOGY

Patagonian Toothfish biology[2,9]

Species	Longevity / Maximum Size	Maturity (50 per cent)
Patagonian Toothfish	~50 years; ~2 000 mm <u>TL</u>	11–15 years (males); 12–17 years (females) ~915 mm <u>TL</u> (males); 1000+ mm <u>TL</u> (females)

## DISTRIBUTION



Distribution of reported commercial catch of Patagonian Toothfish

**TABLES**

<b>Commercial Catch Methods</b>	<b>Commonwealth</b>
Demersal Longline	✓

<b>Fishing methods</b>	<b>Commonwealth</b>
<b>Commercial</b>	
Demersal Longline	✓
<b>Indigenous</b>	
Unspecified	✓
<b>Recreational</b>	
Hand Line, Hand Reel or Powered Reels	✓
Spearfishing	✓

<b>Management Methods</b>	<b>Commonwealth</b>
<b>Commercial</b>	
Area restriction	✓

s	
Catch limits	✓
Individual transferable quota	✓
<b>Active Vessels</b>	
	<b>Commonwealth</b>
	6 Vessel in HIMIF, 1 Vessel in MITF,

**HIMIF** Heard Island and McDonald Island Fishery(CTH)

**MITF** Macquarie Island Toothfish Fishery(CTH)

<b>Catch</b>	
	<b>Commonwealth</b>
<b>Commercial</b>	4279t in HIMIF, 324.5t in MITF,
<b>Indigenous</b>	None
<b>Recreational</b>	None

HIMIF Heard Island and McDonald Island Fishery (CTH), MITF Macquarie Island Toothfish Fishery (CTH),

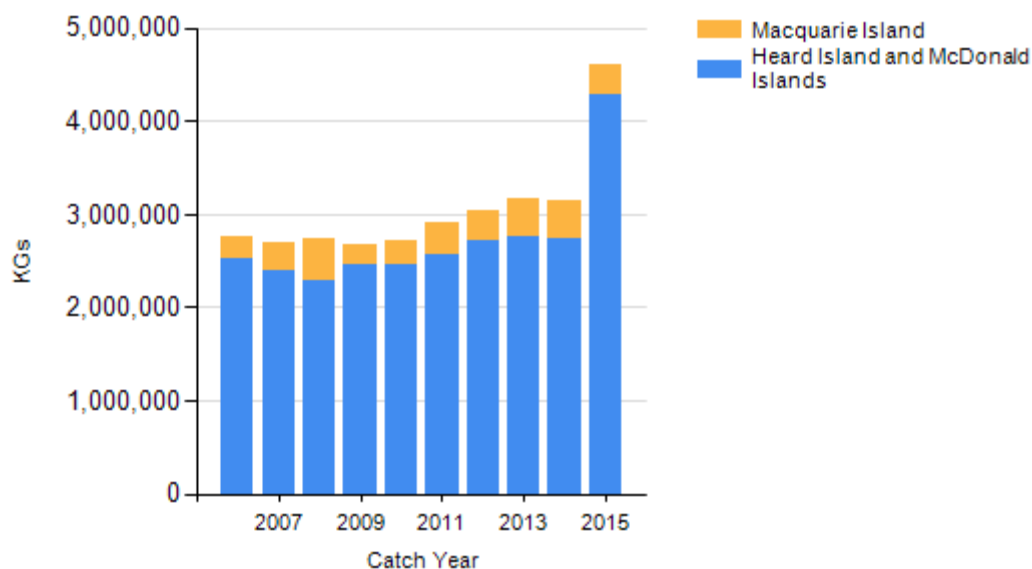
**a Commonwealth – Recreational** The Australian Government does not manage recreational fishing in Commonwealth waters. Recreational fishing in Commonwealth waters is managed by the state or territory immediately adjacent to those waters, under its management regulations.

**b Commonwealth** There is no recreational or Indigenous fishing for Patagonian Toothfish.

**c Commonwealth – Commercial (catch)** The most recent data available for the Heard Island and McDonalds Islands Fishery (HIMIF) is for the 2014–15 fishing season. The most recent data available for the Macquarie Island Toothfish Fishery (MITF) is for the 2015–16 fishing season.

**d Commonwealth – Indigenous** The Australian Government does not manage non-commercial Indigenous fishing in Commonwealth waters, with the exception of the 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



Commercial catch of Patagonian Toothfish - note confidential catch not shown

#### EFFECTS OF FISHING ON THE MARINE ENVIRONMENT

- Three ecological risk assessments (by gear type including demersal trawl, midwater trawl and demersal longline), on non-target species in the Heard Island and McDonald Islands Fishery (Commonwealth) (HIMIF) found that the risk to the sustainability of non-target species was low and no species was determined to be at high risk[10].
- Australia implements regulations, in line with those of Commission for the Conservation of Antarctic Marine Living Resources, to minimise the environmental impact of fisheries in the HIMIF and in the Macquarie Island Toothfish Fishery (Commonwealth)[11]. These include bycatch mitigation measures such as weighted longlines and bird scaring lines; specific reporting requirements for seabird or marine mammal interactions; bycatch catch limits; bycatch and offal discharge restrictions; closed areas and a requirement to carry two scientific observers.

#### ENVIRONMENTAL EFFECTS on Patagonian Toothfish

- Sea surface temperature has been demonstrated to impact recruitment of Patagonian Toothfish[12]. However, the full impact of climate change on Patagonian Toothfish stocks is currently unclear, although Patagonian Toothfish may demonstrate a level of resilience to environmental change as they can migrate large distances[13].

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STATUS OF AUSTRALIAN FISH STOCKS REPORT  
Patagonian Toothfish (2016)

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