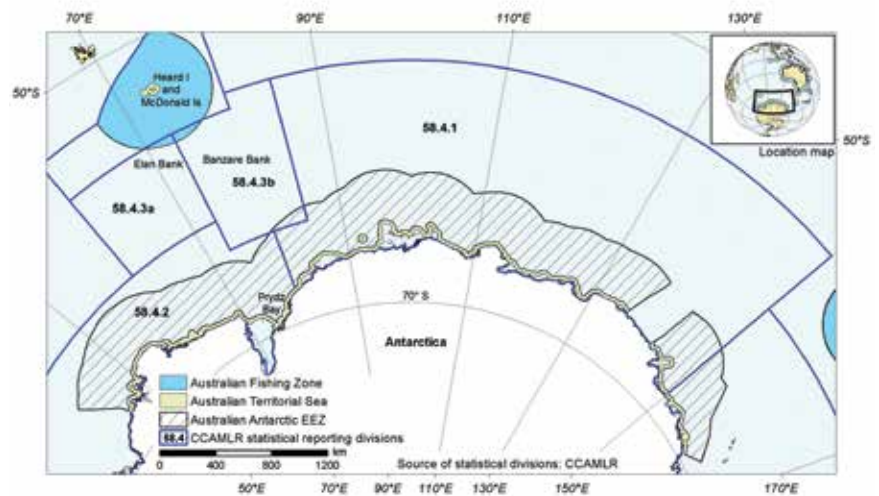


28 Antarctic Waters Fishery

H Patterson and M Skirtun

FIGURE 28.1 Area of the Antarctic Waters Fishery (CCAMLR Statistical Divisions 58.4.1, 58.4.2, 58.4.3a and 58.4.3b)









Note: CCAMLR The Commission for the Conservation of Antarctic Marine Living Resources.

TABLE 28.1 Status of the Antarctic Waters Fishery

Status	2010		2011		Comments
Biological status	Fishing mortality	Biomass	Fishing mortality	Biomass	
Toothfish (<i>Dissostichus eleginoides</i> , <i>D. mawsoni</i>)					No commercial Australian fishing activity since 2005. Statistical Division 58.4.3b is very likely depleted below 20% B_0 ; high levels of historical IUU fishing.
Economic status	No Australian fishing				Not applicable

Notes: B_0 Unfished biomass. IUU Illegal, unregulated and unreported.

Fishing mortality	 Not subject to overfishing	 Subject to overfishing	 Uncertain
Biomass	 Not overfished	 Overfished	 Uncertain

28.1 Description of the fishery

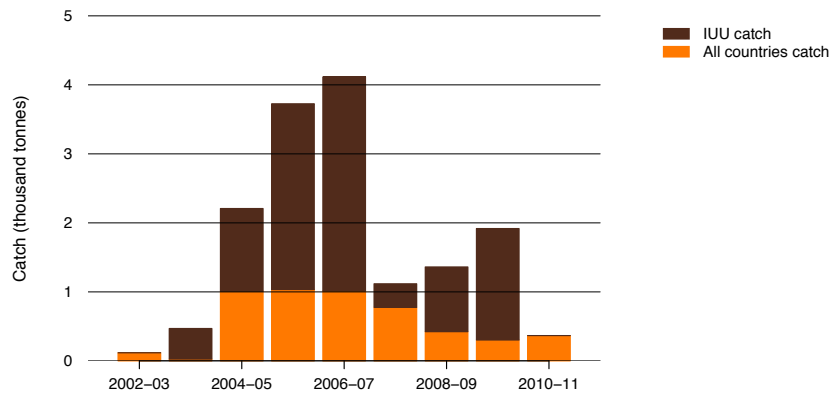
The Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) area of competence is divided into statistical areas, which are further divided into statistical divisions. Statistical Area 58.4 is adjacent to Australia’s Antarctic Territory and overlaps with Australia’s Antarctic Exclusive Economic Zone (EEZ) and the Australian Fishing Zone (AFZ; Figure 28.1). Statistical Divisions 58.4.1 and 58.4.2 are adjacent to Australia’s Antarctic Territory and overlap with Australia’s Antarctic EEZ. Statistical Divisions 58.4.3a and 58.4.3b are high-seas fisheries areas that overlap with the AFZ around Heard Island and McDonald Islands. Statistical Division 58.4.3b also overlaps with Australia’s Antarctic EEZ (Figure 28.1). The 200 nautical mile Australia’s EEZ extending from the Australia’s Antarctic Territory is not defined as part of the AFZ for the purposes of the Commonwealth *Fisheries Management Act 1991*. However, under the Fisheries Management Regulations, the Act extends to Australian citizens and bodies corporate, Australian vessels and all persons on any Australian vessel in this area. The Act also allows for the formation of regulations to apply to areas defined by the regulations as outside the EEZ.

Fisheries are classified by CCAMLR as ‘exploratory’ until there is adequate information about the fishery to apply the CCAMLR decision rules to set catch limits. ‘New and exploratory fisheries’ are managed through a range of binding conservation measures, including precautionary catch limits (equivalent to total allowable catches [TACs]) that can be caught by all CCAMLR members who have been approved to fish in those areas. The CCAMLR toothfish harvest strategy has not yet been formally implemented for CCAMLR Statistical Area 58.4 because the data are inadequate.

The first recorded catch of toothfish in Antarctic waters by Australian vessels was 1990–91, with the largest catch recorded in 2002–03. However, there has been no commercial fishing activity by Australian vessels in Statistical Area 58.4 since 2005. Total Australian catches in the Antarctic Waters Fishery (AWF) are comparatively low, with only 149 t of toothfish taken by Australian vessels between 1990 and 2008. Byproduct species in the AWF are generally limited to grenadiers.

Illegal, unregulated and unreported (IUU) fishing remains a significant obstacle to sustainable management in the high-seas CCAMLR areas (Figure 28.2), including Statistical Area 58.4. Antarctic toothfish (*Dissostichus mawsoni*) is the target species in both legal and IUU operations. This is a different species from Patagonian toothfish (*Dissostichus eleginoides*), which is the target species in the Heard Island and McDonald Islands Fishery, and the Macquarie Island Toothfish Fishery. The IUU catches, which were previously taken by longline but are now taken by gillnet, have been estimated and used when setting TACs. Estimates of IUU catch are not yet available for 2010–11. However, IUU vessels were reported in the CCAMLR convention area in 2011, and the Scientific Committee noted that there was no evidence that IUU fishing has declined but that instead, it could be increasing (CCAMLR 2011a).

FIGURE 28.2 Reported toothfish catch from all fleets and estimated IUU fishing in the AWF, 2002–03 to 2010–11



Notes: IUU Illegal, unregulated and unreported. Estimate of IUU catch for 2010–11 not yet available.

FIGURE 28.3 Australian toothfish catch in the AWF by financial year, 2002–03 to 2010–11

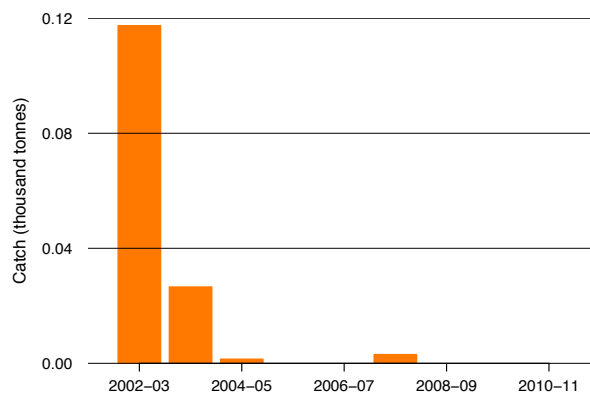


TABLE 28.2 CCAMLR precautionary catch limits, catch reported by CCAMLR members and estimated IUU catches in Statistical Area 58.4 for 2009–10 and 2010–11

Statistical Division	2009–10 fishing season ^a				2010–11 fishing season			
	CCAMLR catch limit ^b (t)	Reported catch (t)	Estimated IUU catch (t)	Total catch (t)	CCAMLR catch limit ^b (t)	Reported catch (t)	Estimated IUU catch (t)	Total catch ^c (t)
58.4.1	210	196	910	1 106	210	216	na	216
58.4.2	70	93	432	525	70	136	na	136
58.4.3 ^a	86	0	0	0	86	4	na	4
58.4.3 ^b	0 ^d	14	171	185	0 ^e	11	na	11

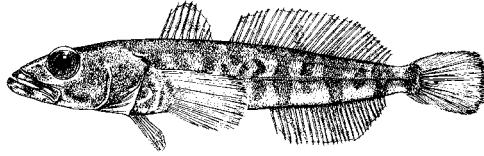
^a Fishery statistics are provided by fishing season, unless otherwise indicated. ^b Set by CCAMLR and available to be caught by all CCAMLR members approved to conduct new and exploratory fisheries in the area. ^c Since IUU catch was not estimated in 2010–11, the actual total catch may be much higher than noted. ^d 72 t available for scientific research. ^e 15 t available for scientific research.
Notes: CCAMLR Commission for the Conservation of Antarctic Marine Living Resources. IUU Illegal, unregulated and unreported. **na** Not available.
Source: CCAMLR 2011b



Toothfish
AFMA

28.2 Biological status

28.2.1 Toothfish



Line drawing: FAO

Stock assessment

Statistical Divisions 58.4.1 and 58.4.2

In 2008, four assessment methods based on catch-per-unit-effort trends, local depletion, a constant recruitment model and mark-recapture data were compared for toothfish (*Dissostichus* spp.) stocks in Statistical Divisions 58.4.1 and 58.4.2. However, a very low rate of tag returns prevented a reliable stock assessment (Agnew et al. 2008). An estimation of catch rates in these statistical divisions using generalised additive models indicated that catch rates were low compared with those in the Ross Sea, and thus these divisions were unlikely to support a large population of toothfish (Welsford 2011). Catches in 58.4.2 are dominated by Antarctic toothfish and there have been high levels of estimated IUU catch in these divisions, well in excess of the CCAMLR catch limits (Table 28.2)

Statistical Division 58.4.3a

Limited data and analyses are available for Statistical Division 58.4.3a. Hillary (2008) assessed this stock based on tag returns, which led to a decrease in the TAC in 2008. Catches in 58.4.3a are dominated by Patagonian toothfish. There has been relatively little or no reported catch by CCAMLR members in this division in recent years, and low estimated IUU catch in 2010 (Table 28.2).

Statistical Division 58.4.3b

A random stratified longline survey by an Australian vessel in 2008 provided evidence of substantial depletion and indicated that there are few fish outside the preferred fishing grounds (Welsford et al. 2008). Similarly, a Leslie depletion analysis of stratified catch-and-effort data provided evidence of recent depletion of toothfish on individual fishing grounds (McKinlay et al. 2008), and an updated assessment indicated that the stock was depleted on all the grounds and patches examined (Welsford et al. 2009). In addition, there is low abundance of small fish in this division, indicating that recruitment may not occur on Banzare Bank, but that older fish may move to the area from elsewhere; Banzare Bank may be a spawning area for Antarctic toothfish (Taki et al. 2011). In 2010 and 2011, a zero commercial TAC was set for this division, based on high levels of IUU fishing (Figure 28.2) and depletion of the stock. Japan conducted fishery-based research in 2010–11 and 2011–12 (CCAMLR 2011b). This research includes a requirement to tag and release toothfish. Catches in 58.4.3b are dominated by Antarctic toothfish. IUU was estimated to be well above the CCAMLR catch limit in 2010.

Stock status determination

Statistical Divisions 58.4.1 and 58.4.2

The IUU catches for these two divisions have been estimated as substantial in recent years, and in 2010, was estimated at more than four times the CCAMLR catch limit for 58.4.1 and more than six times the limit for 58.4.2. Although IUU catch was not estimated in 2011, it is likely to be similar to previous years and well above the CCAMLR catch limit (CCAMLR 2011a). In addition, reported catch exceeded the CCAMLR catch limits by around 3 per cent (6 t) for Statistical Division 58.4.1 and by around 94 per cent (66 t) by one vessel alone for Statistical Division 58.4.2. While it is possible that overfishing is occurring in these divisions, given the lack of a reliable assessment for these areas, it is uncertain whether the stock is overfished or subject to overfishing.

Statistical Division 58.4.3a

Given the lack of data for this division, it is uncertain whether the stock is overfished or subject to overfishing.

Statistical Division 58.4.3b

The available data and analyses suggest that the biomass of the stock in this division is depleted to below 20 per cent of unfished levels. Together with the lack of any evidence of recovery the stock remains classified as overfished. Despite a zero TAC setting, high IUU catches in this statistical division by vessels outside CCAMLR member nations may be continuing or even increasing (CCAMLR 2011a). As a result, the stock is classified as subject to overfishing.

Summary

Given the strong evidence for significant stock depletion in Statistical Division 58.4.3b, the fact that this statistical division may be a spawning area for Antarctic toothfish, and evidence of poor recent recruitment, the overall stock is classified as **overfished**. Although there has been limited historical fishing by Australian vessels in the AWF and none since a research survey in 2008, high levels of IUU catch by vessels outside CCAMLR member nations have historically exceeded, and may continue to exceed, the CCAMLR catch levels, particularly in Statistical Divisions 58.4.1 and 58.4.3b. The reported catch for two divisions (58.4.1 and 58.4.2) also exceeded the CCAMLR catch limits. As a result, the stock is considered to be **subject to overfishing**.

28.3 Economic status

No Australian vessels have been commercially active in the fishery since 2005. The fishery is also a CCAMLR fishery. Therefore, the economic objective of the Commonwealth Fisheries Harvest Strategy Policy (DAFF 2007) does not apply to it. For these reasons, the economic status of this fishery has not been assessed.

28.4 Environmental status

In February 2012, export approval under the *Environment Protection and Biodiversity Conservation Act 1999* for new and exploratory fisheries in the CCAMLR region was allowed to lapse. From 15 March 2012, product harvested from this fishery cannot be exported. A submission from the Australian Fisheries Management Authority for future export approval is currently under review.

No Australian vessels have fished commercially in the AWF since 2005. For this reason, no ecological risk assessment has been undertaken. IUU fishing is likely to be responsible for seabird mortalities in the CCAMLR area (CCAMLR 2007). The number of seabird and mammal mortalities resulting from IUU fishing could not be estimated for 2010–11 because of a lack of information on interaction rates.

28.5 Literature cited

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