

**FISHERY REPORT: *DISSOSTICHUS ELEGINOIDES*
HEARD ISLAND (DIVISION 58.5.2)**

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1. Details of the fishery

1.1 Reported catch

The catch limit of *Dissostichus eleginoides* in Division 58.5.2 for the 2007/08 season was 2 500 tonnes (Conservation Measure 41-08) for the period from 1 December 2007 to 30 November 2008. The catch of *D. eleginoides* reported for this division by October 2008 was 1 496 tonnes. Reported catches along with the respective catch limits and number of vessels active in the fishery are shown in Table 1. In Division 58.5.2, the fishery was a trawl fishery from the 1996/97 to the 2001/02 season. In recent seasons the fishery has been prosecuted by both trawlers and longliners. The longline fishery was active from May to September 2008 and the trawl fishery was active throughout the whole season.

Table 1: Catch history for *Dissostichus eleginoides* in Division 58.5.2 (source: STATLANT data for past seasons, and catch and effort reports for current season, WG-FSA-08/10 Rev. 2 and past reports for IUU catch).

Season	Regulated fishery						Estimated IUU catch (tonnes)	Total removals (tonnes)
	Reported effort (number of vessels)	Catch limit (tonnes)	Reported catch (tonnes)					
			Longline	Pot	Trawl	Total		
1989/90	-	-	0	0	1	1	0	1
1991/92	-	-	0	0	0	0	0	0
1992/93	-	-	0	0	0	0	0	0
1994/95	-	297	0	0	0	0	0	0
1995/96	-	297	0	0	0	0	300	3000
1996/97	2	3800	0	0	1927	1927	7117	9044
1997/98	3	3700	0	0	3765	3765	4150	7915
1998/99	2	3690	0	0	3547	3547	427	3974
1999/00	2	3585	0	0	3566	3566	1154	4720
2000/01	2	2995	0	0	2980	2980	2004	4984
2001/02	2	2815	0	0	2756	2756	3489	6245
2002/03	3	2879	270	0	2574	2844	1274	4118
2003/04	3	2873	567	0	2296	2864	531	3395
2004/05	3	2787	621	0	2122	2744	265	3009
2005/06	3	2584	659	68	1801	2528	74	2602
2006/07	2	2427	601	0	1787	2387	0	2387
2007/08*	3	2500	778	0	718	1496	0	1496

* Catch for 2007/08 not complete. Fishing season ends 30 November.

2. The spatial and temporal structure of the fishing for *D. eleginoides* is summarised in Table 2. The Working Group noted that a minor amount of longline fishing has occurred in trawl ground B to date and that some longline fishing occurs in areas other than the known grounds, but these are not appreciable at this stage. The pot fishery has only been experimental to date (68 tonnes).

Table 2: Spatial and temporal structure of the fishing activities for *Dissostichus eleginoides* in Division 58.5.2 including summary codes for the different elements of the fishery. f – fishery; s – season.

Gear type	Season			
	Approximate area (km ²)	Prior to longline	Longline	Post longline
Survey	85 694	-	f1	-
Trawl ground B	442	f2_s1	f2_s2	f2_s3
Trawl ground C	2 033	f3_s1	f3_s2	f3_s3
Longline ground A	16 678	-	f4_s2	-
Longline ground C	2 033	-	f5_s2	-
Longline ground D	90 625	-	f6_s2	-

1.2 IUU catch

3. There was no evidence of IUU fishing in Division 58.5.2 in 2007/08 (Table 1).

1.3 Size distribution of catches

4. Catch-weighted length frequencies are illustrated in Figures 1 (trawl fishery) and 2 (longline fishery). The Working Group noted that the modal size of fish caught in the longline fishery was greater than that in the trawl fishery. The difference in selectivities between trawl and longline sub-fisheries in Division 58.5.2 was estimated in WG-FSA-06/64. This work showed that longline gear is more able to catch older fish (>25 years) than trawl gear which has high selectivity for 6-year-old fish effectively declining to zero for fish older than 20 years. The length-frequency distribution for the longline fishery will therefore have larger fish because of gear selectivity, as well as the longline fishery occurring in deeper water where toothfish tend to be larger.

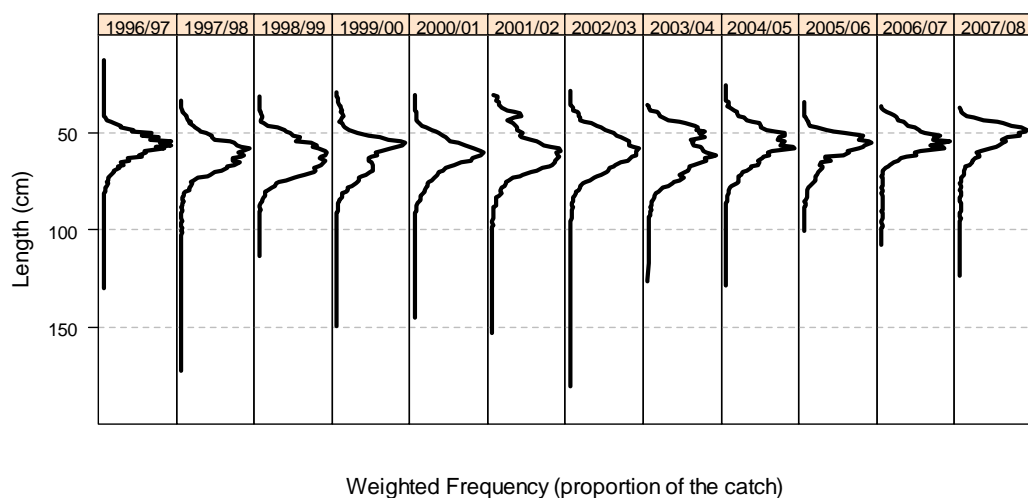


Figure 1: Catch-weighted length frequencies for *Dissostichus eleginoides* caught by trawl in Division 58.5.2 (source: observer, fine-scale and STATLANT data).

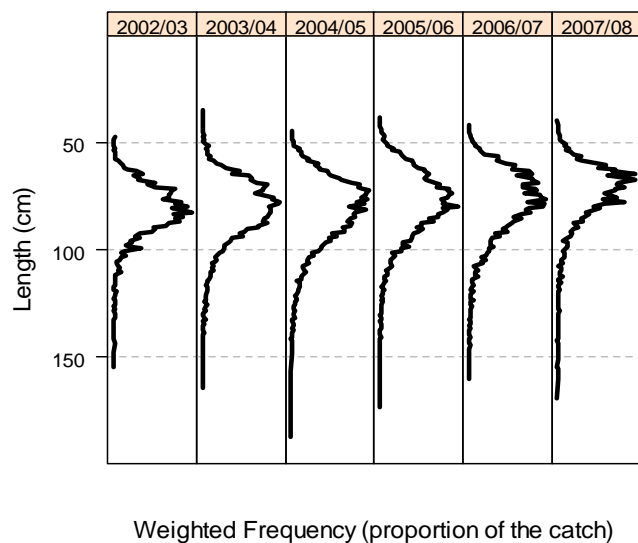


Figure 2: Catch-weighted length frequencies for *Dissostichus eleginoides* caught by longline in Division 58.5.2 (source: observer, fine-scale and STATLANT data).

2. Stocks and areas

5. *Dissostichus eleginoides* occurs throughout the Heard Island and McDonald Islands Plateau, from shallow depths near Heard Island to at least 1 800 m depth around the periphery of the plateau. Random stratified trawl surveys have been conducted since 1990 with survey designs described in detail in WG-FSA-06/44 Rev. 1. Younger fish (less than about 600 mm TL) predominate on the plateau in depths less than 500 m, but no areas of local abundance have been discovered. As fish grow, they move to deeper waters, and are recruited to the trawl fishery on the plateau slopes in depths of 450 to 800 m. Here there are several areas of local abundance that constitute the main trawling grounds where the majority of fish caught are between 500 and 750 mm TL (Figure 1). Older fish are seldom caught in the trawl fishery, and it is assumed that they move into deeper water (>1 000 m depth) where they are caught by the longline fishery. This fishery mostly operates between 1 000 and 1 500 m depth and catches larger fish than in the trawl fishery (Figure 1), but few fish are >1 000 mm TL.

6. Genetic studies have demonstrated that the *D. eleginoides* population at Heard Island and McDonald Islands is distinct from those at distant locations such as South Georgia and Macquarie Island (Appleyard et al., 2002), but that within the Indian Ocean sector there appears to be no distinction between fish at Heard, Kerguelen, Crozet or Marion/Prince Edward Islands based on genetic studies (Appleyard et al., 2004). This, combined with results from tagging data which show movement of some fish from Heard Island to Kerguelen and Crozet Islands (Williams et al., 2002; WG-FSA-07/48 Rev. 1), suggests that a metapopulation of *D. eleginoides* may exist in the Indian Ocean sector (WG-FSA-03/72).

3. Parameters and available data

7. No revised parameter estimates were available in 2008. Parameters used in the Division 58.5.2 toothfish assessment are detailed in SC-CAMLR-XXVI, Annex 5, Appendix L.

4. Stock assessment

8. No assessment for *D. eleginoides* in Division 58.5.2 was conducted in 2008, following the recommendation from the Scientific Committee that the assessment conducted in 2007 was sufficiently stable to provide a yield estimate for the 2008/09 season without revision (SC-CAMLR-XXVI, paragraph 14.6).

5. By-catch of finfish and invertebrates

5.1 By-catch removals

9. By-catch removals for the toothfish fisheries (longline and trawl) are detailed in Table 3 from fine-scale data. By-catch in the toothfish trawl fisheries is generally low, comprising less than 1% of the total catch. Landed by-catch in the longline fisheries ranged from 6 to 13% of the total catch (10% in 2006/07) and including cut-offs revised these estimates to between 11 and 26% (21% in 2006/07) of the total catch. No species was caught in quantities approaching the catch limits.

Table 3: Catch history for by-catch species (macrourids, rajids, *Channichthys rhinoceratus*, *Lepidonotothen squamifrons* and other species), catch limits and number of rajids released alive in Division 58.5.2. Catch limits are for the division (see Conservation Measure 33-02 for details). (Source: fine-scale data).

Season	Macrourids				Rajids				Number released
	Catch limit (tonnes)	Reported catch (tonnes)			Catch limit (tonnes)	Reported catch (tonnes)			
		Longline	Trawl	Total		Longline	Trawl	Total	
1996/97	-	0	0	0	-	0	3	3	-
1997/98	-	0	0	0	120	0	3	3	-
1998/99	-	0	1	1	-	0	2	2	-
1999/00	-	0	4	4	-	0	6	6	-
2000/01	-	0	1	1	50	0	5	5	-
2001/02	50	0	4	4	50	0	4	4	-
2002/03	465	3	1	4	120	7	27	33	-
2003/04	360	42	3	46	120	62	14	76	155
2004/05	360	72	2	74	120	71	8	79	8412
2005/06	360	26	1	27	120	17	19	35	3814
2006/07	360	61	5	66	120	8	10	18	7886
2007/08	360	66	5	71	120	9	2	11	8586

(continued)

Table 3 (continued)

Season	<i>Channichthys rhinoceratus</i>			<i>Lepidonotothen squamifrons</i>				
	Catch limit (tonnes)	Reported catch (tonnes)			Catch limit (tonnes)	Reported catch (tonnes)		
		Longline	Trawl	Total		Longline	Trawl	Total
1996/97	-	0	2	2	-	0	0	0
1997/98	80	0	2	2	325	0	3	3
1998/99	150	0	1	1	80	0	0	0
1999/00	150	0	3	3	80	0	0	0
2000/01	150	0	1	1	80	0	4	4
2001/02	150	0	4	4	80	0	1	1
2002/03	150	0	21	21	80	0	0	0
2003/04	150	0	7	7	80	0	3	3
2004/05	150	0	36	36	80	0	2	2
2005/06	150	0	32	32	80	0	5	5
2006/07	150	0	15	15	80	0	10	10
2007/08	150	0	8	8	80	0	4	4

Season	Other species			
	Catch limit (tonnes)	Reported catch (tonnes)		
		Longline	Trawl	Total
1996/97	50	0	6	6
1997/98	50	0	3	3
1998/99	50	0	3	3
1999/00	50	0	5	5
2000/01	50	0	6	6
2001/02	50	0	10	10
2002/03	50	0	10	10
2003/04	50	3	16	19
2004/05	50	3	9	12
2005/06	50	3	7	12
2006/07	50	1	4	5
2007/08	50	2	14	16

5.2 Assessments of impact on affected populations

10. Updated length–weight relationships, length-at-maturity data and estimates of abundance from survey data for rajids were presented in WG-FSA-05/70. Insufficient information was available to update assessments.

11. No stock assessments of individual by-catch species were undertaken in 2008. By-catch limits of *Channichthys rhinoceratus* and *Lepidonotothen squamifrons* are based on assessments carried out in 1998 (SC-CAMLR-XVII, Annex 5, paragraphs 4.204 to 4.206) and by-catch limits of the grenadier *Macrourus carinatus* are based on assessments carried out in 2002 and 2003 (SC-CAMLR-XXII, Annex 5, paragraphs 5.245 to 5.249).

5.3 Mitigation measures

12. The fishery operates under Conservation Measure 33-02.
13. The Working Group recommended that, where possible, all rajids should be cut from the line while still in the water, except on the request of the scientific observers during their sampling period.

6. By-catch of birds and marine mammals

14. No seabird mortality has been reported in the six years to date of longline fishing in Division 58.5.2, however, see SC-CAMLR-XXVII, Annex 6, paragraph 2.6. Seabird/trawl interactions are reported in Table 4. No seabirds were observed killed in the Division 58.5.2 toothfish trawl fishery in 2007/08 (SC-CAMLR-XXVII, Annex 6, Table 7).

Table 4: Seabird mortality totals and rates (BPT: birds/trawl) and species composition of by-catch, recorded by observers in Division 58.5.2 trawl fisheries over the last six seasons. DIM – black-browed albatross; PRO – white-chinned petrel; DAC – Cape petrel (data from SC-CAMLR-XXVII, Annex 6, Table 7).

Season	Target species	BPT	Dead			Total dead	Alive (all species combined)
			DIM	PRO	DAC		
2000/01	<i>D. eleginoides</i>	<0.10				0	0
2001/02	<i>D. eleginoides</i>	<0.10				0	1
2002/03	<i>D. eleginoides</i>	<0.10	2	2	2	6	11
2003/04	<i>D. eleginoides</i>	<0.10				0	13
2004/05	<i>D. eleginoides</i>	<0.11	5	3		8	0
2005/06	<i>D. eleginoides</i>	0.00				0	0
2006/07	<i>D. eleginoides</i>	<0.10			2	2	0
2007/08	<i>D. eleginoides</i>	0.00				0	1

15. Ad hoc WG-IMAF assessed the level of risk of incidental mortality of seabirds in Division 58.5.2 as category 4 (average-to-high) (SC-CAMLR-XXVI/BG/31).

Table 5: Seal mortality totals and rates (SPT: seals/trawl) and species composition of by-catch, recorded by observers in Division 58.5.2 trawl fisheries over the last six seasons. SLP – leopard seal; SEA – Antarctic fur seal; SES – southern elephant seal (data from SC-CAMLR-XXVII, Annex 6, Table 9).

Season	Target species	SPT	Dead			Total dead	Alive (all species combined)
			SLP	SEA	SES		
2000/01	<i>D. eleginoides</i>	0.001		1		1	2
2001/02	<i>D. eleginoides</i>	0.001		1		1	0
2002/03	<i>D. eleginoides</i>	0.003		2	2	4	2
2003/04	<i>D. eleginoides</i>	0.002		3		3	0
2004/05	<i>D. eleginoides</i>	0.00				0	1
2005/06	<i>D. eleginoides</i>	0.00	1			1	0
2006/07	<i>D. eleginoides</i>	0.00				0	0
2007/08	<i>D. eleginoides</i>	0.00		1		1	0

16. There was one Antarctic fur seal mortality observed in the longline fishery in Division 58.5.2 in the 2007/08 season (Table 5).

6.1 Mitigation measures

17. Longline fishing is conducted in accordance with Conservation Measures 24-02 and 25-02 and the special requirements outlined in Conservation Measure 41-08, paragraph 3; trawl fishing in accordance with Conservation Measure 25-03.

7. Ecosystem implications/effects

18. Fishing gear deployed on the seabed can have negative effects on sensitive benthic communities. The potential impacts of fishing gear on the benthic communities in Division 58.5.2 are limited by the small size and number of commercial trawl grounds and the protection of large representative areas of sensitive benthic habitats from direct effects of fishing in an IUCN category Ia marine reserve (SC-CAMLR-XXI/BG/18). The marine reserve and associated conservation zone comprises around 17% of the area of the Australian EEZ around Heard Island and McDonald Islands and falls entirely within CCAMLR Division 58.5.2.

19. The Working Group noted that by-catch of benthos was monitored by observers in the early stages of the development of the fishery and that by-catch of benthos was much lower in areas that have subsequently become the main fishing grounds.

8. Harvest controls and management advice

8.1 Conservation measures

20. The limits on the fishery for *D. eleginoides* in Division 58.5.2 are defined in Conservation Measure 41-08. The limits in force apply to 2006/07 and 2007/08 and the Working Group's advice to the Scientific Committee is summarised in Table 6.

Table 6: Limits on the exploratory fishery for *D. eleginoides* in Division 58.5.2 in 2006/07 and 2007/08 (Conservation Measure 41-08) and advice to the Scientific Committee.

Element	Limit in force	Advice
Access (gear)	Trawls or longlines or pots	
Catch limit	2 500 tonnes west of 79°20'E (see CM 32-14)	Carry forward
Season:		
trawl and pot	1 December to 30 November	Carry forward
longline	1 May to 14 September, with possible extension from 15 to 30 April and 15 September to 31 October for any vessel that has demonstrated full compliance with CM 25-02 in the previous season.	Carry forward
By-catch	Fishing shall cease if the by-catch limit of any species, as set out in CM 33-02, is reached.	Carry forward
Mitigation	In accordance with CMs 24-02, 25-02 and 25-03.	Carry forward
Observers	Each vessel to carry at least one scientific observer and may include one additional CCAMLR scientific observer.	Carry forward
Data	Ten-day reporting system as in Annex 41-08/A Monthly fine-scale reporting system as in Annex 41-08/A on haul-by-haul basis. Fine-scale reporting system as in Annex 42-02/B. Reported in accordance with the Scheme of International Scientific Observation.	Carry forward
Target species	For the purpose of Annex 41-08/A, the target species is <i>Dissostichus eleginoides</i> and the by-catch is any species other than <i>D. eleginoides</i> .	Carry forward
Jellymeat	Number and weight of fish discarded, including those with jellymeat condition, to be reported. These catches count towards the catch limit.	Carry forward
Environmental protection	Regulated by CM 26-01.	Carry forward

8.2 Management advice

21. The Working Group recommended that the catch limit for *D. eleginoides* in Division 58.5.2 west of 79°20'E should be 2 500 tonnes for the 2008/09 fishing season.

References

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