

**FISHERY REPORT: *DISSOSTICHUS ELEGINOIDES*
SOUTH SANDWICH ISLANDS (SUBAREA 48.4)**

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FISHERY REPORT: *DISSOSTICHUS ELEGINOIDES* SOUTH SANDWICH ISLANDS (SUBAREA 48.4)

1. Details of the fishery

The fishery for *Dissostichus eleginoides* in Subarea 48.4 was initiated as a new fishery in 1992/93 following notifications from Chile and the USA (SC-CAMLR-XI, Annex 5, paragraph 6.22), and the adoption of Conservation Measure 44/XI, which set a precautionary catch limit for *D. eleginoides* of 240 tonnes for that season. Subsequently, the USA withdrew from the fishery and the Chilean longline vessel abandoned fishing after one week of poor catches (SC-CAMLR-XII, Annex 5, paragraph 6.2). In addition, a Bulgarian-flagged longliner fished in November and December 1992 and reported a catch of 39 tonnes of *D. eleginoides* (SC-CAMLR-XII, Annex 5, paragraph 6.1).

2. Haul-by-haul data from the Chilean and Bulgarian vessels were submitted to CCAMLR, and WG-FSA used these data to estimate an annual yield of 28 tonnes of *D. eleginoides* for the subarea (SC-CAMLR-XII, Annex 5, paragraph 6.3, Table 1). The Commission adopted a precautionary catch limit for *D. eleginoides* of 28 tonnes per season. In addition, the taking of *D. mawsoni*, other than for scientific research purposes, was prohibited. These limits remained in force until 2004.

3. In 2004/05, the UK conducted a pilot tagging program using a fishing vessel. The vessel caught 27 tonnes of *D. eleginoides* and tagged 42 individuals, and the results of this research fishing were reported to WG-FSA (SC-CAMLR-XXIV, Annex 5, paragraphs 5.140 and 5.141).

4. Following the pilot study, the Commission agreed to an extensive mark–recapture experiment in Subarea 48.4 during the period from 2005/06 to 2007/08, with fishing conducted in accordance with Conservation Measure 24-01 (CCAMLR-XXIV, paragraphs 11.46 and 11.47; SC-CAMLR-XXIV, paragraphs 4.113 to 4.117). The experiment required a revision of the catch limit for *D. eleginoides* to 100 tonnes per season and a revised fishing season (1 April to 30 September) to allow each vessel operating in the fishery to undertake a tagging program in accordance with the CCAMLR tagging protocol (Conservation Measure 41-03). In addition, fishing was limited to the region of Subarea 48.4 north of a deep-water trench between Candlemas Islands and Saunders Island (Figure 1).

5. During this period, a total of 929 *D. eleginoides* were tagged and released in Subarea 48.4 and 25 tagged fish were recaptured, including 23 fish in 2007/08. The experiment has allowed a preliminary assessment of *D. eleginoides* in the Northern Area, and the vulnerable biomass was estimated to be between 1 000 and 2 000 tonnes (WG-FSA-08/46).

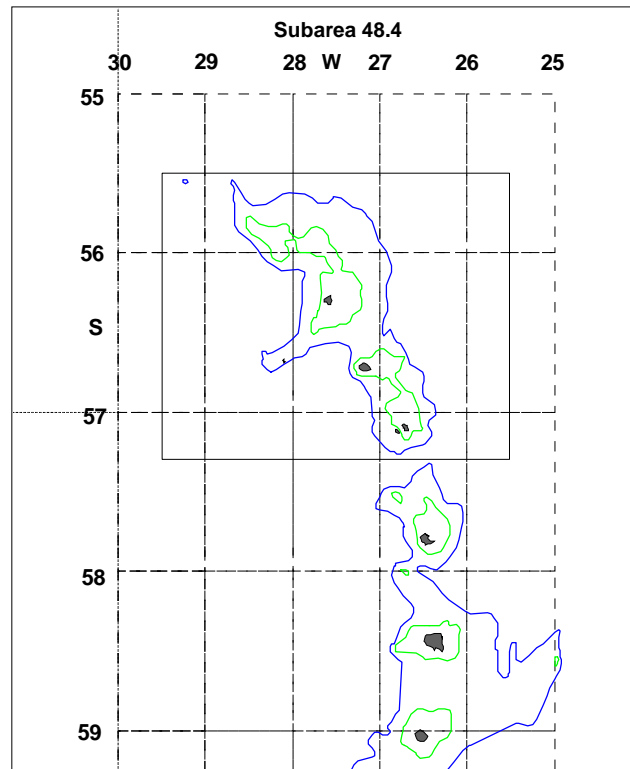


Figure 1: General map of Subarea 48.4. Fishing is limited to the area between latitudes 55°30'S and 57°20'S and longitudes 25°30'W and 29°30'W (box).

1.1 Reported catch

6. Licensed longline vessels commenced fishing for *D. eleginoides* in Subarea 48.4 in 1991/92 and 1992/93; fishing was abandoned following poor catches (Table 1). A tagging program was introduced in 2004/05, and research fishing has continued since that time. In 2007/08, one New Zealand-flagged vessel and one UK-flagged vessel conducted research fishing and reported a total catch of 98 tonnes of *D. eleginoides* from Subarea 48.4 (Table 1).

7. The total catch of *D. eleginoides* in 2007/08 represents 98% of the precautionary catch limit for the fishery.

1.2 IUU catch

8. There is no information to derive an estimate of the level of IUU fishing in Subarea 48.4 (Table 1).

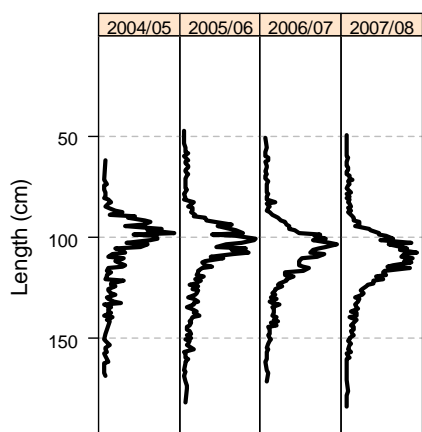
Table 1: Catch history for *Dissostichus* spp. in Subarea 48.4 (source: STATLANT data for past seasons, and catch and effort reports for current season, WG-FSA-08/10 Rev. 2 and past reports for IUU catch).

Season	Regulated fishery						Estimated IUU catch (tonnes)	Total removals (tonnes)
	Effort (number of vessels)		Catch limit (tonnes)*	<i>Dissostichus</i> spp.				
	Limit	Reported		Reported catch (tonnes)				
				<i>D. eleginoides</i>	<i>D. mawsoni</i>	Total		
1991/92	-	1	-	30	0	30	-	30
1992/93	-	1	240	10	0	10	-	10
1993/94	-	0	28	0	0	0	-	0
1994/95	-	0	28	0	0	0	-	0
1995/96	-	0	28	0	0	0	-	0
1996/97	-	0	28	0	0	0	-	0
1997/98	-	0	28	0	0	0	-	0
1998/99	-	0	28	0	0	0	-	0
1999/00	-	0	28	0	0	0	-	0
2000/01	-	0	28	0	0	0	-	0
2001/02	-	0	28	0	0	0	-	0
2002/03	-	0	28	0	0	0	-	0
2003/04	-	0	28	0	0	0	-	0
2004/05	-	1	100	27	0	27	-	27
2005/06	-	2	100	18	0	19	-	19
2006/07	-	2	100	54	0	54	-	54
2007/08	-	2	100	98	0	98	-	98

* Applies to *D. eleginoides*

1.3 Size distribution of catches

9. Most *D. eleginoides* caught in the fishery ranged from 80 to 140 cm in length, with a broad mode at approximately 90–115 cm (Figure 2).



Weighted Frequency (proportion of the catch)

Figure 2: Catch-weighted length frequencies for *Dissostichus eleginoides* in Subarea 48.4 (source: observer, fine-scale and STATLANT data, and the length–weight relationships were taken from observations on *D. eleginoides* in Subarea 48.3).

2. Stocks and areas

10. No data are available on the stock structure of fish in this fishery. Available catch data indicate that *D. mawsoni* occurs predominantly in the southern region of Subarea 48.4, south of the area currently fished.

3. Parameter estimation

3.1 Observations

11. Since 2005/06, vessels operating in this fishery have been required to tag and release *Dissostichus* spp. at a rate of five fish per tonne of green-weight catch. A total of 971 *D. eleginoides* and 11 *D. mawsoni* (total 982 fish) have been tagged and released, and 25 *D. eleginoides* have been recaptured in that subarea (Table 2). In addition, one fish tagged in Subarea 48.4 was recaptured in Subarea 48.3.

Table 2: Number of individuals of *Dissostichus* spp. tagged and released and the tagging rate (fish per tonne of green weight caught) reported by vessels operating in the exploratory fishery for *D. eleginoides* in Subarea 48.4. The number of *D. eleginoides* is indicated in brackets. The total number of tagged fish recaptured to date in Subarea 48.4 is also included. (Source: observer data and catch and effort reports.)

Season	Flag State	Vessel name	<i>Dissostichus</i> spp. tagged and released		
			Number of fish	Tagging rate	
2004/05	UK	<i>Argos Helena</i>	42	(42)	1.56
2005/06	New Zealand	<i>San Aspiring</i>	98	(88)	7.93
	UK	<i>Argos Helena</i>	46	(46)	7.16
2006/07	New Zealand	<i>San Aspiring</i>	252	(251)	5.25
	UK	<i>Argos Helena</i>	40	(40)	6.44
2007/08	New Zealand	<i>San Aspiring</i>	252	(252)	5.12
	UK	<i>Argos Froyanes</i>	252	(252)	5.17
Total number of fish tagged and released			982	(971)	
Total number of tagged fish recaptured in Subarea 48.4			25	(25)	

3.2 Fixed parameter values

12. None available for this fishery.

4. Stock assessment

13. A preliminary assessment of *D. eleginoides* in the Northern Area has been undertaken, based on Peterson mark-recapture and local CPUE depletions; both methods gave similar results with a vulnerable biomass estimated to be between 1 100 and 1 700 tonnes.

5. By-catch of fish and invertebrates

5.1 By-catch removals

14. Catches of by-catch species groups (macrourids, rajids and other species) reported in fine-scale data, and number of rajids cut from lines and released alive are summarised in Table 3. The by-catch in this fishery consists predominantly of macrourids (up to 16 tonnes per season) and rajids (up to 8 276 released alive). Catch limits for by-catch species have not been set for this fishery. However, the taking of *D. mawsoni*, other than for scientific research purposes, is prohibited.

Table 3: Catch history for by-catch species (macrourids, rajids and other species) and number of rajids released alive in Subarea 48.4 (source: fine-scale data).

Season	Macrourids	Rajids		Other species
	Reported catch (tonnes)	Reported catch (tonnes)	Number released	Reported catch (tonnes)
2004/05	3	0	0	<1
2005/06	5	1	4359	<1
2006/07	14	2	6515	<1
2007/08	16	4	8276	<1

5.2 Assessment of impacts on affected populations

15. The distribution of rajids and macrourids in Subarea 48.4 has been investigated and initial results of their distributions were provided in WG-FSA-07/32 and updated in WG-FSA-08/46. To date, 212 skates have been tagged in the subarea and rajids are generally distributed to the east of the South Sandwich Islands, compared to toothfish being generally distributed to the north and west. The potential for significant impacts on rajids may therefore be limited. WG-FSA-08/46 reported that although catch rates for macrourids were initially high, vessels have altered their fishing techniques and rates have subsequently dropped to 16% of the catch weight for *D. eleginoides*. Macrourid catches are almost entirely composed of *Macrourus whitsoni*.

5.3 Identification of levels of risk

16. None available for this fishery.

5.4 Mitigation measures

17. The Commission had agreed that, where possible, vessels should release rajids from the lines by cutting the snoods when the rajids are still in the water, unless requested not to do so by the scientific observer during the biological sampling period (CCAMLR-XXIV, paragraph 4.51). The Working Group noted that, during the 'Year-of-the-Skate' vessels operating in the area would follow the recommendation to bring all skates on board prior to release to allow accurate identification and assessment of condition.

6. By-catch of birds and mammals

6.1 By-catch removals

18. Details of seabird by-catch are summarised in Table 4.

Table 4: Seabird by-catch limit, observed mortality rate and total estimated mortality in Subarea 48.4 (from SC-CAMLR-XXVII, Annex 6, Table 3).

Season	Mortality rate (birds per thousand hooks)	Total estimated mortality (number of birds)
2004/05	0	0
2005/06	0	0
2006/07	0	0
2007/08	0	0

19. No marine mammal interactions or mortalities were reported.

20. Ad hoc WG-IMAF assessed the risk level of seabirds in this fishery in Subarea 48.4 at category 3 (average) (SC-CAMLR-XXVI/BG/31).

6.2 Mitigation measures

21. Conservation Measure 25-02 applies to this fishery.

7. Ecosystem implications/effects

22. No evaluation available for this fishery.

8. Harvest controls and management advice

8.1 Conservation measures

23. The UK proposed to continue the mark-recapture experiment in Subarea 48.4 in 2008/09 so as to allow for a full assessment of *D. eleginoides* in the Northern Area in 2009. Additionally, the UK proposed to commence a mark-recapture experiment in the Southern Area of Subarea 48.4 (Figure 3), with the aim of collecting data required for the assessments of the population structure, size, movement and growth of both *D. eleginoides* and *D. mawsoni* in the southern region of Subarea 48.4. This would require subsequent updates to Conservation Measure 41-03.

24. In addition, ad hoc WG-IMAF recommended amending Conservation Measure 24-02 in order to align the mitigation requirements for Subarea 48.4 with the IMAF risk assessment, such that daytime setting would be permitted if bottle tests are undertaken, and the fishing season be extended to run from 1 December to 30 November (SC-CAMLR-XXVII, Annex 6, paragraph 9.10).

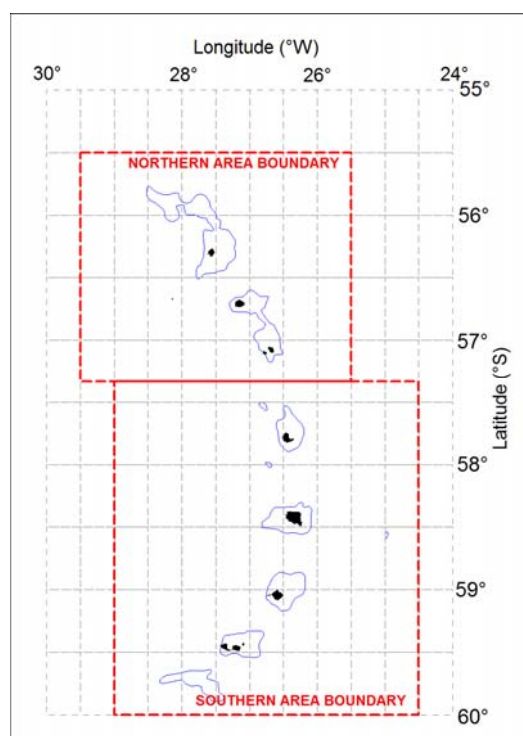


Figure 3: Positions of the boundaries of the Northern Area and Southern Area in Subarea 48.4. The 1 000 m depth contour is indicated.

Table 5: Proposed limits on the fishery for *Dissostichus eleginoides* and *D. mawsoni* in Subarea 48.4 in 2008/09 (Conservation Measure 41-03).

Element	Limit in force	Advice
Access	Directed fishery on <i>Dissostichus eleginoides</i> by longline only. Fishing limited to area bounded by latitudes 55°30'S and 57°20'S and by longitudes 25°30'W and 29°30'W.	Revise
Catch limit	Precautionary catch limit for <i>D. eleginoides</i> was 100 tonnes per season. The taking of <i>D. mawsoni</i> , other than for scientific research purposes, is prohibited.	Revise
Season	1 December to 30 November	Carry forward
By-catch	No limits	Revise
Mitigation	In accordance with CM 25-02.	Revise
Observers	At least one (1) scientific observer appointed in accordance with the CCAMLR Scheme of International Scientific Observation.	Carry forward
Data	Five-day catch and effort reporting Haul-by-haul catch and effort data Biological data reported by the CCAMLR scientific observer.	Carry forward Carry forward Carry forward
Research	Each vessel taking part in the fishery for <i>D. eleginoides</i> shall undertake a tagging program in accordance with the CCAMLR tagging protocol.	Carry forward
	Toothfish tagged at a rate of at least five fish per tonne green weight caught.	Carry forward
Environmental protection	Regulated by CM 26-01.	Carry forward

8.2 Management advice

25. WG-FSA-08/46 proposed a continuation of the tagging experiment initiated in 2004/05 and in addition dividing Subarea 48.4 into a Northern Area and a Southern Area, with a directed longline fishery on *D. eleginoides* in the Northern Area and *Dissostichus* spp. in the Southern Area. The Northern Area is defined as that portion of Statistical Subarea 48.4 that lies within the area bounded by latitudes 55°30'S and 57°20'S and by longitudes 25°30'W and 29°30'W. The Southern Area is defined as that portion of Statistical Subarea 48.4 that lies within the area bounded by latitudes 57°20'S and 60°00'S and by longitudes 24°30'W and 28°30'W (Figure 3).

26. Proposed catch and by-catch limits are outlined below:

Northern Area –

- (i) a catch limit of 75 tonnes for *D. eleginoides*;
- (ii) the continued prohibition of the taking of *D. mawsoni* other than for scientific research purposes;
- (iii) the introduction of catch limits for by-catch species, with a limit for macrourids of 12 tonnes (16% of the catch limit for *D. eleginoides*) and a limit for rajids of 4 tonnes (5% of the catch limit for *D. eleginoides*).

Southern Area –

- (i) a catch limit of 75 tonnes for *Dissostichus* spp. (*D. eleginoides* and *D. mawsoni* combined) in the Southern Area;
- (ii) the introduction of a move-on rule for by-catch species, with a macrourid trigger set at 16% of the catch of *Dissostichus* spp., and a trigger for rajids set at 5% of the catch of *Dissostichus* spp.

27. The Working Group endorsed this proposal noting that although the catch limit in the Northern Area was slightly higher than the preliminary estimate of yield, it was consistent with the staged approach to developing a robust stock assessment for toothfish in Subarea 48.4.