

**Fishery Report: Exploratory fishery for
Dissostichus spp. (TOT) in Division 58.4.3a**

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Throughout this report the CCAMLR fishing season is represented by the year in which that season ended, e.g. 2012 represents the 2011/12 CCAMLR fishing season (from 1 December 2011 to 30 November 2012).

FISHERY REPORT: EXPLORATORY FISHERY FOR *DISSOSTICHUS* SPP. (TOT) IN DIVISION 58.4.3a

1. Details of the fishery

1. The longline fishery for *Dissostichus* spp. in Division 58.4.3 began as a new fishery in 1997 (Conservation Measure (CM) 113/XV). Following the Commission's decision that high levels of illegal, unreported and unregulated (IUU) fishing for *Dissostichus* spp. in the Convention Area had rendered it unrealistic to consider this fishery as 'new' (CCAMLR-XVIII, paragraph 10.14), and renewed interest in this fishery, the fishery was reclassified as exploratory in 2000. That year, the Commission agreed on four exploratory fisheries for *Dissostichus* spp. in this region in 2001: exploratory trawl fisheries on BANZARE Bank (CM 203/XIX) and Elan Bank (CM 205/XIX); and exploratory longline fisheries outside areas of national jurisdiction on BANZARE Bank (CM 204/XIX) and Elan Bank (CM 206/XIX).

2. In 2001, the boundaries of Division 58.4.3 were rearranged on the basis of ecological considerations, and two new divisions were formed: Division 58.4.3a (Elan Bank) and Division 58.4.3b (BANZARE Bank) (Figure 1). The Commission agreed to exploratory fisheries for *Dissostichus* spp. in each of these new divisions, outside areas of national jurisdiction.

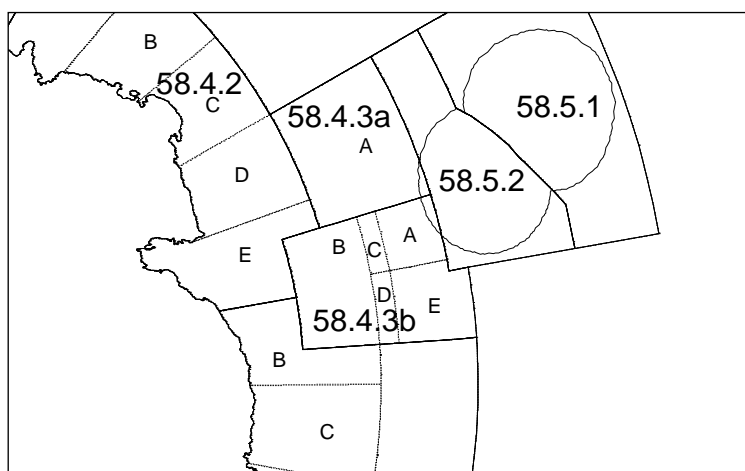


Figure 1: General map of Divisions 58.4.3a (Elan Bank) and 58.4.3b (BANZARE Bank). Division 58.4.3a consists of a single SSRU.

3. The limits on the exploratory fishery for *Dissostichus* spp. in Division 58.4.3a are described in CM 41-06. In 2012, the fishery was limited to French, Japanese and South African flagged vessels using longlines only. The precautionary catch limit for *Dissostichus* spp. was set at 86 tonnes. The catch limits for by-catch species were defined in CM 33-03. The fishing season was from 1 May to 31 August 2012. Fishing was permitted outside the prescribed season provided that each vessel demonstrated its capacity to comply with the requirements for longline weighting outlined in CM 24-02. Environmental protection in this fishery is regulated by CMs 22-06, 22-07, 22-08 and 26-01.

4. Three Members (France, Japan and South Africa), for a total of three vessels, notified their intention to participate in the exploratory fishery for *Dissostichus* spp. in Division 58.4.3a in 2013.

1.1 Reported catch

5. Licensed longline vessels have fished the exploratory fishery for *Dissostichus* spp. in Division 58.4.3a since 2005, and the target species is *D. eleginoides* (Table 1). In 2012, one vessel operated in the fishery and caught 34 tonnes of *Dissostichus* spp.

Table 1: Catch history for *Dissostichus* spp. in Division 58.4.3a. (Source: STATLANT data for past seasons, and catch and effort reports for current season, 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		
2004	6	0	250	0	0	0	-	0
2005	3	4	250	97	9	105	98	203
2006	4	1	250	88	1	89	0	89
2007	3	2	250	3	1	4	0	4
2008	1	1	250	9	0	9	0	9
2009	1	1	86	31	0	31	0	31
2010	3	No fishing	86	0	0	0	0	0
2011	1	1	86	4	0	4	*	4
2012	3	1	86	31	3	34	*	34

* Not estimated

1.2 IUU catch

6. Information on IUU fishing indicated that approximately 98 tonnes of *Dissostichus* spp. were taken illegally in Division 58.4.3a in 2005, and there have been no further reports of sightings or landings related to IUU fishing (Table 1). The IUU catch of *Dissostichus* spp. in 2011 and 2012 was not estimated (SC-CAMLR-XXIX, paragraph 6.5).

1.3 Size distribution of catches

7. Length frequencies for *D. eleginoides* (TOP) for each season are presented in Figure 2. These length-frequency distributions of catches are unweighted and the interannual variability shown in the figure may reflect differences in the fished population but are also likely to be biased by changes in factors such as the characteristics/number of vessels in the fishery and the spatial and temporal distribution of fishing. A description of how length data are used in assessments is provided in the relevant section of this report. Most *D. eleginoides* caught in the fishery ranged from 30 to 150 cm in length (Figure 2). A bimodal distribution was

observed in 2005, 2006 and 2007, with broad modes at approximately 50–80 and 90–130 cm. In 2008 and 2012, a single mode was observed, at approximately 50–80 cm. In 2009 and 2011, there was a broad mode at approximately 70–130 cm.

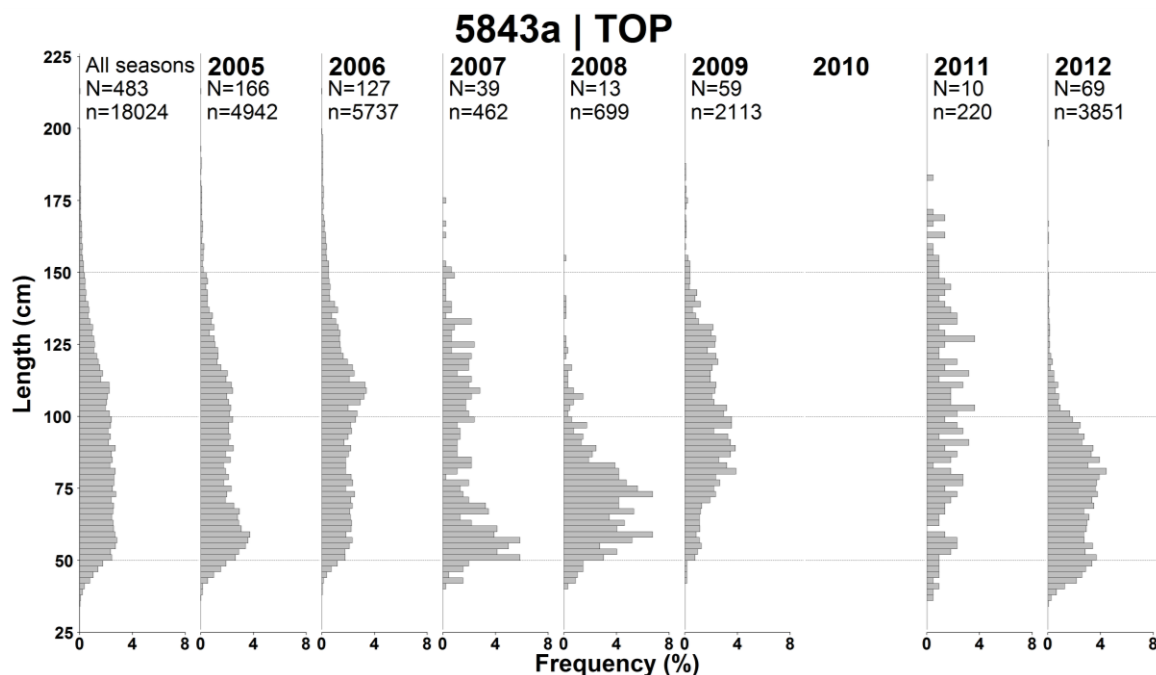


Figure 2: Length frequencies for *Dissostichus eleginoides* (TOP) in Division 58.4.3a from 2005 to present using observer data. The number of hauls (N) and the number of fish measured (n) in each year are given at the top of each panel.

2. Stocks and areas

8. No data are available on the stock structure of fish in this fishery.

3. Parameter estimation

3.1 Observations

9. Vessels operating in this fishery are required to conduct fishery-based research in accordance with CM 41-01. This includes the collection of detailed catch, effort and biological data (Annex 41-01/A), the setting of research lines (Annex 41-01/B) and participation in the tagging program (Annex 41-01/C). The number of research and commercial hauls reported in each season are summarised in Table 2.

10. Since 2012, vessels have been required to tag and release *Dissostichus* spp. at a rate of five fish per tonne of green weight caught (previously the rate was three fish per tonne between 2008 and 2011, one fish per tonne prior to 2008; a limit of 500 fish tagged per vessel applied until the end of 2007). A total of 715 *D. eleginoides* have been tagged and released and 19 fish have been recaptured in that division; no individual of *D. mawsoni* has been tagged and released (Table 3).

Table 2: Research (R) and commercial (C) longline hauls reported by vessels operating in the exploratory fishery for *Dissostichus* spp. in Division 58.4.3a. (Source: fine-scale data.)

Season	Flag State	Vessel name	Number of hauls		
			R	C	Total
2005	Australia	<i>Avro Chieftain</i>	10		10
	Korea, Republic of	<i>Bonanza No. 707</i>	10	10	20
	Spain	<i>Arnela</i>	20	6	26
		<i>Galaecia</i>	34	79	113
2006	Spain	<i>Galaecia</i>	33	95	128
2007	Japan	<i>Shinsei Maru No. 3</i>	12	4	16
	Spain	<i>Tronio</i>	20	4	24
2008	Uruguay	<i>Banzare</i>	8	5	13
2009	Japan	<i>Shinsei Maru No. 3</i>	10	49	59
2010	No fishing				
2011	Japan	<i>Shinsei Maru No. 3</i>	9	0	9
2012	France	<i>Saint André</i>	24	46	70

Table 3: Number of individuals of *Dissostichus* spp. (a) tagged and released and (b) tagging rates reported by vessels operating in the exploratory fishery for *Dissostichus* spp. in Division 58.4.3a since 2007, and (c) total number of tagged fish released and recaptured. (Source: observer data and catch and effort reports.)

(a) Number of individuals of *Dissostichus* spp. tagged and released. The number of *D. eleginoides* is indicated in brackets.

Flag State	Vessel name	Season					
		2007	2008	2009	2010	2011	2012
France	<i>Saint André</i>						235 (235)
Japan	<i>Shinsei Maru No. 3</i>	4 (4)		113 (113)		14 (14)	
Spain	<i>Galaecia</i>						
	<i>Tronio</i>	5 (5)					
Uruguay	<i>Banzare</i>		41 (41)				

(b) Tagging rate (number of fish tagged per tonne of green weight caught) of *Dissostichus* spp.

Flag State	Vessel name	Season					
		2007	2008	2009	2010	2011	2012
France	<i>Saint André</i>						6.9
Japan	<i>Shinsei Maru No. 3</i>	1.8		3.7		3.9	
Spain	<i>Galaecia</i>						
	<i>Tronio</i>	2.2					
Uruguay	<i>Banzare</i>		4.7				
Required rate		1	3	3	3	3	5

(c) Total number of tagged *Dissostichus* spp. released and recaptured in Division 58.4.3a.

Season	Number tagged and released			Number recaptured		
	<i>D. eleginoides</i>	<i>D. mawsoni</i>	Total	<i>D. eleginoides</i>	<i>D. mawsoni</i>	Total
2005	199	0	199	0	0	0
2006	104	0	104	6	0	6
2007	9	0	9	0	0	0
2008	41	0	41	2	0	2
2009	113	0	113	2	0	2
2010	No fishing					
2011	14	0	14	0	0	0
2012	235	0	235	9	0	9
Total	715	0	715	19	0	19

11. Vessels catching more than 2 tonnes of *Dissostichus* spp. were required to achieve a minimum tag-overlap¹ statistic of 50% in 2011 and of 60% from 2012 onwards (Annex 41-01/C). The vessel fishing in Division 58.4.3a in 2012 achieved a tag-overlap statistic of 79% for *D. eleginoides*; no individual of *D. mawsoni* was tagged (Table 4).

Table 4: Time series of the tag-overlap statistic (CM 41-01) for *Dissostichus mawsoni* and *D. eleginoides* tagged in Division 58.4.3a. The statistic was implemented in 2011, and comparative values were calculated for previous seasons. Values were not calculated for total catches of less than 2 tonnes (*) and length data were aggregated by 10 cm length intervals. Only vessels fishing in CCAMLR fisheries in 2012 are listed in the table.

Species	Flag State	Vessel name	2007	2008	2009	2010	2011	2012
<i>D. mawsoni</i>	Japan	<i>Shinsei Maru No. 3</i>			*			
<i>D. eleginoides</i>	France	<i>Saint André</i>						79
	Japan	<i>Shinsei Maru No. 3</i>	100		45		86	
	Spain	<i>Tronio</i>	*					

3.2 Fixed parameter values

12. None available for this fishery.

4. Stock assessment

13. Progress on assessing the exploratory fishery in Division 58.4.3a was presented in WG-SAM-08/05 and a summary was provided in SC-CAMLR-XXVII, Annex 7, paragraphs 3.6 to 3.8. WG-SAM recommended that WG-FSA use the methods described in this paper to provide management advice for the *Dissostichus* spp. fishery in this division (SC-CAMLR-XXVII, Annex 7, paragraph 4.4).

14. The preliminary stock assessment detailed in WG-SAM-08/05 employed a biomass dynamic surplus production model to assess the status of the stock, using the release (199 individuals) and recapture (6 individuals) data for 2005 and 2006 respectively, as well as

¹ The tag-overlap statistic estimates the similarity in size distributions of fish that are tagged and all fish caught by a vessel (Annex 41-01/C, footnote 3).

legal and estimated illegal catches for this division. Resultant stock size estimates were then used to estimate long-term yields (using the CCAMLR decision rules) under four different assumptions about the additional uncertainty in future stock dynamics, beyond that already accounted for in the stock assessment. This gave a range of potential long-term yields of 113, 105, 103 and 86 tonnes, which encompassed a wide range of future stock dynamic uncertainty assumptions (two recapture probability models (binomial and normal) and three different values for future process error).

15. In 2008 the Working Group agreed that the catch limit of 250 tonnes was not a sustainable catch level. A catch limit in the range of 86 to 113 tonnes was proposed. The Scientific Committee endorsed this advice and the Commission set a catch limit of 86 tonnes for 2009.

5. By-catch of fish and invertebrates

5.1 By-catch removals

16. Catches of by-catch species groups (macrourids, rajids and other species) reported in each season, their respective catch limits, and number of rajids cut from lines and released alive are summarised in Table 5. The by-catch in this fishery consists predominantly of rajids (up to 32 tonnes in 2012). Catches of up to 4 tonnes per season of macrourids have been reported.

Table 5: Catch history for by-catch species (macrourids, rajids and other species), catch limits and number of rajids released alive in Division 58.4.3a. Catch limits are for the whole fishery (see CM 33-03 for details). (Source: fine-scale data.)

Season	Macrourids		Rajids			Other species	
	Catch limit (tonnes)	Reported catch (tonnes)	Catch limit (tonnes)	Reported catch (tonnes)	Number released	Catch limit (tonnes)	Reported catch (tonnes)
2004	26	0	50	0	-	20	0
2005	26	2	50	17	985	20	2
2006	26	1	50	7	-	20	1
2007	26	<1	50	<1	-	20	1
2008	26	<1	50	2	-	20	<1
2009	26	2	50	2	57	20	2
2010	26	0	50	0	-	20	0
2011	26	<1	50	<1	-	20	<1
2012	26	4	50	32	-	20	3

5.2 Assessment of impacts on affected populations

17. None available for this fishery.

5.3 Identification of levels of risk

18. None available for this fishery.

5.4 Mitigation measures

19. Catch limits for by-catch species groups (macrourids, rajids and other species) are provided in CM 33-03.

6. Incidental mortality of birds and mammals

6.1 Incidental mortality reported

20. There have been no observed seabird mortalities nor mammal interactions or mortalities for Division 58.4.3a.

6.2 Identification of levels of risk

21. The risk level of seabirds in this fishery in Division 58.4.3a is category 3 (average) (SC-CAMLR-XXX, Annex 8, paragraph 8.1).

6.3 Mitigation measures

22. CM 25-02 applies to this fishery and in recent years has been linked to an exemption for night setting in CM 24-02 and subject to a seabird by-catch limit. Offal and other discharges are regulated under CM 26-01.

7. Ecosystem implications/effects

23. No evaluation available for this fishery.

8. Harvest controls and management advice

8.1 Conservation measures

24. The limits on the exploratory fishery for *Dissostichus* spp. in Division 58.4.3a are defined in CM 41-06. The limits in force and the Working Group's advice to the Scientific Committee for the forthcoming season are summarised in Table 6.

Table 6: Limits on the exploratory fishery for *Dissostichus* spp. in Division 58.4.3a in force (CM 41-06) and advice to the Scientific Committee for 2013.

Element	Limit in force	Advice for 2013
Access	No more than one vessel per country at any one time.	Carry forward
Catch limit	Precautionary catch limit for <i>Dissostichus</i> spp. was 86 tonnes outside areas of national jurisdiction.	Revise
Season	1 May to 31 August, with fishing permitted outside the prescribed season provided that each vessel demonstrated its capacity to comply with the requirements for longline weighting outlined in CM 24-02.	Same period and conditions
By-catch	Regulated by CM 33-03.	Carry forward
Mitigation	In accordance with CM 25-02, except paragraph 4 if requirements of CM 24-02 are met.	Carry forward
	Limit of three (3) seabirds per vessel fishing outside the prescribed season.	Carry forward
Observers	At least one scientific observer appointed in accordance with the CCAMLR Scheme of International Scientific Observation.	Carry forward
Data	Daily and five-day catch and effort reporting	Carry forward
	Haul-by-haul catch and effort data	Carry forward
	Biological data reported by the CCAMLR scientific observer.	Carry forward
Research	Fishery-based research in accordance with CM 41-01, including the collection of detailed catch, effort and biological data (Annex 41-01/A), setting of research hauls (Annex 41-01/B) and tagging (Annex 41-01/C).	Carry forward
	Toothfish tagged at a rate of at least five fish per tonne green weight caught.	Carry forward
Environmental protection	Regulated by CMs 22-06, 22-07, 22-08 and 26-01	Carry forward

8.2 Management advice

25. In 2012 the Working Group considered the research plans from Japan and France for Division 58.4.3a under CM 21-02 and agreed that a catch limit of 32 tonnes was appropriate for the research proposed in 2013.