

**Fishery Report: Exploratory fishery for  
*Dissostichus* spp. (TOT) in Subarea 48.6**

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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 SUBAREA 48.6**

### **1. Details of the fishery**

1. The longline fishery for *Dissostichus* spp. in Subarea 48.6 began as a new fishery in 1997 (Conservation Measure (CM) 114/XV). In 1999, the Commission agreed that high levels of 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 the fishery was re-classified as exploratory.

2. The limits on the exploratory fishery for *Dissostichus* spp. in Subarea 48.6 are described in CM 41-04. In 2012, the fishery was limited to Japanese, Korean, Norwegian, Russian and South African flagged vessels using longlines only, and no more than one vessel per country was permitted to fish at any one time. The precautionary catch limit for *Dissostichus* spp. was 200 tonnes north of 60°S (SSRUs A and G<sup>1</sup>) and 200 tonnes south of 60°S (SSRUs B–F; see Figure 1). The catch limits for by-catch species were defined in CM 33-03. Environmental protection in this fishery is regulated by CMs 22-06, 22-07, 22-08 and 26-01.

3. Two Members (Japan and South Africa) and a total of two vessels notified their intention to participate in the exploratory fishery for *Dissostichus* spp. in Subarea 48.6 in 2013.

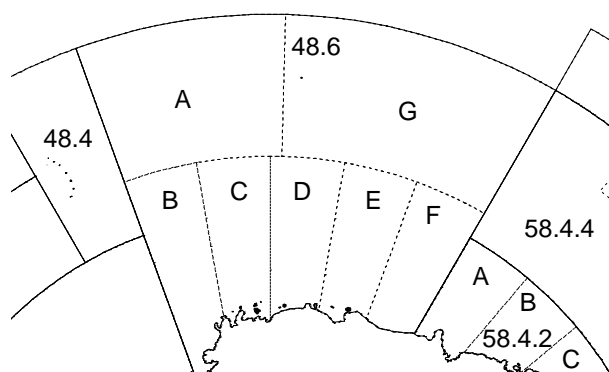


Figure 1: General map of Subarea 48.6 and location of SSRUs (A–G in that subarea).

### **1.1 Reported catch**

4. Licensed longline vessels have fished the exploratory fishery for *Dissostichus* spp. in Subarea 48.6 since 2004. *Dissostichus mawsoni* was the dominant species in the catches in recent seasons (Table 1a) with an increase in catches especially in SSRU G (Table 1b). In 2012, two vessels operated in the fishery and caught 381 tonnes of *Dissostichus* spp. The SSRUs north of 60°S were closed on 29 February 2012 (catch limit for *Dissostichus* spp.:

<sup>1</sup> Small-scale research unit (SSRU) A was divided into A and G in November 2007.

200 tonnes; final reported catch: 190 tonnes), and the SSRUs south of 60°S were closed on 18 February 2012 (catch limit for *Dissostichus* spp.: 200 tonnes; final reported catch: 191 tonnes). The fishery was closed on 19 February 2012 (catch limit for *Dissostichus* spp.: 400 tonnes; final reported catch: 381 tonnes).

Table 1(a): Catch history for *Dissostichus* spp. in Subarea 48.6. (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	1	910	7	0	7	-	7
2005	3	2	910	49	2	51	-	51
2006	2	1	910	100	63	163	-	163
2007	4	3	910	78	34	112	-	112
2008	4	1	400	12	11	24	-	24
2009	2	2	400	17	265	282	-	282
2010	3	3	400	50	342	392	-	392
2011	3	4	400	33	359	392	-	392
2012	5	2	400	5	376	381	-	381

Table 1(b): Catch (tonnes) of *Dissostichus* spp. in Subarea 48.6 reported by SSRU. (Source: fine-scale data pro-rated by total reported catch in Table 1a.) SSRUs are as defined in CM 41-01.

Season	<i>D. eleginoides</i>							<i>D. mawsoni</i>						
	A	G	B	C	D	E	F	A	G	B	C	D	E	F
2004	6	1												
2005	25	24											2	
2006	9	91						<1	63					
2007	46	32						18	6			2	8	
2008		12							11					
2009		17							77				189	
2010	27	23						21	124			97	100	
2011	16	16	<1					2	161	104	92			
2012	3	3					<1	<1	184			108	83	

## 1.2 IUU catch

5. There is no information to derive an estimate of the level of IUU fishing in Subarea 48.6.

## 1.3 Size distribution of catches

6. Length frequencies for *D. eleginoides* (TOP) and *D. mawsoni* (TOA) for each season are presented in Figures 2(a) and 2(b) respectively. 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. The length-frequency distributions indicate a consistent difference in modal size between the two species.

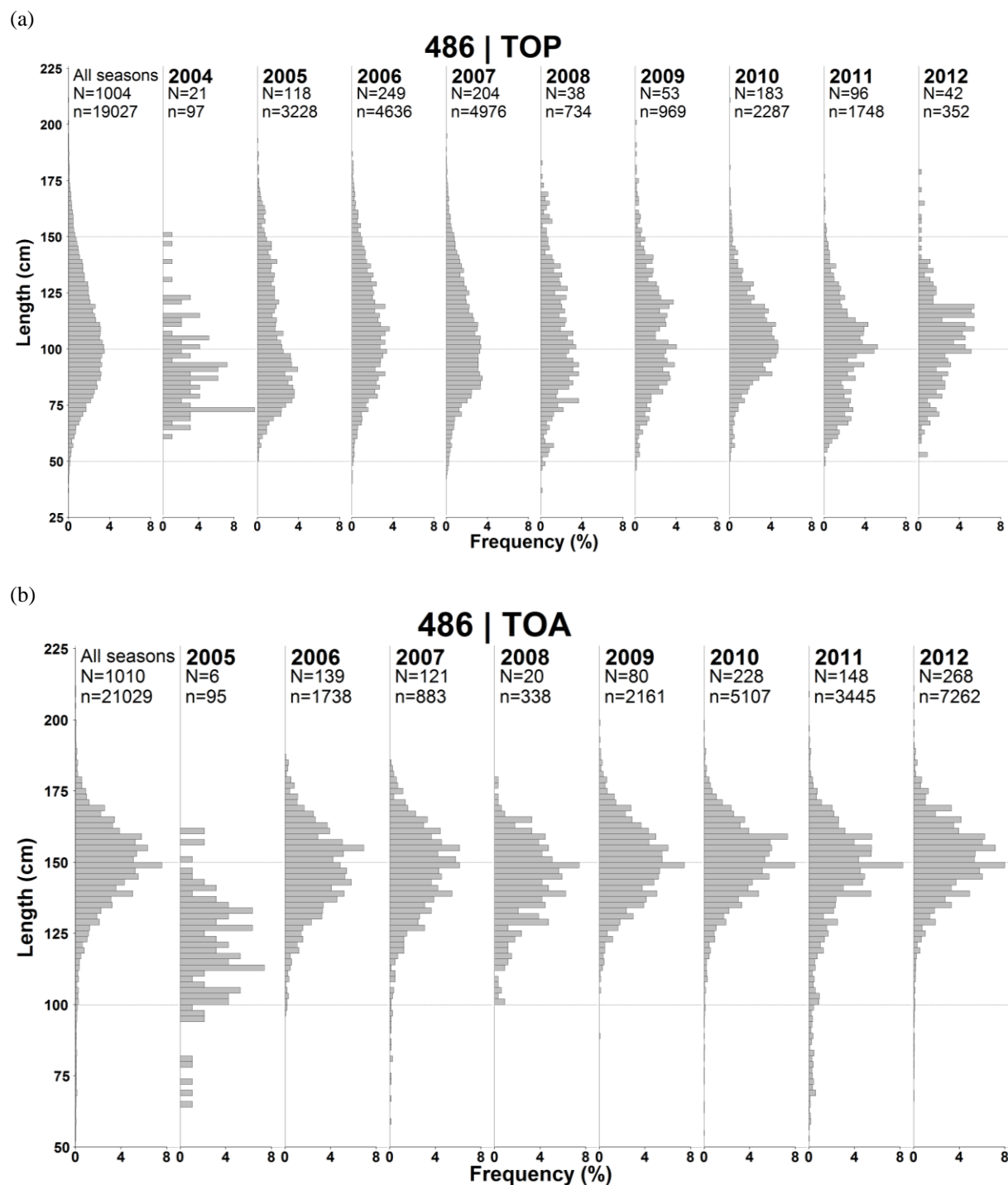


Figure 2: Length frequencies for (a) *Dissostichus eleginoides* (TOP) and (b) *D. mawsoni* (TOA) in Subarea 48.6 from 2004 to present using observer data. The number of hauls (N) and the number of fish measured (n) in each year are given at the top of each panel.

## 2. Stocks and areas

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

## 3. Parameter estimation

### 3.1 Observations

8. 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).

9. The number of research hauls reported in each SSRU is summarised in Table 2.

Table 2: Number of research longline hauls and total number of hauls (in brackets) reported by vessels operating in the exploratory fishery for *Dissostichus* spp. in Subarea 48.6. (Source: fine-scale data.) SSRUs are as defined in CM 41-01(2011).

Season	Flag State	Vessel name	SSRU						
			A	B	C	D	E	G	
2004	Japan	<i>Shinsei Maru No. 3</i>	* (22)						* (7)
2005	Japan	<i>Shinsei Maru No. 3</i>	15 (61)						17 (57)
	Korea, Republic of	<i>Bonanza No. 707</i>						6 (6)	
2006	Japan	<i>Shinsei Maru No. 3</i>	6 (23)						14 (240)
2007	Japan	<i>Shinsei Maru No. 3</i>	2 (87)						18 (102)
	Korea, Republic of	<i>Jung Woo No. 2</i>	2 (4)					6 (6)	5 (16)
	Norway	<i>Froyanes</i>				10 (10)		8 (9)	
2008	Japan	<i>Shinsei Maru No. 3</i>							20 (39)
2009	Japan	<i>Shinsei Maru No. 3</i>						11 (17)	10 (81)
	Korea, Republic of	<i>Insung No. 22</i>						10 (25)	
2010	Japan	<i>Shinsei Maru No. 3</i>	10 (29)				10 (40)		10 (51)
	Korea, Republic of	<i>Insung No. 1</i>	10 (71)						10 (101)
		<i>Insung No. 2</i>						10 (22)	
2011	Japan	<i>Shinsei Maru No. 3</i>		10 (32)	10 (52)				
	Korea, Republic of	<i>Hong Jin No. 701</i>							10 (67)
		<i>Insung No. 7</i>							6 (6)
	South Africa	<i>Koryo Maru No. 11</i>	10 (39)						10 (39)
2012	Japan	<i>Shinsei Maru No. 3</i>					13 (16)	18 (32)	28 (79)
	South Africa	<i>Koryo Maru No. 11</i>	6 (6)				13 (19)	23 (49)	29 (76)

\* Research hauls were not identified in the data.

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 2007 and 2011, one fish per tonne prior to 2007; a limit of 500 fish tagged per vessel applied until the end of 2010). A total of 957 *D. eleginoides* and 4 819 *D. mawsoni* have been tagged and released, and 14 *D. eleginoides* and 39 *D. mawsoni* have been recaptured in that subarea (Table 3).

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 Subarea 48.6 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
Japan	<i>Shinsei Maru No. 3</i>	99 (76)	29 (14)	392 (65)	598 (38)	594 (0)	1 239 (14)
Korea, Republic of	<i>Hong Jin No. 701</i>					493 (52)	
	<i>Insung No. 1</i>				310 (310)		
	<i>Insung No. 2</i>				305 (0)		
	<i>Insung No. 22</i>			520 (0)			
	<i>Insung No. 7</i>					132 (5)	
	<i>Jung Woo No. 2</i>	19 (15)					
Norway	<i>Froyanes</i>	11 (1)					
South Africa	<i>Koryo Maru No. 11</i>					89 (79)	708 (57)

(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
Japan	<i>Shinsei Maru No. 3</i>	1.0	1.1	3.6	3.1	3.0	5.1
Korea, Republic of	<i>Hong Jin No. 701</i>					4.0	
	<i>Insung No. 1</i>				3.2		
	<i>Insung No. 2</i>				3.1		
	<i>Insung No. 22</i>			3.0			
	<i>Insung No. 7</i>					3.0	
	<i>Jung Woo No. 2</i>	3.0					
Norway	<i>Froyanes</i>	1.6					
South Africa	<i>Koryo Maru No. 11</i>					3.1	5.2
Required rate		1	1	3	3	3	5

(c) Total number of tagged *Dissostichus* spp. released and recaptured in Subarea 48.6.

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
2004	4	0	4	0	0	0
2005	57	5	62	0	0	0
2006	169	2	171	3	0	3
2007	92	37	129	2	0	2
2008			*			*
2009	79	862	941	0	2	2
2010	348	865	1 213	7	3	10
2011	136	1 172	1 308	1	1	2
2012	72	1 876	1 948	1	33	34
Total	957	4 819	5 776	14	39	53

\* One vessel fished from 23 October to 28 December 2008 and tag information was reported under 2009.

11. Vessels catching more than 2 tonnes of *Dissostichus* spp. were required to achieve a minimum tag-overlap statistic<sup>2</sup> of 50% in 2011 and of 60% from 2012 onwards (Annex 41-01/C). The vessels fishing in Subarea 48.6 in 2012 achieved a tag-overlap statistic of 70 to 85% (Table 4).

Table 4: Time series of the tag-overlap statistic (CM 41-01) for *Dissostichus mawsoni* and *D. eleginoides* tagged in Subarea 48.6. 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	Season					
			2007	2008	2009	2010	2011	2012
<i>D. mawsoni</i>	Japan	<i>Shinsei Maru No. 3</i>	33	31	65	68	95	85
	Korea, Republic of	<i>Hong Jin No. 701</i>					84	
		<i>Jung Woo No. 2</i>	12					
<i>D. eleginoides</i>	South Africa	<i>Koryo Maru No. 11</i>					50	70
	Japan	<i>Shinsei Maru No. 3</i>	34	44	26	42	*	*
	Korea, Republic of	<i>Hong Jin No. 701</i>					76	
		<i>Jung Woo No. 2</i>	43					
	South Africa	<i>Koryo Maru No. 11</i>					80	70

### 3.2 Fixed parameter values

12. None available for this fishery.

## 4. Stock assessment

13. There is currently no assessment for this data-poor exploratory fishery.

## 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 for each SSRU, their respective catch limits, and number of rajids cut from lines and released alive are summarised in Table 5. The macrourid by-catch in this fishery consists predominantly of grenadiers.

<sup>2</sup> 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).



Table 5: Catch history for by-catch species (macrourids, rajids and other species), catch limits and number of rajids released alive in Subarea 48.6. 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	146	0	100	0	-	120	0
2005	146	6	100	0	-	120	0
2006	146	10	100	0	-	120	3
2007	146	13	100	0	-	120	2
2008	62	1	100	0	-	140	0
2009	64	5	100	0	-	140	2
2010	64	10	100	0	-	140	1
2011	64	8	100	0	-	140	1
2012	64	6	100	0	2	140	<1

## 5.2 Assessment of impacts on affected populations

15. None available for this fishery.

## 5.3 Identification of levels of risk

16. None available for this fishery.

## 5.4 Mitigation measures

17. 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

18. There have been no observed seabird or marine mammal mortalities in Subarea 48.6.

### 6.2 Identification of levels of risk

19. The risk level for seabirds in this fishery in Subarea 48.6 is category 1 (low) south of 55°S, and category 2 (average to low) north of 55°S (SC-CAMLR-XXX, Annex 8, paragraph 8.1).

### 6.3 Mitigation measures

20. 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 annual conservation measures (e.g. CMs 26-01, 41-09 and 41-10).

## 7. Ecosystem implications/effects

21. No evaluation available for this fishery.

## 8. Harvest controls and management advice

### 8.1 Conservation measures

22. The limits on the exploratory fishery for *Dissostichus* spp. in Subarea 48.6 are defined in CM 41-04. 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 Subarea 48.6 in force (CM 41-04) 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 200 tonnes north of 60°S and 200 tonnes south of 60°S.	Carry forward
Season	1 December to 30 November	Same period
By-catch	Regulated by CM 33-03.	Carry forward
Mitigation	In accordance with CM 25-02, except paragraph 5 if requirements of CM 24-02 are met.	Carry forward
Observers	Limit of three (3) seabirds per vessel during daytime setting.	Carry forward
	At least two (2) scientific observers, one of whom shall be 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 of green weight caught.	Carry forward
Environmental protection	Regulated by CMs 22-06, 22-07, 22-08 and 26-01. No offal discharge.	Carry forward

## 8.2 Management advice

23. The advice of WG-FSA in respect of research plans for exploratory fisheries in this subarea is presented in the main report, paragraphs 5.48 to 5.56. This advice was noted by the Scientific Committee (SC-CAMLR-XXXI, paragraph 3.137) and it agreed that fishing should only occur in the research blocks in SSRUs D, E and G as shown in Figure 3.

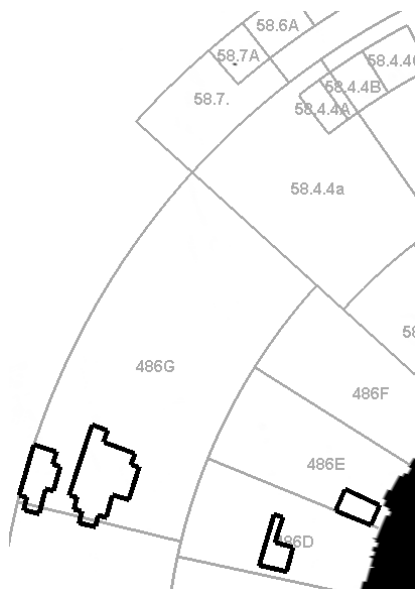


Figure 3: Research blocks for proposed research in Subarea 48.6 in 2013.