APPENDIX E

FISHERY REPORT: EXPLORATORY FISHERY FOR *DISSOSTICHUS* SPP. IN SUBAREA 48.6

CONTENTS

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1. Details of the fishery

The longline fishery for *Dissostichus* spp. in Subarea 48.6 began as a new fishery in 1996/97 (Conservation Measure 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. In 2008/09, the exploratory fishery for *Dissostichus* spp. in Subarea 48.6 was limited to Japanese and Korean flagged vessels using longlines only, and no more than one vessel per country was permitted to fish at any one time (Conservation Measure 41-04). The precautionary catch limit for *Dissostichus* spp. was 200 tonnes north of 60°S (SSRUs A and G[1]) and 200 tonnes south of 60°S (SSRUs B–F; see Figure 1). The catch limits for by-catch species were defined in Conservation Measure 33-03. The fishing season was from 1 December 2007 to 30 November 2008.

3. In recent seasons, the Japanese-flagged vessel operating in this fishery has been using trotlines (WG-FSA-06/15; see also SC-CAMLR-XXIV, Annex 5, paragraphs 3.23 and 7.21; SC-CAMLR-XXV, Annex 5, paragraph 3.14).

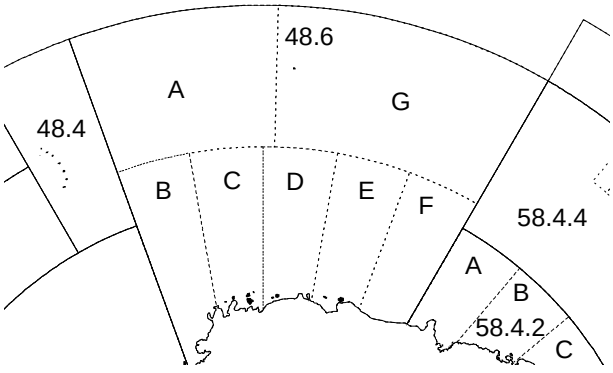

Figure 1: General map of Subarea 48.6 and location of SSRUs (A–G in that subarea).

1.1 Reported catch

4. Licensed longline vessels have fished the exploratory fishery for *Dissostichus* spp. in Subarea 48.6 since 2003/04, and the main species caught has been *D. eleginoides*, except in 2008/09 when the dominant species in the catches was *D. mawsoni* (Table 1). In 2008/09, two vessels fished in SSRUs E and G (Figure 1). SSRU E was closed on 12 March 2009 (catch limit for *Dissostichus* spp.: 200 tonnes; final reported catch: 189 tonnes), with a consequential closure of all other SSRUs south of 60°S.

[1] SSRU A was divided into A and G in November 2007.

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, WG-FSA-09/5 Rev. 1 and past reports for IUU catch).

Season	Regulated fishery						Estimated IUU catch (tonnes)	Total removals (tonnes)
	Effort (number of vessels)		*Dissostichus* spp.					
			Catch limit (tonnes)	Reported catch (tonnes)				
	Limit	Reported		*D. eleginoides*	*D. mawsoni*	Total		
2003/04	6	1	910	7	0	7	-	7
2004/05	3	2	910	49	2	51	-	51
2005/06	2	1	910	100	63	163	-	163
2006/07	4	3	910	78	34	112	-	112
2007/08	4	1	400	12	11	24	-	24
2008/09	2	2	400	17	265	282	-	282

Table 1(b): Catch of *Dissostichus* spp. in Subarea 48.6 reported by SSRU (source: fine-scale data pro-rated by total reported catch in Table 1(a)).

Season	*D. eleginoides*						*D. mawsoni*					
	A	G	B	C	D	E	A	G	B	C	D	E
2003/04	7	*						*				
2004/05	49	*						*				2
2005/06	100	*					63	*				
2006/07	78	*					25	*			2	8
2007/08		12						11				
2008/09		17						77				189

* SSRU A was divided into A and G in November 2007.

1.2 IUU catch

5. There is no information to derive an estimate of the level of IUU fishing in Subarea 48.6 (Table 1(a)).

1.3 Size distribution of catches

6. Most *D. eleginoides* caught in the fishery ranged from 60 to 170 cm in length, with a broad mode at approximately 70–130 cm, and most *D. mawsoni* ranged from 100 to 180 cm in length, with a broad mode at approximately 140–160 cm except in 2004/05 (Figure 2). The length-frequency distributions indicate a consistent difference in modal size between the two species.

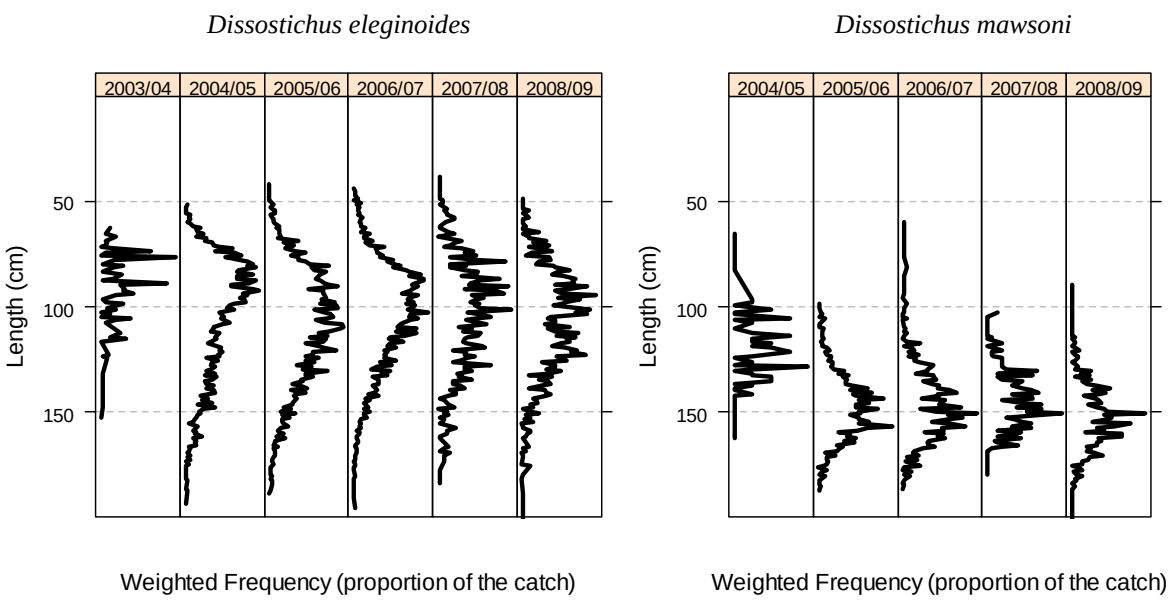

Figure 2: Catch-weighted length frequencies for *Dissostichus eleginoides* and *Dissostichus mawsoni* in Subarea 48.6 (source: observer, fine-scale and STATLANT data, and the length–weight relationships were taken from observations on *D. eleginoides* in Subarea 48.3 and *D. mawsoni* in Subarea 88.1).

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 Conservation Measure 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. Vessels, on first entry into an SSRU, are required to make 10 research longline hauls. The requirement for a further 10 research hauls during the course of fishing was removed in 2008 and in 2008/09 the starting position of research hauls was allocated by the Secretariat (see CCAMLR-XXVIII/BG/6). The number of research hauls reported in fine-scale data are summarised in Table 2.

10. Vessels are also required to tag and release *Dissostichus* spp. at a rate of one fish per tonne of green weight caught, and a limit of 500 fish tagged per vessel applied until the end of 2006/07. A total of 322 *D. eleginoides* and 44 *D. mawsoni* (total 366 fish) have been tagged and released, and five *D. eleginoides* have been recaptured in that subarea (Table 3). Of the fish tagged and released, 346 fish were in SSRU A, two fish were in SSRU D and 18 fish were in SSRU E.

Table 2: Research (R) and commercial (C) longline hauls reported by vessels operating in the exploratory fishery for *Dissostichus* spp. in Subarea 48.6 (source: fine-scale data).

Season	Flag State	Vessel name	SSRU	Number of hauls		
				R	C	Total
2003/04	Japan	*Shinsei Maru No. 3*	486A	*	29	29
2004/05	Japan	*Shinsei Maru No. 3*	486A	32	86	118
	Korea, Republic of	*Bonanza No. 707*	486E	6		6
2005/06	Japan	*Shinsei Maru No. 3*	486A	20	243	263
2006/07	Japan	*Shinsei Maru No. 3*	486A	20	169	189
	Korea, Republic of	*Jung Woo No. 2*	486A	7	13	20
		Jung Woo No. 2	486E	6		6
	Norway	*Froyanes*	486D	10		10
		Froyanes	486E	8	1	9
2007/08	Japan	*Shinsei Maru No. 3*	486G	20	19	39
2008/09	Japan	*Shinsei Maru No. 3*	486E	11	6	17
		Shinsei Maru No. 3	486G	10	71	81
	Korea, Republic of	*Insung No. 22*	486E	10	15	25

* Research hauls were not identified in the data.

Table 3: 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 *Dissostichus* spp. in Subarea 48.6. The number of *D. eleginoides* is indicated in brackets. The total number of tagged fish recaptured to date in Subarea 48.6 is also included. (Source: observer data and catch and effort reports)

Season	Flag State	Vessel name	*Dissostichus* spp. tagged and released		
			Number of fish		Tagging rate
2003/04	Japan	*Shinsei Maru No. 3*	4	(4)	0.61
2004/05	Japan	*Shinsei Maru No. 3*	57	(57)	1.21
	Korea, Republic of	*Bonanza No. 707*	5	(0)	2.21
2005/06	Japan	*Shinsei Maru No. 3*	171	(169)	1.05
2006/07	Japan	*Shinsei Maru No. 3*	99	(76)	1.00
	Korea, Republic of	*Jung Woo No. 2*	19	(15)	2.96
	Norway	*Froyanes*	11	(1)	1.57
2007/08	Japan	*Shinsei Maru No. 3*	*		*
2008/09	Japan	*Shinsei Maru No. 3*	421	(79)	3.83
	Korea, Republic of	*Insung No. 22*	520	(0)	3.01
Total number of fish tagged and released			1 307	(401)	
Total number of tagged fish recaptured in Subarea 48.6			7	(5)	

* Vessel fished from 23 October to 28 December 2008 and tag information was reported under 2008/09.

3.2 Fixed parameter values

11. None available for this fishery.

4. Stock assessment

12. The catch limits in this fishery were agreed by the Commission based on advice provided by the Scientific Committee.

5. By-catch of fish and invertebrates

5.1 By-catch removals

13. Catches of by-catch species groups (macrourids, rajids and other species) reported in fine-scale data, their respective catch limits, and number of rajids cut from lines and released alive are summarised in Table 4. The by-catch in this fishery consists predominantly of macrourids (up to 13 tonnes per season), and the total reported catch of rajids has been low (<100 kg).

Table 4: 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 Conservation Measure 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)
2003/04	146	0	100	0	-	120	0
2004/05	146	6	100	0	-	120	0
2005/06	146	10	100	0	-	120	3
2006/07	146	13	100	0	-	120	2
2007/08	62	1	100	0	0	140	0
2008/09	64	5	100	0	0	140	2

5.2 Assessment of impacts on affected populations

14. None available for this fishery.

5.3 Identification of levels of risk

15. None available for this fishery.

5.4 Mitigation measures

16. In 2008, the Commission agreed that during the Year-of-the-Skate (CCAMLR-XXVII, paragraph 4.55):

(i) all skates should be brought on board or alongside the hauler to be correctly identified, scanned for tags and for their condition to be assessed;

(ii) all skates that are likely to survive if released (condition 3 or 4) should be released by cutting the snood as close to the hook as possible or cutting the snood and removing the hook from the skate, providing this does not further injure the skate;

(iii) all skates which are dead or with life-threatening injuries (condition 1 or 2 in the logbook) should be retained by the vessels;

(iv) skates released alive should be doubled-tagged (i.e. two tags per skate) at a rate of one skate in every five skates caught in exploratory fisheries, up to a maximum of 500 skates per vessel;

(v) tagged skates should be identified to species, measured before they are released and that, where possible, tagging experiments be undertaken to compare different tag types and estimate tag-shedding rates;

(vi) the tagging program will be coordinated by the Secretariat, which will be the repository for skate tagging kits;

(vii) when skates are caught on a line, they should be randomly sampled by observers at a rate of three skates per thousand hooks for the purpose of collecting biological measurements;

(viii) skates should not be sacrificed for biological sampling, and female maturity stage should only be recorded if the skate is dead or has sustained life-threatening injuries (conditions 1 and 2);

(ix) all live skates which are part of the biological sampling, which have not sustained life-threatening injuries, should be handled with care and released after biological information has been recorded, if they are still suitable for release (i.e. still in condition 3 or 4).

6. By-catch of birds and mammals

6.1 By-catch removals

17. There have been no observed seabird mortalities in Subarea 48.6 (Table 5).

Table 5: Seabird by-catch limit, observed mortality rate and total estimated mortality of seabird by-catch in Subarea 48.6 (from SC-CAMLR-XXVIII, Annex 7, Table 4).

Season	By-catch limit (number of birds)	Mortality rate (birds per thousand hooks)	Total estimated mortality (number of birds)
2003/04	3*	0	0
2004/05	3*	0	0
2005/06	3*	0	0
2006/07	3*	0	0
2007/08	3*	0	0
2008/09	3*	0	0

* Per vessel during daytime setting.

18. No marine mammal interactions or mortalities have been reported.

19. WG-IMAF assessed the risk level of seabirds in this fishery in Subarea 48.6 as category 1 (low) south of 55°S, and category 2 (average to low) north of 55°S (SC-CAMLR-XXVIII, Annex 7, Table 14 and Figure 2).

6.2 Mitigation measures

20. Conservation Measure 25-02 applies to this fishery and in recent years has been linked to an exemption for night setting in Conservation Measure 24-02 and subject to a seabird by-catch limit. Offal and other discharges are regulated under annual conservation measures (e.g. Conservation Measures 41-09, 41-10 and 26-01).

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 Conservation Measure 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 2008/09 (Conservation Measure 41-04) and advice to the Scientific Committee for 2009/10.

Element	Limit in force	Advice for 2009/10
Access	No more than one vessel per country at any one time.	Carry forward
Catch limit	Precautionary catch limit for *Dissostichus* 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
	Limit of three (3) seabirds per vessel during daytime setting.	Carry forward
Observers	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	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	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 three fish per tonne green weight caught.	Carry forward
	Skates tagged at a rate of at least one skate per five skates caught, up to a maximum of 500 skates per vessel.	Carry forward
Environmental protection	Regulated by CMs 26-01, 22-06 and 22-07. No offal discharge. Fishing prohibited in depths shallower than 550 m.	Carry forward

8.2 Management advice

23. The Working Group noted that there are still very few tag-recaptures from Subarea 48.6, and that no progress could be made on assessments of *D. eleginoides* in this subarea.

24. The Working Group recommended that all the other requirements of the fishery, including fishery-based research (Conservation Measure 41-01), by-catch limits (Conservation Measure 33-03) and associated measures, be carried forward to the 2008/09 season.

25. The Working Group agreed that measures in the research and data collection plans, including the requirement to tag toothfish at the rate of three toothfish per tonne and the requirement for research hauls as used in 2008/09, be retained for the exploratory fisheries in Subarea 48.6.

26. The Working Group agreed that for some vessels the size frequency of tagged fish showed very little overlap with the overall size frequency of fish caught and that this was having a serious impact on the efficacy of the tagging program. It recalled that a paper had been submitted to WG-FSA in 2007 which outlined methods by which large toothfish could

be tagged in good condition (WG-FSA-07/36). The Working Group recommended that the Scientific Committee once again strongly urge Members to request their vessels to fully comply with all aspects of Conservation Measure 41-01, Annex C.

27. The Working Group reiterated its recommendation from last year that the relative merits of the different views on harvest strategies for toothfish in new and exploratory fisheries be evaluated using simulations. It recommended that such work be submitted to WG-SAM for review of the simulation methodologies before submitting the outcomes to WG-FSA for consideration.