APPENDIX H

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

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1. Details of the fishery

The longline fishery for *Dissostichus* spp. in Division 58.4.3 began as a new fishery in 1996/97 (Conservation Measure 113/XV). Following the Commission's decision 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 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 2000/01: exploratory trawl fisheries on BANZARE Bank (Conservation Measure 203/XIX) and Elan Bank (Conservation Measure 205/XIX); and exploratory longline fisheries outside areas of national jurisdiction on BANZARE Bank (Conservation Measure 204/XIX) and Elan Bank (Conservation Measure 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) (see Figure 1). The Commission agreed to exploratory fisheries for *Dissostichus* spp. in each of these new divisions, outside areas of national jurisdiction.

3. In 2008/09, the exploratory fishery for *Dissostichus* spp. in Division 58.4.3a was limited to one Japanese vessel using longlines (trotlines) only (Conservation Measure 41-06). The precautionary catch limit for *Dissostichus* spp. was limited to 86 tonnes. The catch limits for by-catch species were defined in Conservation Measure 33-03. The fishing season was from 1 May to 31 August 2009. Fishing was permitted outside the prescribed season provided that each vessel demonstrated its capacity to comply with the requirements for longline weighting outlined in Conservation Measure 24-02.

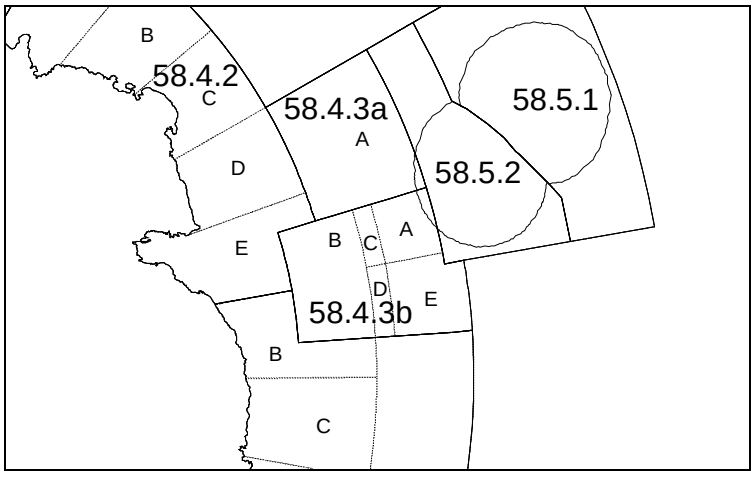

Figure 1: General map of Division 58.4.3a (Elan Bank). This division consists of a single SSRU.

1.1 Reported catch

4. Licensed longline vessels have fished the exploratory fishery for *Dissostichus* spp. in Division 58.4.3a since 2004/05, and the target species is *D. eleginoides* (Table 1). In 2008/09, the single fishing vessel reported a total catch of 31 tonnes of *Dissostichus* spp. (36% of the precautionary catch limit for the fishery).

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, 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	0	250	0	0	0	-	0
2004/05	3	4	250	97	9	105	98	203
2005/06	4	1	250	88	1	89	0	89
2006/07	3	2	250	3	1	4	0	4
2007/08	1	1	250	9	0	9	0	9
2008/09	1	1	86	31	0	31	0	31

1.2 IUU catch

5. Information on IUU fishing indicated that approximately 98 tonnes of *Dissostichus* spp. were taken during IUU fishing in Division 58.4.3a in 2004/05, and there have been no further reports of sightings or landings related to IUU fishing (Table 1).

1.3 Size distribution of catches

6. Most *D. eleginoides* caught in the fishery ranged from 50 to 150 cm in length (Figure 2). A bimodal distribution was observed in 2004/05, 2005/06 and 2006/07, with broad modes at approximately 50–80 and 90–130 cm. In 2007/08, a single mode was observed, at approximately 50–80 cm. In 2008/09, there was a broad mode at approximately 70–130 cm.

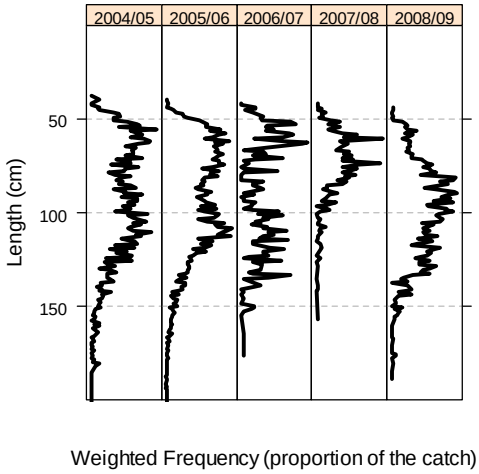

Figure 2: Catch-weighted length frequencies for *Dissostichus eleginoides* in Division 58.4.3a (source: observer, fine-scale and STATLANT data, and the length–weight relationship was taken from observations on *D. eleginoides* in Subarea 48.3).

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 three fish per tonne of green weight caught and a limit of 500 fish tagged per vessel applied until the end of 2006/07; the required tagging rate prior to 2007/08 was one fish per tonne of green weight caught. A total of 466 *D. eleginoides* have been tagged and released and 10 fish have been recaptured in that division (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
2004/05	Australia	*Avro Chieftain*	10		10
	Korea, Republic of	*Bonanza No. 707*	10	10	20
	Spain	*Arnela*	20	6	26
		Galaecia	34	79	113
2005/06	Spain	*Galaecia*	33	95	128
2006/07	Japan	*Shinsei Maru No. 3*	12	4	16
	Spain	*Tronio*	20	4	24
2007/08	Uruguay	*Banzare*	8	5	13
2008/09	Japan	*Shinsei Maru No. 3*	10	49	59

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 Division 58.4.3a. The number of *D. eleginoides* is indicated in brackets. The total number of tagged fish recaptured to date in Division 58.4.3a 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
2004/05	Australia	*Avro Chieftain*	4	(4)	2.75
	Korea, Republic of	*Bonanza No. 707*	32	(32)	3.72
	Spain	*Arnela*	19	(19)	2.01
		Galaecia	144	(144)	1.60
2005/06	Spain	*Galaecia*	104	(104)	1.17
2006/07	Japan	*Shinsei Maru No. 3*	4	(4)	1.83
2006/07	Spain	*Tronio*	5	(5)	2.23
2007/08	Uruguay	*Banzare*	41	(41)	4.68
2008/09	Japan	*Shinsei Maru No. 3*	113	(113)	3.65
Total number of fish tagged and released			466	(466)	
Total number of tagged fish recaptured in Division 58.4.3a			10	(10)	

3.2 Fixed parameter values

11. None available for this fishery.

4. Stock assessment

12. Progress on assessing the exploratory fishery in Division 58.4.3a was presented in WG-SAM-08/5 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).

13. The Working Group considered that there was less uncertainty about using the tagging information in Division 58.4.3a compared with Divisions 58.4.1 and 58.4.2. The reason for

this was that, given the number of releases and catch levels (both legal and IUU), if the observed number of tags was an underestimate (e.g. there should have been 10 recaptures rather than the five observed) then there would be a very large chance that the population in the division over the period of the tag experiment would have to have been effectively removed by fishing. The Working Group agreed that this is not the case and this provided some confidence in using the tagging data to estimate population size in this division.

14. The preliminary stock assessment detailed in WG-SAM-08/5 employed a biomass dynamic surplus production model to assess the status of the stock, using the release (199) and recapture (5) data for 2005 and 2006 respectively, as well as legal and 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: 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 2008/09.

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 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 rajids (up to 17 tonnes per season). Catches of macrourids have been reported up to 2 tonnes per season.

Table 4: 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 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	26	0	50	0	-	20	0
2004/05	26	2	50	17	985	20	2
2005/06	26	1	50	7	-	20	1
2006/07	26	0	50	0	-	20	1
2007/08	26	0	50	2	-	20	0
2008/09	26	2	50	2	57	20	2

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. 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

20. There have been no observed seabird mortalities for Division 58.4.3a (Table 5).

Table 5: Seabird by-catch limit, observed mortality rate and total estimated mortality of seabird by-catch in Division 58.4.3a (from SC-CAMLR-XXVIII, Annex 7, Table 4).

Season	By-catch limit (number of birds)	Mortality rate (birds/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

21. No marine mammal interactions or mortalities were observed in 2008/09.

22. WG-IMAF assessed the risk level of seabirds in this fishery in Division 58.4.3a as category 3 (average) (SC-CAMLR-XXVIII, Annex 7, Table 14 and Figure 2).

6.2 Mitigation measures

23. 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 Conservation Measures 26-01.

7. Ecosystem implications/effects

24. No evaluation available for this fishery.

8. Harvest controls and management advice

8.1 Conservation measures

25. The limits on the exploratory fishery for *Dissostichus* spp. in Division 58.4.3a are defined in Conservation Measure 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 2008/09 (Conservation Measure 41-06) 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 86 tonnes outside areas of national jurisdiction.	Carry forward
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 Conservation Measure 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	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 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.	Carry forward
	Fishing prohibited in depths shallower than 550 m.	

8.2 Management advice

26. The Working Group recommended that the catch limits for Division 58.4.3a be retained for 2009/10. The Working Group recalled that the five-day catch and effort reporting system used in this fishery is not well suited to the monitoring of catch limits below 100 tonnes, and recommend that the Scientific Committee consider this matter further (main text, paragraphs 3.14 and 3.15).

27. 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 Division 58.4.3a.

28. 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.

29. 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.