APPENDIX F

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

CONTENTS

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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 fishery for *Dissostichus* spp. in each of these new divisions, outside areas of national jurisdiction.

3. In 2007/08, the exploratory fishery for *Dissostichus* spp. in Division 58.4.3a was limited to one Uruguayan vessel using longlines only (Conservation Measure 41-06). The precautionary catch limit for *Dissostichus* spp. was limited to 250 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 2008. 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.

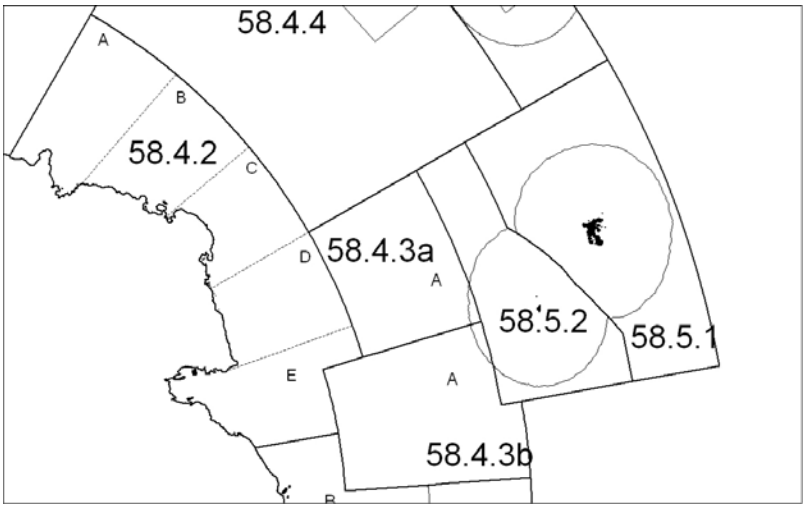

Figure 1: General map of Division 58.4.3a (Elan Bank). This division consists of a single SSRU.

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 2007/08, one vessel reported a total catch of 9 tonnes of *Dissostichus* spp. (4% 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-08/10 Rev. 2 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

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 were no reports of sightings or landings related to IUU fishing in 2005/06, 2006/07 and 2007/08 (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.

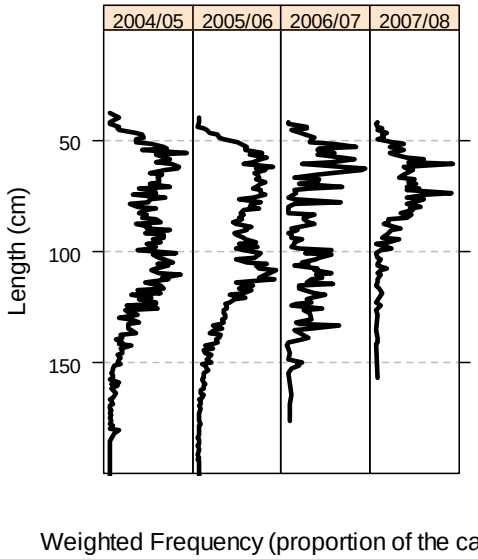

Figure 2: Catch-weighted length frequencies for *Dissostichus eleginoides* in Division 58.4.3a (source: observer, fine-scale and STATLANT data, and the length–weight relationship was taken from observations on *D. eleginoides* in Subarea 48.3).

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. A further 10 research hauls are required during the course of fishing. 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 catch, and vessels may discontinue tagging once 500 fish have been tagged; the required tagging rate prior to 2007/08 was one fish per tonne of green-weight caught. A total of 353 *D. eleginoides* have been tagged and released and eight 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

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
Total number of fish tagged and released			353	(353)	
Total number of tagged fish recaptured in Division 58.4.3a			8	(8)	

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 data (5) 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. The catch limit for Division 58.4.3a for the 2007/08 fishing year was 250 tonnes. The Working Group agreed that the assessment suggested that this level of catch was not sustainable and that the catch limit for this division be reduced to a level in the range of 86 to 113 tonnes.

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

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. The Commission has agreed that, where possible, vessels should release rays from the lines by cutting the snoods when the rays 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 Commission has been requested to review this mitigation practice (see SC-CAMLR-XXVI, Annex 5, paragraph 5.53).

6. By-catch of birds and mammals

6.1 By-catch removals

20. Details of seabird by-catches are summarised in 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-XXVII, Annex 6, Table 3).

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

* Per vessel during daytime setting

21. No marine mammal interactions or mortalities were reported.

22. Ad hoc WG-IMAF assessed the risk level of seabirds in this fishery in Division 58.4.3a as category 3 (average) (SC-CAMLR-XXVI/BG/31).

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 2007/08 (Conservation Measure 41-06) and advice to the Scientific Committee for 2008/09.

Element	Limit in force	Advice for 2008/09
Access	No more than one vessel per country at any one time.	Carry forward
Catch limit	Precautionary catch limit for *Dissostichus* spp. was 250 tonnes outside areas of national jurisdiction.	Review
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.	Review
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 during daytime setting.	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).	Review
	Toothfish tagged at a rate of at least three fish per tonne green weight caught.	Carry forward
Environmental protection	Regulated by CM 26-01.	Carry forward

8.2 Management advice

26. In 2006 the Scientific Committee noted several features of exploratory *Dissostichus* spp. fisheries in the southern Indian Ocean (Subarea 58.4) which gave cause for concern as to the status of the resource in this area, and the lack of a scientific basis for setting catch limits (SC-CAMLR-XXV, paragraphs 4.184 to 4.192). In its management advice for this and other exploratory fisheries, the Scientific Committee requested urgent consideration by Members of methods for collecting data and of assessing these stocks.

27. A detailed a stock assessment of *D. eleginoides* in Division 58.4.3a using the tagging, legal and estimated illegal catches from 2004 to 2007 is now available (WG-SAM-08/5). The

largest tagging event in 2005 (199 releases) and subsequent recapture event in 2006 (five recaptures) formed the basis of the assessment, which was done using a biomass dynamic surplus production model.

28. The catch limit for Division 58.4.3a for the 2007/08 fishing year was 250 tonnes. The Working Group agreed that the assessment suggested that this level of catch was not sustainable and that the catch limit for this division be reduced to a level in the range of 86 to 113 tonnes.

29. The Working Group recommended that vessels entering a new SSRU in Subareas 48.6 and 58.4 should be required to carry out 10 research sets with a maximum hook number of 5 000 (as part of Conservation Measure 41-01) on a stratified random basis through prescribed areas within that SSRU before carrying out their commercial fishing. Sets would be carried out on, or close to, supplied positions within strata based on fishable area where that information is available. Alternate positions could be supplied to replace any positions that were unfishable for any reason. It considered that the prescribed areas could be identified and random positions generated during the week of the 2008 meeting of the Scientific Committee if it agreed to this recommendation. It also considered that, if carried out annually by the same vessels, the research sets could be used to develop a time series of relative abundance indices.