

**FISHERY REPORT: EXPLORATORY FISHERY
FOR *DISSOSTICHUS* SPP. IN DIVISION 58.4.1**

CONTENTS

	Page
1. Details of the fishery	1
1.1 Reported catch	1
1.2 IUU catch	2
1.3 Size distribution of catches	3
2. Stocks and areas	3
3. Parameter estimation	4
3.1 Observations	4
3.2 Fixed parameter values	5
4. Stock assessment	5
5. By-catch of fish and invertebrates	5
5.1 By-catch removals	5
5.2 Assessment of impacts on affected populations	6
5.3 Identification of levels of risk	6
5.4 Mitigation measures	6
6. By-catch of birds and mammals	6
6.1 By-catch removals	6
6.2 Mitigation measures	7
7. Ecosystem implications/effects	7
8. Harvest controls and management advice	7
8.1 Conservation measures	7
8.2 Management advice for <i>Dissostichus</i> spp. in Subarea 58.4	8

FISHERY REPORT: EXPLORATORY FISHERY FOR *DISSOSTICHUS* SPP. IN DIVISION 58.4.1

1. Details of the fishery

The exploratory longline fishery for *Dissostichus* spp. in Division 58.4.1 was first agreed by the Commission in 1998/99 (Conservation Measure 166/XVII), and licensed vessels first operated in this fishery in 2004/05.

2. In 2006/07, the exploratory fishery for *Dissostichus* spp. in Division 58.4.1 was limited to Australian, Korean, Namibian, New Zealand, Spanish and Uruguayan vessels using longlines only (Conservation Measure 41-11). The precautionary catch limit for *Dissostichus* spp. was 600 tonnes, of which no more than 200 tonnes could be taken in SSRUs C, E and G (see Figure 1). Five other SSRUs (A, B, D, F and H) were closed to fishing. Fishing was prohibited in depths less than 550 m in order to protect benthic communities. The catch limits for by-catch species were defined in Conservation Measure 33-03. The fishing season was from 1 December 2006 to 30 November 2007.



Figure 1: General map of Division 58.4.1 and location of SSRUs (A–H in that division).

1.1 Reported catch

3. Licensed longline vessels have fished the exploratory fishery for *Dissostichus* spp. in Division 58.4.1 since 2004/05, and the target species is *D. mawsoni* (Table 1(a)). In 2006/07, four vessels fished in SSRUs C, E and G (Figure 1). The fishery was closed on 13 March

2007 when the catch approached the *Dissostichus* spp. limit of 600 tonnes. The final reported total catch was 645 tonnes of *Dissostichus* spp. and over-ran the limit by 45 tonnes (Table 1(b)).

4. Given that the catches of *D. eleginoides* reported in Table 1(b) all occurred further south than *D. eleginoides* is normally found to exist, that length data from these fish is consistent with *D. mawsoni* and that the catches were identified by the same observer who had no previous experience in the fishery, the Working Group felt that all the catches recorded as *D. eleginoides* in this division in the 2006/07 season were more likely catches of *D. mawsoni*.

5. Fishing in SSRU G in 2006/07 resulted in the SSRU being closed on 24 January 2007 and the total reported catch of *Dissostichus* spp. in that SSRU was 205 tonnes (102% of the catch limit). Fishing in SSRU C in 2006/07 resulted in the SSRU being closed on 15 February 2007. The total reported catch of *Dissostichus* spp. in that SSRU was 202 tonnes (101% of the catch limit; see CCAMLR-XXVI/BG/17, Table 4 and paragraphs 12 to 14).

6. Reported catches of *Dissostichus* spp. over the three seasons fished have increased from 480 tonnes in 2004/05 to 645 tonnes in 2006/07, and the reported catch in 2006/07 represents 108% of the precautionary catch limit for the fishery.

1.2 IUU catch

7. Information on IUU fishing was available in 2006/07, and this indicated that approximately 612 tonnes of *Dissostichus* spp. had been taken during IUU fishing in Division 58.4.1 (Table 1(a); see also WG-FSA-07/10 Rev. 5). As a result, the total removals of *Dissostichus* spp. were estimated at 1 257 tonnes, and this was well in excess of the catch limit for 2006/07.

Table 1(a): Catch history for *Dissostichus* spp. in Division 58.4.1 (source: STATLANT data for past seasons, and catch and effort reports for current season, WG-FSA-07/10 Rev. 5 and past reports for IUU catch).

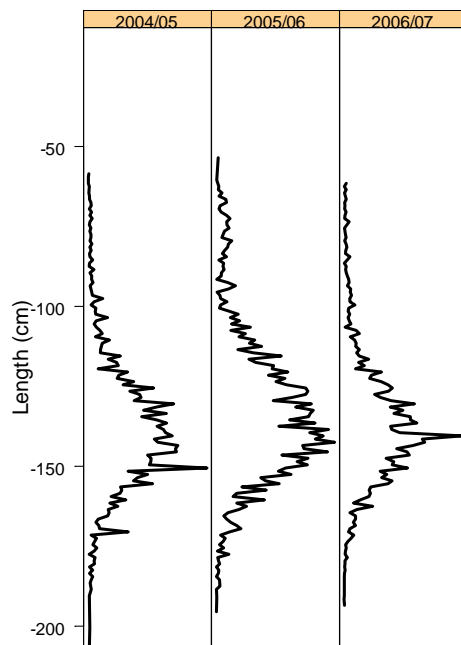
Season	Regulated fishery						Estimated IUU catch (tonnes)	Total removals (tonnes)
	Effort (number of vessels)		Catch limit (tonnes)	<i>Dissostichus</i> spp.				
	Limit	Reported		Reported catch (tonnes)				
				<i>D. eleginoides</i>	<i>D. mawsoni</i>	Total		
2003/04	-	0	800	0	0	0	-	0
2004/05	9	7	600	1	480	480	-	480
2005/06	11	6	600	0	421	421	597	1018
2006/07	9	4	600	94	551	645	612	1257

Table 1(b): Catch of *Dissostichus* spp. in Division 58.4.1 reported by SSRU (source: fine-scale data pro-rated by total reported catch in Table 1(a)).

Season	<i>D. eleginoides</i>								<i>D. mawsoni</i>							
	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H
2004/05			<1				<1				183		154		143	
2005/06											249		24		148	
2006/07			70		7		19				173		186		191	

1.3 Size distribution of catches

8. Most *D. mawsoni* caught in the fishery ranged from 100 to 170 cm in length, with a broad mode at approximately 130–150 cm (Figure 2).



Weighted Frequency (proportion of the catch)

Figure 2: Catch-weighted length frequencies for *Dissostichus mawsoni* in Division 58.4.1 (source: observer, fine-scale and STATLANT data, and the length–weight relationship was taken from observations on *D. mawsoni* in Subarea 88.1).

2. Stocks and areas

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

3. Parameter estimation

3.1 Observations

10. 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).

11. 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.

12. From 2006/07, vessels are required to tag and release *Dissostichus* spp. at a rate of three fish per tonne of green-weight catch (previously one fish per tonne), and vessels may discontinue tagging once 500 fish have been tagged; two vessels exceeded 500 tagged fish. A total of 2 170 *D. mawsoni* and 268 *D. eleginoides* (total 2 438 fish) have been tagged and released, and three *D. mawsoni* have been recaptured in that division (Table 3). Of the fish tagged and released, 818 were in SSRU C, 817 in SSRU E and 803 in SSRU G.

Table 2: Research (R) and commercial (C) longline hauls reported by vessels operating in the exploratory fishery for *Dissostichus* spp. in Division 58.4.1 (source: fine-scale data).

Season	Flag State	Vessel name	SSRU	Number of hauls		
				R	C	Total
2004/05	Chile	<i>Globalpesca II</i>	5841C	2		2
		<i>Globalpesca II</i>	5841E	20	11	31
		<i>Globalpesca II</i>	5841G	8		8
	Korea, Republic of	<i>Bonanza No. 707</i>	5841C	13		13
		<i>Yeon Seong No. 829</i>	5841C	10	14	24
		<i>Yeon Seong No. 829</i>	5841E	10	3	13
		<i>Yeon Seong No. 829</i>	5841G	10	45	55
	New Zealand	<i>Janas</i>	5841C	2		2
		<i>San Aspiring</i>	5841G	20		20
	Spain	<i>Arnela</i>	5841C	5	24	29
<i>Galaecia</i>		5841C	20	53	73	
<i>Galaecia</i>		5841E	12	5	17	
2005/06	Chile	<i>Globalpesca I</i>	5841C	20		20
		<i>Globalpesca I</i>	5841E	10		10
		<i>Globalpesca II</i>	5841C	20	3	23
		<i>Globalpesca II</i>	5841G	20	1	21
	Korea, Republic of	<i>Insung No. 2</i>	5841E	15	6	21
		<i>Insung No. 2</i>	5841G	20	29	49
	New Zealand	<i>San Aspiring</i>	5841E	1		1
	Spain	<i>Tronio</i>	5841C	20	54	74
	Uruguay	<i>Paloma V</i>	5841G	5		5
	2006/07	Korea, Republic of	<i>Insung No. 1</i>	5841C	8	
<i>Insung No. 1</i>			5841E	20	15	35
<i>Insung No. 1</i>			5841G	20	59	79
Namibia		<i>Antillas Reefer</i>	5841C	17	7	24
Spain		<i>Tronio</i>	5841C	20	38	58
		<i>Tronio</i>	5841E	20	62	82
Uruguay		<i>Paloma V</i>	5841C	20	51	71
		<i>Paloma V</i>	5841E	21		21
		<i>Paloma V</i>	5841G	20	5	25

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 58.4.1. The number of *D. eleginoides* is indicated in brackets. The total number of tagged fish recaptured to date in Division 58.4.1 is also included. (Source: observer data and catch and effort reports.)

Season	Flag State	Vessel name	<i>Dissostichus</i> spp. tagged and released			
			Number of fish		Tagging rate	
2004/05	Chile	<i>Globalpesca II</i>	94	(1)	0.65	
	Korea, Republic of	<i>Bonanza No. 707</i>	17	(0)	1.40	
		<i>Yeon Seong No. 829</i>	167	(1)	1.08	
	New Zealand	<i>Janas</i>	1	(0)	2.69	
		<i>San Aspiring</i>	24	(2)	1.13	
	Spain	<i>Arnela</i>	25	(0)	0.89	
2005/06	Chile	<i>Galaecia</i>	134	(18)	1.14	
		<i>Globalpesca I</i>	12	(0)	1.61	
		<i>Globalpesca II</i>	23	(0)	0.62	
	Korea, Republic of	<i>Insung No. 2</i>	182	(0)	1.16	
	New Zealand	<i>San Aspiring</i>	1	(0)	(no weight)	
	Spain	<i>Tronio</i>	249	(0)	1.13	
	Uruguay	<i>Paloma V</i>	2	(1)	0.81	
	2006/07	Korea, Republic of	<i>Insung No. 1</i>	732	(9)	(>500 fish)
		Namibia	<i>Antillas Reefer</i>	3	(0)	0.13
		Spain	<i>Tronio</i>	502	(5)	(>500 fish)
Uruguay		<i>Paloma V</i>	270	(231)	2.29	
Total number of fish tagged and released			2438	(268)		
Total number of tagged fish recaptured in Division 58.4.1			3	(0)		

3.2 Fixed parameter values

13. None available for this fishery.

4. Stock assessment

14. 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

15. 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 41 tonnes per season). 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 Division 58.4.1. 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	96	0	50	0	-	60	0
2004/05	96	17	50	0	-	60	1
2005/06	96	15	50	0	-	60	1
2006/07	96	41	50	0	-	60	2

- Represents a lack of data.

5.2 Assessment of impacts on affected populations

16. None available for this fishery.

5.3 Identification of levels of risk

17. None available for this fishery.

5.4 Mitigation measures

18. 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

19. 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 58.4.1 (from SC-CAMLR-XXVI, Annex 6, Part II, Table 2).

Season	By-catch limit (number of birds)	Mortality rate (birds/thousand hooks)	Total estimated mortality (number of birds)
2004/05	3*	<0.001	8
2005/06	3*	0	0
2006/07	3*	0	0

* Per vessel during daytime setting.

20. No marine mammal interactions or mortalities were reported.

21. Ad hoc WG-IMAF assessed the risk level of seabirds in this fishery in Division 58.4.1 as category 2 (average to low) (SC-CAMLR-XXVI, Annex 6, Part II, Table 20).

6.2 Mitigation measures

22. 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 and 41-10).

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 58.4.1 are defined in Conservation Measure 41-11. The limits in force in 2006/07 and the Working Group's advice to the Scientific Committee for the forthcoming 2007/08 season are summarised in Table 6.

Table 6: Limits on the exploratory fishery for *Dissostichus* spp. in Division 58.4.1 in 2006/07 (Conservation Measure 41-11) and advice to the Scientific Committee for 2007/08.

Element	Limit in 2006/07	Advice for 2007/08
Catch limit	Precautionary catch limit for <i>Dissostichus</i> spp. was 600 tonnes, and catch limits for each SSRU was as follows: A – 0 tonnes; B – 0 tonnes; C – 200 tonnes; D – 0 tonnes; E – 200 tonnes; F – 0 tonnes; G – 200 tonnes; H – 0 tonnes.	Carry forward
Season	1 December to 30 November	Same period
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 two (2) scientific observers, one of whom shall be appointed in accordance with the CCAMLR Scheme.	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
Environmental protection	Regulated by CM 26-01. No offal discharge.	Carry forward

8.2 Management advice for *Dissostichus* spp. in Subarea 58.4

25. 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.

26. The Working Group requested submissions by Members on stock structure, biological parameters (e.g. growth, length–weight relationship, maturity), recruitment and methods for assessment of these stocks.

27. The Working Group recommended that the minimum tag rate be at least three fish per tonne for Subarea 58.4 and that the Scientific Committee consider whether a higher rate should be applicable for each of the divisions of Subarea 58.4 which:

- (i) was commensurate with the size of the fishery and the stock abundance in the division;
- (ii) took into account the practical considerations of maintaining a high-quality tagging program.

28. The Working Group recommended that a depletion analysis similar to that applied to Division 58.4.3b and presented in WG-FSA-07/44 be completed for Divisions 58.4.1 and 58.4.2.