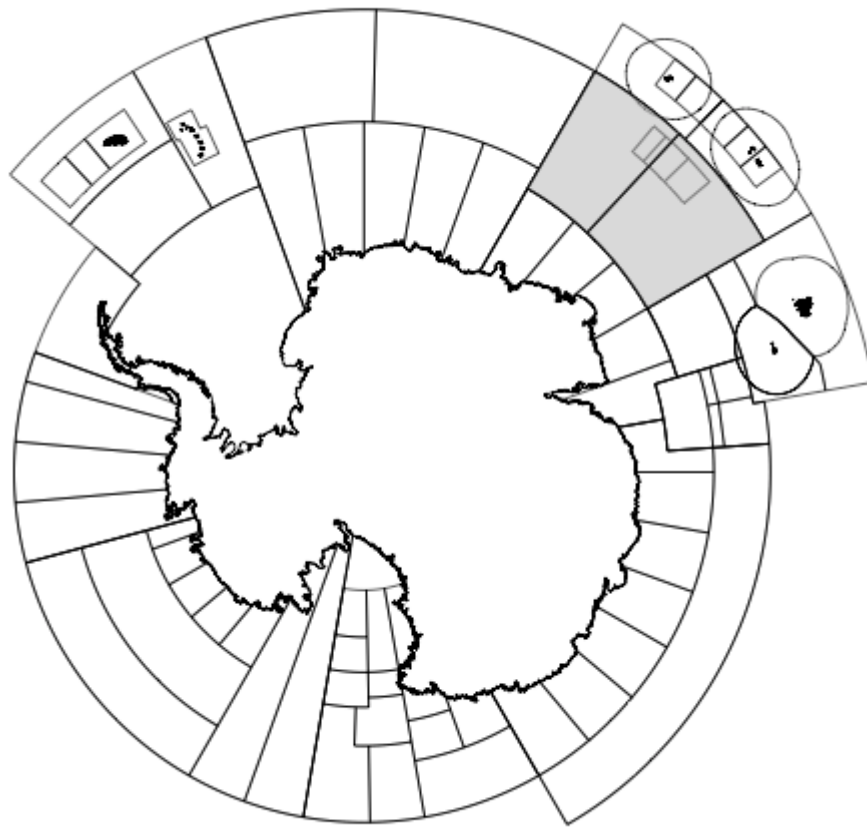




**Fishery Report 2017: Closed fishery for *Dissostichus* spp.  
in Divisions 58.4.4a and 58.4.4b**

**FISHERY REPORT**



The map above shows the management areas within the CAMLR Convention Area, the specific region related to this report is shaded.

Throughout this report the CCAMLR fishing season is represented by the year in which that season ended, e.g. 2015 represents the 2014/15 CCAMLR fishing season (from 1 December 2014 to 30 November 2015).



## **Fishery Report 2017: Closed fishery for *Dissostichus* spp. in Divisions 58.4.4a and 58.4.4b**

### **Introduction to the fishery**

1. This report describes the closed fishery for toothfish (*Dissostichus* spp.) in Division 58.4.4. In 1995, Division 58.4.4 was subdivided into Division 58.4.4a (Ob Bank) and Division 58.4.4b (Lena Bank) (SC-CAMLR-XIV, Annex 5, paragraph 5.175). These divisions were managed as a single area and a catch limit for *Dissostichus* spp. applied to fishing north of 60°S, and in waters outside areas of national jurisdiction<sup>1</sup>. The longline fishery for *Dissostichus* spp. in Division 58.4.4 began as a new fishery in 1998 (Conservation Measure (CM) 138/XVI). Following the Commission's recognition that high levels of illegal, unreported and unregulated (IUU) fishing for *Dissostichus* spp. in the Convention Area had rendered it unrealistic to consider this fishery as 'new' (CCAMLR-XVIII, paragraph 10.14), the fishery was reclassified as exploratory in 1999.

2. In 1999, the whole of Division 58.4.4 was further subdivided into small-scale research units (SSRUs) A, B, C and D.

3. Expressing concern regarding the low levels of stocks of *Dissostichus* spp. in Divisions 58.4.4a and 58.4.4b and the high levels of IUU fishing in that region (CCAMLR-XXI, paragraph 11.36), the Commission prohibited directed fishing for *Dissostichus* spp. in these divisions and closed the fishery in 2002 (CM 32-02). The Commission agreed that such prohibition shall apply at least until further scientific information is gathered and reviewed.

### **Reported catch**

4. In 2008 and from 2010 onward, a catch limit has been allocated to research fishing only. Over the past 10 years, the reported catch peaked at 77 tonnes in 2008, which was below the research catch limit set for that year (Table 1).

5. From 2008 to 2016, a single Japanese-flagged longliner has conducted research fishing in accordance with a research plan submitted under CM 24-01. In 2017, one French-flagged vessel conducted research fishing.

6. The total catch in Division 58.4.4b up to September 2017 was 12 tonnes (Table 1).

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<sup>1</sup> The South African EEZ at Prince Edward and Marion Islands extends into the northern part of Division 58.4.4a.

Table 1: Catch history for *Dissostichus* spp. in Divisions 58.4.4a and 58.4.4b. Research catch limits are in brackets. (Source: STATLANT data for past seasons and catch and effort reports for current season, past reports for IUU catch.)

Season	Catch limit (tonnes)	Reported catch (tonnes)				Total	Estimated IUU catch (tonnes)
		Division 58.4.4a		Division 58.4.4b			
		<i>D. mawsoni</i>	<i>D. eleginoides</i>	<i>D. mawsoni</i>	<i>D. eleginoides</i>		
2004	closed	0	0	0	0	0	0
2005	closed	0	0	0	0	0	220
2006	closed	0	0	0	0	0	104
2007	closed	0	0	0	0	0	109
2008	closed (80)	0	18	<1	58	77	*
2009	closed	0	0	0	0	0	*
2010	closed (60)	0	9	0	50	59	80
2011	closed (53)	0	0	0	35	35	*
2012	closed (70)	0	0	0	28	28	*
2013	closed (50)	0	0	0	31	31	*
2014	closed (60)	0	0	0	27	27	*
2015	closed (35)	0	0	0	35	35	*
2016	closed (42)	0	0	<1	42	42	*
2017	closed (42)	0	0	0	12	12	*

\* Not estimated.

### Illegal, unreported and unregulated (IUU) fishing

7. In each season between 1998 and 2001, the estimated annual catch of *Dissostichus* spp. exceeded 1 000 tonnes. An estimated total of 7 196 tonnes of *Dissostichus* spp. has been removed by IUU fishing since the fishery began with >500 tonnes being removed since 2004 (Table 1). In 2010, the last year in which IUU catch was recorded, an estimated 80 tonnes was taken from Division 58.4.4a.

8. IUU fishing activities were observed in Division 58.4.4a (Ob Bank) during 2008, 2009, 2010 and 2011. French surveillance information suggested that IUU activities have been persistent until 2014. IUU fishing activities were observed in Division 58.4.4b (Lena Bank) during each year from 2006 to 2011, however, given the history of IUU fishing activities in this division, it is possible that IUU activities do still occur, but were undetected from 2011 to 2016. Information from satellite surveillance trials indicated the presence of unidentified vessels in this division in 2016. Since 2011, following the recognition of methodological issues in its assessment, no estimates of the IUU catch of *Dissostichus* spp. have been provided for this division (SC-CAMLR-XXIX, paragraph 6.5).

### Data collection

9. Catch limits for CCAMLR's fisheries for Antarctic (*Dissostichus mawsoni*) and Patagonian toothfish (*D. eleginoides*) for the 'assessed' fisheries in Subareas 48.3, 88.1 and 88.2 and Division 58.5.2 are set using fully integrated assessments; more basic approaches are used for the 'data-poor' fisheries (in Subarea 48.6 and in Area 58 outside the exclusive economic zones (EEZs)). The management of these data-poor fisheries has been a major focus of attention in CCAMLR in recent years after the acknowledgement that commercial fishing

by itself had resulted in too few data to develop a full assessment of the targeted stocks in these areas. CCAMLR has developed a framework for designing and undertaking research fishing designed to lead to an assessment of these toothfish stocks in the short to medium term, established under the provisions of CM 41-01. This research planning framework has three phases: prospecting phase, biomass estimation phase and assessment development phase, with a set of decisions and review for the progression between stages.

10. In order to obtain the data necessary for a stock assessment, catch limits for research fishing by commercial vessels are set at a level intended to provide sufficient information (including sufficient recaptures of tagged fish) to achieve a stock assessment within a time period of 3 to 5 years. These catch limits are also set so that they provide reasonable certainty that exploitation rates at the scale of the stock or research unit will not negatively impact the stock. Appropriate exploitation rates are based on estimates from areas with assessed fisheries and are not more than 3–4% of the estimated stock size. In 2012 and 2013, CCAMLR put in place a more structured approach to setting catch limits, and spatially constraining research, in data-poor fisheries. This process attempts to use all available information combined with a regular review process to make progress while recognising the inherent uncertainties and data limitations in data-poor fisheries.

### **Biological data**

11. The collection of biological data under CM 23-05 is conducted as part of the CCAMLR Scheme of International Scientific Observation. Observer sampling requirements for *Dissostichus* spp. in longline fisheries based on the data collection plan are described in WG-FSA-10/32 (SC-CAMLR-XXIX, Annex 8, paragraph 5.34; SC-CAMLR-XXIX, paragraph 3.187). In longline fisheries targeting *D. mawsoni* and *D. eleginoides*, biological data collection includes representative samples of length, weight, sex and maturity stage, as well as collection of otoliths for age determination of the target and most frequently taken by-catch species.

### **Length distributions of catches**

12. The length-frequency distributions of *D. eleginoides* caught in this fishery are presented for all years in which the number of that species measured was more than 150 fish (Figure 1). These length-frequency distributions are unweighted (i.e. they have not been adjusted for factors such as the size of the catches from which they were collected). The interannual variability exhibited in the figure may reflect differences in the fished population but is also likely to reflect changes in the gear used, the number of vessels in the fishery and the spatial and temporal distribution of fishing.

13. Due to the low level of reported catch, and thus small numbers of length measurements (<150 fish) in each year/SSRU, the length-frequency distributions of *D. mawsoni* have not been presented here.

14. Length frequencies for *D. eleginoides* for each season in Divisions 58.4.4a and 58.4.4b are presented in Figure 1. The majority of *D. eleginoides* caught in the fishery during research fishing ranged from 50 to 150 cm with a broad mode in both divisions at approximately 60–90 cm (Figure 1).

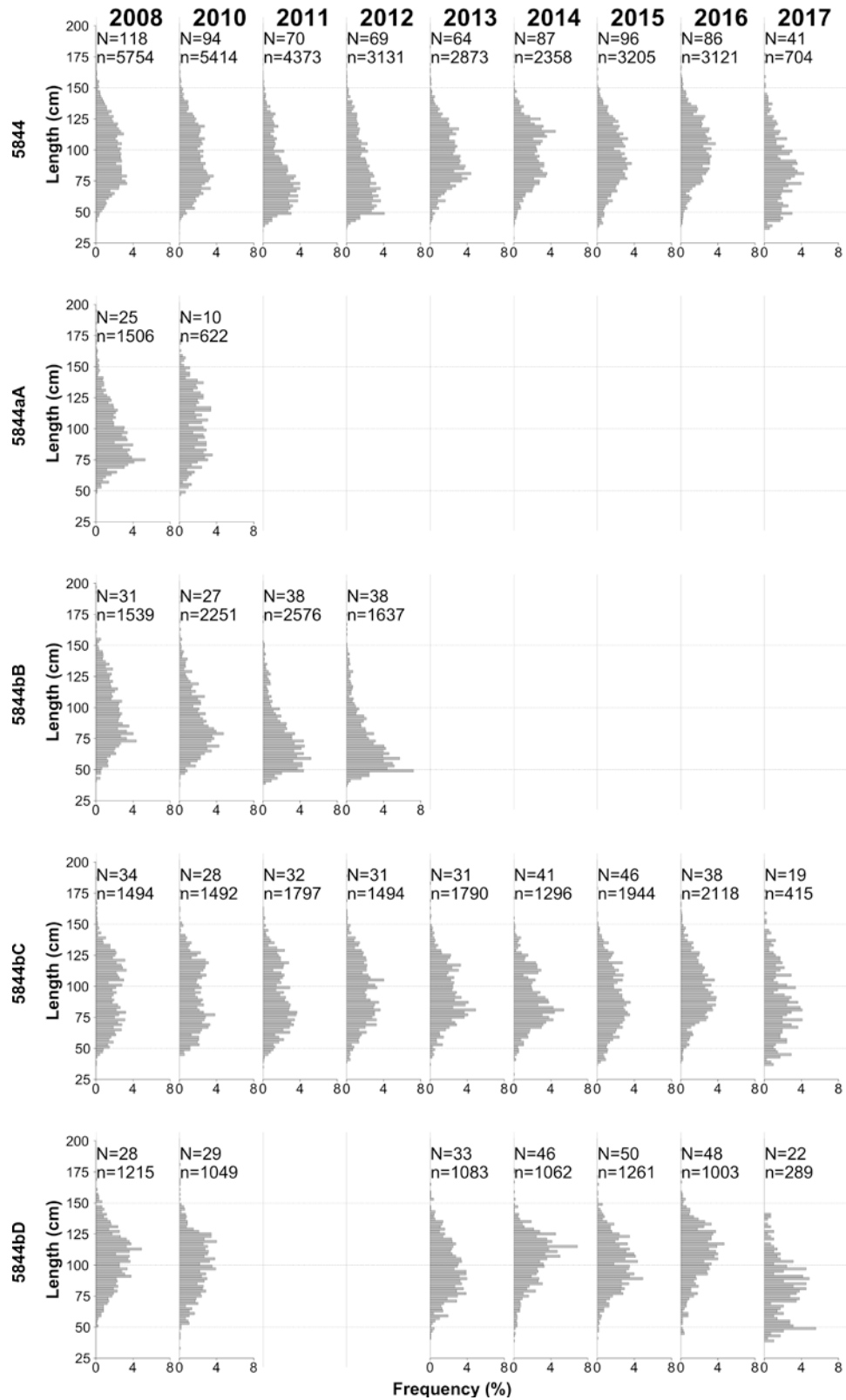


Figure 1: Annual length frequencies for *Dissostichus eleginoides* in Division 58.4.4. The number of hauls from which fish were measured (N) and the number of fish measured (n) in each year are provided. Note: length-frequency distributions are only presented for those years/SSRUs in which the number of fish measured was >150.

## Tagging

15. Since 2012, vessels have been required to tag and release *Dissostichus* spp. at a rate of 5 fish per tonne of green weight caught (Table 2). The tag-overlap statistic estimates the representative similarity between the size distributions of those fish that are tagged by a vessel and of all the fish that are caught by that vessel.

Table 2: Annual tagging rate, reported by vessel, operating in the exploratory fishery for *Dissostichus* spp. in Divisions 58.4.4a and 58.4.4b. The tag-overlap statistics (as per CM 41-01) for *Dissostichus eleginoides* are provided in brackets.

Flag State	Vessel name	Season							
		2010	2011	2012	2013	2014	2015	2016	2017
France	<i>Saint André</i>						7.2 (82)		15.9 (77)
Japan	<i>Shinsei Maru No. 3</i>	6.1 (100)	5.3 (95)	6.1 (82)	7.5 (81)	5.9 (85)	6.4 (76)	5.2 (79)	
	Required tagging rate	3	3	5	5	5	5	5	5

16. Since 2010, a total of 1 595 *D. eleginoides* have been tagged and 41 recaptured in both Divisions 58.4.4a and 58.4.4b (Table 3).

Table 3: The number of individuals of *Dissostichus eleginoides* tagged in each year. The number of fish recaptured is provided in brackets.

Flag State	Vessel name	Season							
		2010	2011	2012	2013	2014	2015	2016	2017
France	<i>Saint André</i>						36 (3)		97 (3)
Japan	<i>Shinsei Maru No. 3</i>	300 (1)	189 (4)	172 (3)	233 (3)	159 (9)	183 (10)	217 (5)	

## Life-history parameters

### Data collection

17. The life histories of *D. mawsoni* and *D. eleginoides* are characterised by slow growth, low fecundity and late maturity. Both *D. mawsoni* and *D. eleginoides* appear to have protracted spawning periods, taking place mainly in winter, but which may start as early as late autumn and extend into spring. However, as this is the period least accessible to fishing, and thus the collection of biological data, specific life-history traits for these species are limited (WG-FSA-08/14). The areas that are considered to be the most likely spawning grounds for *D. mawsoni* include the north of the Ross Sea associated with the Pacific–Antarctic Ridge (SSRUs 881B and C) and the Amundsen Ridge (SSRU 881E) in the Amundsen Sea. In the Cooperation Sea, *D. mawsoni* most likely spawn on BANZARE Bank (Division 58.4.3b). *Dissostichus eleginoides* are thought to spawn in deep water around South Georgia Island (Subarea 48.3), Bouvet Island (Subarea 48.6) and on the Kerguelen Plateau (Divisions 58.5.1 and 58.5.2).

## Parameter estimates

18. A sample of otoliths collected in 2008 has been aged and results reported in WG-FSA-11/16. Ages of 214 otoliths (of 3 013 fish sampled) ranged from 4 to 48 years for females and from 5 to 48 years for males. These ages may be overestimated by one year due to an interpretation issue concerning the location of the first annulus.

## By-catch of fish and invertebrates

### Fish by-catch

19. Catch of by-catch species groups (macrourids, rajids and other species) are provided in Table 4.

Table 4: Catch history for by-catch species (macrourids, rajids and other species), including catch limits and number of rajids released alive in Divisions 58.4.4a and 58.4.4b. Catch limits are for both divisions combined (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)
2008	closed*	3	closed*	<1	0	closed*	1
2009	closed		closed			closed	
2010	closed*	1	closed*	<1	55	closed*	<1
2011	closed*	2	closed*	<1	73	closed*	1
2012	closed*	2	closed*	<1	0	closed*	<1
2013	closed*	2	closed*	<1	1	closed*	<1
2014	closed*	1	closed*	<1	7	closed*	<1
2015	closed*	4	closed*	<1	132	closed*	<1
2016	closed*	1	closed*	<1	84	closed*	<1
2017	closed*	6	closed*	0	558	closed*	3

\* Research fishing permitted in accordance with CM 24-01.

20. The by-catch in Divisions 58.4.4a and 58.4.4b consisted predominantly of macrourids. Catches of by-catch species groups (macrourids, rajids and other species) reported in fine-scale data, their respective catch limits and number of rajids released alive, are summarised in Table 4. In 2017, 6 tonnes of macrourids were reported, which represents ~50% of the total catch of target and by-catch species combined.

### Invertebrate by-catch including VME taxa

21. All Members are required to submit, within their general new (CM 21-01) and exploratory (CM 21-02) fisheries notifications, information on the known and anticipated impacts of their gear on vulnerable marine ecosystems (VMEs), including benthos and benthic communities such as seamounts, hydrothermal vents and cold-water corals. All of the VMEs in CCAMLR's VME Register are currently afforded protection through specific area closures, the locations and other details of which can be found in Annex 22-09/A.



22. There are no VMEs or VME Risk Areas designated in Divisions 58.4.4a and 58.4.4b.

### **Incidental mortality of seabirds and marine mammals**

#### **Incidental mortality reported**

23. There have been no observed bird or mammal mortalities reported from Divisions 58.4.4a and 58.4.4b.

#### **Mitigation measures**

24. No mitigation measures apply to this fishery as it is currently closed.

### **Ecosystem implications and effects**

25. There is no formal evaluation available for this fishery.

### **Conservation measures and advice from the Scientific Committee for research fishing in 2017 and 2018**

26. Directed fishing for *Dissostichus* spp. in Divisions 58.4.4a and 58.4.4b is prohibited under CM 32-02 at least until further scientific information is gathered and reviewed by the Scientific Committee and the Working Group on Fish Stock Assessment (WG-FSA).

27. In 2016, the Scientific Committee supported the continuation of this research program and recommended that the catch limit for Division 58.4.4b remain unchanged (from the previous season) at 25 tonnes in research block 5844b\_1 and 35 tonnes in research block 5844b\_2 for the 2017 season (see Figure 2 and SC-CAMLR-XXXV, paragraph 3.254).

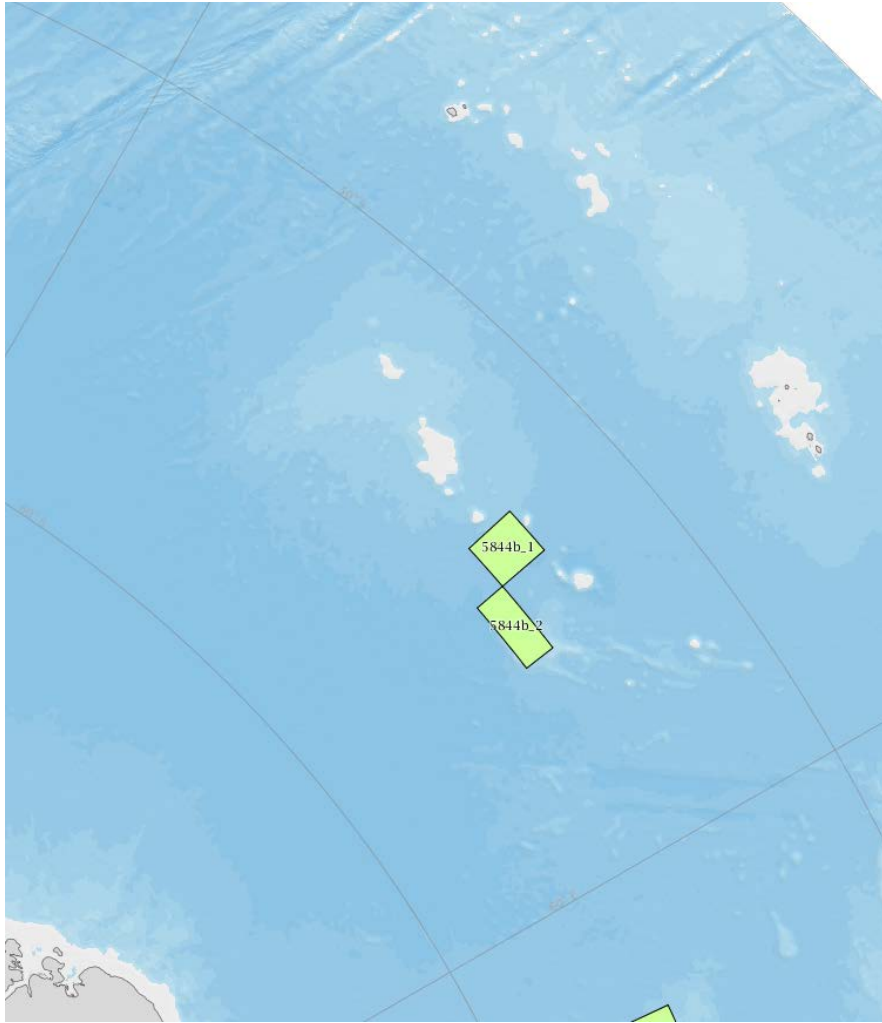


Figure 2: Location of research blocks in Division 58.4.4b.

28. The Scientific Committee noted in 2017 that WG-FSA-17 had reviewed the joint proposal by France and Japan to continue research in Division 58.4.4b and agreed that it is appropriate to achieve the research objectives (SC-CAMLR-XXXVI, paragraph 3.123).

29. In 2017, the Scientific Committee noted that catch limits for 2018 were calculated using the trend analysis decision framework (SC-CAMLR-XXXVI, paragraph 3.77) and recommended that they be applied as shown in Table 5 (and in SC-CAMLR-XXXVI, Table 1).

Table 5: Catch limits agreed by the Scientific Committee for 2017/18.

Division	SSRU	Research block	Species	Catch limit 2017 (tonnes)	Agreed catch limit 2018 (tonnes)	Conservation measure containing catch limit
58.4.4b	n/a	5844b_1	<i>D. eleginoides</i>	25	20	No CM
58.4.4b	n/a	5844b_2	<i>D. eleginoides</i>	35	28	No CM