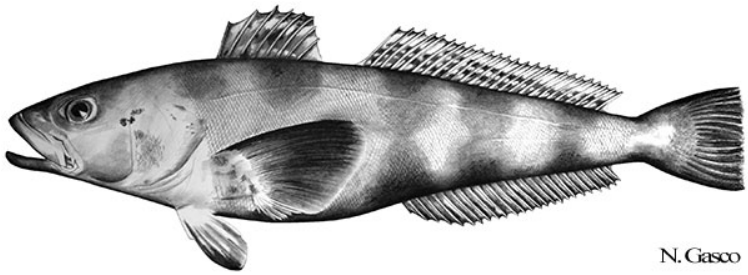
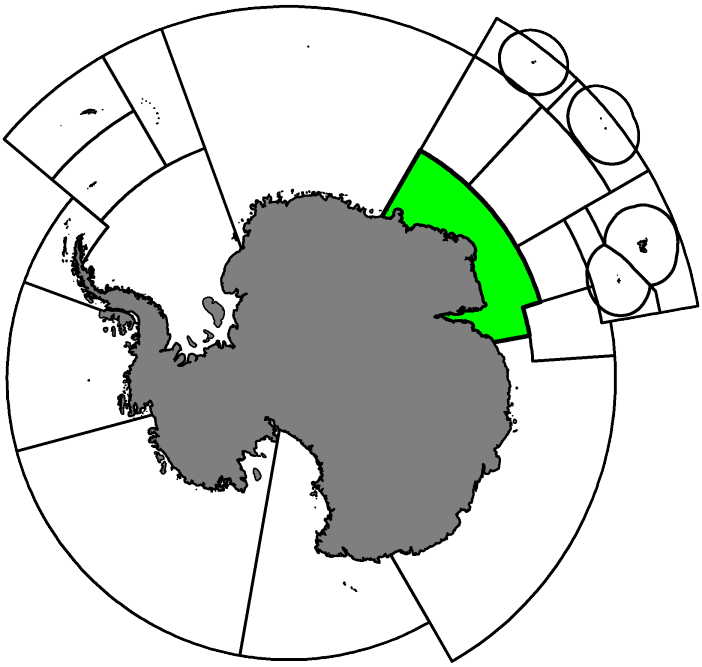
Fishery Report 2022: *Dissostichus mawsoni* in Division 58.4.2

CCAMLR Secretariat

17 March 2023



Antarctic Toothfish, *Dissostichus mawsoni* Norman, 1937.



Map of the management areas within the CAMLR Convention Area. Division 58.4.2, the region discussed in this report is shaded in green. Throughout this report, "2022" refers to the 2021/22 CCAMLR fishing season (from 1 December 2021 to 30 November 2022).

Contents

1. Introduction to the fishery

1.1. History

This report describes the exploratory longline fishery for Antarctic toothfish (*Dissostichus mawsoni*) in Division 58.4.2. This fishery was first agreed by the Commission in 2000 and started as a trawl fishery for spiny icefish (*Chaenodraco wilsoni*), striped-eye rockcod (*Lepidonotothen kempi*), Antarctic rockcod (*Trematomus eulepidotus*) and Antarctic silverfish (*Pleuragramma antarctica*) and an exploratory trawl fishery for toothfish (*Dissostichus* spp.) (Conservation Measure 186/XVIII). In 2001 and 2002, the exploratory trawl fishery was also permitted in association with a new fishery for grenadier (*Macrourus* spp.). In 2003, the fishery for *Dissostichus* spp. in Division 58.4.2 changed to an exploratory longline fishery and since 2004 has targeted primarily *D. mawsoni*. Prior to 2017, this fishery was classified as an exploratory fishery for *Dissostichus* spp., however, in order to better align the target species with the assessment process the target species was specified as *D. mawsoni*, with any Patagonian toothfish (*D. eleginoides*) caught counting towards the catch limit for *D. mawsoni*.

1.2. Conservation Measures currently in force

The current limits on the exploratory fishery for *D. mawsoni* in Division 58.4.2 are described in Conservation Measure 41-05.

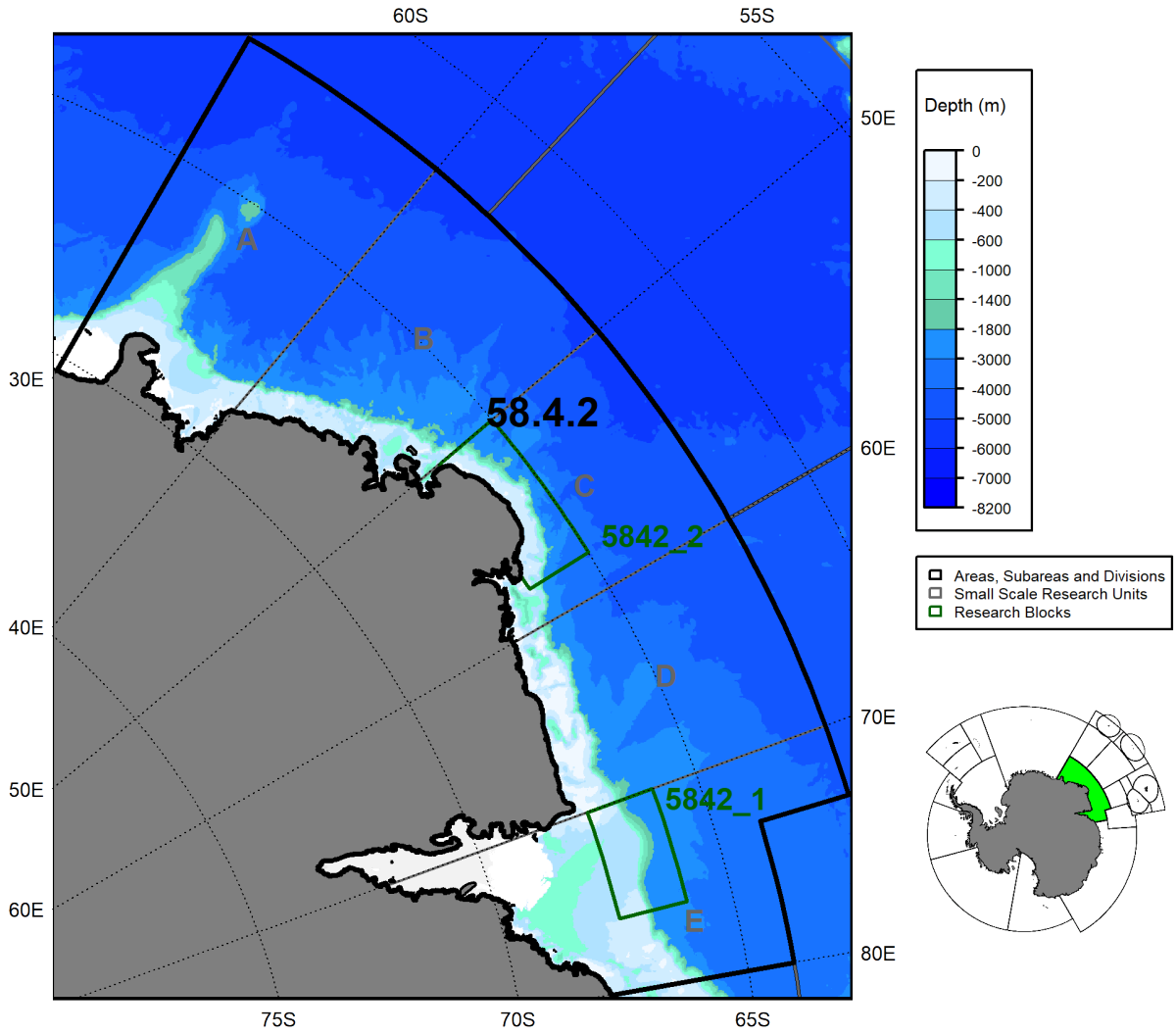


Figure 1: Location of Small Scale Research Units and Research Blocks in Division 58.4.2. The fishable depth range (600m-1800m) is highlighted in shades of green.

1.3. Active vessels

In 2022, 2 vessel participated in this fishery. For the 2023 fishing season, a total of 4 vessels notified their intention to participate in this fishery (2 from Australia; 2 from France).

1.4. Timeline of spatial management

In 2014, a Research Block (5842_1; Fig. 1) was designated in Division 58.4.2 and catch limits applied. This Research Block was designed to ensure that research fishing occurred in those areas with a high probability of recapturing tagged fish. In 2021, a second Research Block (5842_2; Fig. 1) was designated to increase

the spatial representativeness of the data collected within this Division. Fishing in this Division is restricted to the Research Blocks only. Further details on the research conducted in this Division are given in section 5.

2. Reported catch

2.1. Latest reports and limits

Reported catches of *Dissostichus* spp. are shown in Table 1. In this fishery, the catch of *D. mawsoni* reached a maximum of 216 tonnes in 2008. In 2022, 0 tonnes of *D. eleginoides* and 104 tonnes of *D. mawsoni* were caught.

The catches reported in Division 58.4.2 include catch data from particular vessels that CCAMLR has agreed should be quarantined as there is no confidence in the amount and/or the location of those catches (SC-CAMLR-XXXIII, paragraph 3.68). All ancillary data associated with these vessels (*e.g.* by catch, tagging, observer data) is also quarantined and is not included in the data presented in this report.

Table 1. Catch (tonnes) and effort history for *Dissostichus* spp. in this fishery. Source: Fine scale data and past estimates for IUU catch (-: no fishing, or no IUU estimate available; q: catch data currently quarantined).

Season	Number of vessels	Catch limit (tonnes)	*D. eleginoides*	*D. mawsoni*	Estimated IUU catch (tonnes)
2003	1		0	112	-
2004	1	500	0	20	197
2005	4	780	1	125	86
2006	3	780	0	164	192
2007	3	780	0	124	288
2008	3	780	0	216	0
2009	2	70	0	19 (q: 47)	176
2010	1	70	0	0 (q: 93)	432
2011	1	70	0	0 (q: 136)	-
2012	2	70	0	53	-
2013	1	70	0	4	-
2014	-	35	-	-	-
2015	1	35	0	10	-
2016	-	35	-	-	-
2017	2	35	0	35	-
2018	2	42	0	42	-
2019	2	50	0	50	-
2020	2	60	0	58	-
2021	1	60	0	60	-
2022	2	127	0	104	-

Table 2: Catch and catch limits by Research Block in 2022 for *Dissostichus mawsoni* in Division 58.4.2. Source: Fine scale data.

Research Block	Catch limit	Catch (% of catch limit)
5842_1	72	73 (101.4%)
5842_2	55	30 (54.5%)

2.2. By-catch

Catch limits for by-catch species groups (*Macrourus* spp., skates and rays, and other species) are defined in Conservation Measure 33-03 and provided in Table 3.

The by-catch in Division 58.4.2 consists predominantly of *Macrourus* spp. (Table 3).

Table 3. Reported catch and catch limits for by-catch species (*Macrourus* spp., skates and rays, and others) in this fishery (see Conservation Measure 33-03 for details). -: no fishing. Source: fine-scale data.

Season	*Macrourus* spp.		Skates and rays			Other catch	
	Catch Limit (tonnes)	Reported Catch (tonnes)	Catch Limit (tonnes)	Reported Catch (tonnes)	Number Released	Catch Limit (tonnes)	Reported Catch (tonnes)
2003		12		<1	0		<1
2004	80	<1	50	<1	0	100	<1
2005	124	19	50	3	3	60	2
2006	124	4	50	<1	0	60	<1
2007	124	7	50	<1	0	60	<1
2008	124	12	50	<1	0	60	1
2009	20	<1 q	50	0	0	40	<1 q
2010	20	<1 q	50	<1	7	40	<1 q
2011	20	<1 q	50	0	0	40	<1 q
2012	20	<1	50	0	0	40	<1
2013	20	<1	50	0	0	20	<1
2014	20	-	50	-	-	20	-
2015	20	<1	50	0	0	20	<1
2016	20	-	50	-	-	20	-
2017	6	1	2	0	0	6	<1
2018	7	5	2	<1	1	7	<1
2019	8	2	3	<1	2	8	<1
2020	10	2	3	<1	3	10	<1
2021	10	5	3	<1	0	10	<1
2022	20	12	6	<1	104	20	3

2.3. Vulnerable marine ecosystems (VMEs)

All Members are required to submit, within their general new (Conservation Measure 21-01) and exploratory (Conservation Measure 21-02) fisheries notifications requirements, information on the known and anticipated impacts of their gear on vulnerable marine ecosystems (VMEs), including benthic communities and benthos such as seamounts, hydrothermal vents and cold-water corals. All of the VMEs in CCAMLR's VME Registry are currently afforded protection through specific area closures.

By the end of this fishing season, there were no VMEs and one VME Risk Area designated in Division 58.4.2.

2.4. Incidental mortality of seabirds and marine mammals

There has been no observed incidental mortality of birds reported by vessels in Division 58.4.2 in this fishery.

There has been no observed incidental mortality of mammals reported by vessels in Division 58.4.2 in this fishery.

The requirements of Conservation Measure 25-02, including the 'Minimisation of the incidental mortality of seabirds in the course of longline fishing or longline fishing research in the Convention Area' apply to this fishery. There is an exemption to the requirement for night setting by achieving the sink rates described in Conservation Measure 24-02 and subject to a bird by-catch limit.

The risk level for birds in the fishery in Division 58.4.1 is category 2 (average to low) (SC-CAMLR-XXX, Annex 8, paragraph 8.1).

3. Illegal, Unreported and Unregulated (IUU) fishing

Two illegal, unreported and unregulated (IUU)-listed vessels were detected in Division 58.4.2 in 2006 and 2007. One IUU-listed fishing vessel was sighted in 2009 and two IUU-listed vessels were sighted in 2010. IUU fishing activities were not detected again until 2015. However, IUU fishing activities may still have occurred in the region between 2010 and 2014, but may not have been detected. However, since 2011, following the recognition of methodological issues in its assessment, no estimates of the IUU catch of *Dissostichus* spp. have been provided (SC-CAMLR-XXIX, paragraph 6.5).

4. Data collection

4.1. Data collection requirements

The collection of biological data under Conservation Measure 23-05 as part of the CCAMLR Scheme of International Scientific Observation (SISO) 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.

4.2. Summary of available data

Both the vessel's crew and observers collect fishing effort, catch, and by-catch information.

Following Conservation Measure 22-07, vessels participating in this fishery must report the occurrence of VME indicator organisms on hauled lines. To do so, the vessel's crew observe lines in segments (1000-hook sections or 1200m sections, whichever is the shorter) and report the number of VME indicator units (either one litre of those VME indicator organisms that can be placed in a 10-litre container, or one kilogram of those VME indicator organisms that do not fit into a 10-litre container). Depending on the number of VME indicator units landed, vessels must immediately report and potentially cease fishing in the area (termed a Risk Area) until further review of the data is completed (see Conservation Measure 22-07). Based on the portion of the line monitored, observers further identify VME indicator organisms to the lowest taxonomic level possible.

The vessel's crew report total catch of non-VME by-catch (mostly fishes) by coarse taxonomic groups given the taxonomic expertise required to discriminate similar species. Observers collect biological information on toothfish and by-catch specimens at a finer taxonomic resolution, as well as data on individual specimens such as size and maturity.

Summaries of data reported to CCAMLR for the past five years are given in Tables 4 and 5.

Table 4. Summary of VME indicator taxa by-catch, by-catch of other species and biological data reported by vessels crew and observers in each of the last five seasons. By-catch records correspond to the number of observations of total weight and count of individuals for each taxon identified. Observers may take further biological measurements on toothfish and by-catch taxa. Taxonomic identification may occur at different levels.

Data source	Data class	Variable	2018	2019	2020	2021	2022
Vessel crew	VME	line segments	165	241	259	239	418
		VME indicator units >5 and <10	0	0	0	0	0
		VME indicator units >10	0	0	0	0	1
	by-catch	taxa identified	23	18	21	7	12
		records	221	145	185	147	329
Observer	VME	line segments	213	150	100	239	220
		taxa identified	11	11	5	5	15
		weight or volume measurements	70	44	9	7	103
	toothfish	specimens examined	1297	1622	1611	2044	3719
		length measurements	1297	1620	1611	2016	3713
		weight measurements	1297	1478	1384	1718	3262
		sex identifications	1297	1622	1611	2044	3719
		maturity stage identifications	276	1431	1388	1735	3340
		gonad weight measurements	1007	0	0	0	1
		otolith samples	1053	428	600	473	1170
	by-catch	specimens examined	1944	1645	1519	2116	1994
		taxa identified	12	15	8	8	16
		length measurements	1921	1565	1512	2112	1986
		weight measurements**	1944	1636	1511	2103	1934
		standard length measurements*	0	278	568	445	689
		wingspan measurements*	1	4	3	4	39
		pelvic length measurements*	0	0	0	0	14
		snout to anus measurements*	1240	1319	861	1661	1203
		sex identifications**	1865	1536	1519	2116	1918
		maturity stage identifications**	0	1484	946	2116	1443
		gonad weight measurements**	0	0	0	0	0
		otolith samples**	169	120	102	85	49

*: Species-dependent records
**: Voluntary records

Table 5. Summary of biological data for predominant by-catch groups reported by observers (from random subsets of lines) in each of the last five seasons. Taxonomic identification may occur at different levels.

By-catch group	Variable	2018	2019	2020	2021	2022
Macrourus spp.	specimens examined	1250	1323	902	1666	1203
	taxa identified	3	5	3	2	4
	length measurements	1229	1244	897	1663	1195
	weight measurements**	1250	1316	901	1659	1150
	snout to anus measurements*	1240	1319	861	1661	1201
	sex identifications**	1220	1253	902	1666	1203
	maturity stage identifications**	0	1226	902	1666	1203
	gonad weight measurements**	0	0	0	0	0
	otolith samples**	167	120	102	85	49
Skates and rays	specimens examined	1	4	3	4	40
	taxa identified	1	1	1	1	3
	length measurements	1	4	3	4	40
	weight measurements**	1	4	3	4	39
	wingspan measurements*	1	4	3	4	39
	pelvic length measurements*	0	0	0	0	14
	sex identifications**	1	4	3	4	40
	maturity stage identifications**	0	2	2	4	38
	gonad weight measurements**	0	0	0	0	0
Other fish	specimens examined	691	318	614	446	751
	taxa identified	7	9	4	5	9
	length measurements	691	317	612	445	751
	weight measurements**	691	316	607	440	745
	standard length measurements*	0	278	568	445	689
	sex identifications**	644	279	614	446	675
	maturity stage identifications**	0	256	42	446	202
	gonad weight measurements**	0	0	0	0	0
	otolith samples**	2	0	0	0	0

*: Species-dependent records
**: Voluntary records

The counts of by-catch taxa reported above (Table 5) correspond to specimens that have been individually sampled by observers. These are a subset of all the specimens counted by observers and are generally identified at a more precise taxonomic level. The figures below (Figs. 2 and 3) display the distribution of the most frequently examined by-catch taxa in time and space. It is important to note that observers sample a random subset of lines and do not individually examine all taxa; as such these figures are more representative of the distribution of biological observations than the catch of these taxa or their spatial distribution. At a coarse taxonomic level, the total catch of by-catch species groups is provided in section 2.2 above.

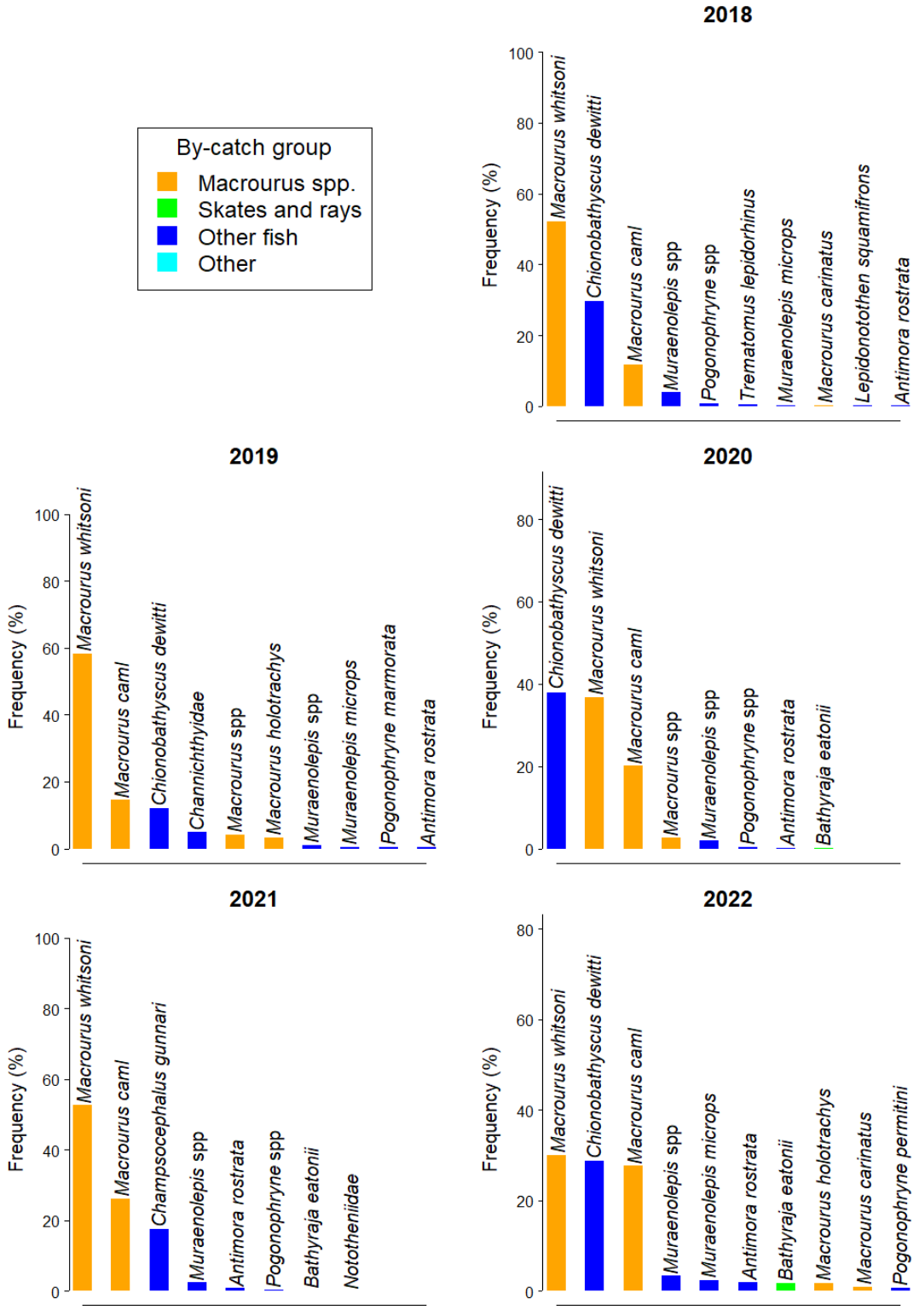


Figure 2. Relative frequencies of the most commonly examined by-catch taxa in each of the last five seasons, from the observer data (unweighted raw counts of individually examined specimens). Taxonomic identification may occur at different levels.

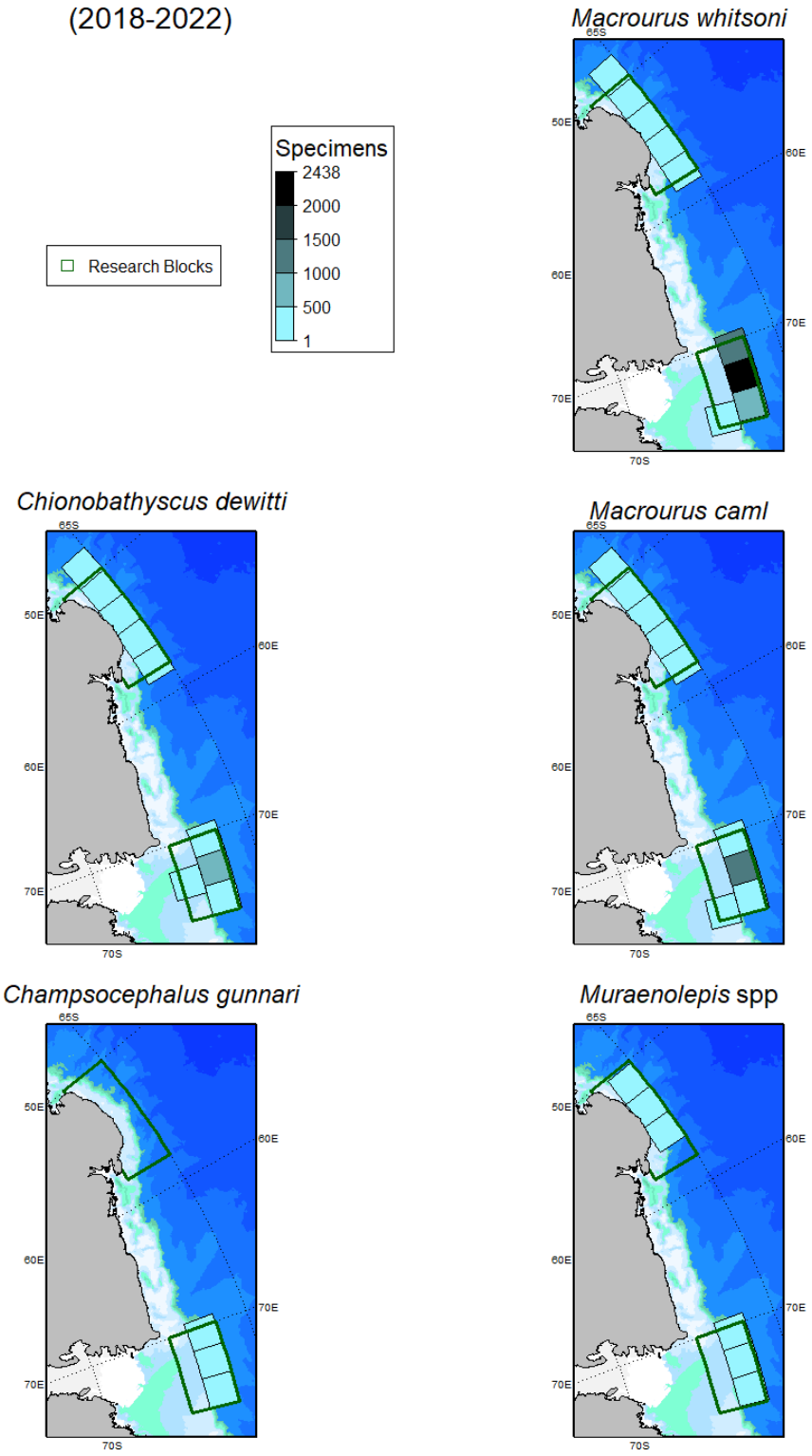


Figure 3. Spatial distribution of the most commonly examined by-catch taxa across the last five seasons, from the observer data (unweighted raw counts of individually examined specimens in each cell). The data were aggregated using equal area (100 km x 100 km) cells. Taxonomic identification may occur at different levels. Refer to Figure 1 for more details on the boundaries shown.

4.3. Length frequency distributions

The length frequency distributions of *D. mawsoni* caught in this fishery are shown in Figure 4. These length frequency distributions are unweighted; 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 changes 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 distributions of fishing.

The majority of *D. mawsoni* caught in the Division 58.4.2 fishery ranged from 50 to 175cm in length, with a relatively consistent broad mode at approximately 140cm (Fig. 4). In some years, a distinct bimodal distribution is observed and is likely to be as a result of vessels fishing in shallower water on the shelf.

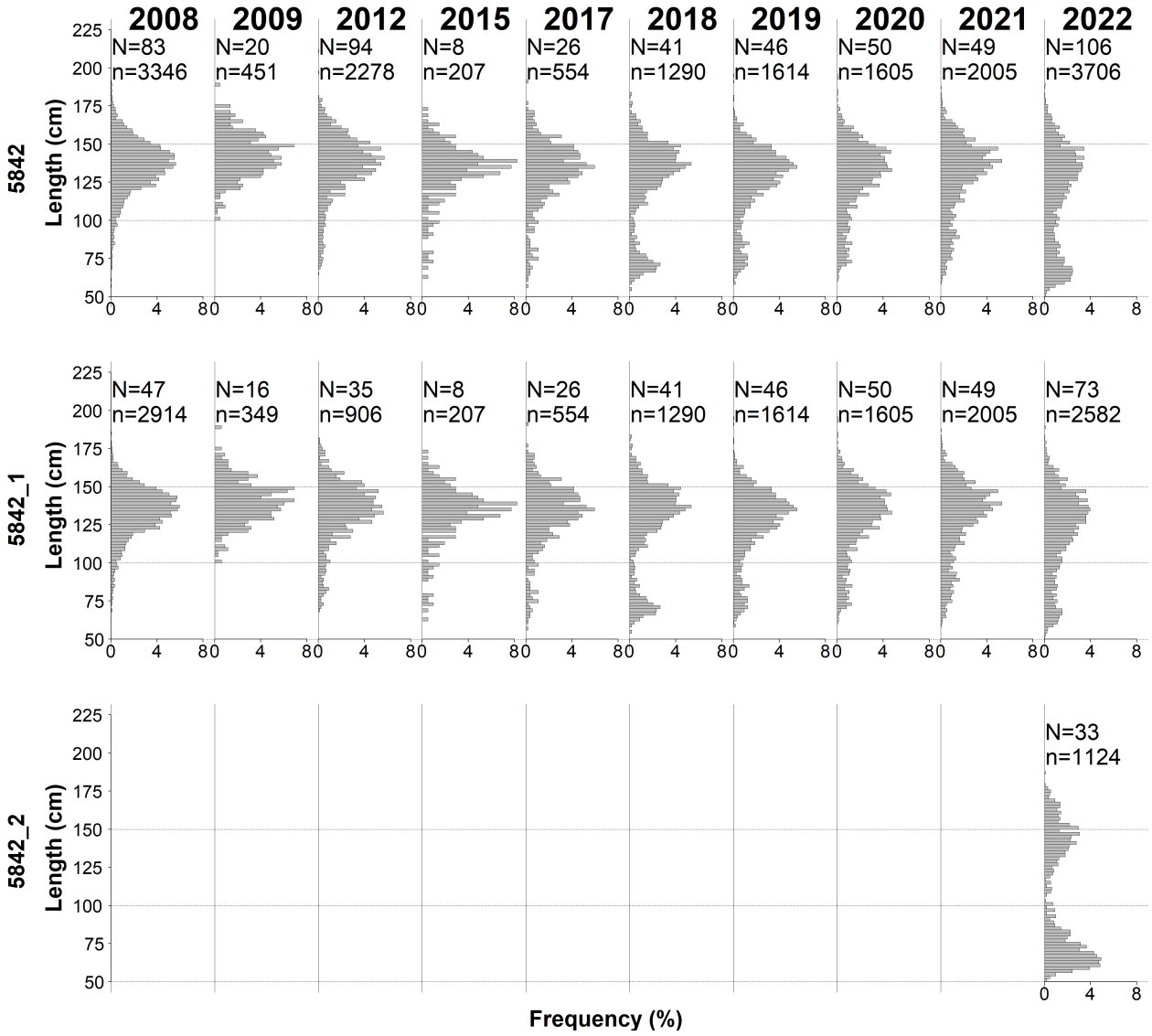


Figure 4. Annual length frequency distributions of *Dissostichus mawsoni* caught in Division 58.4.2 (top panel) and in each Research Block (lower panels). The number of hauls from which fish were measured (N) and the number of fish measured (n) in each year are indicated. Note: length frequency distributions are only shown where more than 150 fish were measured in a given season.

4.3. Tagging

Since 2012, vessels have been required to tag and release *Dissostichus* spp. at a rate of 5 fish per tonne of green weight caught. 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 6). Each vessel catching more than 10 tonnes of each species of *Dissostichus* is required to achieve a minimum tag-overlap statistic of 60% (Annex 41-01/C).

Table 6. Annual tagging rate (number of fish tagged per tonne of total catch), reported by vessels operating in this exploratory fishery. The tag-overlap statistics (CM 41-01) for *D. mawsoni* and *D. eleginoides* respectively are provided in brackets (NC: Tag-overlap statistic is Not Calculated for less than 30 fish tagged; -: no fish were tagged). In the last row, the tagging rate and tag-overlap statistic were computed using all fish tagged and all fish caught in the area.

		Fishing Season								
Flag State	Vessel name	2012	2013	2015	2017	2018	2019	2020	2021	2022
Australia	Antarctic Aurora								5.2 (83.6,NC)	
Australia	Antarctic Chieftain					5.1 (77.2,NC)	5.1 (93.1,NC)	5.6 (83.3,NC)		
Australia	Antarctic Discovery									5.9 (84.7,NC)
France	Le Saint Andre				5.2 (88.4,-)	6 (83.2,-)	5.3 (72.9,-)	5.6 (87.4,-)		5.2 (77.8,-)
Japan	Shinsei Maru No. 3		5.7 (NC,NC)							
Republic of Korea	Hong Jin No. 701	5 (77.4,-)								
Republic of Korea	Kingstar			8.5 (86.3,-)	5.5 (81.8,-)					
South Africa	Koryo Maru No. 11	5.2 (52.9,NC)								
Total		**5.1 (78.1,NC)**	**5.7 (NC,NC)**	**8.5 (86.3,-)**	**5.4 (86.6,-)**	**5.4 (81.7,NC)**	**5.2 (86.5,NC)**	**5.6 (89.8,NC)**	**5.2 (83.6,NC)**	**5.6 (83.3,NC)**

To date in this area, 4596 *D. mawsoni* have been tagged and released (27 have been recaptured; Table 7), and, 39 *D. eleginoides* have been tagged and released (0 have been recaptured; Table 8).

Table 7. Number of *D. mawsoni* tagged in recent fishing Seasons. The number of fish recaptured by each vessel in each Season is provided in brackets.

		Fishing Season								
Flag State	Vessel name	2012	2013	2015	2017	2018	2019	2020	2021	2022
Australia	Antarctic Aurora								309 (10)	
Australia	Antarctic Chieftain					140 (0)	170 (0)	222 (3)		
Australia	Antarctic Discovery									375 (4)
France	Le Saint Andre				76 (0)	85 (0)	88 (5)	100 (2)		211 (1)
Japan	Shinsei Maru No. 3		20 (0)							
Republic of Korea	Hong Jin No. 701	203 (0)								
Republic of Korea	Kingstar			82 (0)	110 (0)					
South Africa	Koryo Maru No. 11	63 (0)								
Total		**266 (0)**	**20 (0)**	**82 (0)**	**186 (0)**	**225 (0)**	**258 (5)**	**322 (5)**	**309 (10)**	**586 (5)**

Table 8. Number of *D. eleginoides* tagged in recent fishing Seasons. The number of fish recaptured by each vessel in each Season is provided in brackets.

		Fishing Season								
Flag State	Vessel name	2012	2013	2015	2017	2018	2019	2020	2021	2022
Australia	Antarctic Aurora								0 (0)	
Australia	Antarctic Chieftain					1 (0)	0 (0)	1 (0)		
Australia	Antarctic Discovery									0 (0)
France	Le Saint Andre				0 (0)	0 (0)	0 (0)	0 (0)		0 (0)
Japan	Shinsei Maru No. 3		1 (0)							
Republic of Korea	Hong Jin No. 701	0 (0)								
Republic of Korea	Kingstar			0 (0)	0 (0)					
South Africa	Koryo Maru No. 11	3 (0)								
Total		**3 (0)**	**1 (0)**	**0 (0)**	**0 (0)**	**1 (0)**	**0 (0)**	**1 (0)**	**0 (0)**	**0 (0)**

5. Research

5.1. Status of the science

Catch limits for CCAMLR's fisheries for *D. mawsoni* and *D. eleginoides* for the 'assessed' fisheries 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)). 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 Conservation Measure 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.

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.

Spanish and Australian scientists are working on the age and growth estimates of Antarctic toothfish within divisions 58.4.1 and 58.4.2 from 2015 and 2017 respectively.

In 2018, an initial stock assessment model was developed for Antarctic toothfish in Divisions 58.4.1 and 58.4.2 (WG-FSA-18/58 rev1) but deemed to be unsuitable to provide management advice on catch limits.

In 2019, Korean scientists joined this collaborative work (WG-FSA-2019/47).

In 2021, WG-FSA-2021/18 presented a report of research activities conducted in this Division since 2012.

In 2022, WG-FSA-2022/10 provided an overview of the deployments of Conductivity, Temperature and Depth (CTD) loggers and Benthic Video Cameras (BVCs) in this fishery which revealed that the majority of fishing activity occurred in waters with unconsolidated soft substrate with very low densities of VME taxa. WG-FSA-2022/21 reported on fish by-catch in this fishery, indicating that by-catch biomass was dominated (98%) by two families: Macrouridae and Channichthyidae, and that *Macrourus* catch was dominated by females in all research blocks without changes in length frequency distribution patterns over time. WG-FSA-2022/25 examined simulated egg and larval transport under different SAM phases in the continental shelf-slope regions of East Antarctica using particle tracking models, indicating a negative relationship between the relative SAM phase and the predicted percentage of successful transport. WG-FSA-2022/34 presented an updated preliminary integrated stock assessment for this fishery indicating that the Antarctic toothfish stock in Divisions 58.4.1 and 58.4.2 was unlikely to be depleted by the current level of fishing mortality.

5.2. Research plans

5.2.1. Background Exploratory fishing for toothfish (*Dissostichus* spp.) in Division 58.4.2 began in 2003. However, a robust stock assessment and catch limits according to CCAMLR decision rules remain to be determined for this Division. Accordingly, the current exploratory Antarctic toothfish (*Dissostichus mawsoni*) fishery in this Division has been identified as 'data-poor'. In 2014, a Research Block was designated in this Division. Research plans are generally focused in Research Block, to facilitate the development of local biomass estimates. All Members notifying to fish in Division 58.4.2 submitted a research plan, based on Conservation Measure 24-01, Annex 24-01/A, format 2.

In 2019, Australia, France, Japan, the Republic of Korea and Spain collaborated on a multi-member research plan on the *Dissostichus mawsoni* exploratory fishery in East Antarctica (Divisions 58.4.1 and 58.4.2) (WG-FSA-2019/44).

In 2021, that research plan was updated with 2022 operating details, a change to the sampling design within existing research blocks, and a proposed new research block WG-SAM-2021/03.

In 2022, that research plan was updated (WG-SAM-2022/04) following a review of its spatial design indicating that Antarctic toothfish across Divisions 58.4.1 and 58.4.2 may be considered as a single stock (WG-SAM-2022/09). The research plan was updated with relevant details for all notified vessels, and random depth-stratified sampling locations in all research blocks.

5.2.2. Objectives Standard catch, fishing effort, tagging and biological data will be collected under CM 41-05 and 41-11 to inform an assessment of the status and productivity of toothfish in this Division. Annual milestones include updated reports on research activity and collected data, and ageing of collected toothfish otoliths, while the estimation of biological parameters and the stock assessment will be updated biennially. Pop-up satellite tags will be released from Korean and Japanese fishing vessels to investigate toothfish behaviour and movement. The collection of environmental data will continue annually or as opportunities arise. Environmental data collection will entail the attachment of conductivity, temperature and depth loggers (CTD loggers) and Benthic Video Cameras (BVCs) to fishing gear. CTD loggers and BVCs will be deployed from Australian, French and Spanish vessels. By-catch data will be collected in accordance with relevant conservation measures (CMs 33-03, 41-05 and 41-11). These data will help to update estimations of the distribution, relative abundance, and life history of the main by-catch species. In addition, the assessment and recommendations for catch limits of main by-catch species, particularly *Macrourus*, will be updated and current mitigation measures evaluated. Samples of fish muscle tissue, stomach contents, plankton and zooplankton will be used for the investigation of feeding strategy of Antarctic toothfish based on stomach analysis, and trophic relationships and ecosystem function based on fatty acid and stable isotope sampling.

The 2022 multi-member research plan (WG-SAM-2022/04) aims to achieve four objectives:

Objective 1: Provide an assessment of the status and productivity of toothfish stocks,

Objective 2: Identify the spatial distributions of toothfish, important habitats and vulnerable marine ecosystems (VME) in order to inform spatial management approaches,

Objective 3: Identify the spatial and depth distributions of by-catch species, and inform by-catch mitigation measures,

Objective 4: Improve the understanding of trophic relationships and ecosystem function to assist the development of ecosystem-based fisheries management approaches.

5.3. Advice by the Scientific Committee

In 2016, the Scientific Committee considered the advice of WG-FSA on research in Divisions 58.4.1 and 58.4.2 and agreed that the research plan in WG-FSA-16/29 was appropriate to achieve the research objectives.

In 2017, the Scientific Committee recommended that the catch limits for these divisions remain unchanged for 2018 and supported the catch allocation scheme developed by the research proponents in 2016.

In 2019, the Commission agreed that the research plan was appropriate to achieve the research objectives in 58.4.2, with a catch limit of 50 tonnes in Research Block 5842_1.

In 2021, following the Scientific Committee's advice (SC-CCAMLR-40, paragraph 3.104), the Commission agreed that this research should proceed in 2022 (CCAMLR-40, paragraph 6.40).

In 2022, following the Scientific Committee's advice (SC-CCAMLR-41, paragraph 3.136), the Commission agreed that this research should proceed in 2023 (CCAMLR-41, paragraph 4.45).

6. Stock status

6.1. Summary of current status

As a data-limited fishery, this fishery does not have such estimates.

6.2. Assessment method

Stock biomass and catch limits in data-limited fisheries are estimated using the trend analysis.

6.3. Year of last assessment, year of next assessment

Research plans for data-limited fisheries are reviewed annually.

7. Climate Change and environmental variability

In 2018, a summary of the potential impacts of climate change on Southern Ocean fisheries (FAO 2018) highlighted the following key points:

The Antarctic region is characterized by complex interaction of natural climate variability and anthropogenic climate change that produce high levels of variability in both physical and biological systems, including impacts on key fishery taxa such as Antarctic krill. The impact of anthropogenic climate change in the short-term could be expected to be related to changes in sea ice and physical access to fishing grounds, whereas longer-term implications are likely to include changes in ecosystem productivity affecting target stocks. There are no resident human populations or fishery-dependent livelihoods in the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) Area, therefore climate change will have limited direct implications for regional food security. However, as an "under-exploited" fishery, there is potential for krill to play a role in global food security in the longer term. The institutional and management approach taken by CCAMLR, including the ecosystem-based approach, the establishment of large marine protected areas, and scientific monitoring programmes, provides measures of resilience to climate change.

In 2022, the Commission recognised that climate change is already having effects in the Convention Area (CCAMLR-41, paragraph 6.3) and agreed that it needed to act urgently to prepare for, and adapt to, the effects of climate change on the marine ecosystems within the Convention Area (CCAMLR-41, paragraph 6.5). The Commission noted (CCAMLR-41, paragraph 6.4) that the Scientific Committee had incorporated climate change into its advice (SC-CAMLR-41, paragraph 7.8) and through discussions at the SC-Symposium (SC-CAMLR-41, Annex 11) had also added climate change to the work plans and terms of reference of its Working Groups (SC-CAMLR-41, paragraph 7.14). The Commission also welcomed (CCAMLR-41, paragraph 6.8) the Scientific Committee's agreement to hold a workshop on climate change in the first half of 2023 (SC-CAMLR-41, paragraph 7.10) and encouraged the inclusion of a range of scientific experts as well as policy makers to foster integration of the best available science into management actions. The Commission adopted (CCAMLR-41, paragraph 6.28) Resolution 36/41.

Additional Resources

- Fishery Summary: pdf, html
- Species Description: pdf, html
- Trend Analysis: pdf, html
- Fisheries Documents Browser