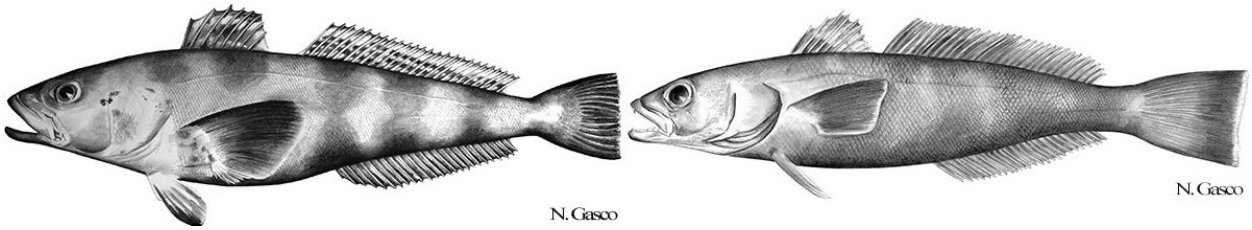
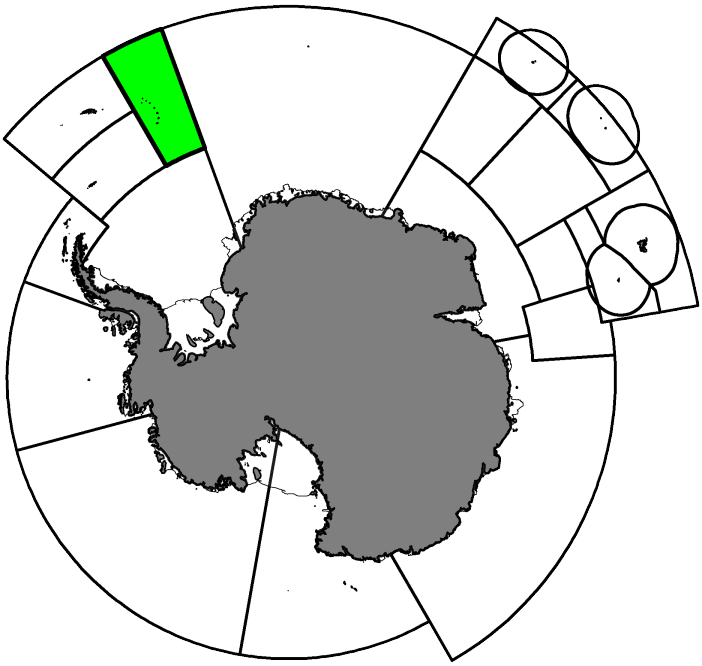
# Fishery Report 2024: *Dissostichus eleginoides* and *Dissostichus mawsoni* in Subarea 48.4

CCAMLR Secretariat

28 April 2025




Antarctic toothfish, *Dissostichus mawsoni* Norman, 1937, and, Patagonian toothfish, *Dissostichus eleginoides* Smitt, 1898.



Map of the management areas within the CAMLR Convention Area. Subarea 48.4, the region discussed in this report is shaded in green. Throughout this report, "2024" refers to the 2023/24 CCAMLR fishing season (from 1 December 2023 to 30 November 2024). Coastlines and ice shelves: UK Polar Data Centre/BAS and Natural Earth. Projection: EPSG 6932.

# Contents

# 1. Introduction to the fishery

## 1.1. History

This report describes the longline fishery for Patagonian (*Dissostichus eleginoides*) and Antarctic (*D. mawsoni*) toothfish in Subarea 48.4.

The fishery for *D. eleginoides* in Subarea 48.4 was initiated as a new fishery in 1993 following notifications from Chile and the USA (SC-CAMLR-XI, Annex 5, paragraph 6.22), and the adoption of Conservation Measure 44/XI, which set a precautionary catch limit for *D. eleginoides* of 240 tonnes for that season. Subsequently, the USA withdrew from the fishery and the Chilean longline vessel abandoned fishing after one week of poor catches (SC-CAMLR-XII, Annex 5, paragraph 6.2). In addition, a Bulgarian-flagged longliner fished in November and December 1992 and reported a catch of 39 tonnes of *D. eleginoides* (SC-CAMLR-XII, Annex 5, paragraph 6.1).

There was no further fishing activity in Subarea 48.4 until 2005 when a mark-recapture experiment was initiated.

## 1.2. Conservation Measures currently in force

The limits on the established fishery for *Dissostichus* spp. in Subarea 48.4 are defined in Conservation Measure 41-03.

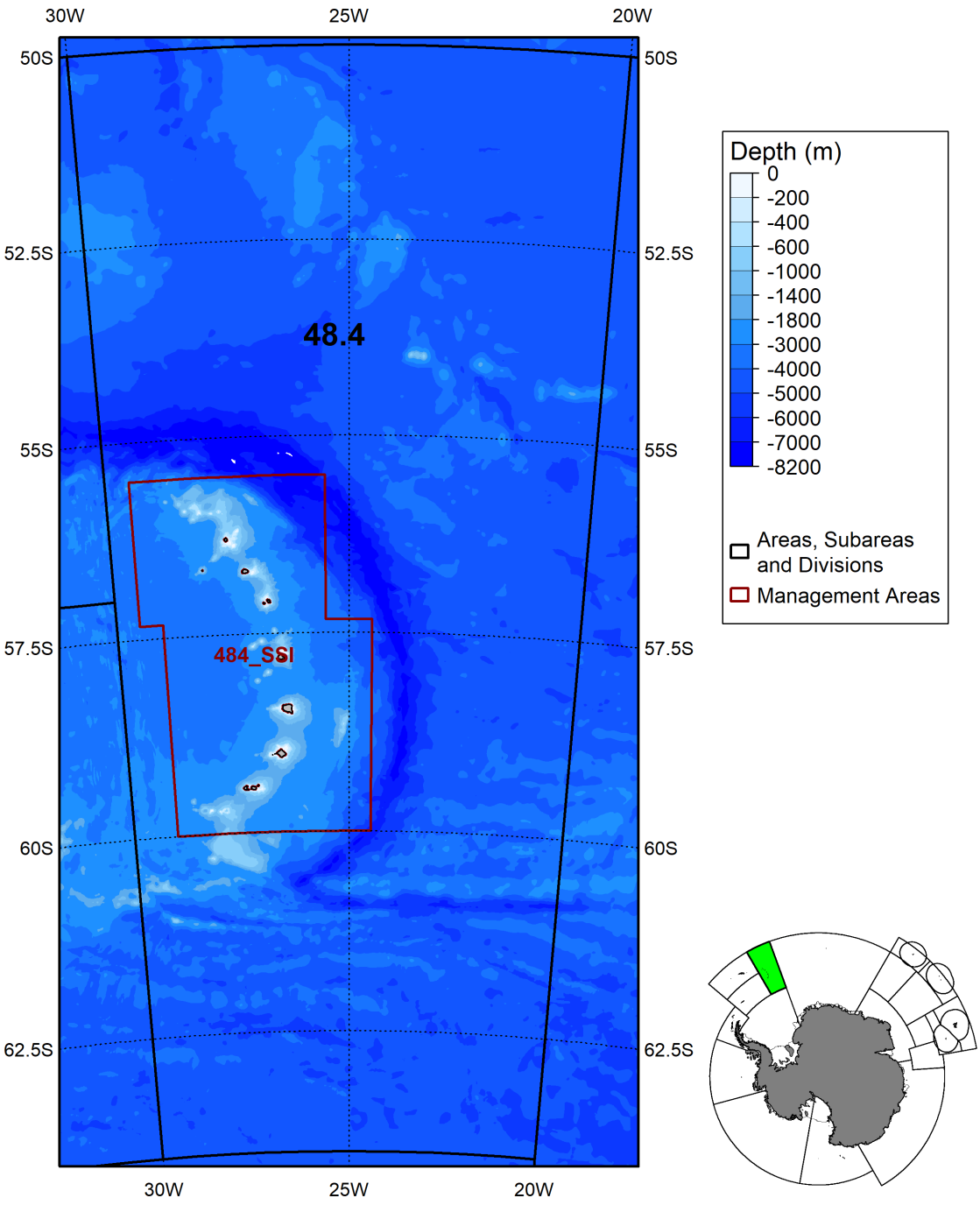



Figure 1: Location of the area of directed fishing in Subarea 48.4. Coastlines and ice shelves: UK Polar Data Centre/BAS and Natural Earth. Bathymetry: GEBCO. Projection: EPSG 6932 (rotated).

### 1.3. Active vessels

In 2024, 1 vessel participated in this fishery.

### 1.4. Timeline of spatial management

In 2008, the Commission agreed to divide Subarea 48.4 into a northern area (Subarea 48.4N) and a southern area (Subarea 48.4S) with directed longline fisheries of *D. eleginoides* in Subarea 48.4N and *Dissostichus* spp. in Subarea 48.4S with a single catch limit applied to both species.

In 2014, the management approach in this Subarea was changed and rather than using the northern and southern areas, separate catch limits were set for each species within the directed fishing area specified in Conservation Measure 41-03 (see Fig. 1).

## 2. Reported catch

### 2.1. Latest reports and limits

Reported catches of *Dissostichus* spp. are presented in Table 1. In this fishery, the catch of *D. eleginoides* reached a maximum of 98 tonnes in 2008. In 2024, 4 tonnes of *D. eleginoides* and 42 tonnes of *D. mawsoni* were caught.

Table 1. Catch (tonnes) and effort history for *Dissostichus* spp. in this fishery. The separate catch limits for *D. eleginoides* and *D. mawsoni* from 2014 onwards are shown here separated by a semicolon (-: no IUU estimate available). Source: Fine scale data.

| Season | Number of vessels | Catch limit (tonnes) | *D. eleginoides* | *D. mawsoni* | Estimated IUU catch (tonnes) |
|---|---|---|---|---|---|
| 1990 | 1 | | 0 | 0 | - |
| 1992 | 1 | | 27 | 0 | - |
| 1993 | 1 | | 12 | 0 | - |
| 2005 | 1 | 28 ; 0 | 27 | 0 | - |
| 2006 | 2 | 100 ; 0 | 19 | 0 | - |
| 2007 | 2 | 100 ; 0 | 54 | 0 | - |
| 2008 | 2 | 100 ; 0 | 98 | 0 | - |
| 2009 | 2 | 150 ; 75 | 74 | 59 | - |
| 2010 | 2 | 116 ; 75 | 57 | 56 | - |
| 2011 | 2 | 70 ; 30 | 39 | 15 | - |
| 2012 | 2 | 81 ; 33 | 55 | 22 | - |
| 2013 | 2 | 115 ; 52 | 72 | 40 | - |
| 2014 | 2 | 45 ; 24 | 44 | 24 | - |
| 2015 | 2 | 42 ; 28 | 42 | 28 | - |
| 2016 | 2 | 47 ; 39 | 42 | 28 | - |
| 2017 | 2 | 47 ; 38 | 28 | 19 | - |
| 2018 | 2 | 26 ; 37 | 17 | 32 | - |
| 2019 | 2 | 26 ; 37 | 17 | 33 | - |
| 2020 | 2 | 27 ; 45 | 19 | 44 | - |
| 2021 | 2 | 27 ; 45 | 16 | 43 | - |
| 2022 | 1 | 23 ; 50 | 14 | 32 | - |
| 2023 | 1 | 23 ; 42 | 5 | 26 | - |
| 2024 | 1 | 19 ; 43 | 4 | 42 | - |

### 2.2. By-catch

Catch limits for by-catch species groups (*Macrourus* spp., skates and rays, and other species) are defined in Conservation Measure 41-03.

As defined in Conservation Measure 41-03, if the by-catch of skates exceeded 5% of the catch of *Dissostichus* spp. in any one haul or set, or if the catch of *Macrourus* spp. reached 150kg and exceeds 16% of the catch of *Dissostichus* spp. in any one haul or set, then the fishing vessel must move at least 5 nautical miles away for a period of at least five days.

In addition to the mitigation measures described in Conservation Measure 41-03, skates are handled and released following 'Year-of-the-Skate' protocols to maximise their survival.

Catches of by-catch species groups (*Macrourus* spp., skates and rays, and other species) and number of skates released alive, are summarised in Table 2. The by-catch limits in Subarea 48.4 (as set out in Conservation Measure 41-03) have changed with the development of the fishery research: prior to 2009 there were no specified limits, from 2009 to 2013 there was an overall by-catch limit for macrourids and skates in area 48.4N and a move-on rule provision in Subarea 48.4S, and in 2014, with the introduction of species-specific catch limits for the two target species, whole-fishery catch limits for macrourids and skates were introduced.

Table 2. Reported catch and catch limits for by-catch species (*Macrourus* spp., skates and rays, and others) in this fishery (see CM 41-03 for details). 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) |
| 1990 | | <1 | | <1 | 0 | | <1 |
| 1992 | | 0 | | 0 | 0 | | 0 |
| 1993 | | 0 | | 0 | 0 | | 0 |
| 2005 | | 3 | | 0 | 0 | | <1 |
| 2006 | | 5 | | 1 | 4359 | | <1 |
| 2007 | | 14 | | 2 | 6515 | | <1 |
| 2008 | | 16 | | 4 | 8276 | | <1 |
| 2009 | | 26 | | 2 | 9767 | | 1 |
| 2010 | | 16 | | 2 | 6183 | | 1 |
| 2011 | | 5 | | <1 | 4680 | | <1 |
| 2012 | | 7 | | <1 | 5582 | | <1 |
| 2013 | | 6 | | <1 | 3115 | | <1 |
| 2014 | 11 | 3 | 3.5 | <1 | 1124 | | <1 |
| 2015 | 11.2 | 4 | 3.5 | <1 | 624 | | <1 |
| 2016 | 13.8 | 3 | 4.3 | <1 | 1203 | | <1 |
| 2017 | 13.6 | 4 | 4.3 | <1 | 1549 | | <1 |
| 2018 | 10.1 | 5 | 3.2 | 2 | 1768 | | <1 |
| 2019 | 10.1 | 4 | 3.2 | <1 | 1750 | | <1 |
| 2020 | 11.5 | 3 | 3.6 | <1 | 2322 | | <1 |
| 2021 | 11.5 | 8 | 3.6 | <1 | 2016 | | <1 |
| 2022 | 11.7 | 10 | 3.7 | <1 | 3784 | | <1 |
| 2023 | 10.4 | 10 | 3.2 | <1 | 1534 | | <1 |
| 2024 | 9.9 | 3 | 3.1 | <1 | 1359 | | <1 |

The distribution of skates and macrourids in Subarea 48.4 has been investigated and their distributions described in WG-FSA-09/17 and WG-FSA-09/18.

Catch rates for macrourids in the north of Subarea 48.4 were high at the start of the fishery. Vessels subsequently altered their fishing techniques and areas to avoid macrourid by-catch and rates dropped (Table 2).

Macrourid catches were previously thought to be almost entirely comprised of Whitson's grenadier (*Macrourus whitsoni*). Subsequent taxonomic studies (including genetic analyses) now indicate that the Macrourid population comprises two species, including *M. whitsoni* and the recently described species *Caml* grenadier (*M. caml*) (WG-FSA-10/33; McMillan et al., 2012).

### 2.3. Vulnerable marine ecosystems (VMEs)

As Conservation Measure 22-06 does not apply to this subarea there are no CCAMLR VMEs or VME Risk Areas designated in Subarea 48.4. There are fishery-specific restrictions in place to mitigate the impact of the fishery on VMEs, including benthic communities such as seamount and hydrothermal vent communities and benthos, such as cold-water corals.

### 2.4. Incidental mortality of seabirds and marine mammals

In 2017 one Southern giant petrel (*Macronectes giganteus*), and in 2022 one grey-headed albatross (*Thalassarche chrysostoma*) were killed in this fishery. There have been no mammal mortalities reported by vessels in this fishery.

The level of risk of incidental mortality of birds in Subarea 48.4 is category 3 (medium) (SC-CAMLR-XXX, Annex 8, paragraph 8.1).

Conservation Measure 25-02 on minimisation of the incidental mortality of birds in longline fishing applies to this Subarea. Conservation Measure 41-03 also stipulates that if any vessel catches three seabirds in a season then that vessel must only set longlines at night.

## 3. Illegal, Unreported and Unregulated (IUU) fishing

Data on potential illegal, unreported and unregulated (IUU) fishing in this Subarea is limited to sightings from licensed vessels (including fishing vessels, expedition yachts and research ships). There has been no recorded evidence of IUU fishing activities in Subarea 48.4.

## 4. Data collection

### 4.1. Data collection requirements

The collection of biological data 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.

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.

Conservation Measures 22-06 and 22-07 do not apply to this fishery.

Summaries of data reported to CCAMLR for the past five years are given in Tables 3 and 4.

Table 3. Summary of by-catch 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 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|
| Vessel crew | by-catch | taxa identified | 5 | 9 | 7 | 7 | 7 |
| | | records | 183 | 242 | 273 | 178 | 135 |
| Observer | toothfish | specimens examined | 1050 | 910 | 1186 | 580 | 482 |
| | | length measurements | 1050 | 910 | 1186 | 580 | 480 |
| | | weight measurements | 1047 | 819 | 751 | 578 | 480 |
| | | sex identifications | 1048 | 829 | 769 | 467 | 480 |
| | | maturity stage identifications | 1044 | 825 | 768 | 467 | 480 |
| | | gonad weight measurements | 1035 | 823 | 678 | 466 | 480 |
| | | otolith samples | 622 | 465 | 365 | 235 | 282 |
| | by-catch | specimens examined | 517 | 351 | 621 | 297 | 232 |
| | | taxa identified | 8 | 8 | 9 | 9 | 7 |
| | | length measurements | 212 | 351 | 620 | 295 | 232 |
| | | weight measurements** | 515 | 348 | 613 | 297 | 232 |
| | | standard length measurements* | 27 | 0 | 0 | 0 | 0 |
| | | wingspan measurements* | 31 | 63 | 31 | 6 | 17 |
| | | pelvic length measurements* | 31 | 64 | 31 | 6 | 17 |
| | | snout to anus measurements* | 424 | 157 | 387 | 230 | 153 |
| | | sex identifications** | 334 | 347 | 30 | 297 | 232 |
| | | maturity stage identifications** | 299 | 342 | 26 | 287 | 232 |
| | | gonad weight measurements** | 0 | 197 | 0 | 269 | 0 |
| | | otolith samples** | 223 | 0 | 0 | 0 | 0 |

*: Species-dependent records
**: Voluntary records

Table 4. 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 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|
| *Macrourus* spp. | specimens examined | 414 | 157 | 387 | 229 | 154 |
| | taxa identified | 2 | 3 | 3 | 3 | 2 |
| | length measurements | 119 | 157 | 387 | 229 | 154 |
| | weight measurements** | 412 | 157 | 387 | 229 | 154 |
| | snout to anus measurements* | 414 | 157 | 387 | 229 | 152 |
| | sex identifications** | 252 | 157 | 0 | 229 | 154 |
| | maturity stage identifications** | 232 | 153 | 0 | 222 | 154 |
| | gonad weight measurements** | 0 | 107 | 0 | 212 | 0 |
| | otolith samples** | 207 | 0 | 0 | 0 | 0 |
| Skates and rays | specimens examined | 31 | 64 | 31 | 6 | 17 |
| | taxa identified | 1 | 1 | 1 | 1 | 1 |
| | length measurements | 31 | 64 | 30 | 4 | 17 |
| | weight measurements** | 31 | 61 | 23 | 6 | 17 |
| | wingspan measurements* | 31 | 63 | 31 | 6 | 17 |
| | pelvic length measurements* | 31 | 64 | 31 | 6 | 17 |
| | sex identifications** | 31 | 62 | 30 | 6 | 17 |
| | maturity stage identifications** | 31 | 63 | 26 | 6 | 17 |
| | gonad weight measurements** | 0 | 19 | 0 | 0 | 0 |
| Other fish | specimens examined | 72 | 130 | 203 | 62 | 61 |
| | taxa identified | 5 | 4 | 5 | 5 | 4 |
| | length measurements | 62 | 130 | 203 | 62 | 61 |
| | weight measurements** | 72 | 130 | 203 | 62 | 61 |
| | standard length measurements* | 27 | 0 | 0 | 0 | 0 |
| | sex identifications** | 51 | 128 | 0 | 62 | 61 |
| | maturity stage identifications** | 36 | 126 | 0 | 59 | 61 |
| | gonad weight measurements** | 0 | 71 | 0 | 57 | 0 |
| | otolith samples** | 16 | 0 | 0 | 0 | 0 |

*: Species-dependent records
**: Voluntary records

The counts of by-catch taxa reported above (Table 4) 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.

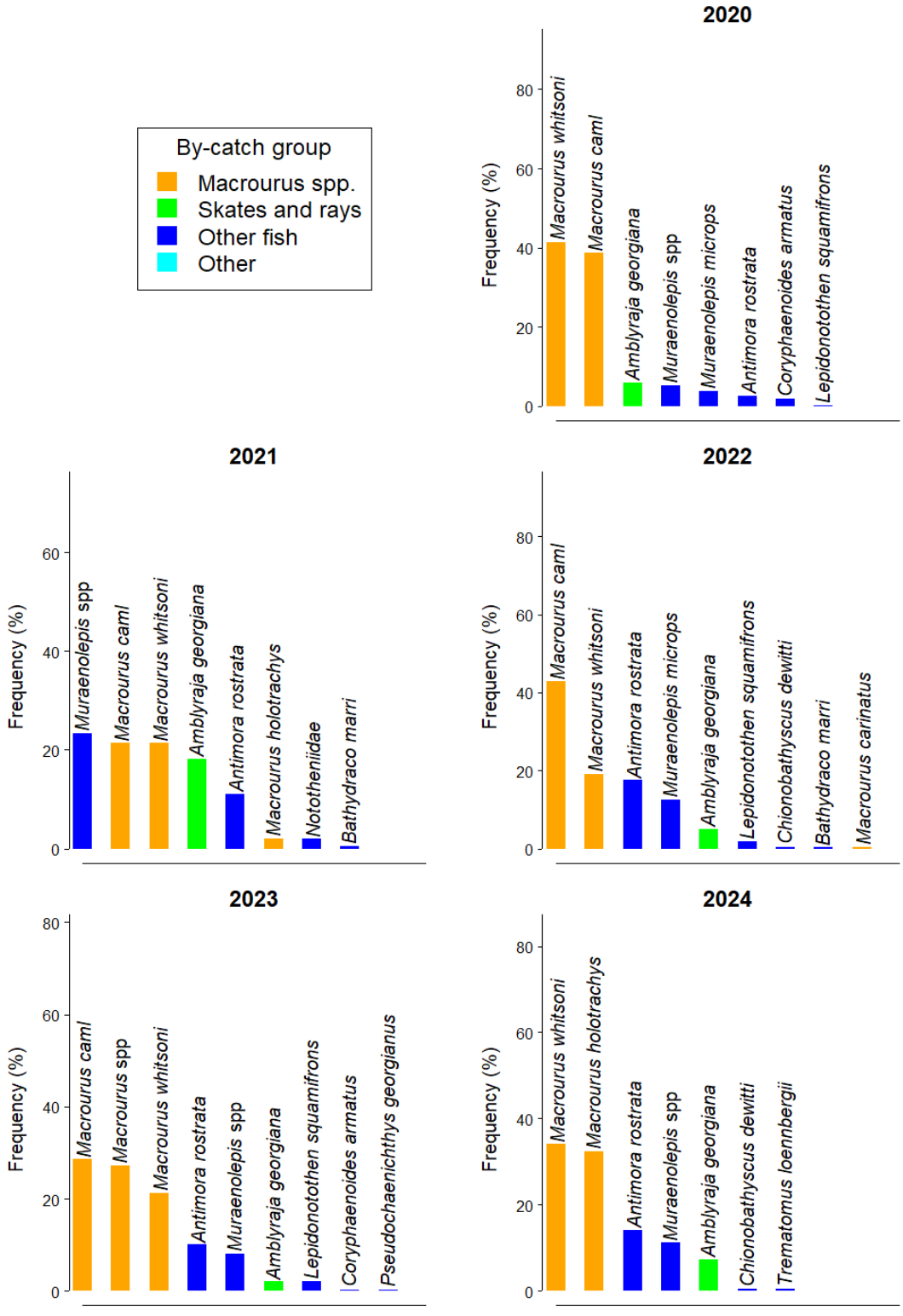



Figure 2. Relative frequencies of the most commonly examined by-catch taxa in each of the last five seasons, from the observer data (unweighted raw counts of individually examined specimens). Taxonomic identification may occur at different levels.

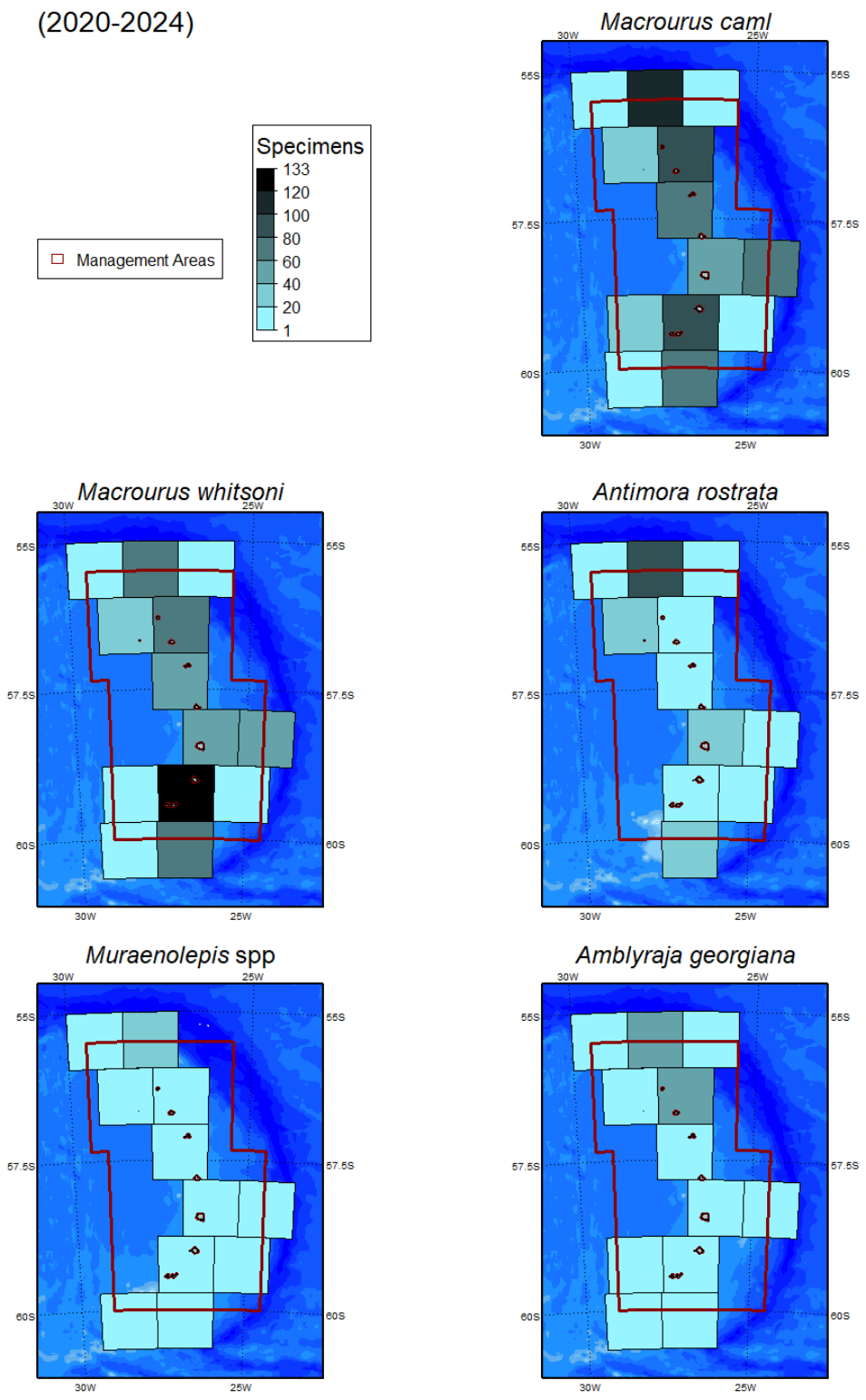



Figure 3. Spatial distribution of the most commonly examined by-catch taxa across the last five seasons, from the observer data (unweighted raw counts of individually examined specimens in each cell). The data were aggregated using equal area (100 km x 100 km) cells. Taxonomic identification may occur at different levels. Refer to Figure 1 for more details on the boundaries shown. Coastlines and ice shelves: UK Polar Data Centre/BAS and Natural Earth. Bathymetry: GEBCO. Projection: EPSG 6932 (rotated).

### 4.3. Length frequency distributions

The recent length frequency distributions of *D. eleginoides* and *D. mawsoni* caught in this fishery are presented in Figures 4 and 5. 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 length frequency distribution of *D. eleginoides* caught in Subarea 48.4 shows a shifting mode from around 120 cm at the beginning of the time series to 140 cm in recent years (Figure 4). A second mode of smaller fish (75cm) is evident in 2013 and develops throughout the remainder of the time series, indicating a recruitment pulse.

The length frequency distribution of *D. mawsoni* (Figure 5) is dominated by a single strong mode around 150cm and does not show any cohort progression between years as observed in the length frequency distributions of *D. eleginoides*.

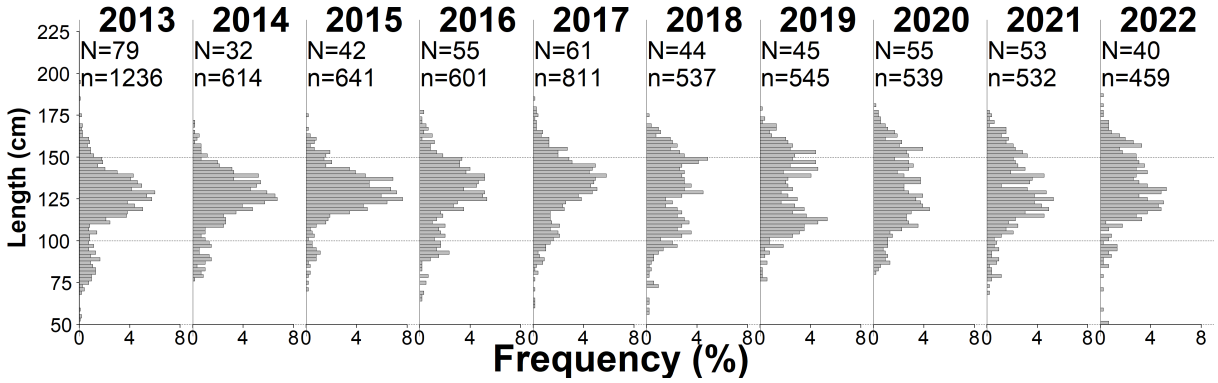



Figure 4. Annual length frequency distributions of *D. eleginoides* caught in Subarea 48.4. The number of hauls from which fish were measured (N) and the number of fish measured (n) in each year are indicated. Note: length frequency distributions are only shown where more than 150 fish were measured in a given season.

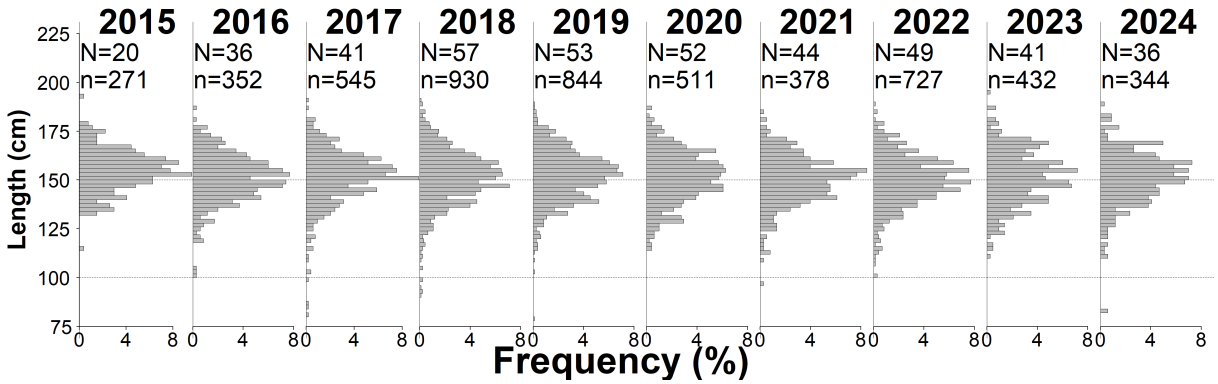



Figure 5. Annual length frequency distributions of *Dissostichus mawsoni* caught in Subarea 48.4. The number of hauls from which fish were measured (N) and the number of fish measured (n) in each year are indicated. Note: length frequency distributions are only shown where more than 150 fish were measured in a given season.

### 4.4. Tagging

In 2005, the UK conducted a pilot tagging program using a longline fishing vessel. Following the pilot study, the Commission agreed to continue the tagging experiment in Subarea 48.4.

Since 2012, vessels have been required to tag and release *Dissostichus* spp. at a minimum rate of 5 fish per tonne of green weight caught. All vessels which have fished in Subarea 48.4 have exceeded the minimum required tagging rate. Tagging data now underpin stock assessments for Subarea 48.4.

The tag-overlap statistic estimates the 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. Tagging requirements are detailed in Conservation Measure 41-03 (paragraph 5) and whilst the tag overlap statistic requirement in Conservation Measure 41-01 (Annex C) do not apply here, vessels fishing in Subarea 48.4 have exceeded this requirement. To date in this area, 3155 *D. mawsoni* have been tagged and released (211 have been recaptured, 192 of which were released in this area; Table 5), and, 4298 *D. eleginoides* have been tagged and released (593 have been recaptured, 561 of which were released in this area; Table 6).

One tagged *D. eleginoides* has also moved into Subarea 48.4 from Subarea 48.3 (WG-FSA-14/29 Rev. 1; WG-FSA-17/06). One *D. mawsoni* tagged in Subarea 48.4 was reported recaptured in Subarea 88.2 after three years at liberty. Schematics of toothfish movements, based on recent tagging data are given in the *Species Descriptions* documents.

WG-FSA-09/17, WG-FSA-09/18 and WG-FSA-16/40 Rev. 1 provided a comprehensive analysis of the catch distribution of the two *Dissostichus* species in Subarea 48.4.

Table 5. Number of *Dissostichus mawsoni* tagged and recaptured in the area for each fishing season.

| | | Recaptured | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Season | Tagged | 2009 | 2010 | 2011 | 2012 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | Total |
| 2006 | 10 | | | | | | | | | | | | | | | | |
| 2007 | 1 | | | | | | | | | | | | | | | | |
| 2009 | 193 | 2 | 15 | 3 | 2 | | | | | | | | | | | | **22** |
| 2010 | 202 | | 6 | 4 | | 1 | | | | | | | | | | | **11** |
| 2011 | 83 | | | | 1 | | 1 | | | | | | | | | | **2** |
| 2012 | 147 | | | | | | | | | | | | | | | | |
| 2013 | 179 | | | | | 1 | | 1 | 1 | 2 | | | | | | | **5** |
| 2014 | 191 | | | | | | 13 | 1 | 1 | 1 | | | | | | | **16** |
| 2015 | 584 | | | | | | | 12 | 5 | 1 | 1 | | | | | | **19** |
| 2016 | 149 | | | | | | | 8 | 5 | 2 | 1 | 1 | | | | | **17** |
| 2017 | 104 | | | | | | | | | 3 | 3 | | 1 | | | | **7** |
| 2018 | 161 | | | | | | | | | 3 | 1 | 1 | 1 | | | | **6** |
| 2019 | 168 | | | | | | | | | | 2 | 6 | 3 | | | | **11** |
| 2020 | 229 | | | | | | | | | | | | 16 | 3 | 1 | | **20** |
| 2021 | 224 | | | | | | | | | | | | 12 | 15 | 3 | 5 | **35** |
| 2022 | 165 | | | | | | | | | | | | | 2 | 1 | 5 | **8** |
| 2023 | 150 | | | | | | | | | | | | | | | 9 | **9** |
| 2024 | 215 | | | | | | | | | | | | | | | 4 | **4** |
| **Total** | **3155** | | | | | | | | | | | | | | | | **192** |

Table 6. Number of *Dissostichus eleginoides* tagged and recaptured in the area for each fishing season.

| | | Recaptured | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Season | Tagged | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | Total |
| 2005 | 42 | | 2 | 2 | | 1 | | | | 1 | | | | | | | | | | **6** |
| 2006 | 134 | 2 | 8 | 5 | 2 | 1 | 1 | 2 | | | 2 | 1 | | | | | | | | **24** |
| 2007 | 291 | | 13 | 12 | 1 | 4 | 5 | 4 | 2 | 1 | | | 2 | 2 | | | | | | **46** |
| 2008 | 504 | | | 8 | 11 | 7 | 11 | 10 | 4 | 3 | 6 | 6 | 2 | 3 | 2 | 1 | | | | **74** |
| 2009 | 558 | | | 3 | 16 | 12 | 11 | 8 | 2 | 5 | 3 | 3 | | 1 | 4 | 1 | | | | **69** |
| 2010 | 418 | | | | 2 | 12 | 2 | 12 | 4 | 1 | 4 | 2 | 2 | 2 | 3 | | 1 | | | **47** |
| 2011 | 222 | | | | | | | 2 | 3 | | 4 | 2 | 1 | 1 | 1 | | 1 | | | **15** |
| 2012 | 302 | | | | | | | 7 | 3 | 2 | 2 | 2 | 5 | 3 | 1 | | 1 | | | **26** |
| 2013 | 470 | | | | | | | | 23 | 19 | 15 | 7 | 1 | 4 | 3 | 2 | 4 | 1 | | **79** |
| 2014 | 223 | | | | | | | | | 20 | 12 | 9 | 1 | 2 | 2 | 1 | 2 | 1 | | **50** |
| 2015 | 226 | | | | | | | | | | 11 | 12 | 7 | 4 | 1 | 5 | 2 | 3 | 3 | **48** |
| 2016 | 225 | | | | | | | | | | | 5 | 1 | 4 | 3 | 9 | 5 | | | **27** |
| 2017 | 159 | | | | | | | | | | | 1 | 1 | 1 | 2 | 5 | 1 | 3 | 2 | **16** |
| 2018 | 87 | | | | | | | | | | | | | 1 | 3 | 2 | | 1 | 1 | **8** |
| 2019 | 91 | | | | | | | | | | | | | | 3 | 3 | 1 | | | **7** |
| 2020 | 102 | | | | | | | | | | | | | | | 3 | | 3 | | **6** |
| 2021 | 97 | | | | | | | | | | | | | | | | 5 | 4 | | **9** |
| 2022 | 75 | | | | | | | | | | | | | | | | | 1 | | **1** |
| 2023 | 42 | | | | | | | | | | | | | | | | | | 3 | **3** |
| 2024 | 30 | | | | | | | | | | | | | | | | | | | |
| **Total** | **4298** | | | | | | | | | | | | | | | | | | | **561** |

## 5. Research

A precautionary approach has been applied in treating the Subarea 48.4 *D. mawsoni* as a separate stock. Based on the biological characteristics of the catches in Subarea 48.4, and the surrounding regions, the *D. mawsoni* around the southern Islands are now hypothesised as being part of a much larger stock that extends south into Subarea 48.2, 48.6 and possibly 48.5 (WG-FSA-2019/27).

According to the Stock Assessment of *D. eleginoides* in this fishery, observed recruitment is characterised by a large pulse from the early 2000s, followed by low background levels of recruitment. The stock hypothesis currently used in the assessment assumes a single stock unit for this subarea. The characteristics of the growth and maturity do not provide evidence for localised spawning activity.

The UK conducted a multi-year (2017-2019) effort-limited research program to the south of the directed fishery area in Subarea 48.4 examining the linkages between *D. mawsoni* in Subarea 48.2 and the adjacent area of Subarea 48.4. The results provided evidence linking *D. mawsoni* with the Antarctic continental shelf and a potential spawning region in Subarea 48.2 (WG-FSA-2021/22). The movements of tagged fish indicated potential connections with the Lazarev Sea (Subarea 48.6) as well as the southern Islands in Subarea 48.4 (WG-FSA-2021/22).

In 2023, the UK provided a document summarizing this fishery (WG-FSA-2023/30) including a detailed description of the biological characteristics of the catch of both toothfish species between the 2014 to 2023 fishing seasons, and population demographics summaries.

## 6. Stock status

### 6.1. Summary of current status

A Casal2 stock assessment of *D. eleginoides* indicated that the stock was at 59.5% of B0 in 2023 (see Stock Assessment Report).

The five-year (2020-2024) average biomass of *D. mawsoni* in this Subarea, estimated from mark-recapture data was 968 tonnes (see Stock Assessment Report).

### 6.2. Assessment method

The stock of *D. eleginoides* in this Subarea is assessed using a combined-sex, single-area integrated Casal2 stock assessment (see Stock Assessment Report).

The stock of *D. mawsoni* in this Subarea is assessed using a tag-recapture based population assessment (see Stock Assessment Report).

### 6.3. Year of last assessment, year of next assessment

Assessments are reviewed biennially for *D. eleginoides* and annually for *D. mawsoni*. The last assessments were in 2023 for *D. eleginoides* and in 2024 for *D. mawsoni*.

## 7. Climate Change and environmental variability

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 adopted (CCAMLR-41, paragraph 6.28) Resolution 36/41.

In 2023, the Scientific Committee held a workshop on Climate Change (WS-CC-2023) which made recommendations regarding monitoring and management actions CCAMLR could progress to document and track the effects of climate change in the Convention Area. The recommendations were incorporated into the workplan of the Scientific Committee. Further, the Scientific Committee recommended that summaries of evidence for changes in stock assessment parameters or processes that could be due to the effects of environmental variability or climate change be developed for all fisheries (SC-CAMLR-42, paragraph 2.149).

In 2024, Members developed such summaries, in the form of tables, for fisheries in Subarea 48.3, Divisions 58.5.1 and 58.5.2 and in the Ross Sea region.

## References

McMillan, P., T. Iwamoto, A. Stewart and P.J. Smith. 2012. A new species of grenadier, genus *Macrourus* (Teleostei, Gadiformes, Macrouridae) from the southern hemisphere and a revision of the genus. Zootaxa, 3165: 1-24.

## Additional Resources

- Fishery Summary: pdf, html
- Stock Assessment Report: pdf
- Species Description for Patagonian Toothfish: pdf, html
- Species Description for Antarctic Toothfish: pdf, html
- Fisheries Documents Browser