

South Georgia & the South Sandwich Islands

Toothfish Fishery (48.3 & 48.4) Management Plan 2018



South Georgia & the South Sandwich Islands Toothfish Fishery (48.3 & 48.4) Management Plan

For enquiries relating to this plan contact:
Government of South Georgia & the South Sandwich Islands
Government House
Stanley
Falkland Islands
FIQQ 1ZZ
Telephone: +500 28214
e-mail: dof@gov.gs

Recommended citation: Government of South Georgia & the South Sandwich Islands (2017) South Georgia & the South Sandwich Islands Toothfish Fishery (48.3 and 48.4) Management Plan 2018. Government House, Stanley, Falkland Islands

Cover photo credit: MRAG / GSGSSI

Last updated: 15 November 2017

Table of Contents

Preamble.....	4
Conservation and management objectives.....	4
The South Georgia & the South Sandwich Islands Marine Protected Area.....	5
The South Georgia & the South Sandwich Islands Toothfish Fisheries.....	6
Fishery Management.....	7
Fishery Timetable.....	8
Harvest Control Measures.....	8
2017/2018 Toothfish fishery (48.3) Licence Advice.....	10
2017/2018 Toothfish fishery (48.4) Licence Advice.....	11
Science, Research and Monitoring.....	13

Preamble

The South Georgia & the South Sandwich Islands Maritime Zone (SGMZ), was declared in 1993. It extends 200 nautical miles from the baselines (the coast of South Georgia and each of the South Sandwich Islands) and occupies approximately 1.3 million km². The South Georgia & the South Sandwich Islands MPA (SGSSI MPA), which occupies the 1.07 million km² of the MZ that lies north of 60° S was declared in 2012, with additional protection measures established in 2013. The SGSSI MPA is a sustainable use MPA and includes no take zones in all coastal areas, areas closed to all seabed fishing on the shelf, and temporally closed areas.

Conservation and management objectives

The *South Georgia & the South Sandwich Islands Strategy 2016-2020* sets out the key conservation and management objectives for the fisheries within the SGSSI MPA, these are:

- Manage SGSSI fisheries in a precautionary manner, to the highest international standards and consistent with all CCAMLR requirements, to ensure long-term sustainability.
- Collaborate with stakeholders to develop fishery management plans to guide management and research, with clear and transparent policy and updated fisheries legislation.
- Establish arrangements for monitoring and assessing the performance of the MPA to provide evidence for future management decisions in the context of the MPA review in 2018.
- Continue raising standards in the fisheries and ensure best practice is adopted, including by developing a plan to phase out heavy fuel, restricting bunkering activity and introducing a minimum ice-classification standard in the toothfish fishery.
- Support the UK delegation to CCAMLR to represent SGSSI's interests and seek the highest standards of marine management and conservation in the Scotia Sea and wider Southern Ocean.
- Improve public awareness about the high standards and sustainability of SGSSI fisheries, and enhance two-way knowledge and best practice information sharing with other fisheries.
- Maintain a strong, enforceable policy on Illegal, Unreported and Unregulated (IUU) vessels, deterring IUU activity through fishery patrolling while exploring scope for additional remote sensing options.

The South Georgia & the South Sandwich Islands Marine Protected Area

The SGSSI MPA incorporates a number of management tools designed to protect the wider ecosystem and its ecological linkages, while at the same time, allowing sustainable use fisheries:

- A total ban on all commercial bottom trawling throughout the Maritime Zone.
- Bottom longline fishing is restricted to depths between 700m and 2,250m.
- No-take zone extending 12 nm from the coast of South Georgia, Clerke Rocks, Shag and Black Rocks.
- No-take zones extending 3 nm from the coast of the South Sandwich Islands (extending to 12 nm for pelagic fishing).
- A network of benthic closed areas, with restricted access for experimental and research purposes.

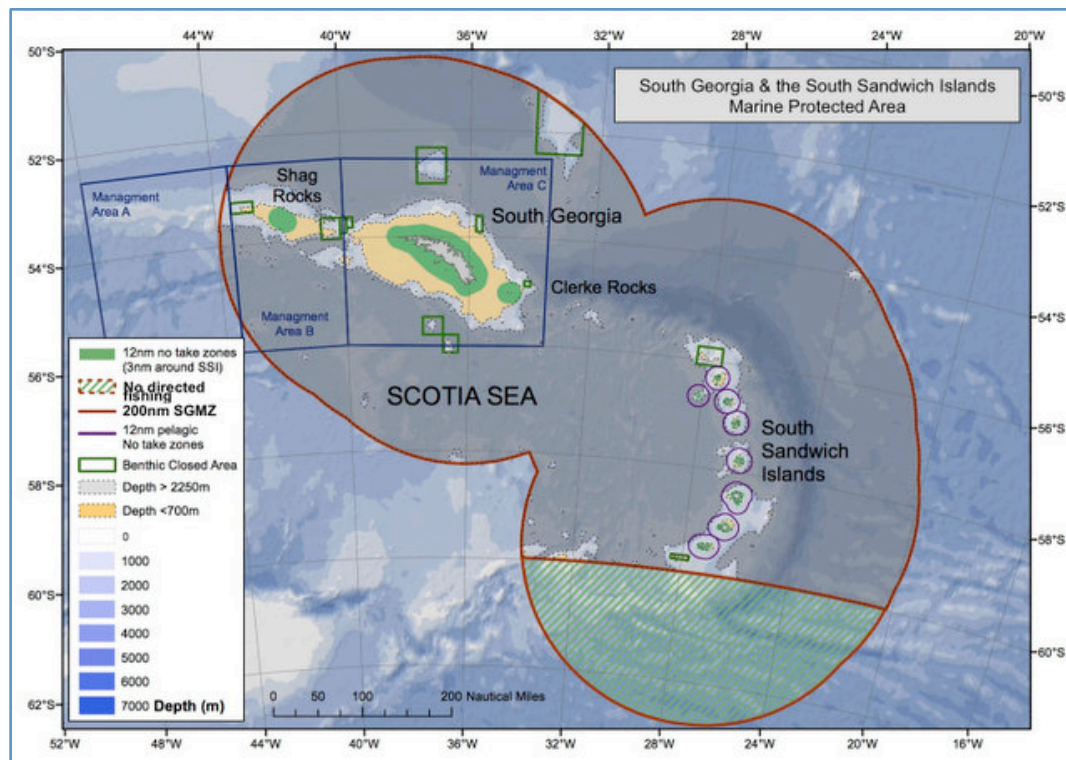


Figure 1: The SGSSI Maritime Zone (including the SGSSI MPA) and the CCAMLR catch management areas.

The South Georgia & the South Sandwich Islands Toothfish Fisheries

Patagonian toothfish were probably first caught around South Georgia in the trawl fisheries of the early 1960s. A by-catch species at that time, the first reported catches were during the late 1970s, with catches of smaller *D. eleginoides* on the shelf. South Georgia lies within the area covered by the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) to which the United Kingdom is a contracting party. Accordingly, fisheries are managed under the auspices of CCAMLR. It is a condition of every licence that all applicable CCAMLR Conservation Measures (CMs) must be adhered to. GSGSSI sets additional compliance conditions which are often more precautionary than those agreed under CCAMLR.

Longline fishing for *D. eleginoides* in Subarea 48.3 began in 1988. Early management of the fishery began in 1993 with greater input from CCAMLR and deployment of scientific observers on vessels. This led to the first indication of the severity of seabird by-catch in the fishery. In 1998, the fishery in Subarea 48.3 was restricted to the winter months (1 May to 31 August) to minimise interactions with foraging birds during their breeding season. Night-time shooting of the longlines and line weighting were also introduced following collaborative research and discussions between the industry, Government, scientists and conservation groups. Since 2010 CCAMLR has applied a gradual extension to the season culminating in a season opening date for the 15/16 and 16/17 seasons on 16 April. These extensions were accompanied by additional compliance requirements to prevent increases in seabird by-catch. The whole toothfish fishery has been MSC certified since 2004. The third re-certification of the fishery commenced in 2017.

The fishery for *D. eleginoides* in Subarea 48.4 was initiated as a new fishery under CCAMLR in 1993 when a precautionary catch limit for *D. eleginoides* of 240 tonnes was set for that season. There was no further fishing activity in Subarea 48.4 until 2005 when a mark-recapture experiment was initiated. In 2008, CCAMLR 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. In 2013, the Commission changed the management approach in the subarea and agreed to remove the northern and southern areas. Instead, separate subarea-wide catch limits were set by species. In 2017 the UK began a multiyear effort-limited research programme to the south of the established fishery in Subarea 48.4 and in 48.2.

The detection and prevention of IUU fishing, during the early years of the fishery, establishment of licence controls and strong enforcement reduced effort and mortality rates before the stock was over-exploited. Introduction of a controlled tagging regime and observer collection of biological data have led to the development of fully integrated stock assessments for Patagonian toothfish in 48.3 and 48.4, and improved knowledge of stock movements and reproductive biology. Collectively, the combination of observed industry and scientific data collection, peer reviewed analysis and management advice, and strong enforcement within CCAMLR and GSGSSI, have led to fisheries recognised worldwide for their sustainable management.

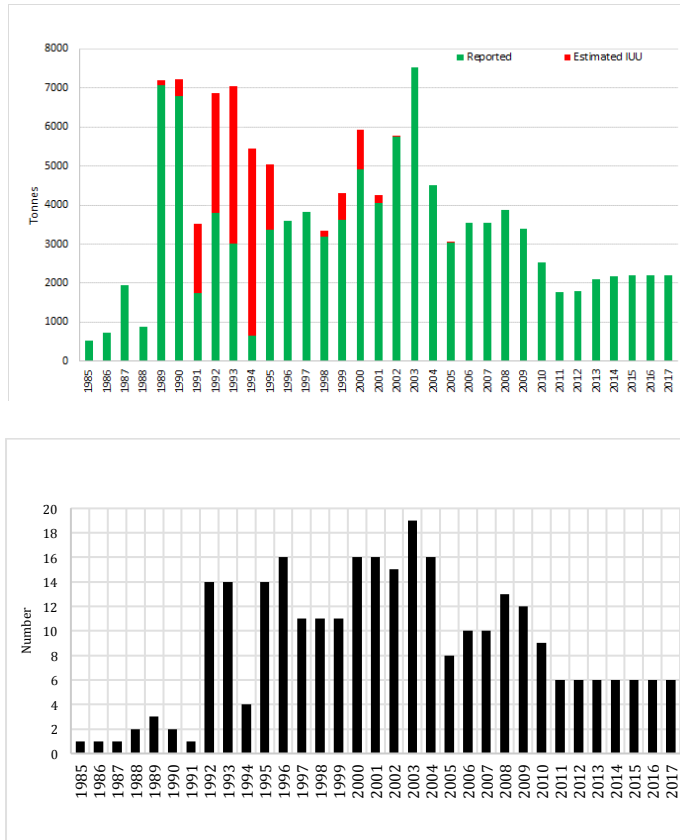


Figure 2: Catches of Patagonian toothfish at South Georgia (CCAMLR Subarea 48.3) and the number of vessels fishing

Fishery Management

Primary Legislation	<p>Fisheries (Conservation and Management) Ordinance 2000.</p> <p>Wildlife & Protected Areas – Marine Protected Areas Order 2013.</p> <p>Fisheries (Transshipment and Export) Regulations 1990.</p>
Fishery Documentation	<p>Toothfish Licensing Information for Applicants for the 2018 – 2021 Fishing Seasons.</p> <p>CCAMLR Schedule of Conservations Measures in Force 2017/18.</p>
Fishing Season	<p>1 May until 31 August with a provisional opening date of 16 April.</p>
Valid Fishing Areas	<p>Beyond 12nm around South Georgia, Shag/Black Rocks, Clerke Rocks. Beyond 3nm around the SSI.</p>

Between 700m and 2250m depth.

Outside Benthic Closed Areas (except for scientific research fishing).

Fishing Methods Permitted

Autoline and “Spanish” longline systems. Other methods being reviewed.

Licencing

4 year licencing, with quota allocation confirmed annually on the basis of scientific advice.

Fishery Management Timetable

- **February 1 - November 30** – South Sandwich Islands (Subarea 48.4) toothfish fishing season.
- **April 16 - August 31** - South Georgia (Subarea 48.3) toothfish fishing season.
- **September** - Preliminary stock assessment presented at annual Fishing Industry Meeting.
- **October** - Stock assessments presented at CCAMLR at which catch limits are agreed for the following two seasons; biennially for Patagonian toothfish and annually for Antarctic.
- **November** - Annual licence advice presented to GSGSSI.
- **December** - Updates to toothfish quotas, fees and licence conditions published.

Harvest Control Measures

The CCAMLR Decision Rule, used as the basis for establishing its management advice on the catch limits of toothfish stocks, is based on Article II of CCAMLR. The Decision Rule specifies that:

- (i) the total removals from the stock should be set at a level which in the long term (35 years) will result in a spawning stock biomass being at 50% of the unfished (virgin) state B_0 , and
- (ii) the probability of the spawning stock biomass dropping below 20% of its virgin state during this long-term management period is low (<10%) to avoid depletion of the stock.

CCAMLR agrees two-year catch limits for Subarea 48.3 based on whichever catch is the lowest of (i) and (ii).

The GSGSSI fisheries management strategy for the toothfish stock is more precautionary than that agreed by CCAMLR, with an average long-term target of 55% of B₀. This represents a buffer that allows application of less severe management actions in response to changes in the assessment, providing stability for the industry; it also allows time for management actions to take effect, consequently reducing the risk of over-exploitation in conditions of environmental uncertainty.

The GSGSSI decision to use a higher spawning stock biomass target consequently results in catches being lower than those set by CCAMLR. Two year catch limits are agreed for *D. eleginoides* in Subareas 48.3 & 48.4; annual catch limits are set for *D. mawsoni* in Subarea 48.4.

Depredation

Both the CCAMLR and the GSGSSI stock assessments look at the total removals from the stock resulting from the fishery. Consequently, there needs to be an adjustment to account for the losses resulting from depredation by toothed whales in Subarea 48.3 (Subarea 48.4 is not subject to depredation). Not adjusting for the losses would result in under estimation of removals from the stock and consequent over-fishing with a failure to achieve management objectives. Consequently, the catch limits that would achieve the target of 55% of B₀ have to be reduced by the average estimated depredation rate of 5% per annum to calculate the final quota available for the fishery.

Patagonian toothfish (*Dissostichus eleginoides*)

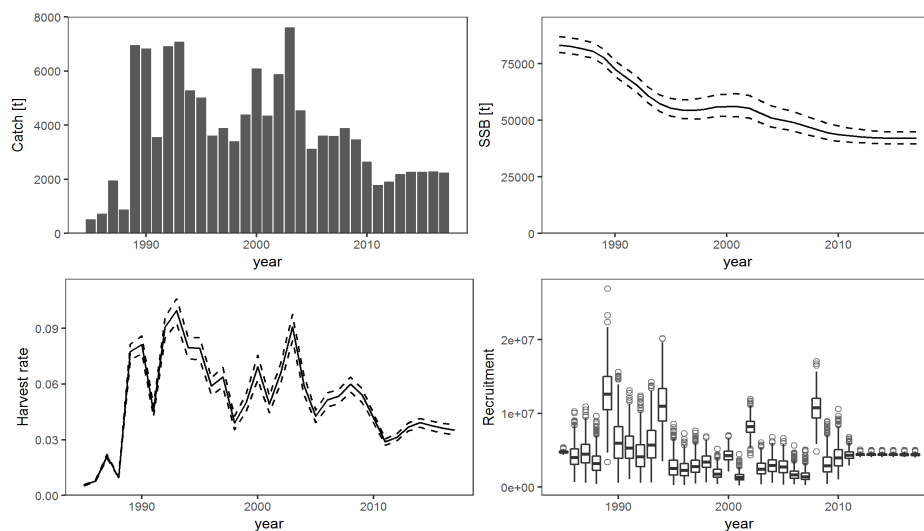


Figure 3: South Georgia Patagonian toothfish (*Dissostichus eleginoides*) stock assessment: Top left yield (t) including cetacean depredation, top right spawning stock biomass (t), bottom left harvest rate (including depredation) and bottom right year class abundance (years 2011 onwards set to the average of the time series).

The harvest rate, which includes depredation, decreased between 2009 and 2011 following management action to reduce catch limits. In recent years it has been relatively constant in the region of 4%. The 2017 spawning stock biomass was estimated at 51% of B_0 , above the CCAMLR management target and below the GSGSSI target. The target of 55% of median spawning biomass is expected to be reached over the next few years.

The assessment estimates a period of higher recruitment during the early part of the time series, followed by a recent series of lower recruitment, interspersed with two or three relatively large recruitment events, which have only recently entered the fishery. The 2017 estimate of virgin spawning stock biomass (SSB) is around 83,200 tonnes, and the estimate of the current spawning biomass in 2017 is estimated at 42,200 tonnes.

Based on the application of the CCAMLR Decision Rule to the 2017 assessment of Patagonian toothfish in Subarea 48.3, CCAMLR agreed a two-year catch limit of 2,600 tonnes for each of the 2018 and 2019 seasons. The limits are separated into Management Areas B (780 t) and C (1820 t) in order to ensure that the catches are distributed according to the stock biomass distribution (see Figure 1 for locations of Management Areas B & C) and in keeping with CCAMLR Conservation Measure 41-02.

The CCAMLR catch limit does not allow for depredation and consequently needs to be reduced by the recent average rate.

The GSGSSI fisheries management strategy for the toothfish stock is more precautionary than CCAMLR, with an average long-term target of 55% of B_0 . The quota is derived from the CCAMLR assessment of the stock and application of the 55% of B_0 GSGSSI Decision Rule adjusted to take into account the average depredation rate of 5% per annum.

A comprehensive review of the assessment and catch limits for the 2020 and 2021 seasons is scheduled for 2019 and will be presented to CCAMLR at its October 2019 meeting.

Management of by-Catch

By-catch limits for the 2018 and 2019 seasons for skates and *Macrourus* spp. in Subarea 48.3 are 110 tonnes for each species group. By-catch limits for 2020 and 2021 will be agreed at CCAMLR 2019.

2018/2019 South Sandwich Islands (Subarea 48.4) Fishery Licence Advice

Patagonian toothfish (*Dissostichus eleginoides*)

The CCAMLR long-term management target for all toothfish stocks is to maintain the stock at 50% of B_0 . The Government of South Georgia and South Sandwich Islands (GSGSSI) long-term management objective is more precautionary and aims to maintain the stock of Patagonian toothfish in Subarea 48.4 at around 55% of virgin SSB as far as is possible, given natural variability.

Fishing mortality has followed the changes in catches from the stock. In recent years it has been relatively constant in the region of 5%. The 2017 spawning stock biomass was estimated at 664 tonnes, 68% of virgin spawning stock biomass, B_0 , (983 tonnes), above the CCAMLR management target and the GSGSSI target. The assessment estimates a period of higher recruitment during the early part of the time series, followed by a recent series of lower recruitment.

There is migration of *D. eleginoides* between Subareas 48.3 and 48.4, and fish tend not to reproductively mature in Subarea 48.4, rather they likely move to Subarea 48.3 to spawn. CCAMLR has recommended further review of the stock hypothesis and future work to reflect links between populations in the assessments of *D. eleginoides* in Subareas 48.3 and 48.4.

The GSGSSI fisheries management strategy for the toothfish stock is more precautionary than CCAMLR, with an average long-term target of 55% of B_0 . The quota is derived from the CCAMLR assessment of the stock and application of the 55% of B_0 GSGSSI Decision Rule.

A comprehensive review of the assessment and catch limits for the 2020 and 2021 seasons is scheduled for 2019 and will be presented to CCAMLR at its October 2019 meeting.

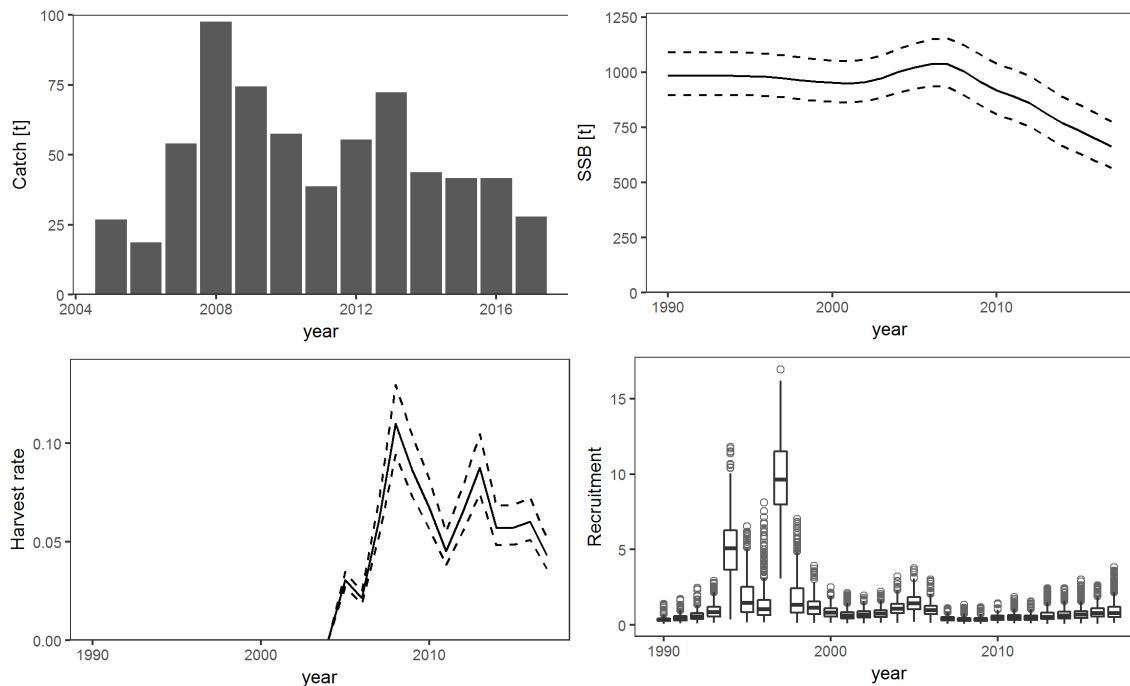


Figure 4: South Sandwich Islands Patagonian toothfish (*Dissostichus eleginoides*) stock assessment: Top left yield (t), top right spawning stock biomass (t), bottom left harvest rate and bottom right year class abundance.

Antarctic toothfish (*Dissostichus mawsoni*)

The current CCAMLR management approach which GSGSSI is also following is to maintain the Antarctic toothfish stock at a sustainable level, consistent with the CCAMLR decision rules, by following a fixed 3.8% exploitation rate (consistent with the exploitation rate in Subarea 48.3). The long-term objectives need to be reviewed once information on stock connectivity to adjacent Subareas (48.2, 48.5) is available and a longer time series of data obtained.

The stock of Antarctic toothfish in CCAMLR subarea 48.4 was estimated from tagging returns to be 979 tonnes in 2017. Applying the CCAMLR agreed precautionary assumption of average biomass across the historic time series, and harvest rate of 3.8%, results in an estimated yield for 2017/18 of 37 tonnes.

The GSGSSI fisheries management strategy for the toothfish stock is more precautionary than CCAMLR, with an average long-term target of 55% of B₀. The quota is derived from the CCAMLR assessment of the stock and application of the 55% of B₀ GSGSSI Decision Rule.

A comprehensive review of the assessment and catch limits for the 2019 season is scheduled for 2018 and will be presented to CCAMLR at its October 2018 meeting.

Management of by-Catch

By-catch limits for the 2018 season for skates and *Macrourus* spp. in Subarea 48.4 are 3 tonnes and 10 tonnes respectively. By-catch limits for 2019 will be agreed at CCAMLR 2018.

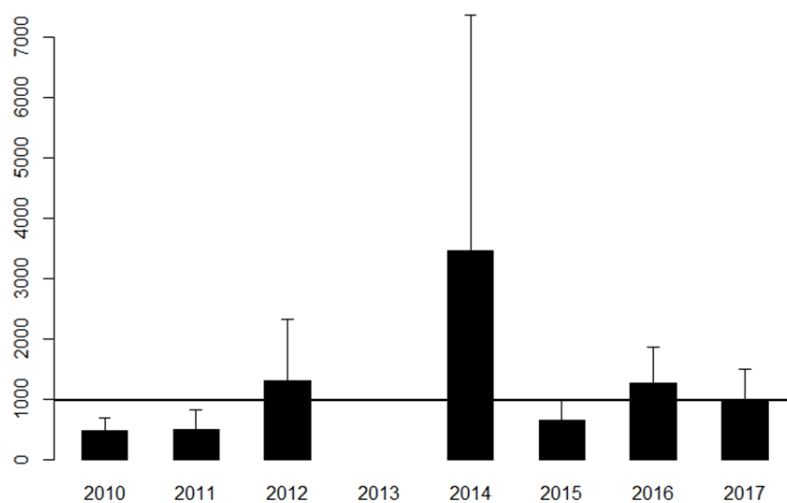


Figure 5: Tag based estimates of the Antarctic toothfish biomass in the area 48.4 as agreed by CCAMLR in 2017. The horizontal line shows the current estimate at 979 tonnes in 2017.

Science, Research and Monitoring

King Edward Point science programme (BAS)

GSGSSI have contracted BAS to manage the research base at King Edward Point since 2001. The station houses office and laboratory facilities where scientists conduct higher predator monitoring and fisheries science work all year round. The research directly supports the management of the toothfish fishery including the stock assessment work. KEP Science is guided by the KEP Science 5 year Plan. Current priorities:

1. Provision of data in support of stock assessment including larval sampling and otolith processing for toothfish and by-catch species.
2. Enhancing understanding of toothfish ecology.
3. Research on by-catch including sea-bird necropsy and winter diet analysis and skate tag survivorship.
4. Support for marine protected area research including longline interactions with seabed, efficacy of spatial management through e.g. benthos and camera analysis and higher predator monitoring.
5. Scientific support for observers and on-board vessel data collection.

Stock assessment and population science (Cefas)

Cefas have been contracted since 2012 to carry out annual toothfish stock assessments, provide licensing advice, and conduct other population-level science. The contract is divided between GSGSSI and the UK Foreign and Commonwealth Office. In addition to annual tasking, the Cefas science programme includes:

1. Analysis of toothfish tagging programme.
2. Analysis of skate tagging programme.

3. Analysis and incorporation of whale depredation in the toothfish stock assessment.
4. Development of a recruitment index through shallow line fishing and groundfish survey data.
5. Toothfish stock research in CCAMLR Sub-areas 48.2, 48.3 and 48.4.
6. By-catch data analysis and assessment.
7. Monitoring of enhanced toothfish stock through SG MPA conservation tools.

Observer Programme (MRAG / CapFish)

The consortium of MRAG and CapFish manage the South Georgia scientific observer programme. MRAG/CapFish are tasked with providing highly experienced and capable observers whose role is to both meet the reporting requirements for CCAMLR as well as the additional standards and tasks set by GSGSSI. The GSGSSI Scientific Observer programme currently includes:

1. 100% observer coverage on toothfish vessels.
2. Deployment of “Roaming” observer programme, tasked with monitoring and raising standards across the fleet.
3. Analysis and standardisation of Conversion factors.
4. Improved whale photographic ID gathering.
5. Review invertebrate by-catch data and collection methods.

Fishery research priorities

The Government has identified a core set of priorities for the next 4 year licensing period based on existing research and collaboration with fishery operators and non-governmental organisations and current policy development:

1. **Marine Protected Area research:** developing an evidence base for the Marine Protected Area including through benthic closed area and shallow line survey work conducted by operators licenced to fish at South Georgia. The aim of this work is to establish the impact of measures in place and collect better data on tagging and recruitment.
2. **By-catch interactions in the fishery:** exploring options to reduce bird, whale and benthic interactions to tackle issues of depredation and by-catch underpinned by research and monitoring.
3. **Technology to support fishery management:** deployment of depth and temperature loggers, CCTV systems and longline cameras to support collection and analysis of data to enhance the management of the fishery.