

MSC SUSTAINABLE FISHERIES CERTIFICATION

Falkland Islands Toothfish



2nd Re-Assessment

Public Comment Draft Report

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Assessment Data Sheet

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1 Glossary

ASPM	Age Structured Production Model
B	Biomass (with subscripts such as B_{msy} = Biomass at maximum sustainable yield).
CASAL	C++ Algorithmic Stock Assessment Laboratory
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources (CAMLR Convention)
CDS	Catch Documentation Scheme (see section 5.4.1.1)
CFL	Consolidated Fisheries Limited (the client for this assessment)
COLTO	Coalition of Legal Toothfish Operators Inc.
CPUE	Catch Per Unit of Effort
CR	Certification Requirements (MSC)
DCD	Dissostichus Catch Document (required)
DED	Dissostichus Export Document
ENGO	Environmental Non Governmental Organisation
ETP	Endangered, Threatened and Protected species.
F	Fishing mortality (with subscripts such as F_{msy} = Fishing mortality at maximum sustainable yield).
FCR	Fisheries Certification Requirements (MSC)
FICZ	Falklands Interim Conservation Zone (see Figure 1)
FIFCA	Falkland Islands Fishing Companies Association
FIFD	Falkland Islands Fisheries Department
FIG	Falkland Islands Government
FOCZ	Falklands Outer Conservation Zone (see Figure 1)
ICES	International Council for the Exploration of the Sea
IUU	Illegal Unreported Unregulated (fishing)
lim	Limit reference point (e.g. B_{lim})
loss	Lowest Observed Spawning Stock (e.g. B_{loss})
MSY / msy	Maximum Sustainable Yield
pa	Precautionary reference point (e.g. F_{pa} ; B_{pa})
PI	Performance Indicator
SAERI	South Atlantic Environmental Research Institute
SI	Scoring Issue
SSB	Spawning Stock Biomass
TAC	Total Allowable Catch (annual)
WWF	World Wildlife Foundation

2 Executive Summary

- » This report provides details of the MSC assessment process for the fishery for Consolidated Fisheries Ltd. The assessment process began on the 29th September 2017 and was concluded (to be determined at a later date).
- » A comprehensive programme of stakeholder consultations were carried out as part of this assessment, complemented by a full and thorough review of relevant literature and data sources.
- » A rigorous assessment of the wide ranging MSC Principles and Criteria was undertaken by the assessment team and a detailed and fully referenced scoring rationale is provided in the assessment tree provided in section 10 of this report.
- » The **Target Eligibility Date** for this assessment is 6th March 2019, which is when the current period of certification ends.

The assessment team for this fishery assessment comprised of Jim Andrews, who acted as team leader and primary Principle 3 specialist; John Nichols who was primarily responsible for evaluation of Principle 1 and Andy Hough who was primarily responsible for evaluation of Principle 2.

Description of the Unit of Assessment

- » This report considers a single Unit of Assessment: the fishery for Patagonian toothfish, (*Dissostichus eleginoides*) conducted within the Falkland Islands EEZ using demersal longlines.
- » There is a single fishing company operating in this fishery, and generally only a single fishing vessel. There are no certificate sharing mechanisms in place, and no other eligible fishers.

Fishery strengths

- » The target stock is in good condition, and the fishery is well monitored and well managed. There is a conservative management plan in place which is delivering a stock biomass that is consistent with the MSY approach. There is just one vessel currently operating in the fishery (and in the past there have been no more than two vessels), operated by a single fishing company which is the only licensed operator in the fishery.
- » Prior to 2006 the fishery had some problems with bird bycatch, which have long been addressed by appropriate bird mitigation measures which are proven to be effective. High observer coverage in the fishery (over 47%) provides confidence that bird mitigation measures are implemented and continue to be effective.
- » There is a well-founded and robust fisheries management framework in place, supported by legislation that is appropriate for the scale and nature of the fishery. Fishery surveillance and monitoring is thorough, and levels of compliance with regulations is excellent. This has resulted in the fishery scoring well with respect to MSC Principle 3.

Fishery weaknesses

- » The team did not identify any significant weaknesses in the fishery. This is a result of the work carried out by Consolidated Fisheries Ltd. and the Falkland Islands Fisheries Department during the previous period of MSC certification.

Determination

- » On completion of the assessment and scoring process, the assessment team concluded that the fishery **should be certified** for a period of 5 years, subject to annual surveillance audits. The MSC Principle-level scores are set out in the table below.

Final Principle Scores	
Principle	Score
Principle 1 – Target Species	91.3
Principle 2 – Ecosystem	91.3
Principle 3 – Management System	96.8

Conditions & Recommendations

Conditions of certification may be required where any of the Performance Indicators against which a fishery is assessed scores less than an unconditional pass mark of 80. Compliance with conditions of certification is mandatory for ongoing MSC certification.

“Recommendations” may be made by assessment teams where an opportunity for improving the performance of the fishery against a Performance Indicator has been identified even though a score of 80 or more has been awarded. Compliance with recommendations is not mandatory.

- » **Conditions:** none of the Performance Indicators against which the fishery was assessed scored less than the unconditional pass mark of 80. There are therefore no conditions of certification.
- » **Recommendations:** the assessment team identified 6 areas where the performance of the fishery could be improved. In several cases the recommendations are intended to prepare the fishery for the requirements of future versions of the MSC Certification Requirements. The recommendations are set out below:-

1. Non-target species (PI2.1.1 & 2.2.1):

The fishery meets all of the requirements for non-target (retained and discarded) species under MSC CRv1.3. When the fishery is re-assessed, it will need to meet the requirements of FCRv2.0 (or its successor). MSC FCRv2.0 considers “primary” and “secondary” non-target species. It is recommended that the status of the non-target species and management measures in place are reviewed in order to ensure that the fishery is compatible with this change to the MSC Certification Requirements.

2. Non target species - review of alternative measures:

Although the fishery meets all of the MSC CR v1.3 requirements with respect to managing impacts on non-target species, it is a requirement under MSC FCR v2.0 to review the potential effectiveness and practicality of alternative measures to reduce UoA-related mortality of unwanted catches of both primary and secondary species (PI2.1.2e & 2.2.2e). The SG80 standard requires that there is a regular review of such measures, and that they are implemented as appropriate. It is recommended that a system for regular review of unwanted

mortality is established during this period of certification in order to ensure that the fishery is compatible with this change to the MSC Certification Requirements.

3. Habitat management (PI2.4.2) –

The fishery meets all of the requirements for habitat management under MSC CR v1.3. The management plan for the fishery is currently undergoing its quinquennial review. The scoring of the PIs relating to habitat management under CRv1.3 (and looking ahead, to reassessment under FCRv2.0) would be improved if the new management plan took account of emerging norms for habitat management, including the adoption of a “move-on rule” for vulnerable marine ecosystems.

4. Habitat outcome & information (PI2.4.1 & 2.4.3):

Again, while the MSC CR v1.3 requirements are fully met for these PIs, the information required to allow the assessment of the fishery against PI2.4.1 in CR v2.0 is more onerous. In particular the new CR required that there is an understanding of impacts on “commonly encountered” habitats and “vulnerable marine ecosystems”. The scoring of these PIs under CR v1.3 (and looking ahead, to reassessment under CRv2.0) would be improved by the work currently being carried out to investigate the extent and character of benthic habitats.

5. Consultation, roles & responsibilities (PI 3.1.2):

It is recommended that consultation processes should facilitate the effective engagement of all interested parties (for instance through the use of the internet).

6. Fishery specific objectives (PI 3.2.1)

It is recommended that the client encourages the FIFD to develop measurable management objectives for habitat impacts within this period of certification.

The main body of this report sets out the basis for the assessment of this fishery. It includes information that is required by the MSC to determine the extent of the Units of Assessment, and to describe the assessment procedures that have been followed. The assessment team have also included a summary of all of the information that has been made available to them by the client and stakeholders and which the team have considered during the course of this assessment of the fishery against MSC Principles 1, 2 and 3. The assessment of the fishery’s performance with respect to the MSC Standard is set out in a series of tables in section 10 of this report.

Acoura Marine Ltd. confirms that prior to carrying out this assessment it was determined that the **Falkland Islands Patagonian toothfish longline fishery** meets the entry criteria set by MSC (i.e. it is considered to be “within scope”).

3 Authorship and Peer Reviewers

3.1 Assessment Team

The assessment team are listed below, along with a brief summary of their experience.

All team members have completed all requisite training and signed all relevant forms for assessment team membership on this fishery, including confirmation of no Conflict of Interest.

Assessment team leader: Jim Andrews

Primarily responsible for assessment under Principle 3

Jim Andrews has over 25 years' experience working in marine fisheries and environmental management. His previous experience includes running the North Western and North Wales Sea Fisheries Committee as its Chief Executive from 2001 to 2005, and previously working as the SFC's Marine Environment Liaison Officer. During this time he was responsible for the regulation, management and assessment of inshore finfish and shellfish stocks along a 1,500km coastline. He has an extensive practical knowledge of both fisheries and environmental management and enforcement under UK and EC legislation. Jim has formal legal training & qualifications, with a special interest in the policy, governance and management of fisheries impacts on marine ecosystems. He has worked as an assessor and lead assessor on more than 20 MSC certifications within the UK, in Europe and in India since 2007. In 2008 he worked with the MSC and WWF on one of the pilot assessments using the new MSC Risk Based Assessment Framework (RBF). Jim has carried out numerous MSC Chain of Custody assessments within the UK.

Expert team member: John Nichols

Primarily responsible for assessment under Principle 1

Mr John Nichols is a retired UK government fisheries biologist with 42 years research experience in plankton ecosystems in the North Atlantic specializing in the taxonomy of North Atlantic & NW European plankton including phytoplankton, micro and meso-plankton, ichthyoplankton and young fish. He has been a member of ICES working groups on herring, mackerel, horse mackerel, sardine and anchovy assessments; and mackerel and horse mackerel egg surveys. He was also a member of ICES study groups on herring larval surveys and plankton sampling.

He was scientist in charge of numerous research vessel surveys for fish stock assessment purposes and directly involved in the assessment of pelagic and western demersal fish stocks from 1994 to 2000.

He has been involved in the publication of over fifty scientific papers and reports more than half of which have been in peer reviewed journals, and the publication of two fish egg and larvae identification keys.

Since retirement from his government post he has participated in more than 27 different fisheries MSC assessments as the Principle 1 expert plus the re-assessments of many of those fisheries Those assessments include the Thames estuary herring, PFA North Sea Herring, NEA mackerel and Atlanto-Scandian herring, Hastings Fleet Dover sole, the north – east coast of England bass fishery, the SW mackerel hand line fishery, Portuguese sardine, a Newfoundland herring fishery, Canadian Pacific sablefish, various Norwegian and Swedish pelagic fisheries, Faroese and Norwegian saithe fisheries, Faroese, Russian and Norwegian Arctic cod and haddock fisheries and a North Sea plaice and sole fishery,. He has also been

a peer reviewer for numerous MSC certification reports by various Certification bodies and has also carried out two MSC pre-assessments and numerous annual audits. In 2010 he delivered a lecture on 'The Importance of a Fisheries Interaction with the Ecosystem in the MSC Certification Process' at an international Safe Seas conference in Portugal.

He was elected as a Fellow of the Society of Biology in July 2014.

Expert team member: Andrew Hough
Primarily responsible for assessment under Principle 2

Andy Hough (P2) has been active in the development of Marine Stewardship Council certification since 1997, when involved in the pre-assessment of the Thames herring fishery. He was a founding Director of Moody Marine, led the establishment of Moody Marine fishery certification systems and has represented Moody Marine at all MSC workshops until 2011. He has also worked with MSC on several specific development projects, including those concerned with the certification of small scale/data deficient fisheries.

He has been Lead Assessor (and often also expert team member) on many fishery assessments to date. This has included Groundfish (e.g. cod, haddock, pollock, hoki, hake, flatfish), Pelagics (e.g. tuna species, herring, mackerel, sprat, krill, sardine) and shellfish (molluscs and crustacea); included evaluation of the environmental effects of all main gear types and considered many fishery administrations including the North Atlantic, South Atlantic, Pacific, Southern Ocean and in Europe, North America, Australia and New Zealand, Japan, China, Vietnam and Pacific Islands. He has recently acted solely as an expert team member of Principle 2 inputs of European inshore fisheries and Falkland Islands Toothfish.

He has carried out peer reviews for various CABs including fisheries for molluscs, crustacea and freshwater finfish. Other assessments include Chain of Custody assessments for merchants, processors, distributors and retailers.

Andrew has also been involved in the development of certification schemes for individual vessels (Responsible Fishing Scheme) and evaluation of the Marine Aquarium Council standards for trade in ornamental aquarium marine species. Consultancy services have included policy advice to the Association of Sustainable Fisheries, particularly with regard to the implications of MSC standard development, and assistance to fisheries preparing for, or engaged in, MSC assessment.

3.1.1 RBF Training

Both Jim Andrews and Andrew Hough have been fully trained in the use of the MSC's Risk Based Framework (RBF).

3.2 Peer Reviewers

The MSC's Peer Review College compiled a shortlist of potential peer reviewers to undertake the peer review for this fishery. One peer reviewer will be selected from the following list:-

- David Japp
- Jo Akroyd
- Chris Grieve
- William Karp

A summary of their experience and qualifications is given below. Further details of their experience is available on request by e-mail to the MSC Peer Review College (PeerReviewCollege@msc.org).

David Japp

Mr Japp is a Fisheries Scientist with an undergraduate degree in Zoology and Oceanography and post graduate degrees (Masters and Honours) in Fisheries Science. Presently he is director of Capricorn Fisheries Monitoring (CapFish) in South Africa, working extensively in fisheries in South Africa as well as regionally and internationally. He was previously employed at the Sea Fisheries Research Institute (SFRI) from 1988 to 1997 as a biologist and manager and at the time he left this institution was head of the offshore resources section (demersal and pelagic stocks). His role at SFRI (now The Department of Agriculture Forestry and Fisheries) was primarily management, biology and resource assessment and he was responsible for the submission of management advice on hake and other demersal stocks. He was also responsible for, planned and lead demersal biomass surveys in the period employed at SFRI. Mr Japp has retained an intimate knowledge of all aspects of the demersal and other fisheries including the trawling methods. He has authored many fisheries-related papers as well as numerous technical reports for the FAO. Mr Japp has also provided many expert reports for Environmental Impact Assessments relating to fisheries and has an intimate knowledge of Southern African and global fisheries and associated recruitment processes and related environmental characteristics. He also consults to FAO and the World Bank on fisheries-related issues including high-seas guidelines, Ecosystem Approach to Fisheries (EAF) and project development, appraisal and implementation in the East African and West Indian Ocean regions. Regarding the Marine Stewardship Council (MSC), Mr Japp was an assessor of the South African hake fishery from 2002 through to reassessment in 2009. He is presently on the assessment teams for Tristan da Chuna lobster, Sea of Okhotsk Pollock, Namibian Hake and PNA Purse seine. He has conducted pre-assessments for Kenya lobster, Tanzanian octopus, Mozambique shrimp, Uruguay hake, Patagonian toothfish and South Africa tuna pole (albacore) amongst others. He is a member of the MSC peer review college and has refereed numerous MSC assessments and also supervises MSC-related Chain of Custody audits in South Africa.

Jo Akroyd

Jo is a fisheries management and marine ecosystem consultant with extensive international and Pacific experience. She has worked at senior levels in both the public and private sector as a fisheries manager and marine policy expert. Jo was with the Ministry of Agriculture and

Fisheries in New Zealand for 20 years. Starting as a fisheries scientist, she was promoted to senior chief fisheries scientist, then Fisheries Management Officer, and the Assistant Director, Marine Research. She was awarded a Commemoration Medal in 1990 in recognition of her pioneering work in establishing New Zealand's fisheries quota management system. Among her current contracted activities, she is involved internationally in fishery certification of offshore, inshore and shellfish fisheries as Fisheries Management Specialist and Lead Assessor for the Intertek Fisheries Certification audit team. She has carried out the Marine Stewardship Councils' (MSC) certification assessment for sustainable fisheries. Examples include NZ (hoki, southern blue whiting, albacore, hake, scallops), Fiji (longline albacore) Japan (pole and line tuna, flatfish, snowcrab, scallops), China (scallops), Antarctica (Ross Sea toothfish fishery).

Chris Grieve

Chris has 25+ years' experience in fisheries management and policy-making from local to global levels. First as research assistant to Australian stock assessment scientists, then the manager of complex Australian demersal trawl and dredge fisheries. She moved to the UK in 2000 to lead the Sustainable Fisheries Policy Research Programme for a London-based think tank where the mission was influencing change in the EU's Common Fisheries Policy. In 2002, Chris became International Policy Director for the Marine Stewardship Council (MSC) to lead MSC's work on standards, certification and accreditation, governing bodies and developing world fisheries. Chris's role evolved to become Associate Director between 2005 and 2010 after she established Meridian Prime as a consulting company with a diverse portfolio of work. Chris led and participated in work on the development, evolution and implementation of the MSC standard and certification requirements. She has also led and participated in sustainable fisheries-related projects for client organisations in the UK, across Europe and the USA. Chris has been team member on fishery assessments and surveillance audits under the MSC certification scheme; and is an approved independent peer reviewer for MSC's Peer Reviewer College. On a consultancy basis, Chris is Executive Director Standards & Impact of the EDGE Certified Foundation: a Swiss-based, global certification scheme focusing on gender equality in the workplace. Chris served until recently as a Board Director for WOCAN (an international non-profit focusing on gender equality in natural resource management in the global south) and was on the founding Advisory Board of Ocean Outcomes (a US-based non-profit focusing on sustainable fisheries). Chris was a founding Trustee and Vice Chair of the ISEAL Alliance, the global sustainability standards organization; and a statutory-appointed member of two Australian fisheries management public boards.

William Karp

Retired in September 2016, after a 30-year career with NOAA Fisheries. For the last five years of his employment with NOAA, he served as Science and Research Director of the Northeast Fisheries Science Center in Woods Hole. For the preceding 25 years, he was a researcher and administrator at the NOAA's Alaska Fisheries Science Center in Seattle, most recently as Deputy Science and Research Director. He has extensive experience in survey, assessment, and monitoring of marine fish populations and fisheries, and in designing and implementing broad based research programs to address assessment questions. He has substantive experience in providing science-based advice for management for fisheries in Alaska, and off the East and West Coasts of the US. He has advised the North Pacific Fishery Management Council, the New England Fishery Management Council, and the Mid Atlantic Fishery Management Council, and served as a non-voting member of the New England and Mid Atlantic Councils. He is currently an affiliate professor at the University of Washington and a NOAA Fisheries Scientist Emeritus. He is also a US Delegate to the International Council for Exploration of the Sea (ICES) and is fully familiar with the ICES advisory process.

4 Description of the Fishery

4.1 Unit(s) of Assessment (UoA) and Unit(s) of Certification

4.1.1 Unit of Assessment

The Unit of Assessment (UoA) for this fishery is as defined below.

Table 1: Proposed Unit of Assessment for Falkland Islands toothfish longline fishery.

Species:	Patagonian toothfish (<i>Dissostichus eleginoides</i>)
Stock:	Stock located within FICZ, FOCZ
Geographical area:	Falkland Islands Conservation Zones (FICZ, FOCZ)
Harvest method:	Longline (umbrella gear)
Client Group:	Consolidated Fisheries Ltd
Other Eligible Fishers:	None

This Unit of Assessment was used as it is compliant with client wishes for assessment coverage and is in full conformity with MSC criteria.

4.1.1.1 Other eligible fishers

Entry to the fishery is limited by the Falkland Islands Government. There is currently one licensed operator, Consolidated Fisheries Ltd. There are no other eligible fishers.

4.1.1.2 Overlapping fisheries

There is no overlap between the fishery under assessment and any other MSC-certified fisheries. A trawl fishery for squid operates in shallower Falkland Islands waters, but does not overlap with the toothfish longline fishery.

4.1.2 Unit of Certification

(PCR ONLY)

The final Unit Of Certification for this fishery is as defined below. This has not changed throughout the process. Alternatively provide rationale for why this has changed.

4.1.3 Total Allowable Catch (TAC) and Catch Data

The TAC and catch data for the 2017 fishery are summarised in the table below.

The Assessment team noted that a TAC of 1040t was set for the longline fishery in 2017. This was the same as the 2016 TAC and a decrease from the 1200t TAC set in 2014. The TAC reduction was made in response to scientific advice.

Table 2: TAC and Catch Data [Source: FIFD, 2017b]

TAC	Year	2017	Amount	1040t
UoA share of TAC	Year	2017	Amount	100%
UoC share of TAC	Year	2017	Amount	100%
Total green weight catch by UoC	Year (most recent)	2017	Amount	1033t
	Year (second most recent)	2016	Amount	1020t

4.2 Scope of fishery

Acoura Marine considers that the unit of certification in the fishery is within the scope set out in the MSC Fisheries Certification Requirements v.2.0 at §7.4 *et seq.*

Specifically:-

- **Target taxa** §7.4.1.1 – the fishery does not target amphibians, reptiles, birds or mammals.
- **Destructive fishing practices** §7.4.1.2 – no destructive fishing practices (explosives or poisons) are used in this unit of certification.
- **Controversial unilateral exemptions** §7.4.1.3 – there is an on-going sovereignty dispute over the Falkland Islands between the United Kingdom and Argentina. This does not, however, constitute a “*controversial unilateral exemption to an international agreement*”.
- **Forced labour** §7.4.1.4 – fishery operators have not been prosecuted for any violations against forced labour laws¹.
- **Controversial disputes** §7.4.2 – there are mechanisms in place for resolving disputes between the fishery and the management system.
- **Enhanced fishery** §7.4.3– this is not an enhanced fishery.
- **Introduced Species Based Fisheries** §7.4.4 – toothfish are not an introduced species.
- **Inseparable or practically inseparable catches** §7.4.13 – there are no non-target IPI species in the UoAs.

The fishery is therefore eligible for assessment against the MSC Standard.

¹ According to the Seafood Slavery Risk Tool, the UK fishery for Patagonian Toothfish (including the Falkland Islands) is rated LOW RISK (<http://www.seafoodslaveryrisk.org/profiles/?q=Patagonia%20Toothfish,%20United%20Kingdom>).

5 Overview of the fishery

5.1 Background

5.1.1 Geographic & seasonal extent

The Falkland Islands toothfish longline fishery takes place within the Falkland Island Conservation Zones in waters that are deeper than 600m. The extent of this area is shown in Figure 1.

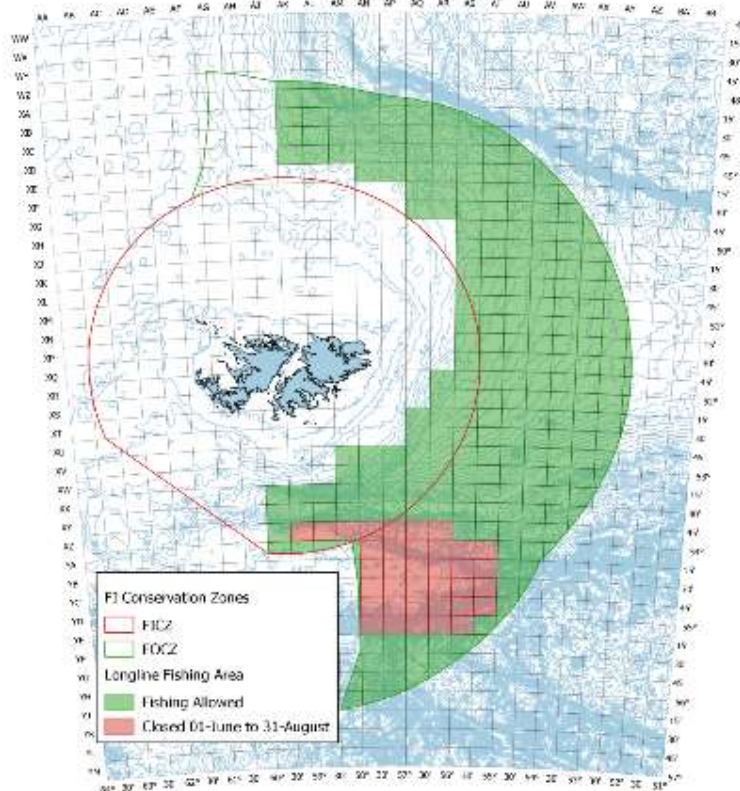


Figure 1: Map showing the geographic extent of the Falkland Islands Inner Conservation Zone (FICZ, red boundary), Falkland Islands Outer Conservation Zone (FOCZ, green boundary), areas where longline fishing is permitted (green squares), and location of the Burdwood Bank seasonal closed area (red squares). [Source: FIFD, 2017].

The only vessels permitted to fish in the Falkland Islands toothfish longline fishery are those that are permitted by the Falkland Islands Government under an Individual Transferable Quota system introduced in 2005. The vessels permitted to fish in this area are not permitted to fish on the High Seas outside the Falkland Islands Outer Conservation Zone (FOCZ).

The fishery operates from the 1st January – 31st December each year. An area known as “Burdwood Bank”, covering over 32,000km² is closed to the fishery annually from the 1st June – 31st August to protect spawning toothfish.

5.1.2 History of the fishery

The Falkland Islands Toothfish Longline fishery was founded in the early 1990s. The Falkland Islands Government decided to authorise exploratory fishing for toothfish within the Falklands Interim Conservation Zone (FICZ) and Falklands Outer Conservation Zone

(FOCZ) in 1992. The fishing industry on the Islands responded by forming a new company, Consolidated Fisheries Ltd, in which all of the main fishing companies were shareholders.

Consolidated Fisheries started fishing on an exploratory basis using chartered Chilean vessels over the period 1994-97. Once the viability of the fishery had been proven, the company bought the autoliner *CFL Pioneer* in 1997 (see Figure 3B). The fishing gear operated by this vessel proved unsuited to the fishing grounds around the Falklands, and the vessel was converted to a Spanish longline system in 2000 and was eventually removed from the fishery in 2002. In 2000 the *CFL Valiant* was purchased. The *Valiant* used the Spanish longline system (see Figure 3A) which proved far better suited to the Falklands fishing grounds.

In 2004, CFL bought the vessel *CFL Gambler*, which also used the Spanish longline system. The *Gambler* and *Valiant* operated in the fishery until 2008, when the TAC was reduced from 1,500t to 1,200t pa.

From the period 2008-12 the *CFL Gambler* was the only vessel operating in the fishery. In 2013 CFL chartered the longline vessel *Tronio* because the *Gambler* had been unable to fully utilise the TAC allocation; and in 2014 the vessel *Global Pesca III* was chartered for the same reason. Both instances were triggered by mechanical problems with the *Gambler*, which had prevented the vessel from operating as normal.

The TAC for the fishery was reduced from 1,200t pa to 1,040t in 2015 in response to a revised perception of stock status relative to reference points.

The *CFL Gambler* was replaced with a new fishing vessel, *CFL Hunter* in 2017. *CFL Hunter* is a 59.9m long purpose-built deep water longliner. The vessel features diesel-electric propulsion, a CO₂ refrigeration system, and a low acoustic signature which is intended to minimise interactions with cetaceans. *CFL Hunter* arrived in Stanley on 26th May and left for its first fishing trip on 26th June 2017. It is intended that this will normally be the only vessel operating in the fishery. CFL chartered the longline vessel *Global Pesca I* to bridge the gap between the departure of the *Gambler* and the arrival of *CFL Hunter*. This vessel worked alongside *CFL Hunter* to the end of 2017 to assist with utilisation of the annual TAC.

A significant modification was made to the fishing gear in 2007, when “umbrella” gear was introduced. This gear was developed to reduce the loss of hooked toothfish to depredation by cetaceans, principally by Orcas (*Orcinus orca*) and Sperm Whales (*Physeter macrocephalus*), which had become a major problem with the Spanish longline system. With the “umbrella” gear, hooks are set in a cluster, with an “umbrella” of buoyant netting above the cluster of hooks. This netting floats above the hooks like an umbrella whilst the gear is on the seabed. When the gear is recovered, the “umbrella” folds over the cluster of hooks and any fish that have been caught, and protects it from depredation by whales (see Figure 3C & Figure 4). After an initial trial year in 2007, this fishing gear has been used by all of the vessels operating in the fishery since 2008.

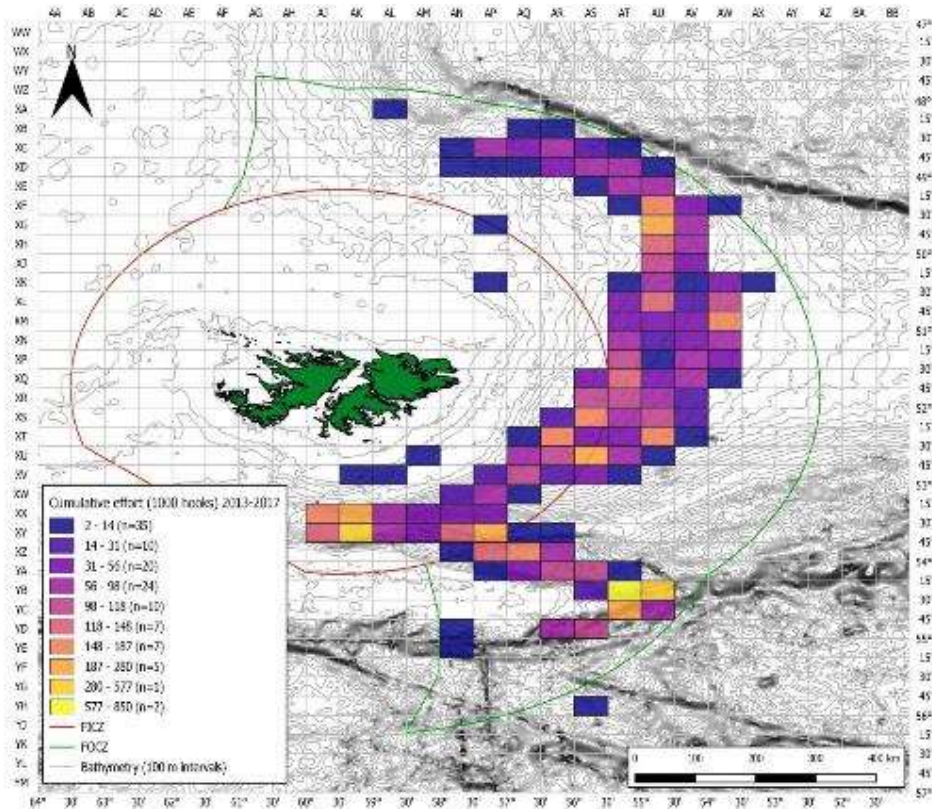


Figure 2: Spatial distribution of fishing effort in the Falkland Islands Longline Toothfish Fishery over the period 2013-2017[Source: Falkland Islands Government].²

² Note that this map shows some fishing outside the permitted fishing area shown in Figure 1. The square to the SSE of the Islands and outside the FOCZ was a “fake” line entered into a logbook as part of a demonstration by FIFD to a charter vessel. It has subsequently been deleted from the database. There are 5 grid squares within the FICZ that were fished in 2013 under licence from FIFD, to catch live toothfish for a hatchery project. Further information about these areas is provided in section 14.1.2.1 of this report.

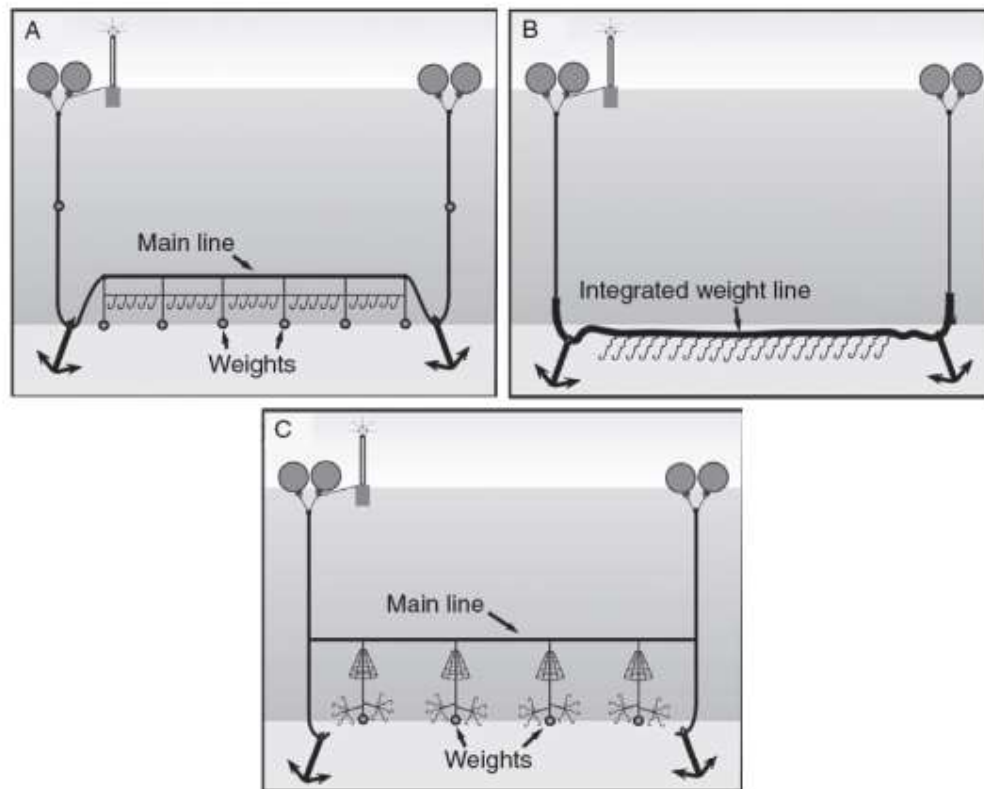


Figure 3: Illustrations of the longline systems that have been used in the Falkland Islands Toothfish Longline Fishery. A = Spanish longline (used from the mid-1990s until 2007); B = Autoline (used in the 1990s and inefficient); C = “Umbrella” gear (used from 2007 to present). [Source: Collins et al, 2010]

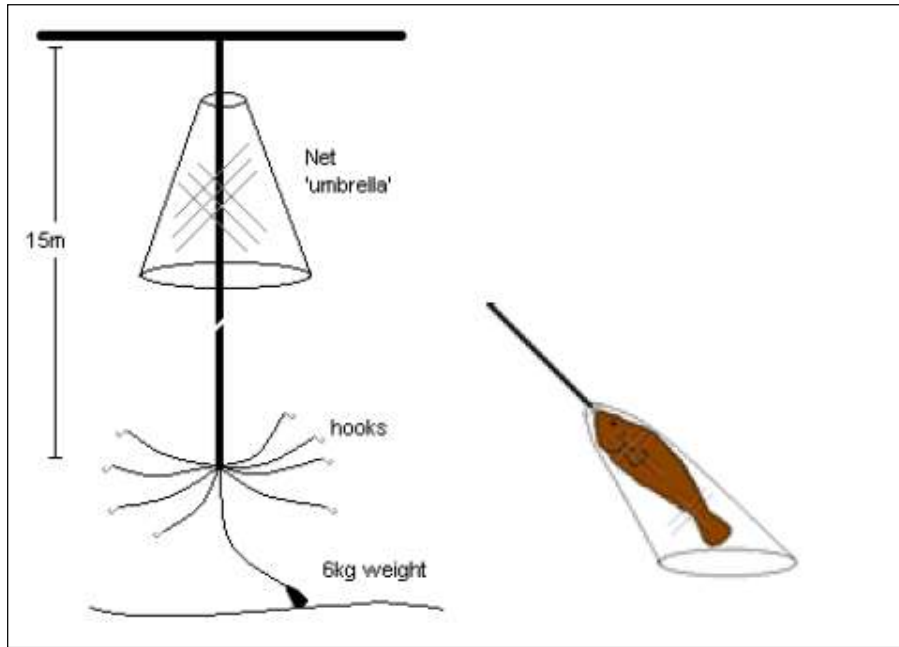


Figure 4: Detail of umbrella gear and illustration of how the umbrella shrouds the fish, preventing depredation by cetaceans on hauling the gear. [Source: FIFD].



Figure 5: CFL *Hunter*, the new 59.9m longliner which replaced the CFL *Gambler* in 2017.

5.2 Principle One: Target Species Background

5.2.1 Fishery Resource:

5.2.1.1 Stock identity

The MSC Certification Requirements define a fish stock as:-

“The living resources in the community or population from which catches are taken in a fishery. Use of the term fish stock implies that the particular population is a biological distinct unit. In a particular fishery, the fish stock may be one or several species of finfish or other aquatic organisms.”

The Patagonian toothfish (*Dissostichus eleginoides*) is managed as a single stock unit and is relatively uninfluenced by the neighbouring populations in southern Chile and South Georgia.

In the Falklands region, Patagonian toothfish are known to spawn primarily on the Burdwood Bank (Laptikhovsky et al 2006). This region spans both Argentine waters and the Falkland Conservation Zone (FCZ), such that recruitment to both fisheries is likely to come from this region. Larvae are carried from the Burdwood Bank region onto the Falklands Shelf where they settle, reside and develop until they are around six years old and at a length of approximately 60-70cm. At this time they migrate into deeper water mature and then become available to the longline fishery in their respective deep-water zones either within or outside the FCZ (Laptikhovsky et al 2006, Brown 2011).

Additional recruitment contributions to both fisheries can potentially come from southern Chile (Ashford et al 2012). The Falkland Island Government imposes a temporal ban on the area of the Burdwood Bank that falls within the FCZ during the spawning period (1 June – 31 August). This was extended in 2016, from the original closure period of 1 July to 31 August, to provide added protection for spawning fish.

The Falkland Islands longline fishery targets these adults (approx 60cm length) inhabiting deep-water (>600m depth); this is the fishery under assessment. The Falkland Islands Patagonian toothfish longline fishery is managed as a single “fish stock” (in the sense of the MSC definition of the term), separate from neighbouring Argentine stocks to the south-west and north of the FCZ. The MSC certification process requires that the stock is sufficiently discreet and catches can be reliably ascribed to a particular stock. Information available at the first assessment was not conclusive in terms of stock discreteness and further research was needed to back the stock discreteness hypothesis. Based on the recommendations of Parker (2015), a range of methodologies have been employed to examine the stock structure of the Patagonian toothfish in Falkland Islands waters. These include tagging-based, otolith-based, morphology-based, and genetic-based methods. This range of disparate projects has resulted in a preliminary evaluation which will ultimately lead to one overarching recommendation.

Preliminary evaluation

A qualitative examination of the preliminary results from all the projects suggests a multi-scale pattern of toothfish stock discrimination in the southwest Atlantic. At the largest spatial scales, there seems to be a very clear differentiation between toothfish from South Georgia/South Sandwich Islands and the Patagonian shelf (based on morphology and genetics). On the Patagonian shelf, otolith shape analysis suggests several different populations, while the otolith microchemistry evidence suggests that several spawning locations may be contributing to the overall population within the FICZ/FOCZ. Finally, the preliminary tagging data do not show adult toothfish making large-scale movements.

Further analysis

Once all of the results from the different projects are finalized, an evaluation of all the sources of information will be undertaken. If all the results suggest a similar pattern, it will be taken as a robust confirmation of the conclusions. If some of the results are in conflict, a “weight of evidence” approach will be employed (Weed, 2005). A weighting scheme of the disparate sources of information will be used based on the geographical scale of the method, the error associated with each result, and the amount of information provided by each method.

The current position is that the evidence produced to date points to the discreteness of the adult stock of Patagonian toothfish. This conclusion is strongly supported by the preliminary results of the tagging of over 1000 toothfish. These results indicate that the tagging protocol put in place in June 2016 works and that the recaptured toothfish demonstrated remarkable site fidelity.

5.2.1.2 Status of Stock (FIFD, 2016b)

Toothfish stock assessment was calculated using an age-structured production model (ASPM) in CASAL (C++ Algorithmic Stock Assessment Laboratory) software (Bull et al. 2012, Dichmont et al. 2016). The stock assessment model was revised for 2016 by: a) including unreported catches (unreported to the Falkland Islands Government) and undetected whale depredation as separable factors, b) computing Spanish-system longlining and umbrella-system longlining as two different fisheries with different CPUE indices and c) equalizing the computational weights of the CPUE indices and catch-at-age distributions for the objective function of the age-structured production model.

The stock assessment calculated toothfish total biomass of 30,288 tonnes and spawning stock biomass of 10,337 tonnes in 2016. The ratio of SSB₂₀₁₆:SSB₀ (current spawning stock biomass to unfished spawning stock biomass) was 45.2%. Maximum sustainable yield was estimated by the stock assessment model at 1,843 tonnes, assuming a catch / bycatch split of 75.9% toothfish longline, 21.9% finfish trawl, and 2.2% calamari trawl.

The recommendation for the toothfish longline fishery is for a *status quo* total allowable catch (TAC) at 1,040 tonnes. The recommendation is based on the SSB₂₀₁₆:SSB₀ ratio being above the trigger point (Expansion range).

Assessment model outputs have been provided to the assessment team showing how the perception of unfished stock biomass and virgin spawning stock biomass has evolved in the period 2010-2016 (Table 3).

Table 3: Retrospective analysis of the 'initial' biomass in 1987 (B_{1987}) and the virgin spawning stock biomass (SSB_0) estimated by the stock assessment model using data up to each year between 2010 and 2016. For each data year, the set of possible SSB ratios ($SSB_{year}:SSB_0$) is also calculated

Data Year	Estimate of Unfished stock biomass		$SSB_{2010}:SSB_0$	$SSB_{2011}:SSB_0$	$SSB_{2012}:SSB_0$	$SSB_{2013}:SSB_0$	$SSB_{2014}:SSB_0$	$SSB_{2015}:SSB_0$	$SSB_{2016}:SSB_0$
	B_{1987}	SSB_0							
2010	66,169.4	23,206.4	0.555						
2011	64,568.8	22,920.5	0.550	0.542					
2012	64,095.5	22,942.3	0.570	0.561	0.553				
2013	63,593.5	23,904.6	0.573	0.557	0.543	0.524			
2014	62,071.0	23,223.8	0.555	0.540	0.527	0.510	0.496		
2015	59,952.8	22,604.1	0.552	0.534	0.518	0.496	0.477	0.459	
2016	61,108.8	22,867.5	0.564	0.547	0.532	0.510	0.491	0.472	0.452
Avg.	63,080.0	23,095.6	0.560	0.547	0.535	0.510	0.488	0.465	0.452

Forward-calculation of the age-structured production model projected that spawning stock biomass will decrease until 2022, reaching a minimum $SSB_{current}:SSB_0$ ratio of 40.6% - 41.6% before increasing back above the upper target reference point of 45% by 2029 - 2034.

5.2.2 Harvest Strategy

The fundamental purpose of the Harvest Strategy is to provide a 'route map' which ensures long-term sustainability and prevents over-fishing of the stock. For the Patagonian toothfish stock the basic tenets of this strategy are:

1. To set an annual TAC which limits the toothfish catch by longliners (or potters) to the sustainable levels.
2. To maintain Spawning Stock Biomass (SSB) at 45%, or higher, of the unfished spawning biomass.
3. To research options that may lead to the minimisation of toothfish by-catch on the shelf.
4. Maintain the temporal fishing ban on the Burdwood Bank spawning grounds during the spawning period with only limited access for research purposes.

The first two elements are firmly based on the annual assessment of the status of the stock. This is achieved using the age-structured production model (ASPM) in CASAL which generates annual estimates of biomass and spawning stock biomass (SSB). Forward projections of these estimates can also be calculated which allows assumptions to be made regarding likely future catches. The harvest strategy in place in 2016 was a four tier decision making matrix depicted in Figure 6 and consisting of:

1. Target reference point:

If the ratio of $SSB_{current}:SSB_0$ has remained $\geq 45\%$ for 3 consecutive years and SSB forward projection shows no decrease $< 45\%$ for at least 6 years under precautionary assumptions, the Director may authorize an increase in longline TAC to a level that continues to show no projected $SSB_{current}:SSB_0$ decrease $< 45\%$ for at least 6 years under precautionary assumptions.

2. Threshold:

If the ratio of $SSB_{current}:SSB_0$ is 40% to 45%, current longline TAC is reviewed in relation to stock trends. Current TAC may be maintained if $SSB_{current}:SSB_0$ has increased from the previous assessment, or if SSB projection shows a level status under precautionary assumptions. TAC may be decreased if age-structure distributions anticipate weak recruitment. TAC may not be increased.

3. Trigger:

If the ratio of $SSB_{current}:SSB_0$ is $<40\%$, longline TAC will be decreased to a level that projects an increasing SSB trend under precautionary assumptions within 6 years of the last previous adjustment to the TAC.

4. Limit reference point:

If the ratio of $SSB_{current}:SSB_0$ is $\leq 20\%$, the longline fishery will be closed pending comprehensive evaluation of conditions required to rebuild the stock. The Director may authorize test fishing to measure biological parameters of the stock, subject to close monitoring by the Fisheries Department.

In 2017 the decision making matrix was modified with explicit changes to the criteria which serve to strengthen the management and provide additional precaution.

1. Expansion range

If the ratio of $SSB_{current}:SSB_0$ has remained above the upper target reference point (45%) for 3 consecutive years and the SSB projection with the current TAC shows no decrease below 45% for at least 10 years (one generation) under precautionary assumptions, the Director may authorize an increase in longline TAC to a level that continues to show no projected $SSB_{current}:SSB_0$ decrease to below 40% (trigger point) for at least 10 years under precautionary assumption.

2. Target range:

If the ratio of $SSB_{current}:SSB_0$ is between 40% and 45% (within the target range), current longline TAC is reviewed in relation to stock trends. Current TAC may be maintained if $SSB_{current}:SSB_0$ has increased from the previous assessment, or if the SSB ratio projection shows a level status under precautionary assumptions. TAC may not be increased, but it may be decreased if age-structure distributions anticipate weak recruitment.

3. Trigger point and range:

If the ratio of $SSB_{current}:SSB_0$ falls to $\leq 40\%$ (trigger point), longline TAC will be decreased to a level that projects an increasing SSB trend under precautionary assumptions. The magnitude of the proposed TAC reduction will be examined using three methods (adapted from ICES, 2017):

- a. Indexed to the reduction of the MSY estimates
 - i. $TAC_{year} = TAC_{year-1} * (MSY_{year} / MSY_{year-1})$
- b. Indexed to the reduction of the SSB estimates
 - i. $TAC_{year} = TAC_{year-1} * (SSB_{year} / SSB_{year-1})$
- c. Indexed to the reduction in SSB ratios
 - i. $TAC_{year} = TAC_{year-1} * (SSB_{ratio_{year}} / SSB_{ratio_{year-1}})$

TACs obtained from all three methods will be projected forward in the stock assessment model and the trends in SSB will be compared. The final method will be chosen based on it returning the SSB ratio to above 40% within 10 years (one generation) of the SSB ratio falling below 40%. If more than one method meets this requirement, the chosen method will also depend on discussions between the Fisheries Department and industry.

4. Limit reference point:

If the ratio of $SSB_{current}:SSB_0$ is $\leq 20\%$, the longline fishery will be closed pending comprehensive evaluation of conditions required to rebuild the stock. The Director may authorize test fishing to measure biological parameters of the stock, subject to close monitoring by the Fisheries Department

Toothfish are long lived and slow growing and do not mature until they are approximately 10 years old. This life history trait renders them vulnerable to recruit overfishing which would result in a lengthy process of stock rebuilding should the population of either adults or juveniles be depleted. This requires additional precaution in the management of the stock and in particular the annual TAC.

The Harvest strategy adopts a number of additional measures to reduce and cope with uncertainty. These include: data collection and research, precautionary catch limits, overall effort control, reduction in unrecorded mortality (umbrella catch system, surveillance operations) and the seasonal closure of the major spawning ground (Burdwood Bank).

5.2.3 Harvest Control Rules

The firm basis from which the harvest control rules and tools have been developed is the four tier harvest strategy detailed above (Figure 6). The high level target for the fishery is to maintain the spawning biomass at or above 45% of the unfished spawning biomass SSB_0 . The four tier strategy is used to determine the annual TAC. The strategy in place up to 2016 and the 2017 revised strategy both have clear rules which progressively reduces the annual TAC in line with a reduction of the SSB below the 'expansion range' level of 45% of unfished spawning biomass. The lower tier of the harvest strategy triggers the complete closure of the longline fishery if the ratio of $SSB_{current}:SSB_0$ is $\leq 20\%$. This is the level at which it has been determined that there is an appreciable risk of impairing recruitment (PI 1.1.2) and is the MSC default level in CR v1.3:CB2.3.3.5.

In support of the rules to determine the annual exploitation level, based on the harvest strategy, the FIFD have implemented a number of other control measures to ensure the sustainable exploitation of the stock. These measures are designed to take into account areas of uncertainty not specifically addressed in setting an annual TAC.

In relation to the annual TAC the FIFD and industry have agreed that, irrespective of stock status in relation to the harvest strategy, fishing mortality will be capped at a maximum of 2/3rds F_{msy} .

There is a measure in place which permits up to 15% of the annual TAC to be carried forward to the next year or to be brought forward from the next year. These permissible carry overs can only operate from one year to the next and cannot accumulate over multiple years. Any revision of the TAC can override any such adjustments in the TAC.

There is a spawning area closure in place to protect over exploitation on vulnerable spawning fish and juveniles. The closure operates on the Burdwood Bank from 1 June to 31 August each year and is rigorously enforced.

The catch of toothfish in trawl fisheries on the continental shelf is monitored via daily catch reports, monthly monitoring, and Observer collected data. There are measures in place to minimise the by-catch of juvenile toothfish in other fisheries on the shelf. Depredation is reduced through the use of umbrella systems, and is now explicitly taken into account in the stock assessment.

Although there is currently little evidence of illegal, unregulated and underreported (IUU) fishing in the toothfish fishery, the impacts of possible unseen IUU fishing is examined in computer-based simulations. Other sources of uncertainty are taken into account through precautionary measures and a highly conservative TAC.

There is clear evidence from the fishery that the rules are being successfully implemented in controlling exploitation at a sustainable level. The assessment of stock status in 2017 shows that the ratio of SSB 2016: SSB₀ (current spawning biomass to unfished spawning biomass) was 45.2%. This is in keeping with the upper target level in the revised harvest strategy and provides clear evidence that the raft of rules in place are achieving exploitation levels determined by the Harvest Strategy. This conclusion is strongly supported by the successive reductions in the annual TAC over recent years in order to maintain SSB at or above 45% of the unfished spawning biomass. An annual TAC was first set for the longline fishery in 2006 at 1,500t. It remained at 1,500t in 2007 but reduced to 1,200t in 2008. The TAC remained at 1,200t through to 2014 and reduced again in 2015 to 1,040t. It has remained at 1,040t for the two subsequent years.

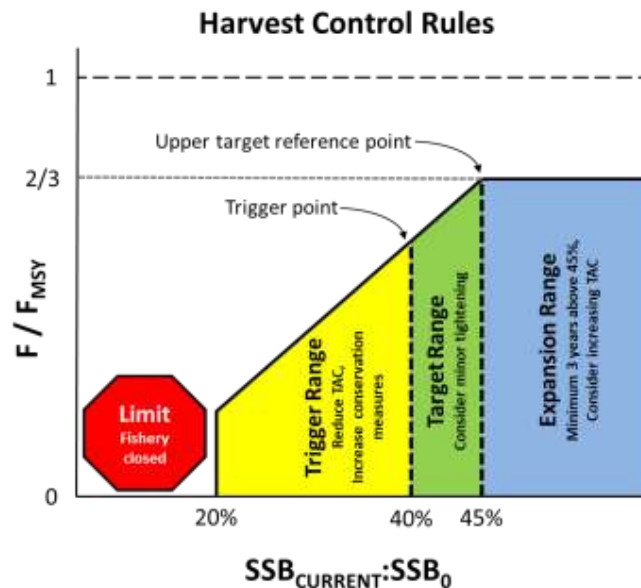


Figure 6: FIFD toothfish fishery Harvest Control Rules. Levels of Spawning Stock Biomass (SSB) reference points with corresponding changes in fishing mortality. Fishing mortality is capped at $2/3 F_{MSY}$ (grey dashed line) as a precautionary approach. See decision matrix for more detailed description at each reference point. Diagram is illustrative only and not to scale (from: Sustainability Measures 2017 – 2018 Draft FIFD, 2018)

5.2.4 Information and Monitoring and Stock Assessment

A suite of high quality data is available for accurate monitoring of the stock. These come in the form of daily catch reports (both longline and trawl fisheries), comprehensive observer data collection during observer periods, and independent catch verification of landed fish. A very wide range of data is collected for stock assessment of the toothfish fishery, the role of toothfish in the wider ecosystem, and other data that helps understand the biology and ecology of *D. eleginoides*. Stock assessment data includes length, weight, and age relationships, CPUE, reproductive status, and spawning periodicity. Otolith aging for age-length keys is verified by a 2nd reader, and semi-regularly by 3rd external reader. Other ecological relationships include studies on diet composition and variability. General biology

includes parasitology and evolution of ontogenetic growth. Stock discrimination work includes otolith shape, otolith microchemistry, toothfish morphology and demography. Oceanographic data are collected monthly.

Catch and effort data necessary for stock assessments are recorded daily and analysed on a monthly basis. Biological data is collected by Scientific Observers as often as possible. Observer coverage on the CFL Gambler has been approximately 50% every year, and this will continue on the new vessel, the CFL Hunter. Toothfish data from the trawl fishery are collected whenever toothfish are caught, either in daily catch reports (fish > 30cm approx. are processed), or when observers are on trawlers. Statistical (spatial and temporal) uncertainty is considered in the sampling design (spatial and temporal breadth and resolution). Biological uncertainties are addressed through reviews of knowledge, examination of pattern, and ongoing research programs.

Since 2008, the first full year of umbrella-system longlining, reported annual toothfish catches in the target longline fishery have ranged from 943 to 1469 tonnes, with a downward trend over the past four years. Average (unstandardized) CPUE in the longline fishery increased over the same period, from 3.1 to 5.2t / vessel / day, and levelled off in just the past two years. Annual toothfish bycatch in finfish trawls reached its highest total in 2010, the year that rock cod (*Patagonotothen ramsayi*) first attained predominance in the finfish trawl fishery. However, the highest toothfish CPUE in finfish trawls was obtained last year in 2016, when both toothfish bycatch and CPUE increased by several times over the year before. With the recent large decrease in rock cod abundance (FIFD 2016c), finfish trawlers targeted other species and fished deeper. In 2015, the weighted average depth of finfish toothfish bycatch was 231m, and 49.2% of toothfish was taken in trawls of which the primary catch was rock cod. In 2016, the weighted average depth of finfish toothfish bycatch was 300m, and 4.6% of toothfish was taken in trawls of which the primary catch was rock cod. Annual toothfish bycatch as well as CPUE in calamari trawls reached their highest levels last year in 2016, with several times' increase over the year before. The increase may be due to increased recruitment of toothfish, but could also relate to the decrease of rock cod abundance (FIFD 2016c). Fewer small rock cod may allow more juvenile toothfish to inhabit the zone occupied by the calamari fishery, and may also result in more accurate reporting of toothfish bycatch, as small rock cod and juvenile toothfish are mistakable for crews that have no commercial interest in either.

5.2.4.1 Summary of the results of the 2016 stock assessment.

5.2.4.1.1 The fishery in 2016

A total of 1495.8 t was reported as caught in the 2016 fishery. The longline fishery took 68.4% of the catch, 1023.1 t in 199 vessel days (TAC 1040t). This was the lowest longline toothfish catch since 2010 and the longline vessel days were the lowest since 1993. This was due to operational scheduling by the quota holder.

The finfish trawl fishery took 420.3t (28.1%) in 2498 vessel days and the Calamari trawl fishery took 52.4t (3.5%) in 2014 vessel days.

5.2.4.1.2 Stock assessment

The Falkland Islands toothfish stock assessment in 2016 was calculated using an age-structured production model in CASAL software, model version II (FIFD, 2016b), Bull et al. 2012, Dichmont et al. 2016).

The stock assessment model was revised for 2016 by: a) including unreported catches (unreported to the Falkland Islands Government) and undetected whale depredation as

separable factors, b) computing Spanish-system longlining and umbrella-system longlining as two different fisheries with different CPUE indices and c) equalizing the computational weights of the CPUE indices and catch-at-age distributions for the objective function of the age-structured production model.

The stock assessment calculated toothfish total biomass of 30,288 tonnes and spawning stock biomass of 10,337 tonnes in 2016 (FIFD, 2016b). The ratio of SSB₂₀₁₆:SSB₀ (current spawning stock biomass to unfished spawning stock biomass) was 45.2%. Maximum sustainable yield was estimated by the stock assessment model at 1843 tonnes, assuming a catch / bycatch split of 75.9% toothfish longline, 21.9% finfish trawl, and 2.2% calamari trawl. The recommendation for the toothfish longline fishery is to maintain total allowable catch (TAC) at 1040 tonnes, same as last year. The recommendation is based on the SSB₂₀₁₆:SSB₀ ratio being above the trigger point.

Forward-calculation of the age-structured production model projected that spawning stock biomass will decrease until 2022, reaching a minimum SSB_{current}:SSB₀ ratio of 40.6% - 41.6% before increasing back above the upper target reference point of 45% by 2029 – 2034.

5.2.4.2 Preliminary results from the 2018 stock assessment

Preliminary results of the 2017 fishery and the 2018 assessment of stock status in 2017 were presented to the Team at a Surveillance audit meeting in London on 13 March 2018.

5.2.4.2.1 The fishery in 2017.

In 2017, a total of 1,519 t of toothfish was taken by all fisheries in the Falkland fishing zones. 1,030 t (67.8%) was taken by targeted longline fishery whilst a further 488t (32.2%) was taken under eight other licences.. The majority of the toothfish catches 55%, were taken by Falkland-flagged vessels primarily in the longline fishery. While the TAC was set at 1,040 t for the longline fishery, it was estimated that a proportion equivalent to approximately 330 t would be taken as by-catch by the respective trawl fisheries. Recently, with a shift in fishing behaviour as some vessels exploit deeper waters, i.e. 500 to 800 m depths, in the southwest of the FICZ between October and January, a significant increase in toothfish by-catch has been noted during this period. For a second consecutive year, the proportion of MSY taken by trawlers has exceeded FIFD predictions. This is considered to be unsustainable and some measures to control toothfish by-catch in the trawl fisheries have been discussed and will be trialled in 2018. This situation led to the closure of an area in the southwest of the FICZ from early December 2017 to the end of January 2018 as a conservation measure.

5.2.4.2.2 Stock assessment

In general, the stock assessment model is very similar to the one used in 2017, but a few small improvements/corrections have been made. These changes related to the maturity ogive, historic cpue data and a change in whale depredation rates. None of the changes were expected to make produce major changes in the stock assessment outputs but were considered to make the model closer to reality.

The outputs of the preliminary 2018 stock assessment model are quite similar to the 2017 stock assessment outputs. Natural mortality was estimated in 2018 at 0.176, very similar to the 0.168 estimated in 2017. The SSB₀ was estimated as slightly lower in 2018 (21515.4 t) compared to 2017 (22867.5 t), while recruitment was a bit higher in 2018 (2.369*10⁶ vs. 2.302*10⁶).

The 2017 SSB is estimated at 10,509.9 t. The final SSB ratio in the 2018 model was 48.8%, an increase from the ratio of 45.2% in the 2017 model. This difference is probably due mostly to the difference in the SSB0 estimate.

The time series of the estimates SSBs by the 2018 model is presented in Table 4. This time series is quite similar to the SSBs estimated by the 2017 model. In the 2018 model, the SSB went from 21511 t in 1987 to 10962 t in 2016 – very similar to the decrease from 22863 t in 1987 to 10337 t in 2016 estimated by the 2017 model.

Table 4: Time series of SSB estimates from the 2018 fisher model.

Year	SSB (t)	Year	SSB (t)
1987	21511.2	2003	14712.1
1988	21489	2004	14299.1
1989	21452.5	2005	14017.5
1990	21431.4	2006	13911
1991	21299.3	2007	13624.1
1992	20738.7	2008	13360.7
1993	20539.5	2009	13211.3
1994	19143.5	2010	13081.5
1995	18280.7	2011	12763.4
1996	18198.2	2012	12483.7
1997	17900.5	2013	12072.1
1998	17263.5	2014	11718.9
1999	16207.1	2015	11363.6
2000	15568.8	2016	10962.2
2001	15277.7	2017	10509.9
2002	15010.3		

5.2.4.2.3 Additional analysis with 2017 stock assessment

At the surveillance audit meeting in March 2018 the client reported that work was currently underway to address the requirement for a more probabilistic analysis of the stock assessment outputs.

The work involved forward projections of the SSB in order to examine how the SSB_{current}/SSB₀ ratio may change in the future. Five thousand iterations of the projection were run between 2018 and 2051 (Figure 7). The 95% confidence interval of these 5,000 iterations shows that the majority of the projections are likely to fall above the 45% upper target reference point (as defined by the Sustainability Measures (FIFD, 2018)). There were very few projections that had the SSB ratio fall below the 0.2 limit reference point.

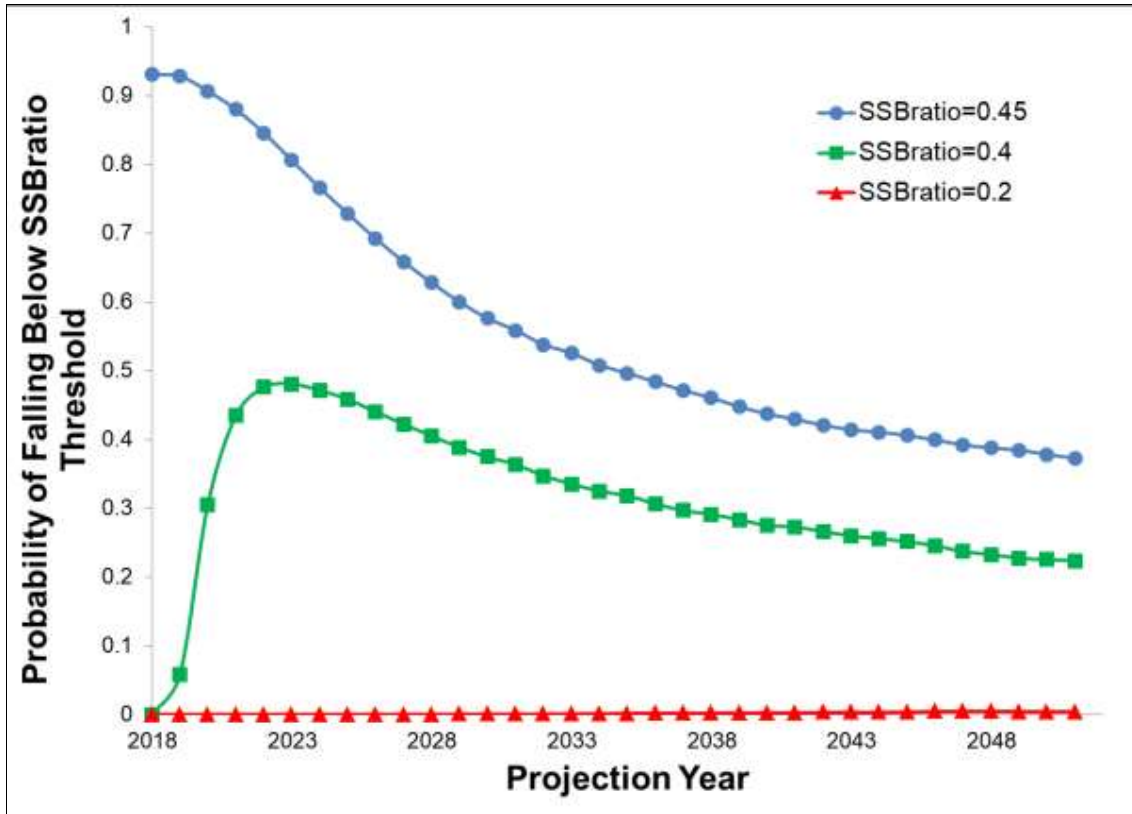


Figure 7: Probability of the projections falling below the key SSB ratio thresholds defined by the Sustainability Measures (blue = 0.45 upper target reference point, green = 0.4 trigger point, red = 0.2 limit reference point). See Sustainability Measures for more details.

Projections can be used to determine the probability that the toothfish stock will fall below the various harvest strategy management thresholds in the future. Starting in 2018, the probability that the SSB ratio will fall below 0.2, the limit reference point at which the fishery would be closed, is 0, with a slight increase to 0.4% by 2051. The probability that the SSB ratio will fall below 0.4, the trigger point for reducing the TAC, also starts at 0 in 2018, but increases to 48% by 2023, before decreasing slowly to 22% in 2051. The SSB ratio is currently below 0.45, therefore the probability that it will be below 0.45 in the near future is over 90%. But this probability decreases continually to 37% in 2051.

5.3 Principle Two: Ecosystem Background

Principle 2 of the Marine Stewardship Council standard states that:

“Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent ecologically related species) on which the fishery depends.”

The information presented in this section is provided to support the rationale set out for the Principle 2 Performance Indicators. Principle 2 of the MSC Standard has 5 components:

- Retained non-target species
- Bycatch species (discarded non-target species)
- Endangered, Threatened or Protected (ETP) species
- Habitats
- Ecosystems

This section considers the information available about the potential effect of the fishery on each of these Principle 2 components in turn. We also describe the information available about the status of the components and the management arrangements that are in place to mitigate or regulate adverse impacts.

5.3.1 Retained Species

Retained species are those that are caught along with toothfish and landed. The only retained species caught in the fishery are grenadier, which are landed in small quantities - total catches are typically below 100t of which less than 10 tonne per annum of retained product is expected (see Table 5). This is therefore considered a retained species. The other species that are considered as “retained” by this fishery are those that are used as bait on the longlines.

Two species of Grenadier may be caught in this fishery. The species most frequently caught is *Macrourus holotrachys*. In the shallower parts of the fishery area there may also be a catch of *Macrourus carinatus*. In 2012 and 2013 the observers have distinguished between the two species, and the 2013 observer data show that over 95% of the Macrourids caught in the fishery are *M. holotrachys*, with the remainder being *M. carinatus*.

Although some assessments of grenadier stock status have been made, these are currently not considered to be adequate to fully evaluate the effects of the toothfish fishery on population status; accordingly the risk-based assessment framework (RBF) was used to evaluate the effects of the fishery on these species.

Table 5: Grenadier catches and retained proportion 2012-2017 (source: CFL Ltd)

Year	Discarded (kg)	Retained		Total (kg)	Discarded (%)
		Fillet (kg)	Trunk (kg)		
2012	71,998	0	0	71,998	100.00%
2013	66,992	435	101	67,528	99.20%
2014	50,576	4,651	152	55,379	91.30%
2015	65,424	3,787	1,535	70,746	92.50%
2016	66,579	8,474	0	75,053	88.70%
2017*	22,593	6,573	0	29,166	77.50%
				AVERAGE:	91.53%

* 2017 data incomplete

Grenadiers have been collected in catch data by the fishery, and Observers since 2001, and those data indicate ongoing stability in the Grenadier stock, showing no changes in CPUE, % catch, or shifts in population size structure over recent years (see Figure 8 below). There has been some interest in opening a targeted fishery for grenadier, and a precautionary TAC of 4000t and accompanying regulations were produced in 2012 (FIFD 2012 Grenadier Fishery Information).

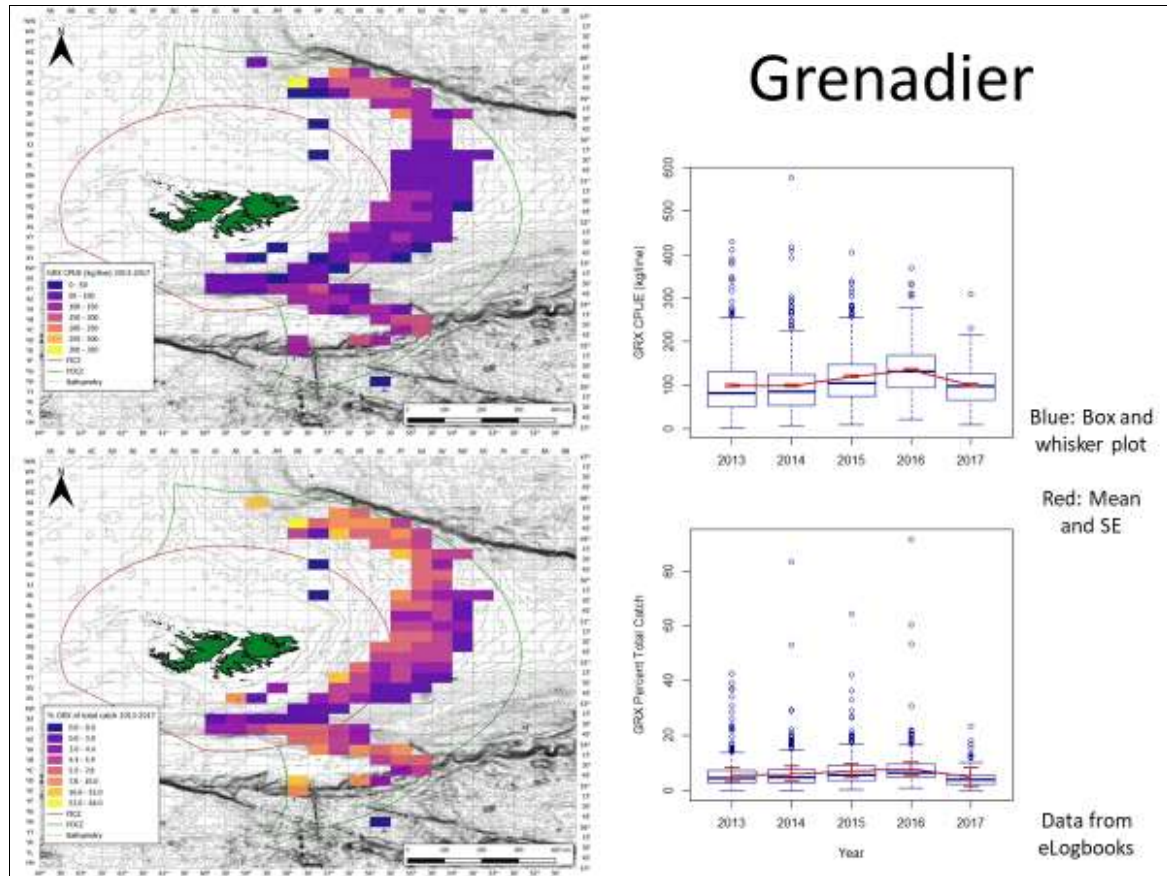


Figure 8: Grenadier catch areas and CPUE

Bait species are mainly Portuguese sardine (previously an MSC certified source) and *Illex* squid (an assessed and controlled fishery). These were considered during the RBF workshop and considered of less significance than Grenadier in terms of impacts from the fishery.

The principal bait species is sardine from south west Europe. This comprises over 5% of the total 'catch' (average 6.67%) and is therefore a main species. Two stocks are exploited – sardine in the Bay of Biscay (ICES divisions 8.a-b and 8.d) for which spawning-stock biomass is well above MSY Btrigger and sardine in the Cantabrian Bay and Atlantic Iberian waters (ICES divisions 8.c and 9.a) which is currently below MSY Btrigger and Blim. It is noted that total catches on the Bay of Biscay stock are in the region of 30 000 t and catches in the Cantabrian Bay and Atlantic Iberian waters are in the region of 23 000 t. Total sardine bait use in the UoA is 65-100 t. If all bait was from the Cantabrian Bay and Atlantic Iberian stock, this would be no more than 0.43% of the total catches.

The other most important bait species is *Ilex*, caught predominantly in Falklands waters but also in Argentine waters. Together, these comprise over 5% of the total ‘catch’ and this is therefore a main species. Maximum bait use is around 129/128 t in 2014/15. Average catches in Falklands waters is around 150 000 t, making the bait use around 0.06% of the average catch. Catches are from the southern populations of the South Atlantic *Ilex argentinus* stock. This population enters the Falkland Conservation Zones (FCZ) as adults in the January – June months every year. After that, they migrate back north to near the mouth of the Rio de la Plata in Argentina, where larvae are released. The larvae then disperse inshore, and juveniles start migrating south along the Argentinian coast.

The table below shows *Ilex* bait use and FI catches since 2014, together with the percentage of total FI catches used as bait in the toothfish fishery. In addition to the FOCZ, *Ilex* is also caught in the Argentinean and Uruguayan EEZs and on the high seas to the north of the FOCZ, so these percentages will therefore be a very conservative estimate of total catches from the stock.

Table 6: Ilex bait use and total catches in the FOCZ

Year	<i>Ilex argentinus</i>		Percentage
	Catch in FOCZ (t)	Bait use in toothfish fishery (t)	
2014	142,619	129	0.09
2015	357,722	128	0.03
2016	2,360	83	3.50
2017	67,487	43	0.06

Table 7 shows catches since 2008, but bait data are only available from 2014. All catches since 2008 are shown to illustrate the development (and general stability) of catches, but percentages of the total catch are calculated for 2014-17 for which full data, including bait, are available.

5.3.2 Bycatch Species

For the purposes of an MSC assessment, bycatch species are considered to be those that are captured in the fishery but are then returned to the sea rather than being retained.

All catches in the fishery are shown in Table 7 below (noting that toothfish is the Principle 1 species and Grenadier is considered a retained species). Bycatches are reported by the fishing vessel in an e-logbook, and since 2001 have also been recorded by Government observers who are currently present on around 50% of longline fishing trips. It was noted that changes were made to the fishing gear in 2007, with a switch to the “umbrella” system, and this had resulted in lower discard levels in the fishery.

The bycatch species appearing in catches in any appreciable numbers over the past 5 years are:-

- Blue antimora (*Antimora rostrata*) comprises average 1.43% of catches: since 2008, discards have been between 10-24t per year.
- Skates (several species) comprise average 2.09% of catches: the total weight of all skate species discarded is between 21 and 78t per year. Skate are cut from hooks

and released back to the sea before landing. It is noted that studies in other longline fisheries indicate that survival of skate after discarding can be good (Endicott & Agnew, 2004)

- Occasional large shark species, including sleeper (Greenland) and porbeagle sharks

The RBF workshop concluded that the species most vulnerable to adverse effect from the Falkland Islands Toothfish Longline fishery was the blue antimora (*Antimora rostrata*). The RBF workshop was informed by catch area and CPUE data on blue antimora.

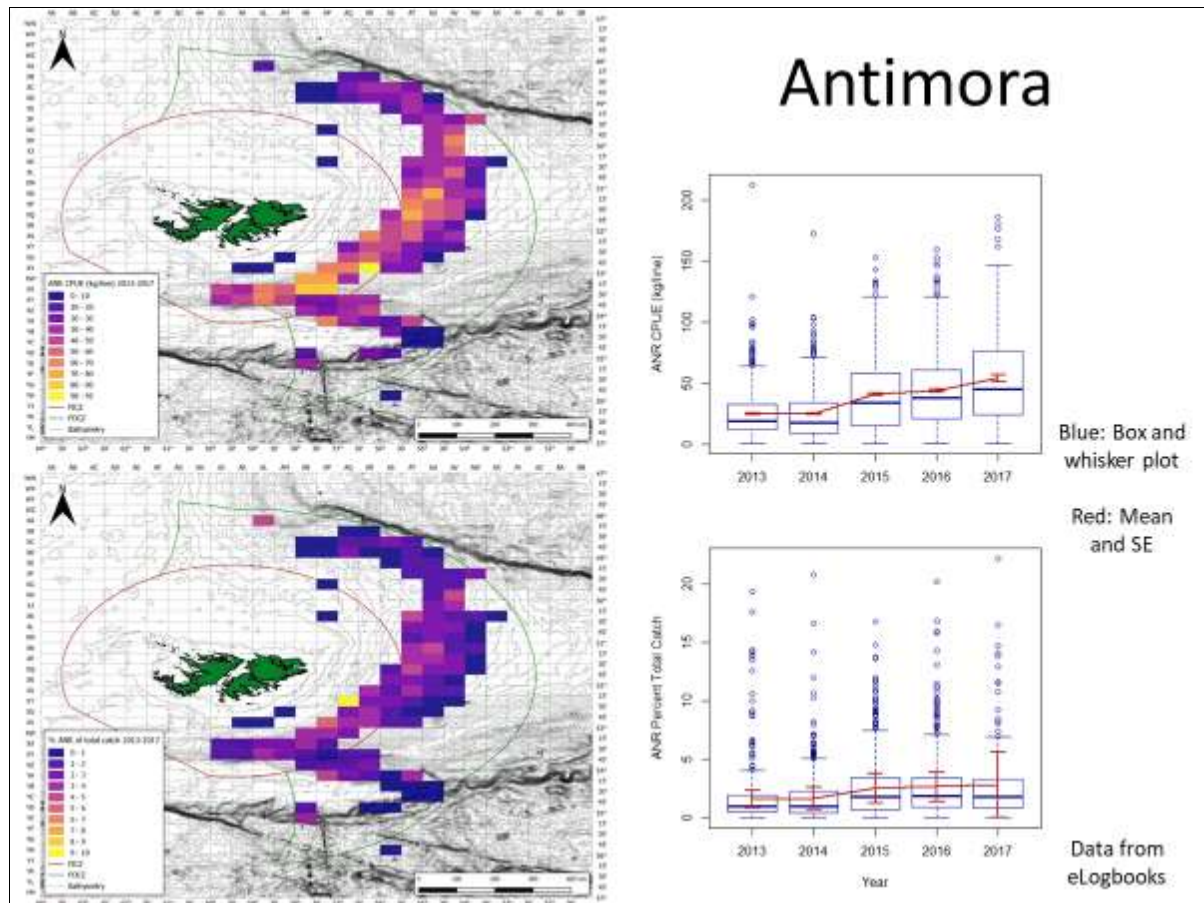


Figure 9: Blue antimora catch areas and CPUE

FIFD Scientific Observers and scientists have been collecting data on bycatch fish species since the start of the fishery, including size, weight, sex and maturity, and otoliths. Similarly, FIFD has a number of skate specialists who have been examining biology and distribution of skates in the region. Analyses to date suggest that the fishery is having little impact on fish and skate populations, although this information is not yet sufficient to draw firm conclusions (hence use of RBF for this element of the ecosystem). Ongoing work is planned to examine the effects of bycatch in the toothfish fishery on populations of affected bycatch species.

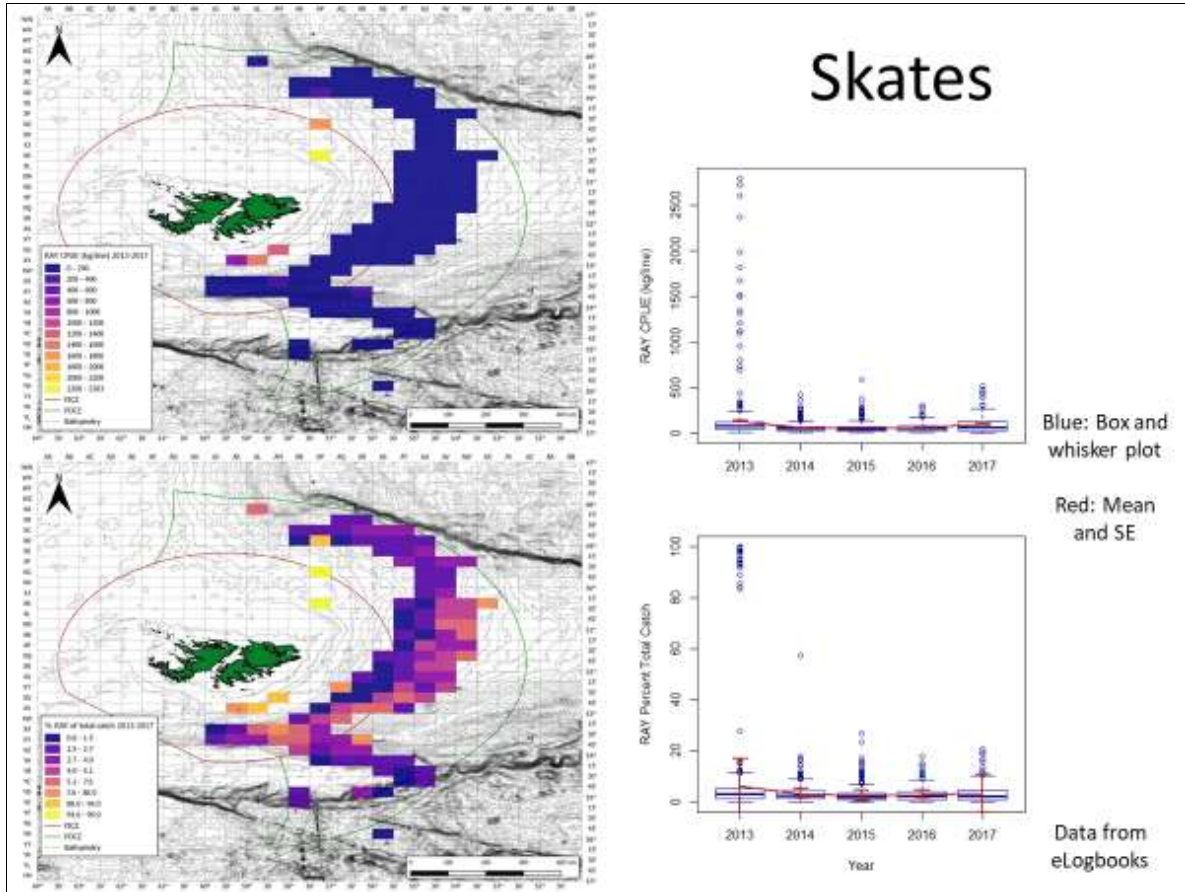


Figure 10: Skate species catch areas and CPUE

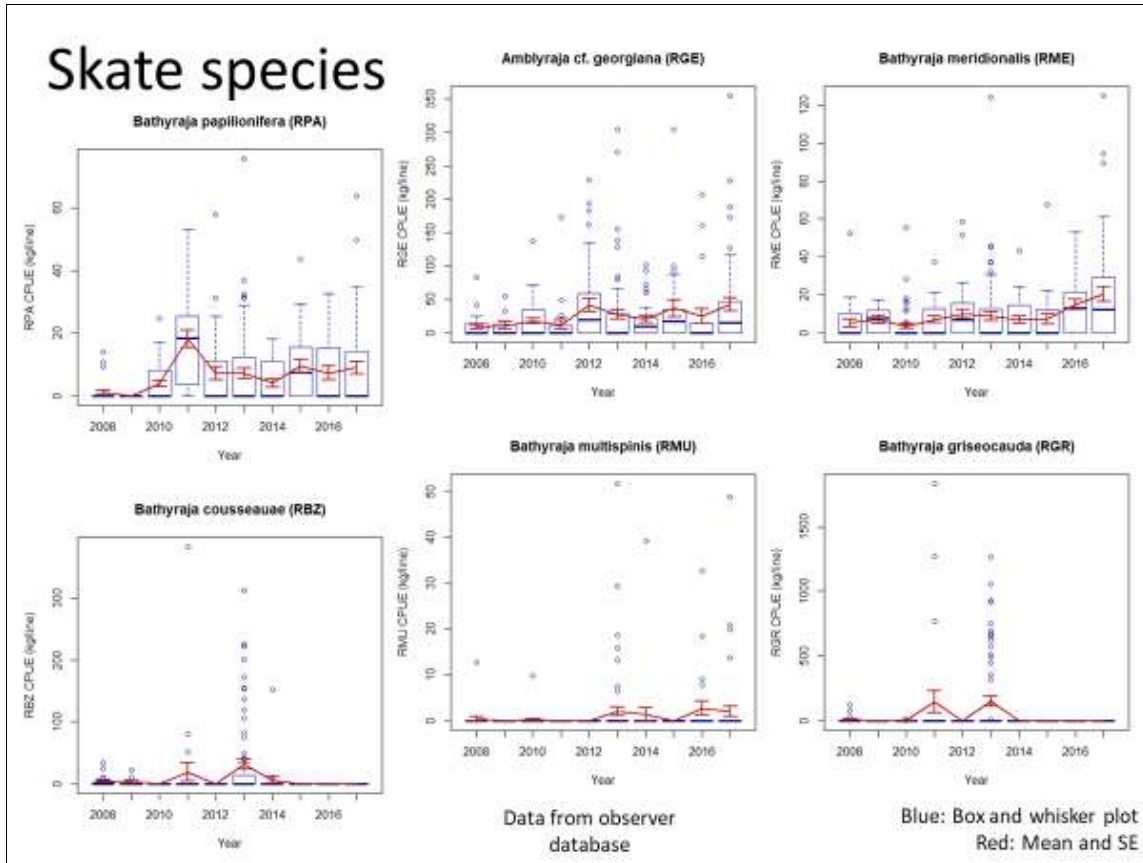


Figure 11: CPUE data for skate by species

Licence conditions for toothfish fishery require that all Ray/Skate bycatch must be cut off the line at the surface of the water, or as near to it as possible, except during sampling and tagging by the observer, when such by catch may be retained. All by-catch must be recorded, both in the daily catch reports and in the fishing logbooks.

The Falkland Islands is a signatory to a Memorandum of Understanding under the Convention on the Conservation of Migratory Species of Wild Animals, which includes porbeagle sharks. This MoU requires there to be no directed fisheries on these species – a measure with which the Falkland Islands is fully compliant. It is also noted that porbeagle were listed as CITES Appendix II species in 2014. This would not qualify as an ETP species on this basis (only Appendix I species are ETP) but indicates the vulnerability of the species. The catches shown below (average 0.07% of a relatively small overall catch) would not indicate a particular concern within the fishery, however.

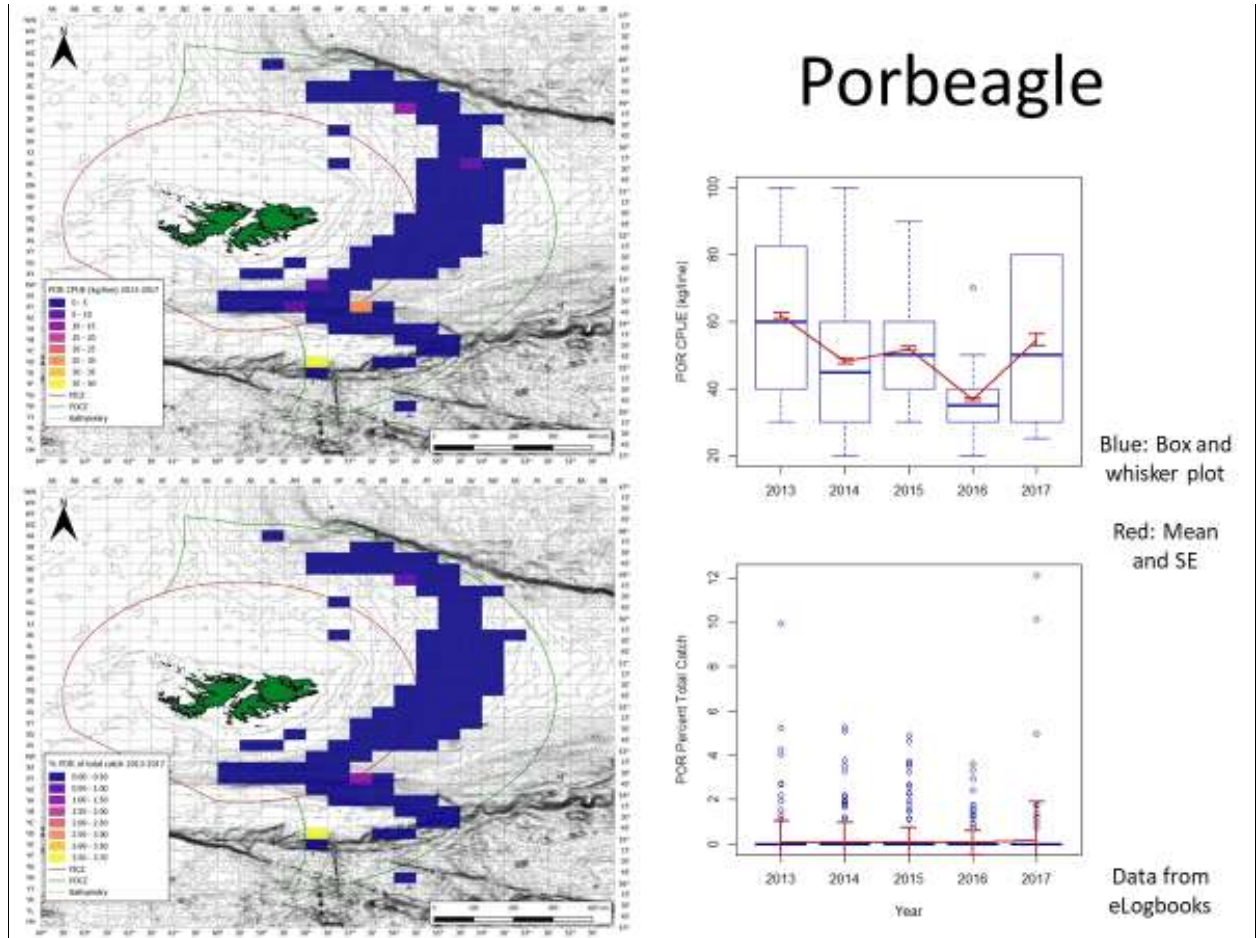


Figure 12: Porbeagle shark (*Lamna nasus*) catch areas and CPUE

Table 7: Catch composition of the longline fishery (2008-2017) in Falkland Islands waters, including catch (kg) for each species group and percent of the total catch.

		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017*	Total 2014-17
Toothfish	TOO	1,368,044	1,133,719	943,208	1,220,778	1,085,061	1,302,172	1,252,325	1,123,301	1,022,931	432,901	3,831,458
		90.56%	90.44%	89.13%	87.13%	89.25%	88.30%	78.88%	75.81%	77.31%	71.03%	76.60%
Blue Antimora	ANR	13,841	10,119	11,532	21,993	18,121	16,378	13,779	23,635	23,984	9,931	71,329
		0.92%	0.81%	1.09%	1.57%	1.49%	1.11%	0.87%	1.60%	1.81%	1.63%	1.43%
Red Cod	BAC	0	0	0	0	0	23	0	0	0	0	0
		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0
Notothenid (Ramsayi)	COX	0	0	3	0	0	0	0	0	0	0	0
		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0
Grenadier Species	GRX	94,954	77,568	74,857	99,893	76,725	68,901	57,343	70,746	75,053	18,404	221,546
		6.29%	6.19%	7.07%	7.13%	6.31%	4.67%	3.61%	4.77%	5.67%	3.02%	4.43%
Minke Whale	MIW	0	0	0	0	0	0	5,000	0	0	0	5,000
		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.31%	0.00%	0.00%	0.00%	0.10%
Jellyfish	MED	0	0	514	0	0	0	0	0	0	0	0
		0.00%	0.00%	0.05%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0
Crab	CRB	42	4	1,329	149	26	5,649	7,463	4,946	0	0	12,409
		0.00%	0.00%	0.13%	0.01%	0.00%	0.38%	0.47%	0.33%	0.00%	0.00%	0.25%
Porbeagle	POR	1,275	2,085	595	1,110	450	692	675	860	565	460	2,560
		0.08%	0.17%	0.06%	0.08%	0.04%	0.05%	0.04%	0.06%	0.04%	0.08%	0.05%
Skate/Ray	RAY	27,828	21,634	22,819	55,134	32,280	77,660	31,950	27,578	28,790	16,360	104,678
		1.84%	1.73%	2.16%	3.93%	2.66%	5.27%	2.01%	1.86%	2.18%	2.68%	2.09%
Greenland Shark	SOM	4,600	8,465	3,377	2,115	3,145	3,123	4,535	3,396	2,005	1,003	10,939
		0.30%	0.68%	0.32%	0.15%	0.26%	0.21%	0.29%	0.23%	0.15%	0.16%	0.22%
Bait												
Sardine	<i>Sardina Pilchardus</i>	FAO 27						84,220	98,540	85,060	65,800	333,620
								5.30%	6.65%	6.43%	10.80%	6.67%
Illex	<i>Illex Argentinus</i>	Argentina						76,892	30,507	23,752	8,573	139,724
								4.84%	2.06%	1.80%	1.41%	2.79%
Illex	<i>Illex Argentinus</i>	Falkland Islands						53,460	98,280	60,963	35,628	248,331
								3.37%	6.63%	4.61%	5.85%	4.96%
Mackerel	<i>Scomber sp.</i>	FAO 27						0	0	0	20,396	20,396
								0.00%	0.00%	0.00%	3.35%	0.41%
Total		1,510,584	1,253,594	1,058,234	1,401,172	1,215,808	1,474,598	1,587,642	1,481,789	1,323,103	609,456	5,001,990

* 2017 data incomplete, through 30 September 2017.

Table 8 below shows the catches of main bycatch species over the previous certification period. No trends are apparent in bycatches. The increase in sleeper shark (by weight) is attributed to capture of a few large individuals, no trend in catches is apparent.

Table 8: Retained species catch for the Falkland Islands Toothfish Longline Fishery (FIFD, 2017).

Species/Group	Catch (tonnes)				Range identified in Main Assessment 2014	% total catch			
	2017	2016	2015	2014		2017	2016	2015	2014
Blue Antimora	15.4	23.8	23.6	13.7	10-22	1.5	2.1	1.88	1.0
Grenadiers	41.0	75.8	70.7	57.3	70-95	3.9	6.5	5.66	4.2
Skate/Ray	28.0	28.8	27.6	31.9	21-55	2.7	2.5	2.2	2.3
Porbeagle Shark	0.5	0.3	0.8	0.6	-	0.04	0.03	0.06	0.04
Sleeper Shark	10.3	2.1	3.4	3.8	-	0.99	0.18	0.27	0.27

5.3.3 Interactions with Endangered, Threatened and Protected Species

The MSC define Endangered Threatened & Protected (ETP) species as those that are recognised by national ETP legislation and those species that are listed in Appendix 1 of the Convention on International Trade in Endangered Species (CITES).

Species susceptible to harmful interactions with the CFL Hunter are primarily seabirds at sea, but also potentially marine mammals (species such as porbeagle shark are considered under bycatch species).

5.3.3.1 Seabirds

All birds are protected under the Falkland Islands Conservation of Wildlife and Nature Ordinance 1999. Under the international Agreement for the Conservation of Albatross and Petrels additional protection is afforded to the black-browed albatross, southern giant petrel and white-chinned petrel.

Seabirds at risk of interacting with longline gear include black-browed albatross, southern giant petrel, white-chinned petrel, wandering albatross, southern royal albatross, grey-headed albatross, northern giant petrel and cape petrel (Falkland NPOA Longline 2004 and update 2011)

During the 1990s there was significant mortality of black-browed albatross in the longline fishery, with birds killed by eating bait, becoming hooked and drowning; and also following physical impact from the fishing gear. Subsequent mitigation measures have been introduced, including

- use of bird-scaring devices (tori lines to CCAMLR or equivalent specification)
- weighting of the longline to ensure rapid sinking (specified as >0.45 m/sec)
- setting lines at night, with deck lighting at a minimum
- use of thawed bait
- offal management (no dumping during setting, discharge on opposite side to longline)
- hooks to be removed from fish and bycatch
- a device to be used to discourage birds during hauling (the "Brickle curtain") (CFL Hunter Licence Conditions 2017, NPOA 2011).

These have been very successful in virtually eliminating bird interactions. ETP interactions since 2010 are listed in Table 9.

Table 9: ETP Interactions in the Falkland Islands toothfish longline fishery 2010 – present.

Date	Vessel No.	Number of individuals	Species	Notes
14/05/2010	ZDLC2	1	Snowy sheathbill	OTHER
14/07/2011	ZDLC2	1	Minke whale	TANGLED IN FISHING LINE/NET
24/07/2012	ZDLC2	1	Giant petrel spp.	OTHER***
24/02/2014	ZDLC2	1	Black-browed albatross	TANGLED IN TORI LINE FLOAT ^{ooo}

Recent interactions have been limited to unusual accidents: the giant petrel flew into the deck overnight; and the black-browed albatross was caught up in a Tori line buoy. There were no recorded incidental mortalities of birds or mammals in 2017.

The limit on bird mortality in the NPOA since 2006/07 has been 0.002 birds per 100 hooks (Around 16 birds in a season). This limit was met in 2005/06. It is noted that the longline fishery is now considered a low priority for the FI specialist seabird observer.

5.3.3.2 Marine Mammals

All marine mammals are protected by the Falkland Islands Marine Mammals Ordinance 1992, CITES and the IWC moratorium on whaling. It was noted that Sperm whales (*Physeter macrocephalus*) and Orcas (*Orcinus orca*) are frequently seen near the longline vessel, and seek to actively scavenge fish from the gear as it is recovered. The whales suffer no adverse effect from this.

There has been one observer report of a whale mortality associated with the fishery. During 2011 a single Minke whale (*Balaenoptera acutorostrata*) was reported to have been entangled and presumed to have drowned (this was reported in the last main assessment of this fishery). A search of the observer database from 2003 to the present shows no other records of whale entanglement. Direct or indirect effects on marine mammals in the fishery are considered by all stakeholders, and the assessment team, to be negligible.

5.3.4 Interactions with marine habitats

The MSC Scheme requires that fisheries should be unlikely to cause serious or irreversible harm to habitats. Serious harm in this context means gross changes in habitat types or abundances, and disruption in the role of the habitats. Irreversibility means changes that represent some form of regime shift from which recovery may not automatically occur. When assessing habitat impacts, the full extent of the habitats has to be taken into account, and not just that part of the habitat that overlaps with the fishery (hence the habitat Component of the fishery is assessed on a bioregional basis).

These requirements mean that fisheries which have an impact on marine habitats can attain the MSC standard, providing that these impacts are neither serious nor irreversible. This

section considers the potential impact of the Falkland Islands Toothfish Longline fishery, the habitats which may be affected by it, and the potential significance of the impacts.

Determining the effect of longlining on benthic habitats has been intrinsically difficult to assess, given the depths and areas involved. It is noted that MSC evaluations undertaken in other toothfish longline fisheries have concluded a low level of risk to habitats – a conclusion consistent with the RBF workshop for this fishery which determined a low likelihood of there being significant effects from the Falklands Islands longline fishery. As detailed during the RBF workshop, the fishery is known to take place on a variety of seabed types, ranging from muddy to sandy (the predominant fishing habitat) to rocky areas. Most of the seabed in the areas that is fished is muddy, with occasional rock outcrops where erect benthic organisms may be found. Observation of preliminary video imagery of the seabed (with cameras suspended from the longline gear) supports this view – with most images seen showing fine sand and mud with sparse emergent fauna. The only apparent impact of the gear seen through video imaging are fine furrows caused by line weights moving during hauling, although some drifting of the line is also possible.



Figure 13: Example of seabed image showing furrow in sediment from line weight Screenshot from video file 2018_0222_200509_040.MP4

In response to a condition of certification raised at the initial MSC assessment of this fishery, the client has commissioned the South Atlantic Environmental Research Institute (SAERI) to evaluate the current benthic VME species inventory and occurrence maps, the direct impact of a longline on benthic species/habitats and to provide an assessment of the impact of longlining throughout the fished area (footprint) with respect to risks to VMEs (Brewin, 2018).

Based on the observations of gear behaviour, a (highly) precautionary footprint of the gear of a 600m wide swath is adopted. Combined with this footprint estimate, predictive species distribution modelling has been used to estimate the distribution of Vulnerable Marine Ecosystem (VME) indicator species. This uses a suite of environmental factors to predict the suitability of a location for a given species or group of species based on observed affinities with those environmental conditions (modelling techniques that have been used to better manage VME indicator taxa in a variety of deep-sea habitats across trawl and longline fisheries; Brewin 2018). Predictive models have been produced for soft corals, hard corals,

whips and fans, sponges, glass sponges and sea pens. Model results for these groups are shown below, together with observer records of the species groups hauled in fishing gear.

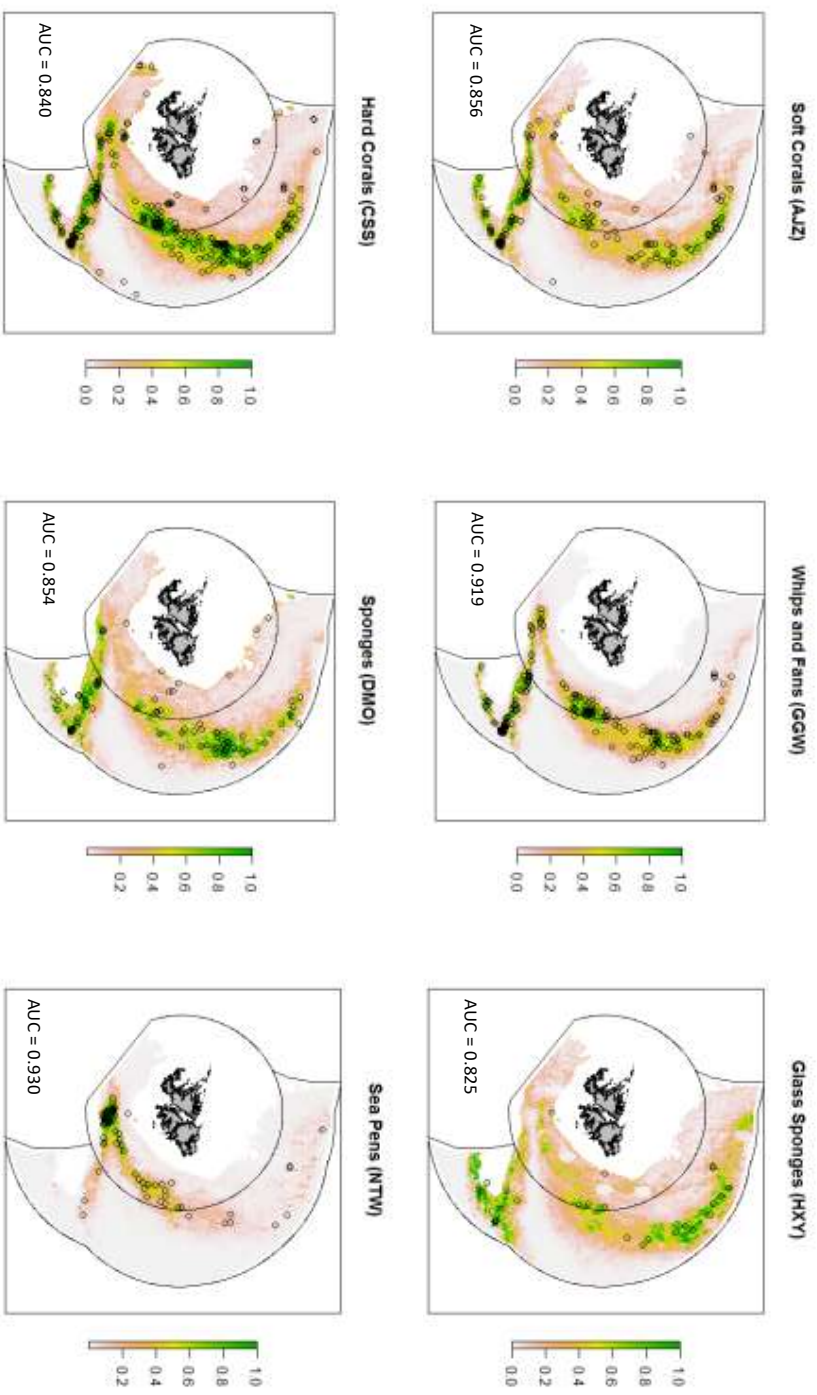


Figure 14: Predicted habitat suitability for VME indicator species. Samples locations are also shown.

The historic and contemporary impact of longline fishing in the Falklands was then measured by combining the footprint of the longline swath of 600m along the length of the longline on the habitat suitability maps. This estimates the percentage impact of the longline on the total predicted suitable habitat for each VME group (Table 10). This uses positions for all lines set since the longline logbook has been in use (July 2012), which is also representative of historic fishing patterns. The footprint assumes uniform impact of the longline on the seabed throughout the entire buffer and also allows for fishing intensity by calculating the number of times a fishing swath overlaps another. The table below shows the percentage footprint of gear on species distributions based on low (<4 overlaps of individual fishing swaths), medium (4-10 overlaps) and high (>10 overlaps) and uses the most precautionary estimation of footprint area. It is noted that these % footprint estimates would be considerably reduced with less conservative estimates of gear swaths, use of less precautionary calculation methods and inclusion of the extent of habitats outside of the FOCZ.

Table 10: Analysis of low, medium and high and cumulative impact of longline fishing (2012-2017) as a percentage of total suitable habitat.

Threshold: Sensitivity-Specificity							
VME group	Model AUC	Threshold Probability	Presence Total area (km ²)	Low Impact % total area	Medium Impact % total area	High Impact % total area	Footprint % total area
Soft corals (AJZ)	0.85611	0.204273	78,637	9.85%	1.02%	0.08%	11.01%
Stony corals (CSS)	0.84042	0.280672	75,231	12.09%	1.32%	0.09%	13.55%
Whips and fans (GGW)	0.91976	0.188654	57,821	14.23%	1.82%	0.12%	16.08%
Sponges (DMO)	0.85464	0.312888	56,232	12.20%	1.22%	0.11%	13.60%
Glass Sponges (HXY)	0.82579	0.391822	44,108	9.47%	0.87%	0.87%	10.50%
Sea pens (NTW)	0.93044	0.114203	33,237	11.11%	0.04%	0.04%	12.83%

The research into species distributions and gear impacts continues in order to further refine and verify this work and to develop VME/habitat management options.

5.3.5 Ecosystem interactions

As described in the previous assessment, adult Patagonian toothfish are accepted to be high on the trophic food chain, feeding mainly on rockcod (*Patagonotothen ramsayi*) and Loligo (*Doryteuthis gahi*) during younger life stages on the shelf, and larger pelagic fish while adults in deeper water. Orca and Sperm whales are known to depredate on toothfish when hooked; toothfish is not part of the natural diet of Orca but is part of the natural diet of sperm whales. A preliminary ecosystem model has been developed for the Falkland Islands region (Cheung and Pitcher, 2005).

Apart from the developments in understanding of benthic habitats, toothfish and some bycatch/ETP species outlined in this report, this remains the current state of knowledge. It is noted that the 'GAP Project' looks to develop knowledge of the Falkland marine ecosystem in relation to the developing hydrocarbon industry. This will contribute to future knowledge

As for habitat effects above, MSC evaluations undertaken in other fisheries have concluded a low level of risk to ecosystem structure and functioning. Consistent with this conclusion, the RBF workshop for this fishery determined a low likelihood of there being significant

effects from the Falklands Islands longline fishery; measures to restrict this risk (notably restricted fishing effort and control of gear use) are therefore considered adequate at present.

5.4 Principle Three: Management System Background

Principle 3 of the Marine Stewardship Council standard states that:

“The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.”

In the following section of the report a brief description is made of the key characteristics of the management system in place to ensure the sustainable exploitation of the fishery under assessment.

5.4.1 Management Background and Legal Framework

The Falkland Islands are a British Overseas Territory. The Islands are self-governing, and the remit of the Falkland Islands Government is set out in a Constitution that was most recently revised in 2009. The United Kingdom takes responsibility for defence and foreign affairs.

Executive authority is exercised by the Governor of the Falkland Islands, on behalf of the Queen. The Governor acts on the advice of the Executive Council which is composed of the Governor, Chief Executive, Director of Finance and three elected Legislative Assembly Members. The Legislative Assembly for the Falkland Islands is democratically appointed, and has 8 members.

The jurisdiction of the Falkland Islands Government over fisheries extends throughout the Falklands Interim Conservation Zone (FICZ) which was established in 1987 and the Falklands Outer Conservation Zone (FOCZ) which was established in 1991, and cover an area of over 330,000km² (see Figure 1). Fisheries legislation made by the Falkland Islands Government is enforceable throughout these areas. The 1987 Ordinance that established the FICZ and FOCZ was revoked and revised by the Fisheries (Conservation and Management) Ordinance 2005.

The Fisheries Ordinance 2005 sets out formal mechanisms for addressing disputes, and also the scale of penalties that might result from a breach of fisheries regulations. Legal disputes are addressed in the Falkland Islands by a resident Senior Magistrate and a non-resident Chief Justice.

The only vessels that are able to legally operate within the FICZ and FOCZ are those permitted by the Falkland Islands Government. The Government does not permit fishing for toothfish outside the FOCZ. The fishery therefore has a single jurisdiction with no High Seas, straddling or shared components overlapping the UoA or UoC.

5.4.1.1 Falkland Islands Fisheries Department

Fisheries around the Falkland Islands fisheries are administered by the Falkland Islands Fisheries Department (FIFD). The FIFD was established in 1986 as a Falkland Islands Government (FIG) department, and is now part of the Natural Resources Department.

The Department of Natural Resources includes Agriculture, Veterinary services, Fisheries and Marine operations. The Department is charged with facilitating and enabling wealth creation in fishing and farming whilst promoting and regulating the conservation and sound stewardship of natural resources. The Department sets conditions for maximising profitability in private sector fishing and farming enterprises whilst ensuring long term sustainability for future generations. It secures sustainable returns from renewable natural resources whilst

protecting and conserving the marine and terrestrial environments in their natural state. The functions of the Department involve administration, science, extension, research, regulation, facilitation, and enforcement. The organisation of the Department is illustrated in Figure 15.

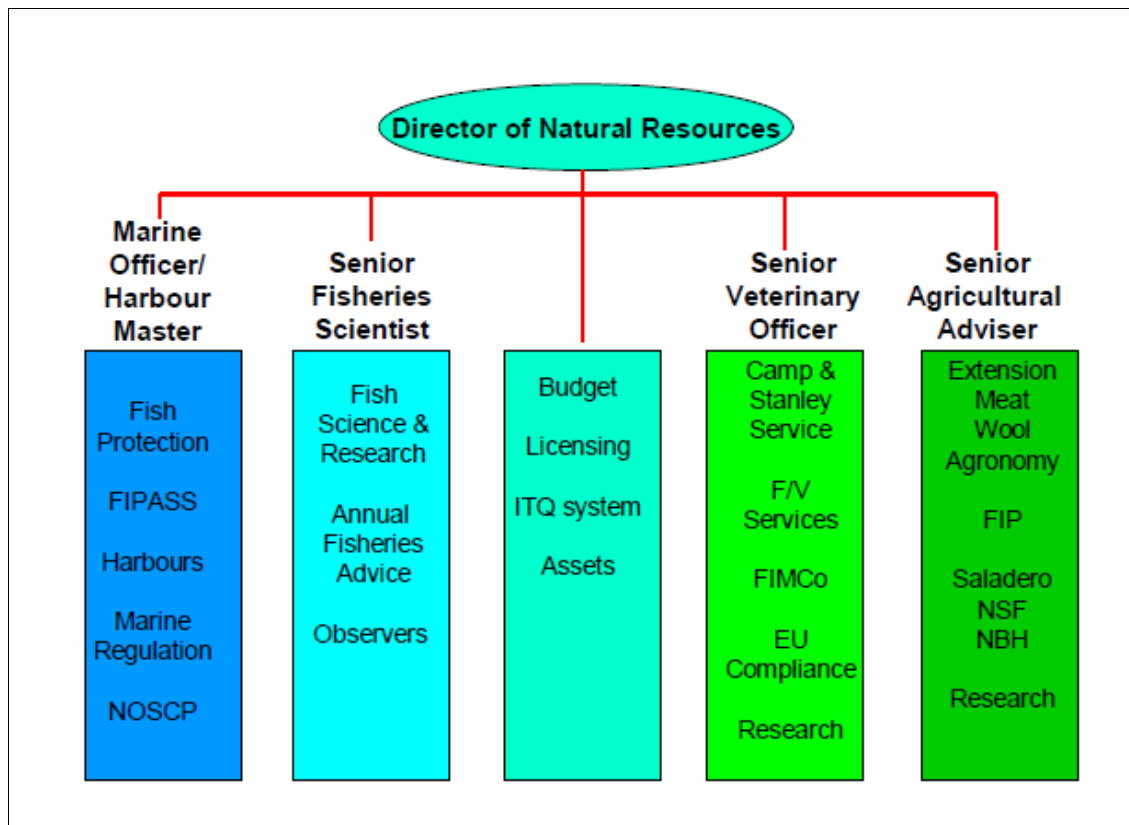


Figure 15: Organogram for the Department of Natural Resources in the Falkland Islands [Source: Department of Natural Resources, 2017].

Fisheries Department’s primary mission is the management of Falkland Island commercial fisheries, while minimising impacts on the wider ecosystem. Its three main tasks are Fisheries Science, Fisheries Protection and operating the Individual Transferable Quota (ITQ) system. This latter function includes licensing and revenue collection. All Department functions are reviewed and audited regularly. The Department’s goals are underpinned by efficient and effective fisheries research, surveillance and administration, as set out in the Fisheries (Conservation and Management) Ordinance 2005.

In 2016 the Falkland Islands issued 221 licences for the different fisheries in the FICZ and FOCZ. Revenue from these licences provides a significant part of the Islands’ GDP. On average the income from licences is around £20M pa. In 2015-16 the revenue from fishing licences was £15.9M, due to a poor squid (*Illex*) season.

The Falkland Islands Government spends approximately £4.1 million on fisheries science and protection annually. The Fisheries Department has 26 staff (as of 2018) including 5 Fisheries Officers, 1 Harbour Master, 6 scientific observers, 1 observer co-ordinator, 6 research and stock assessment scientists, 2 PhD students, 1 technician, 1 licensing officer, 2 data administrators, 1 office administrator, and the Department Director. The FIFD operates one patrol vessel (the *PV Protegat*, 70m length, 1170 GRT, armed). There are also aircraft patrols operated by the FIG Air Service. The fishing fleet is monitored by VMS.

Scientific observers play an important role in monitoring fishing licence conditions and other compliance tasks (see section 5.4.7).

The Department maintains comprehensive research programmes designed to enhance fisheries stock management and minimise fishery ecological impacts through research cruises (up to 42 days per year) and data gathered by scientific observers. All fisheries statistics, research cruise reports and annual stock assessments are published on the FIFD website (<http://www.fig.gov.fk/fisheries/>). The Department has a large research output, with over 50 peer-reviewed scientific publications in the last 5 years.

5.4.1.2 CCAMLR, COLTO and Dissostichus Catch Document Scheme

The Falkland Islands, FICZ and FOCZ lie outside the area covered by the Convention on the Conservation of Antarctic Marine Living Resources (CAMLR) and are thus not bound to comply with this Convention. Nevertheless, key parts of CAMLR are relevant to this fishery and are enforced by the Falkland Islands Government and the client in order to promote sustainability and good governance.

The Commission for CAMLR (which is known as CCAMLR) has established a traceability scheme for toothfish (*Dissostichus*) fisheries in order to address a problem with Illegal, Unlicensed and Unregulated fishing activity which was at that time posing a threat to the viability of some toothfish stocks. Under this Catch Documentation Scheme (CDS), the signatories to CCAMLR agreed to only allow toothfish imports that were accompanied by a “*Dissostichus* Catch Document” (DCD) which certifies the legality and provenance of the fish at the point of landing, and a “*Dissostichus* Export Document” (DED) which accompanies each subsequent consignment of exported fish. These documents are issued by the relevant State Authorities and can be inspected throughout the supply chain both as a hard copy and online.

The CDS documentation system is supported by at-sea monitoring of vessel activity using dedicated VMS equipment required by CCAMLR regulations. Any vessel fishing in CCAMLR waters is required to transmit VMS data directly to CCAMLR. The Falkland Islands toothfish fishery is not within a CCAMLR region; however, the *Hunter* transmits VMS data directly to CCAMLR in order to comply with US (NOAA) import regulations and in addition transmits the same data to the Fisheries Department in order to comply with Falkland Island legislative requirements.

The companies participating in the DCD / DED scheme have formed an alliance, the Coalition of Legal Toothfish Operators (COLTO) which promotes this scheme and acts as an independent industry watchdog to drive good compliance and eliminate IUU fishing for toothfish. Consolidated Fisheries Limited is a founding member of COLTO.

5.4.2 Consultation, roles and responsibilities

The fishery is managed by a range of organisations, and it provides opportunities for stakeholder participation and formal review of scientific advice and management actions. The key features of the management systems and processes relating to this fishery are summarised here.

5.4.2.1 Fishery-specific Committees and Groups

The organisations with a fishery-specific remit are outlined below. These organisations include two Committees established under statute.

Fisheries Advisory Committee

Membership:

- (Statutory): 2 Members of the Legislative Assembly (Portfolio holder Chairs)
Director of Fisheries
4 members of Falkland Islands Fishing Company Association (FIFCA)
- (Non-statutory): General Manager Falkland Islands Development Corporation (FIDC)
Attorney General

Purpose: to advise the Director of Fisheries

Meeting frequency: Monthly meetings to link of the Executive Committee meeting schedule (and providing that there is business on the agenda)

Comment: FAC is a statutory body provided for under the 2005 ordinance. The Ordinance (§7) states:

- (1) *There shall be a Fisheries Committee which shall be constituted by two elected members of the Legislative Council selected by all the members of the Legislative Council, the Director and such other public officers as may be determined by the Governor and by such number of representatives of fishing or other interests selected in such manner as the Governor may determine.*
- (2) *The Chairman of the Committee shall be such of the two members of the Committee selected by the elected members of the Legislative Council as shall be determined by the elected members of the Legislative Council and the other of them shall be the Vice-Chairman of the Committee.*
- (3) *The Committee shall not transact any business at any time when both the Chairman and the Vice-Chairman are absent therefrom.*
- (4) *The function of the Committee shall be to advise the Director as to the exercise of his powers under this Ordinance and as to such other matters on which he consults them.*

Falkland Islands Fishing Companies Association (FIFCA)

Membership: all members of the fishing industry that are holders of ITQ

Purpose: to represent all members and undertake projects to the benefit of the industry

Comment: a statutory body provided for under the 2005 Ordinance (§191).

Meeting Frequency: Meetings every 2 months.

Falklands Fisheries Liaison Group

Membership: Fishing Industry who subscribe

By Invitation: Falkland Island Fisheries Department

Any other organization/enterprise for relevant issues

Purpose: To liaise between the industry and all other local bodies and organizations that might engage with it, such as Government Departments, Telecom companies, shipping agents and other commercial enterprises.

Meeting Frequency: Monthly.

5.4.2.2 Other relevant Groups

The other Government organisations that are relevant to management of the fishery are outlined below.

Legislative Assembly

- Elections to the Legislative Assembly are held every 4 years.
- There are 8 Legislative Members of equal standing.
- Each Member is allocated a suite of portfolios, allocation method being decided by each Council/Assembly. There is thus an MLA with portfolio responsibility for Fisheries.
- MLA'S (Members of the Legislative Assembly) hold a Legislative Council meeting once in every two month period.
- The Financial Director, Attorney General and Chief Executive are all members of the Legislative Assembly but have no voting powers. Legislative Assembly is chaired by the Speaker of the House who is elected by MLA's.

Executive Council

- Executive Council is chaired by the Governor.
- 3 MLA's are selected every year by all 8 members to sit on ExCo.
- The Chief Executive and Attorney General are also members of ExCo.
- Only the 3 MLA's have voting rights.
- ExCo meets once a month.
- ExCo is required to review fisheries policy on an annual basis (§6 of the 2005 Fisheries Ordinance).

Environmental Committee

- Non-statutory committee through which all environmental issues concerning FIG are channelled.
- Membership includes 2 x MLA's, 2 officers from FIG Environmental Department, 2 reps from the local community and representatives of the farming community, Falklands Conservation, FIFCA, Tourism, Agricultural Department and SAERI.
- FIG Environmental Department is the regulatory body for all environmental matters concerning FIG so all regulatory considerations are processed through this Committee prior to submission to Executive Council.
- The Environmental Committee meets every two months.

MSC Steering Committee

- Non-statutory committee established in 2016 to provide a forum for liaison between the client and fisheries scientists in FIFD.

- Membership: 2 FIFD scientists & 2 CFL representatives.
- Meets every 6 weeks.

5.4.2.3 Management regime

The management of this fishery is based upon a system of regular stock assessments and management review, carried out by many different organisations working together. The overall system is summarised in Figure 16 and explained below.

Scientific advice lies at the core of the management regime. This advice is provided by the Fisheries Department (FIFD). FIFD take account of observer monitoring data, biological information and their own stock surveys when framing their advice on the future management of the fishery. This advice is summarised in a single document (the most recent being Toothfish Sustainability Measures 2017-18).

The FIFD advice is discussed by stakeholder groups (the Falkland Islands Fisheries Liaison Committee, Falkland Islands Fishing Companies Association and the Fisheries Advisory Committee). Representations from these groups, along with the FIFD advice, are then considered by the Executive Council, which sets the TAC for the coming year.

Once the overall TAC has been set, quotas are allocated to fishing companies according to a pre-determined allocation key that is based upon historical fishing activity during a qualifying period between 2003-05.

For the toothfish fishery, the only operator in the fishery in the 2003-05 qualifying period was CFL. Virtually all of the TAC is allocated to CFL, minus an allowance for the landing of toothfish that are caught as non-target species in the FICZ trawl fisheries.

Compliance with the ITQ allocation is carefully monitored. The fishing licence requires vessels to report their daily catch to FIFD. These reports are later reconciled with the monitoring of the landings by the vessel. FIFD make a monthly report on fishing activity to the Fisheries Advisory Committee which, including an update on quota uptake, patterns of fishing activity, and any issues identified by ship-board observers.

The effectiveness of the management regime is scrutinised by the organisations described above. The Executive Council has a statutory duty to review fisheries management policy; and all of the different groups participated in the last major review of management policy for the Falklands which took place in 2005.

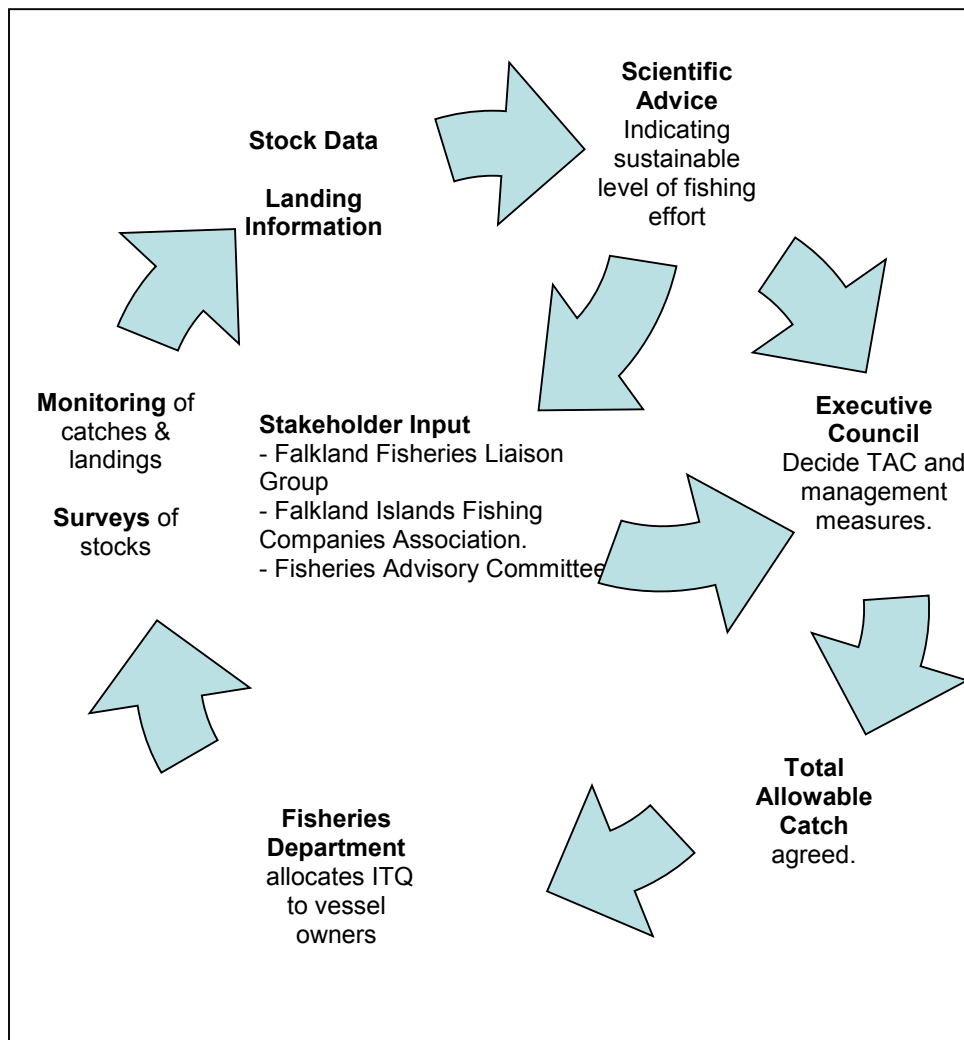


Figure 16: Diagram of the procedure for administering the management of the Falkland Islands Toothfish Longline Fishery.

5.4.2.4 Consultation

The management system specifies consultation processes associated with any changes to the sustainability measures associated with the fishery (Fisheries Ordinance 2005 at §12). These arrangements require that information is sought from interested parties including:-

“...such persons or organisations within the Falkland Islands [...] who are representative of persons having an interest in the stock or the effects of fishing on the marine environment and environmental interests before setting or varying any sustainability measure”

The consultation arrangements that are customarily used include discussions between the Government and stakeholders at the different consultation groups (summarised above), and publication of consultation notices in the Falkland Islands Gazette, the Government’s official publication.

The Fisheries Ordinance also requires that after setting or varying any sustainability measure the reasons for any decision are published. This is achieved through the production of minutes for the various consultative groups, and also the publication of official notices in the Falkland Islands Gazette.

5.4.3 Long-term management objectives

Long term objectives are explicitly set out in the management policy for all Falkland Islands fisheries in the Fisheries Ordinance 2005 (at §8, 9, 10, 11 and 13). These policy objectives require, *inter alia*, that fish stocks are managed sustainably; that the fishery should not affect the viability of associated or dependent species; that biological diversity shall be maintained; that habitats of particular significance for fisheries management shall be protected; and that decision makers shall use the best available information, consider uncertainties in information, and be cautious when information is uncertain, unreliable or inadequate.

The Fisheries Ordinance also requires that the Executive Council carries out an annual audit to ensure that this management policy has been effectively implemented (§6).

The long term management objectives are translated into fishery-specific objectives for the toothfish longline fishery that are set out in the FIFD document “Toothfish Sustainability Measures 2017-18” which is considered further in section 5.4.5.

5.4.4 Incentives for sustainable fishing

There are no subsidies within the management system. The fishery management system contains various incentives to encourage sustainable fishing.

The Falkland Islands Government specifies the fishing effort (through a long-term (25year) ITQ and an annual TAC that is set by reference to the fish stock and potential environmental impacts). The ITQ and TAC are compatible with sustainable fishing activity.

Additional technical measures (such as the gear specification and requirements to use equipment to mitigate impacts on birds) are specified as statutory licence conditions. These measures are designed to minimise the effect of the fishery on ETP species, particularly birds.

A range of pre-determined statutory penalties, including fines and imprisonment, are set out in the legislation and provide incentives for compliance.

Further incentives for sustainable fishing are provided by the CCAMLR Catch Documentation System (see section 5.4.1.2).


5.4.5 Fishery-specific objectives

Well defined and measureable short and long term objectives are set out in the “*Toothfish Sustainability Measures*” documents (2007, 2009, 2013, 2015, 2016, 2017) produced by the Falkland Islands Fisheries Department. These documents set out a clear management plan for the fishery, as well as plans for addressing environmental impacts and a research plan for the fishery.

The conservation and management priorities in the current Toothfish Sustainability Measures document are reproduced below:-

 **Ensure the long-term sustainability and prevent the over-fishing of toothfish**

- *Maintain the Spawning Stock Biomass (SSB) at 45% or higher of SSB₀.*
- *Limit the toothfish catch by longliners (or potters) to the sustainable catch limit (annual TAC).*
- *Minimize toothfish bycatch in other fisheries, particularly of juveniles on the shelf.*
- *Keep spawning areas protected from impacts of fishing during spawning season (i.e. Burdwood Bank spawning grounds closure). Limited access may be granted for research purposes.*
- *Continue research on the biology and ecology of toothfish, and on the prosecution of the fishery (e.g. conversion factor of HGT to green weight, effect of hook size on catch, etc...).*

 **Reduce impacts on seabirds, marine species (including bycatch), habitats and VMEs**

- *Continue to implement the management strategy on reducing incidental seabird mortalities set out in the National Plan of Action – Longlining plan, and achieve all targets set out in the plan.*
- *Maintain coverage by Scientific Observers to collect data and enforce other procedures which reduce impacts.*
- *Encourage and help maintain the culture of “good housekeeping” on longliners with respect to seabirds, bycatch and other best-practice licence conditions.*
- *Better understand the habitats and VMEs in the areas where longlining takes place.*
- *Reduce the impacts of fishing on sensitive benthic ecosystems.*

 **Management, compliance and catch documentation**

- *Maintain full VMS coverage in and out of Falkland Islands Government Conservation Zones.*
- *Ensure full compliance with the Dissostichus Catch Documentation Scheme.*
- *Maintain monthly fisheries monitoring reports for toothfish.*
- *Maintain the regular monitoring of TAC usage within the longline fishery.*
- *Ensure daily catch reporting via e-log books is continuous and accurate.*

[Source: Department of Natural Resources – Fisheries, 2017]

The management plan sets out clear objectives that promote sustainable fisheries management and which embrace a precautionary approach to decision making.

There are explicit requirements in the underlying statutory management system to apply these objectives and the management guidance produced annually by the Fisheries Department to determine the short and long-term management of this fishery with respect to both the target stock and Principle 2 components that could be affected by it (see sections 5.2 & 5.3 of this report).

Short-term management objectives are determined for the fishery annually when fishing opportunities (TACs) for the coming year are set, in accordance with the long-term objectives for the fishery, and which are transposed into ITQs

Compliance with quota uptake and other licence conditions is measured by Observers and Fishery Officers from the Falkland Islands Government, through monitoring of landings, surveillance of fishing fleets, inspections of vessels at sea, and monitoring of vessels during

fishing trips. Information gathered by monitoring the fishery is used to inform future management decisions.

5.4.6 Decision making processes

The procedures outlined above represent established decision making processes that result in measures and strategies that deliver fishery specific objectives – such as setting annual TACs that are compatible with maintenance of SSB for the fishery and that are compatible with B_{msy} for the fishery.

Established decision making processes are in place in the form of the statutory provisions of the Fisheries Ordinance 2005, and the processes that have been established to consider both annual stock assessment information and other information (such as advice on the modification of fishing gear, changes to fishing practices and fishery closures).

Decisions are based upon the best available information, provided by FIFD and stakeholder groups. The Fisheries Ordinance 2005 (at §10) requires that all decisions concerning the management of fisheries in the FICZ and FOCZ use the best available information, take full account of uncertainties, and are precautionary.

Performance of the fishery relative to these objectives is measured on a daily basis through catch data, which provides near real-time recording of catch levels and quota uptake. Monthly reports on quota uptake and observations of other aspects of the fishery (such as bycatch levels and capture of ETP species) are submitted to the Fisheries Advisory Council.

The Fisheries Ordinance 2005 requires that the management of the fishery takes account of the stock of the target species and the potential effects on non-target species, marine biodiversity, and marine habitats. The setting of an annual TAC ensure that these issues are kept under review, and the discussion of the stock assessment, TAC and management proposals through the consultation and liaison arrangements that have been established for the fishery ensure that all issues are scrutinised by a wide range of stakeholders.

Evidence that the management process responds to such issues is provided by, *inter alia*, the reduction of the TAC in 2007 and again in 2015 in response to scientific advice about stock status; the seasonal closure of the Burdwood Bank that was established in 2006 and extended in 2015; and the mitigation measures in place to prevent accidental mortality of birds in the fishery which were introduced after concerns were raised in 2004 (see Sullivan, 2004; Janzen et al, 2011). Other examples include the establishment of a dedicated seabird observer scheme; and the introduction of electronic logbooks.

As well as providing a demonstrably effective mechanism for responding to all relevant issues, the decision making process provides ample opportunities for stakeholders to participate directly in the management process (see Figure 16). The various groups associated with the management of the fishery provide a formal mechanism for reporting management responses to issues as well as a conduit for discussion. In additions, the Fisheries Ordinance 2005 requires that the response of the management system to findings and recommendations are formally reported to all interested stakeholders. This information is communicated directly, through minutes of stakeholder meetings, and via formal notices in the Falkland Islands Gazette. Minutes of meetings are readily and widely available (see for instance, (Fisheries Committee, 2017a, b)).

In summary, the fishery is supported by a well-established formal decision making process that is precautionary; demonstrably responds to all relevant issues; provides many opportunities for stakeholder engagement, and communicates how it has addressed issues clearly and effectively.

5.4.7 Compliance and enforcement

The fishery is closely monitored and controlled by the Falkland Islands Government which operates a statutory surveillance system. Additional monitoring and control measures are applied by the client and Government to ensure compliance with the CCAMLR toothfish management measures (the DCD and DED documentation system).

The statutory system in force requires, *inter alia*, that the fishing vessel reports daily fishing activity (location and catch weight) to the FIFD; monitoring of landings that are reconciled with daily catch reports; surveillance of the fishing vessel using two VMS systems (one for the Falkland Islands Government, and the other to comply with the CCAMLR CDS requirements outlined in section 5.4.1.2); direct observation of fishing trips, monitoring of fishing practices and sampling of catches by FIFD observers; and surveillance of fishing activity at sea by the patrol vessel *Protegat* as well as aircraft.

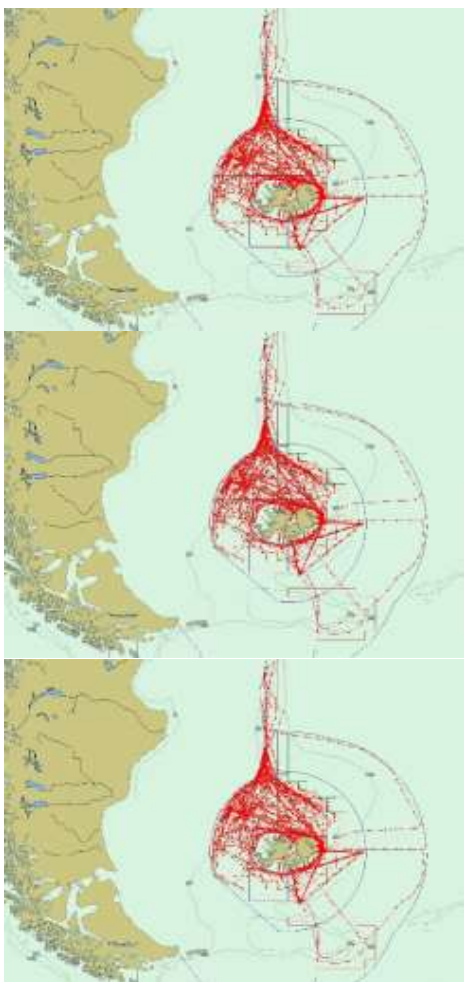
The FIFD issues a Fishery Officer's Operations Manual (FIFD, 2017fopm) which details the roles and responsibilities of individuals and organisations involved in compliance monitoring and enforcement. A copy of this manual was provided to the assessment team, and a brief summary of the compliance and enforcement procedures in place for the fishery is provided below.

5.4.7.1 At-sea & aerial enforcement

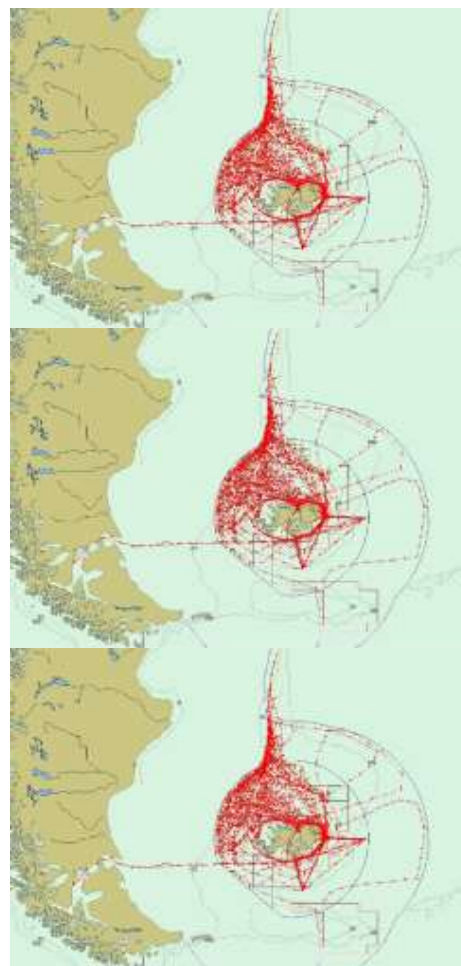
Before being issued with a fishing licence all vessels are subject to a pre-licence port inspection, and may also be subject to inspections at sea. The pre-licence inspection is carried out to detect any potential non-compliance issues before the vessel starts fishing in the FOCZ. For the CFL vessels (*Gambler* in the past and now *Hunter*) the pre-licence inspections are less important than they are for any replacement vessels that have been previously operating on the High Seas. An example of a pre-licence inspection was provided to the assessment team. The inspectors identified issues such as a hook caught in one of the vessel scuppers (which was covered with mesh before departure); plastic banding from bait cartons that hadn't been cut into sections; and Tori lines that were not up to CCAMLR requirements and which were replaced before the licence was issued.

Once at sea in the FICZ and FOCZ the movements of all vessels are monitored by the FIFD and also by military aircraft and vessels.

The FIFD fishery patrol vessel *Protegat* patrols the FICZ and FOCZ areas to monitor the activities of authorised fishing vessels, and would also detect the presence of IUU vessels. As well as targeted enforcement in particular fishing areas, the *Protegat* carries out regular patrols of the entire FOCZ boundary (see Figure 17). The *Protegat* is a 70m long vessel, and is equipped with two 6.5m RIBs for carrying out boardings of fishing vessels at sea (Figure 18). She has a crew of 16.



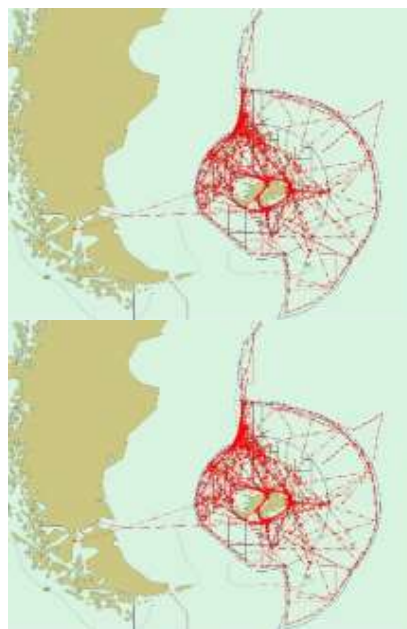
2012



2013



2014



2015

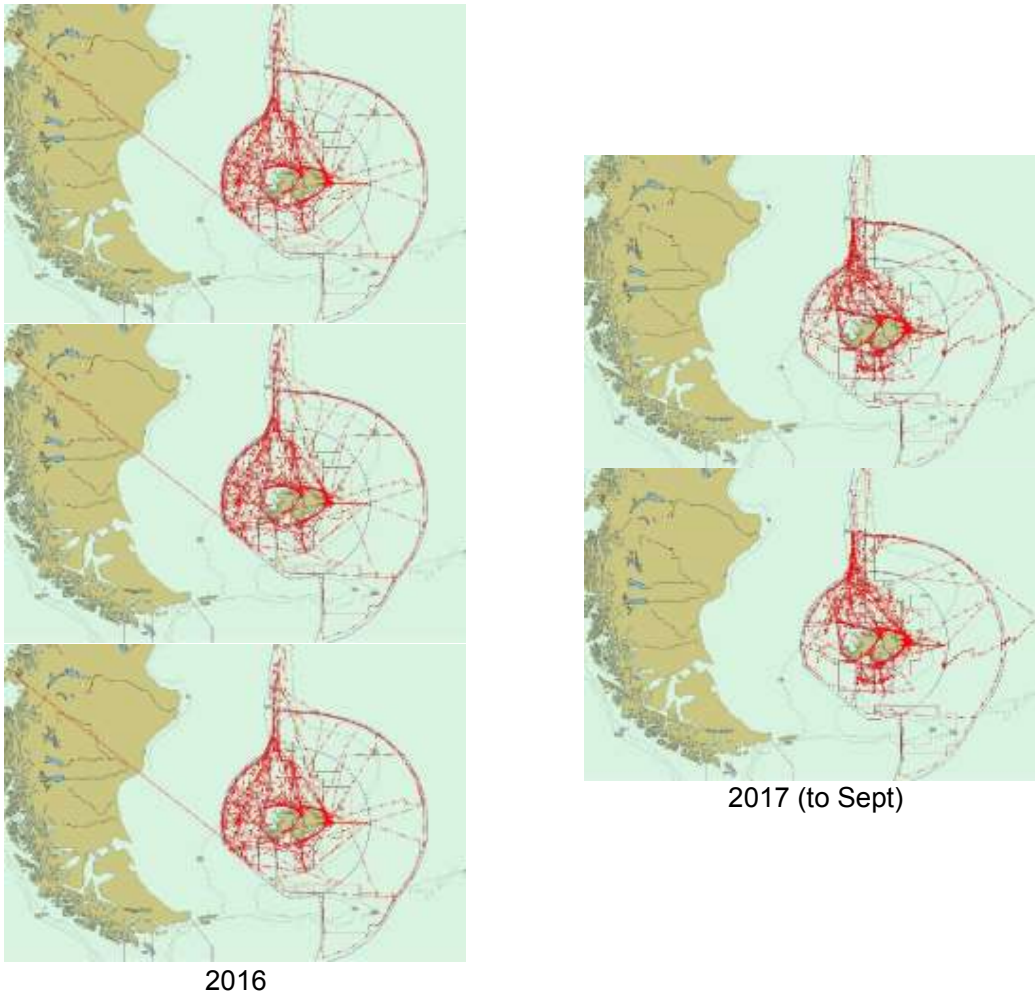


Figure 17: VMS tracks from patrols within the FOCZ conducted by FPV *Protegat* from 2012-2017. [Source: Department of Natural Resources – Fisheries].

The *Protegat* typically carries out 26 patrols per year of 12-13 days duration each. Aerial surveillance flights are carried out by the Falkland Islands Government Aerial Surveillance (FIGAS) aircraft, which targets particular areas of concern; and also by the military RAF flights, which carry out surveillance of all vessel traffic in the FOCZ. There are often more than 100 aerial surveillance flights in the UoA per year (see Table 11).



Figure 18: Fisheries Protection Vessel *Protegat*.



Figure 19: The Falkland Islands Government Air Service (FIGAS) “Defender” type aircraft used in aerial surveillance. [Source: Falkland Islands Fisheries Department].

To facilitate coordination between FIFD and military assets, the FIFD sends a weekly and daily report to the Joint Operations Centre (JOC) at Mount Pleasant Airport. These JOC reports include information about the activities of the FPV *Protegat*, the flight program for the FIGAS aircraft, and the VMS positions of vessels known to be operating in the FICZ and FOCZ.

Table 11: Summary of number of aerial surveillance flights carried out in the FICZ and FOCZ, 2012-17. [Source: Falkland Islands Fisheries Department].

Year	Number of aerial surveillance flights	
	Falkland Islands Government Air Service (FIGAS)	RAF C-130 Flights
2012	13	63
2013	28	133
2014	23	84
2015	25	103
2016	15	45
2017	17	68

5.4.7.2 Fishery Observers

Fishery observers are placed aboard fishing vessels by FIFD. Observers were present on 49.7% of fishing days in the Falkland Islands toothfish longline fishery during 2016.

Fishery observers are required to follow pre-determined procedures to ensure that all aspects of fishing operations at sea are monitored. These procedures are set out in a “Scientific Observer Manual” which is kept under review. The manual also includes a language guide to facilitate communication between the observer and crew members of different nationalities.

Recent observer reports were provided to the assessment team. These reports provide a detailed record of the fishing activities, catch, bycatch and interactions with non-target species during a fishing trip. Some photographs from a recent observer report are shown in Figure 20. In addition to making scientific observations, the observer also reported on compliance with licence conditions, particularly the deployment of the “Brickle Curtain” and Tori lines as bird mitigation measures.

In addition to observing fishing vessel activities, the at-sea observers fulfil an educational and liaison role. The FIFD produces and distributed information to fishermen on various aspects of fishing vessel operations, ranging from warnings about the risks of cold water to mitigation of seabird interactions (Figure 21).

Fishery observer reports also record how the observers may provide advice to the crew to encourage better compliance with regulations. One example of this is provided in the observer report for the Global Pesca I, in which the observer provided advice to the crew on improving the design of the Tori Lines deployed from the vessel as a bird bycatch mitigation measures (FIFD 2017). The crew responded to these suggestions by modifying the Tori lines whilst at sea.

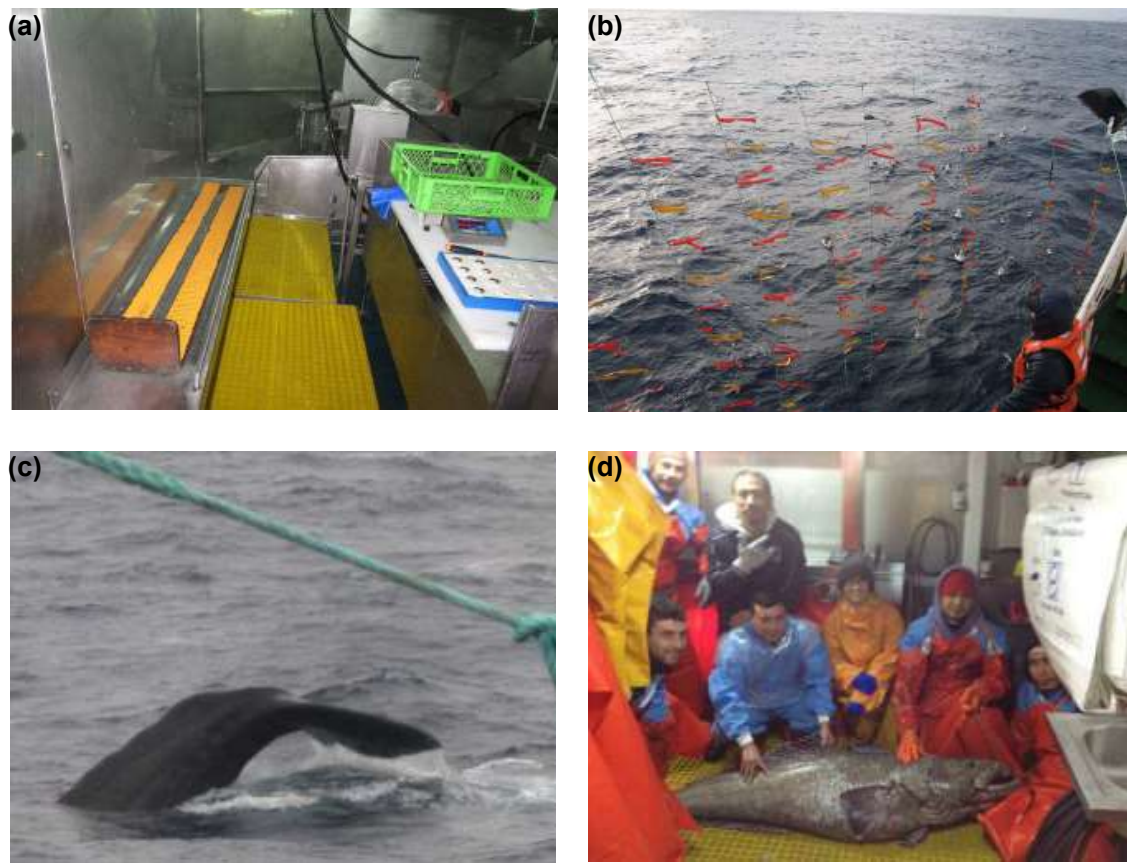


Figure 20: Photographs from a fishery observer report showing (a) observer's workspace; (b) Brickle curtain deployed around line hauling station; (c) tail of a sperm whale observed close to the vessel; (d) observer and crew with a large (191cm) toothfish caught during the trip. [Source: FIFD, 2017OBS]

TEN POINTS TO REMEMBER TO BE A SEABIRD FRIENDLY LONGLINER!

Most seabirds can live for a long time, some for over sixty years, and many species do not breed until they are at least 5 years old. Most seabirds produce only one chick once every 1 to 2 years. The chances for chick survival can be low. It is therefore not surprising that an increase in the death rate of adults can pose a serious threat to the long term well being of seabird populations. Not so long ago huge amounts of seabirds were being killed by longliner operations and many seabird breeding populations have consequently decreased to very low levels. Birds can die as a result of swallowing hooks that have been left in fish or in bait that have been discarded. Some birds, unknowingly, feed their chick these hooks.

YOU CAN PLAY A VITAL ROLE IN KEEPING BIRD DEATH RATES AT LOW LEVELS!

It is not difficult to be a seabird friendly longliner just keep in mind the following points:

1. For every line setting make sure that the bird scaring line is also set and working well
2. Ensure that all the weights are at least 8.5kg with no more than 40meters between them or at least 6kg every 20meters – the heavier the weights the quicker the line will sink so the birds have less time to steal the baits off the hooks
3. Birds are more active during the day so set at night there will be fewer birds around your boat – Fewer birds around your boat means fewer birds getting hooked
4. During setting push the weights off the shelf – don't let the line pull them off as this keeps the line within reach of the birds for longer
5. Keep your hook boxes in good condition, boxes in poor condition makes the line snap more often – you lose more bait and the birds have more time to get hooked
6. During night time setting turn off all or some of the deck lights – this way you will not attract as many birds
7. For setting make sure the bait is fully thawed as frozen bait floats which reduces the sinking rate of the line
8. Be aware of loose hooks. Loose hooks with the bait still attached can be lethal if swallowed by a bird – Never let them be dumped overboard! Take out all the hooks from the bycatch before they are discarded – hooks left in toothfish heads can also be dangerous to the seabirds
9. If a bird gets hooked during hauling two crewmen are needed. One should hold the bird while the other, with pliers, cuts the barb from the hook and removes it from the bird. No pliers handy? – cut the snood then thread the hook out tip first
10. Do not discard fish on the starboard side during hauling it may initially keep birds away from the line but in time will only attract more birds to your boat. When hauling don't let the birds come too close to the line.

YOU CAN MAKE A DIFFERENCE

Permission to use illustrations from "Ornithology" by Franklin B. Gill has been kindly granted by the editor, W.H. Freeman and Company.

Figure 21: Interpretation material about methods for mitigating seabird interactions provided by FIG to longlining vessels [Source: FIFD Observer Manual].

5.4.7.3 Electronic monitoring

Electronic monitoring of fishing activity is an important aspect of compliance monitoring. In this fishery, electronic monitoring includes the use of e-logbooks to provide a daily record of catches, and the use of satellite monitoring of vessel position to ensure that licensed vessels are complying with licence conditions, and also to ensure that IUU fishing is not taking place.

All fishing vessels operating in the toothfish fishery are required to complete an electronic logbook that records the location of every line set, and the catch of toothfish and other fish species from that line. The logbook also records the type of bait used on the line, the key characteristics of the fishing gear (such as hook size and type) and allows for records of Orca and sperm whale interactions. The logbook is bilingual to facilitate operation by both English and Spanish speaking crew. Screenshots from the e-logbook are shown in Figure 22.

The e-logbook system generates a daily report that is submitted by e-mail to the FIFD by the fishing vessel.

In addition to electronic monitoring of catches, the position of vessels is also monitored electronically. All vessels operating in the FICZ and FOCZ are required to carry Vessel Monitoring System (VMS) equipment that provides a poll of their position to the FIFD. Toothfish fishing vessels are required under the DCD scheme to provide VMS polls to CCAMLR as well as their flag state (see section 5.4.1.2 of this report). An example of VMS data showing areas fished by vessels working in the UoA is provided in Figure 17.

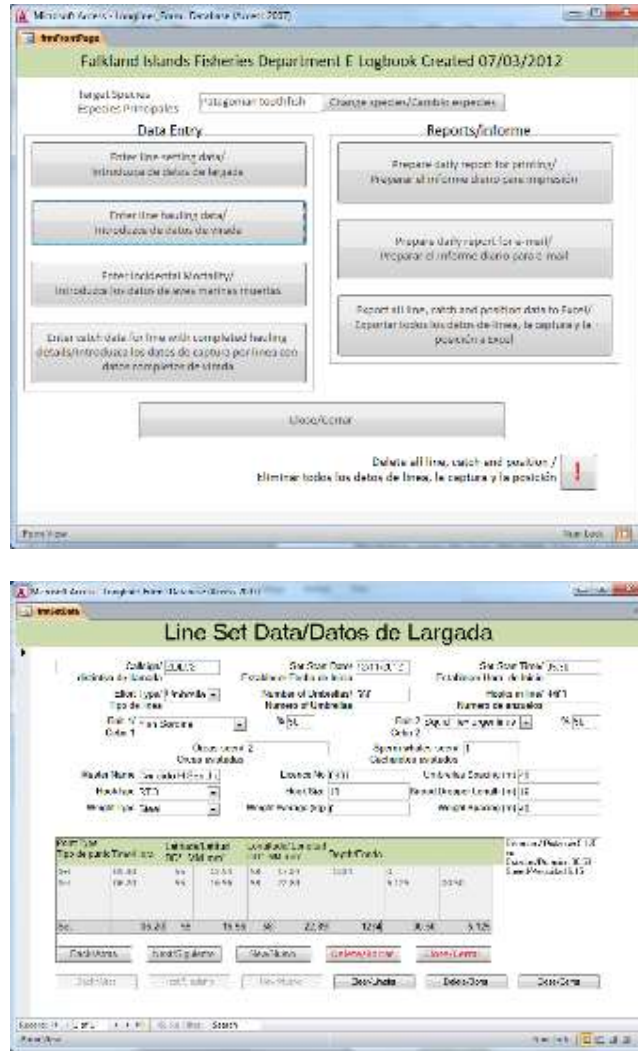
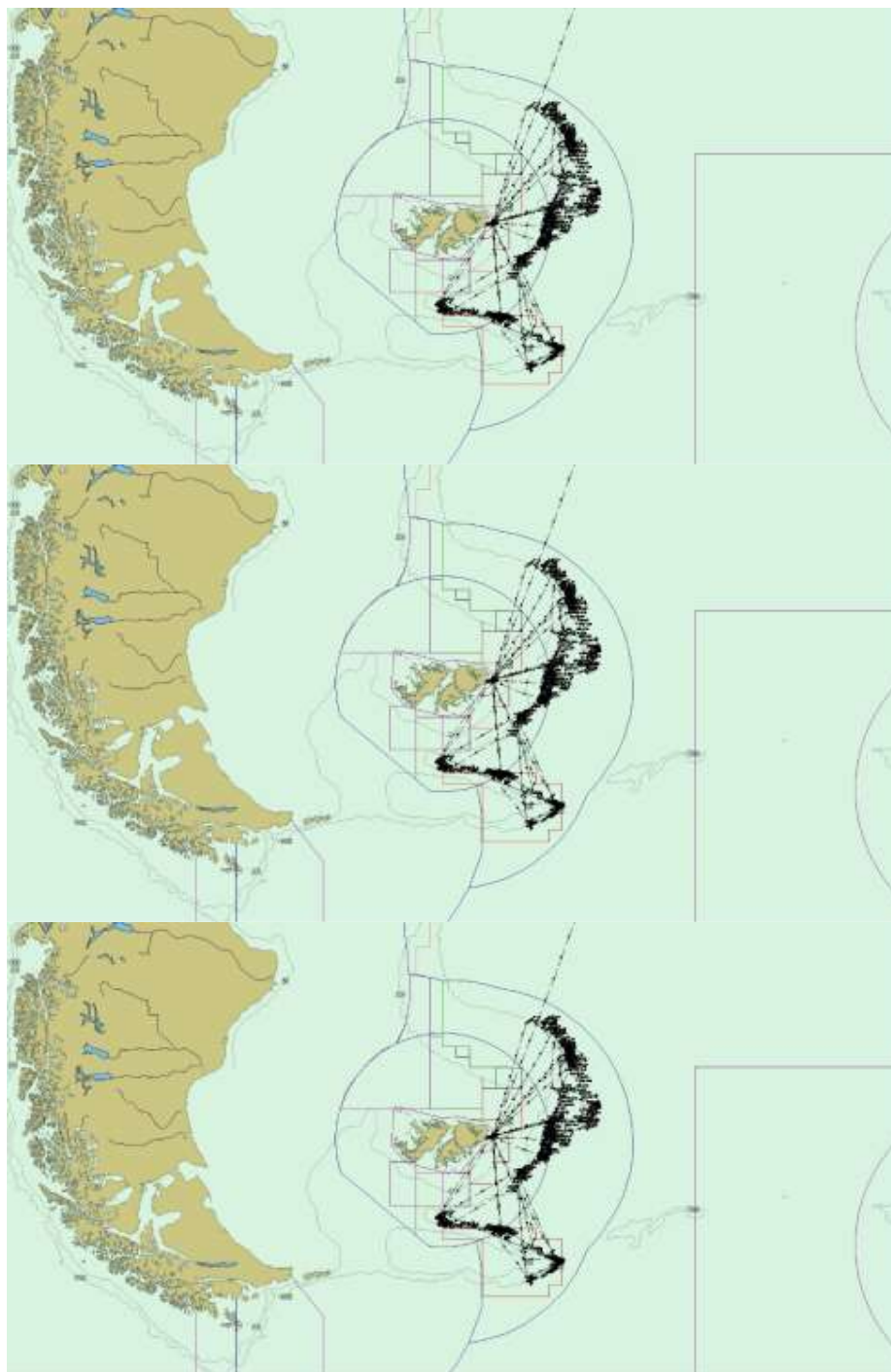
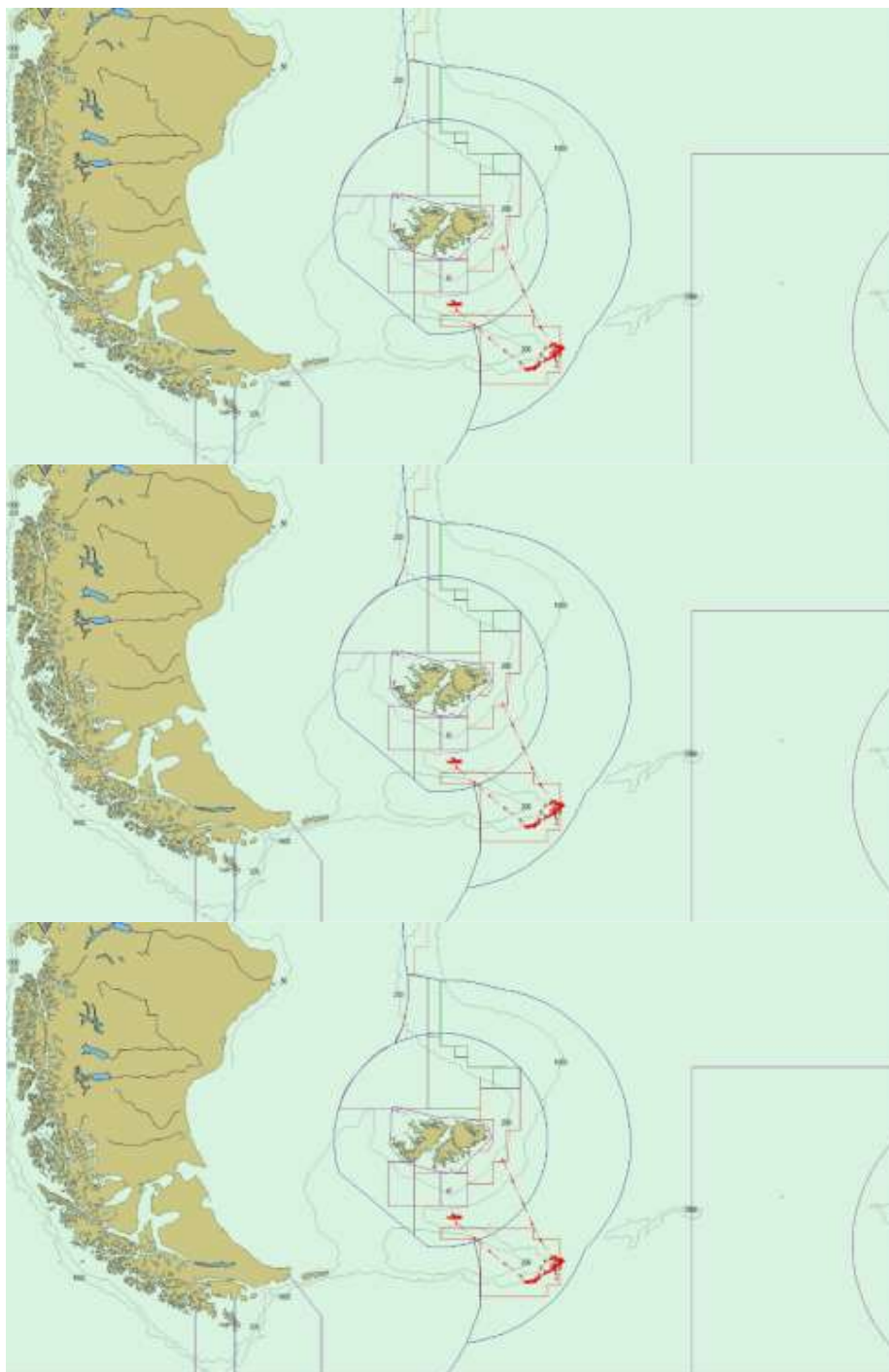


Figure 22: Screenshots from the electronic logbook that has been used in the Falkland Islands toothfish longline fishery since 2012 [Source: Falkland Islands Government].



FV *Gambler*, 2016



FV Global Pesca, 2017



FV Hunter, 2017

Figure 23: Satellite (VMS) monitoring data for vessels operating in the Falkland Islands toothfish longline fishery in 2017 and part of 2017. [Source: Falkland Islands Fisheries Department]

The position of vessels can also be monitored using the Automatic Identification System (AIS). During the site visit the Department of Natural Resources – Fisheries enforcement officers demonstrated how AIS allowed the monitoring of Korean longliners operating close to the FOCZ. An example of this remote monitoring in action is provided in Figure 24.



Figure 24: Screenshot showing AIS monitoring of High Seas fishing vessels operating outside the FOCZ. Inset image shows detailed track for one vessel. [Source: Department of Natural Resources – Fisheries]

FIFD staff report that compliance by these Korean vessels with the FOCZ boundary is very good (see section 5.4.7.4.1).

5.4.7.4 Compliance

This comprehensive system is capable of detecting breaches of management measures, strategies and rules. The level of compliance is excellent demonstrating the ability of the system to enforce these measures, strategies and rules. There has been no legal action against the fishery for over 12 years (and the action on that occasion was associated with a single incident when bird mitigation measures were not used). The TAC for the fishery is generally under-utilised, and uncaught quota is usually carried forward to the following year, so quota overshoot is currently very unlikely to occur.

A clear set of statutory sanctions are in place to support the Falklands Islands legislation. Schedule 3 of the Fisheries Ordinance 2005 sets out the manner in which offences shall be punished, providing assurance that sanctions shall be consistently applied.

The high level of compliance under this well monitored regime demonstrates that the system is both enforced and complied with, providing effective deterrence.

Although there is no evidence of any issues of non-compliance in the toothfish longline fishery, the FIG provided the assessment team with evidence of enforcement action taken against a trawler fishing for squid that was found not to have deployed Tori lines while fishing in 2017, and was also discharging offal as fishing commenced. The action was taken in response to observations made by the fishery observer aboard that fishing vessel. The master of the fishing vessel and the owner of the vessel were both charged with an offence contrary to the Fisheries (Conservation and Management) Ordinance 2005. Whilst this offence has no connection with the toothfish fishery, it demonstrates that the UoA has legislation and enforcement arrangements in place that are capable of detecting and responding to issues of non-compliance.

5.4.7.4.1 Illegal, Unreported & Unregulated fishing

The South Atlantic fisheries were known to have significant levels of IUU fishing in the past (Agnew 2000, Agnew *et al.* 2009). Management measures such as the DCD scheme outlined above have largely addressed this problem. There are no ports in the South Atlantic that will accept undocumented (non-DCD) toothfish, leaving very few options for IUU fishers globally to offload undocumented catch.

The assessment team noted concerns about the level of enforcement in the FOCZ and the risk of IUU fishing that were raised in a recent report commissioned by the Royal Society Protection of Birds (MarEcol, 2017). These concerns were specifically investigated during the site visit.

FIFD reported that several South Korean long liners fish along the edge of the FOCZ all year round. These vessels are closely monitored using the Automatic Identification System (AIS) (see Figure 24). The FPV *Protegat* patrols the areas where there is the greatest risk of these vessels making incursions into the FOCZ (see Figure 17). The FIFD are assessing unreported catch in several areas and have estimated that these vessels catch between 60t and 460t of toothfish annually (see section 14.1.2.1).

In addition to monitoring using VMS and AIS and with the FPV *Protegat*, the FIGAS military aircraft that survey the FICZ and FOCZ areas have a list of all ships, including fishing

vessels that are permitted to operate in the area. Any vessels that are not on the list will be reported.

There have been no recent reports of any IUU vessels present or operating in the FICZ and FOCZ despite this high level of enforcement coverage. The most recent record of IUU fishing dates from 2013, when the South Korean Government took action against a South Korean vessel that had made an incursion into the FOCZ. The FIG and South Korean Government have been working together to prevent subsequent incursions.

The extensive monitoring of the fishery by the FOCZ provides reassurance that the risk of IUU fishing is currently addressed within the UoA area.

5.4.8 Research Planning

The FIFD has a strategy for continued collection of targeted research data through research cruises. Previously the *FV Dorada*, and then the *FV Castelo* were used. Presently the *FV Monteferro* is chartered for 5 years with up to 42 days per year for research (and a minimum of 110 days in 3 years). Results are analysed, syntheses of such data are presented to the industry, and recommendations are made and implemented through this process. Monitoring protocols are assessed and updated as new information comes to light (surveillance, observers, monthly reporting, etc). The FIFD scientists have regular scientific strategy meetings in order to plan research cruise objectives, to internally review licence advice, and to generally co-ordinate future research objectives.

A comprehensive research plan is set out the 2017-18 Toothfish Fishery Sustainability Measures. The current research objectives identified in this plan are:-

- *Target species*
 - *Update and refine the stock assessment model as needed*
 - *Conduct focused research projects to address knowledge gaps in the biology and ecology of toothfish, particularly for issues related to the fishery. These projects should lead to peer-reviewed publications.*
 - *Maintain a toothfish sample collection.*
 - *Explore potential improvements to fishing gear to better target toothfish.*
 - *Build science capacity at FIFD to address current and future research questions on toothfish.*

- *Habitat and Ecosystem species*
 - *Maintain 50% Scientific Observer coverage annually for the longline fleet.*
 - *Continue to collect bycatch data.*
 - *Gather habitat and VME species information during longlining operations, develop a predictive model for the presence of VME species, and determine the impact of the fishing gear on habitats and VMEs.*
 - *Examine options to further reduce bycatch.*
 - *Develop the invertebrate and fish taxonomic collection held at FIFD.*
 - *Regularly update observer manuals and NPOA documents.*

- *Management, compliance and catch documentation*
 - *Ensure that the fishing fleet is equipped with technologies and amenities that allow observer and research operations and facilitate compliance with management regulations.*
 - *Regularly assess the harvest control rules (HCR) to ensure that they are adequately responsive to potential changes in the stock status.*
 - *Develop move-on rules for by-catch and VME species.*
 - *Ensure adequate reviews of FIFD take place.*
 - *Maintain the excellent compliance record of the fishing fleet.*
 - *Meet the Marine Stewardship Council milestones, requirements and principles.*

[Source: Department of Natural Resources – Fisheries, 2017]

Reports demonstrating progress with this research plan were submitted to the assessment team at the site visit. These demonstrated ongoing work to refine the assessment model, understand stock identity better, test different hook types in order to improve gear selectivity, and research into the nature and distribution of benthic communities in the fishing zone.

Research plans and the results of research work are submitted directly to the management bodies and stakeholders on the Falkland Islands (see Figure 16). Research information from the FIFD is also published on the Falkland Islands Government website (www.fig.gov.fk/fisheries). This information is widely and publicly available and published in a timely fashion.

Much of the research work carried out by FIFD is also published in peer-reviewed journals, which brings it to the direct attention of the scientific community and also ensure that a high standard of research work is maintained.

5.4.9 Monitoring and Evaluation of Management Performance

There is a formal mechanism in place that requires annual review of the fishery management system by the Falkland Islands Government Executive Council (§6 of the Fisheries Ordinance 2005).

Evidence that FIFD carry out this requirement is provided in the annual review of fishing effort and TAC (the most recent being FIFD, 2016). The Fisheries Department itself is also subject to annual review by the Falkland Islands Government Auditors, who examine both financial propriety and compliance with all of the statutory responsibilities and duties of the Department. The main issue identified at the most recent audit was ensuring that skippers working in the Ilex fishery provide a declaration stating that they have no fishing convictions. No issues were identified relating to the toothfish fishery.

The management system described in section 5.4.2 of this report provides a mechanism for wide involvement in, and scrutiny of, management decisions. Minutes from recent meetings of the Fisheries Committee have been provided, which show that a wide range of issues (stock assessments, licensing, mammal bycatch) are kept under review by this Committee (Fisheries Committee, 2017a, b)

The most recent review of the management system was carried out in 2003 (Fisheries Policy Review Group, 2003), and informed the drafting and implementation of the Fisheries Ordinance 2005. Following recent changes in the harvest control rules for the fishery, the Fisheries Department has identified the review of the management system as a research priority for 2017-18.

6 Evaluation Procedure

6.1 Harmonised Fishery Assessment

The MSC Fisheries Certification Requirements specify that assessment teams should harmonise their findings with those of other fisheries that are already certified or undergoing certification (see Annex PB of FCR v2.0).

At the time of this re-assessment there are 7 fisheries for toothfish (*Dissostichus* spp) in the MSC programme. Six of these fisheries are for *Dissostichus eleginoides*, of which 5 (including this fishery) are currently certified. The sixth fishery (Argentine Patagonian toothfish) was withdrawn from the MSC programme. The Ross Sea toothfish longline fishery targets the congeneric species *D. mawsoni* and shares many characteristics with the *D. eleginoides* fisheries. The fisheries are all listed in Table 12 of this report.

There is no spatial overlap between the Falkland Islands toothfish longline fishery and the other MSC-certified fisheries. The Falkland Islands toothfish stock is considered to be separate from the other toothfish stocks in the MSC programme.

The management regime and the body of scientific information available for the Falkland Islands are different to that for the other fisheries. In particular, the Falkland Islands lie outside the area covered by the Convention on Antarctic Marine Living Resources (CAMLR), which sets the standard for management of the other MSC-certified fisheries. Nevertheless, the Falkland Islands Government has adopted many aspects of the CAMLR approach to fisheries management (and in particular the DCD scheme) within its waters.

Acoura Marine have concluded that whilst it is appropriate to have regard to the outcome of the other toothfish assessments, there is no need for close harmonisation of Principle 1 & Principle 2 assessment outcomes because of the separation between the units of certification in terms of stock boundaries, and areas fished.

The assessment team has therefore concluded that no further harmonisation activity is required.

Table 12: List of fisheries for toothfish (*Dissostichus* spp) listed in the MSC programme. [Source: MSC Website]

Fishery	Species	Gear types	Locations	MSC status	Tonnage
Argentine Patagonian toothfish	Toothfish (Patagonian) (<i>Dissostichus eleginoides</i>)	Hooks And Lines – Longlines Traps Trawls – Bottom ...	Southwest Atlantic (FAO Area 41)	Withdrawn	
Ross Sea toothfish longline	Toothfish (Antarctic) (<i>Dissostichus mawsoni</i>)	Hooks And Lines – Set longlines	Antarctic & Pacific (FAO Area 88)	Certified	2153
Falkland Island toothfish	Toothfish (Patagonian) (<i>Dissostichus eleginoides</i>)	Hooks And Lines – Set longlines	Southwest Atlantic (FAO Area 41)	Certified	1123
SARPC Toothfish	Toothfish (Patagonian) (<i>Dissostichus eleginoides</i>)	Hooks And Lines – Set longlines	Antarctic and Southern & Indian Ocean (FAO Area 58)	Certified	5323
South Georgia Patagonian toothfish longline	Toothfish (Patagonian) (<i>Dissostichus eleginoides</i>)	Hooks And Lines – Set longlines	Atlantic & Antarctic (FAO Area 48)	Certified	2194
Macquarie Island (MI) toothfish	Toothfish (Patagonian) (<i>Dissostichus eleginoides</i>)	Hooks And Lines – Set longlines Trawls – Bottom tr...	Southwest Pacific (FAO Area 81)	Certified	413
Australian Heard Island and McDonald Islands Toothfish & Icefish fisheries	Mackerel icefish (<i>Champrocephalus gunnari</i>), Toothfish (Patagonian) (<i>Dissostichus eleginoides</i>)	Hooks And Lines – Set longlines Trawls – Bottom tr...	Antarctic and Southern & Indian Ocean (FAO Area 58)	Certified	3144

6.2 Previous assessments

This fishery was initially certified under the MSC Standard in 2014. The Performance Indicator Scores awarded in the initial assessment are shown in Table 13.

Table 13: Scores awarded for the Falkland Islands Toothfish Longline Fishery initial certification in 2015. Scores shaded green attain the unconditional pass level. Yellow shading indicates a conditional pass. Red shading would indicate a fail.

Prin- ciple (L1)	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt		Score	Contribution to			
						(L3)	Weight in		Principle	Score		
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	0.333	0.1667	100	25.00	16.67
				1.1.2	Reference points	0.5	0.25	0.333	0.1667	75	18.75	12.50
				1.1.3	Stock rebuilding			0.333	0.1667			0.00
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125			90	11.25	11.25
	1.2.2			Harvest control rules & tools	0.25	0.125			65	8.13	8.13	
	1.2.3			Information & monitoring	0.25	0.125			75	9.38	9.38	
	1.2.4			Assessment of stock status	0.25	0.125			80	10.00	10.00	
	Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667			100	6.67
2.1.2					Management	0.333	0.0667			80	5.33	5.33
2.1.3					Information	0.333	0.0667			90	6.00	6.00
Bycatch		0.2	2.2.1	Outcome	0.333	0.0667			100	6.67	6.67	
			2.2.2	Management	0.333	0.0667			80	5.33	5.33	
			2.2.3	Information	0.333	0.0667			90	6.00	6.00	
ETP species		0.2	2.3.1	Outcome	0.333	0.0667			100	6.67	6.67	
			2.3.2	Management	0.333	0.0667			100	6.67	6.67	
			2.3.3	Information	0.333	0.0667			100	6.67	6.67	
Habitats		0.2	2.4.1	Outcome	0.333	0.0667			100	6.67	6.67	
			2.4.2	Management	0.333	0.0667			80	5.33	5.33	
			2.4.3	Information	0.333	0.0667			75	5.00	5.00	
Trophic function		0.2	2.5.1	Outcome	0.333	0.0667			100	6.67	6.67	
			2.5.2	Management	0.333	0.0667			80	5.33	5.33	
			2.5.3	Information	0.333	0.0667			80	5.33	5.33	
Three	1	Governance and policy	0.5	3.1.1	Legal & customary framework	0.25	0.125			100	12.50	
				3.1.2	Consultation, roles &	0.25	0.125			90	11.25	
				3.1.3	Long term objectives	0.25	0.125			100	12.50	
				3.1.4	Incentives for sustainable fishing	0.25	0.125			100	12.50	
	Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1			90	9.00		
			3.2.2	Decision making processes	0.2	0.1			100	10.00		
			3.2.3	Compliance & enforcement	0.2	0.1			100	10.00		
			3.2.4	Research plan	0.2	0.1			90	9.00		
			3.2.5	Management performance	0.2	0.1			90	9.00		

Overall weighted Principle-level scores		Either Or
Principle 1 - Target species	Stock rebuilding PI not scored	82.50
	Stock rebuilding PI scored	
Principle 2 - Ecosystem		90.33
Principle 3 - Management		95.75

The fishery was certified with four conditions of certification. The current status of these conditions is summarised in Table 14.

Table 14: Summary of status of previous conditions of certification.

Condition number & summary		Performance Indicator	Year Closed	Justification
1	<p>Limit Reference Point Based upon available scientific evidence, including the stock assessment, as well as expert judgement, the management authority should identify a limit reference point above the level at which there is an appreciable risk of impairing reproductive capacity and incorporate it into their harvest strategy.</p>	1.1.2	Year 1	An explicit limit reference point has been set and accepted by management. The LRP has been set at 20%B ₀ . This value has been determined to be above the point at which there is an appreciable risk of impairing reproductive capacity after modelling this stock, and by reference to other similar fisheries. This value of LRP is also consistent with the generic level set out in the MSC CR.
2	<p>Harvest Control Rule Evidence is required, from for example computer simulation studies, that the harvest control rule is robust to the main uncertainties and will effect rebuilding of the stock if necessary consistent with the requirements of PI 1.1.2 and PI 1.1.3.</p>	1.2.2	Year 4	New harvest control rules have been developed which are designed to maintain the stock at a level above B _{msy} . Evidence has been presented in the form of computer simulation studies to show that these harvest control rules are robust to the main uncertainties and are likely to effect rebuilding of the stock if necessary.
3	<p>Benthic habitat information The scale and intensity of the fishery is low, and the nature of the gear restricts impacts on benthos. The client should therefore determine where highly sensitive (i.e. main) habitats are present within the area fished. Should areas requiring management intervention be identified, relevant measures should be implemented (cf PI 2.4.2).</p>	2.4.3	Year 4	The client has carried out observations of benthic species hauled on longline gear, video observation and predictive modelling of the distributions of VME-indicator species. The outcome of this is a clear and precautionary indication of the distribution of sensitive habitats. The conclusion of the study is that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm – no additional measures are therefore currently required.
4	<p>Relevant information is collected to support the harvest strategy A research plan should be developed and implemented within the term of this certification to</p>	1.2.3	Year 4	A research plan has been drawn up and implemented to investigate stock identity. This has used various techniques (otolith

	investigate the extent of interchange between different Patagonian Toothfish groups in the southwest Atlantic. Results should be compared with, and interpreted in relation to, any similar results published or otherwise made directly available to FIFD. Implications of this research for ongoing management of the Falkland Islands fishery, particularly any necessary modifications to the Harvest Strategy, should be outlined prior to recertification of this fishery.			morphology, microchemistry; genetics; adult morphometrics; and tagging studies). Some of this research is due to be published in a peer-reviewed journal, and a synthesis of the work has been published on the FIFD website. The conclusion is that the evidence provided supports the existing approach – that the Falkland Islands toothfish stock is discrete, and that it is managed at an appropriate scale.
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6.3 Assessment Methodologies

This fishery was re-assessed using the Standard Requirements defined within the MSC Certification Requirements (CR) v1.3 and the Process Requirements defined within the MSC Fishery Certification Requirements (FCR) v2.0. This means that all of P-Annexes set out in the FCR apply to this assessment, and that the S-Annexes do not, with the exception of Annex PF (RBF requirements). The rationale for this approach is set out in the FCR.

The MSC Certification Requirements (v2.0 at §7.8.4-7.8.5) specify that the assessment methodology shall be stated in the assessment report. This information is set out in the table below.

Table 15: Summary of methodology used in this fishery assessment

Item	Detail
Version of MSC Certification Requirements Methodology Used	CR Version 2.0, 1 st October 2014.
Version of Full Assessment Reporting Template	Version 2.0 (modified to suit CRv1.3 Assessment Tree)
Version of MSC Assessment Tree Used	CR Version 1.3, 14 th January 2013
Default Assessment Tree Used	Yes
Adjustments made to Assessment Tree	Not applicable.
Risk Based Framework	Yes RBF Procedure set out in CR v1.3 has been applied.

Stakeholders were informed of the assessment methodology in the notice issued by Acoura Marine on 29th September 2017. No comments were received.

6.4 Evaluation Processes and Techniques

6.4.1 Site Visits

A site visit was conducted in Stanley, Falkland Islands, over the period 14th-17th October 2017. The Team Leader and Principle 3 assessor travelled to the Falkland Islands for the site visit. The other two team members participated in the site visit meetings using VOIP. These arrangements are a deviation from the site visit procedure specified in FCR v2.0 at §7.9.1 which requires that all team members are present for the site visit. Acoura Marine requested a variation from this requirement, which was granted by the MSC (see section 15).

A list of the meetings carried out during the site visit and attendance at each meeting is provided in Table 16.

Table 16: List of meetings carried out during the site visit, with date, activity and attendance.

Date	Activity	Attendance
14 th November 2017	Meeting with client.	<p>Consolidated Fisheries Ltd Janet Robertson, Marketing & Sales Manager Timothy Cotter, General Manager</p> <p>Falkland Islands Fisheries Department Thomas Farrugia, Stock assessment scientist.</p>
15 th November 2017	Meetings with Falkland Islands Government officials	<p>Falkland Islands Government Thomas Farrugia, Stock assessment scientist. Andreas Winter, Stock assessment scientist Kyran Evans, Fishery Protection Officer Chris Peck, Fishery Protection Officer</p> <p>South Atlantic Environment Research Institute Paul Brewin, consultant (off-site)</p>
16 th November 2017	RBF Workshop	See attendance list in Table 22.

6.4.2 Consultations

All aspects of the fishery and its management were discussed in the meetings with stakeholders. All stakeholders were invited to comment upon the record of each meeting that was compiled by the assessment team.

The records of each meeting contain information that has been used in this assessment. Where stakeholders provided reports that have been used in the assessment, these are listed in the references cited.

6.4.3 Evaluation Techniques

This assessment was announced through direct e-mail sent directly to stakeholders by Acoura Marine, notification on the MSC website, and through the Fishery Updates sent by the MSC to interested parties globally.

These multiple approaches were considered likely to reach all of the key stakeholders with an interest in this fishery.

6.4.3.1 Methodology for information gathering

The information used in this assessment to provide a working knowledge of fishery and management operations was gathered by reference to published material before, during, and following the site visit. Information about the at-sea operation of the fishery was obtained through discussions with the client, scientists who have worked aboard the vessels operating in this fishery, and fishery observers.

6.4.3.2 The scoring process

Scoring was discussed by the team during the site visit and formally completed afterwards when information requested during the site visit had been made available by the clients and other stakeholders.

The scores were determined using the methodology set out in the MSC CRv2.0 at section 7.10 and set out in Table 4 of the CRv2.0. In summary, the MSC Principles and Criteria set out the requirements of a certified fishery. The certification methodology adopted by the MSC involves the interpretation of these Principles and Criteria into specific Performance Indicators and Scoring Guideposts against which the performance of Fishery can be measured. In order to make the assessment process as clear and transparent as possible, these identify the level of performance necessary to achieve 100, 80 (a pass score), and 60 scores for each Indicator. A summary of the hierarchy of MSC Principles and Performance Indicators is provided in section 10.1 of this report.

For each Performance Indicator, the performance of the fishery is assessed as a 'score'. In order for the fishery to achieve certification, an overall score of 80 is considered necessary for each of the three Principles, 100 represent ideal best practice and 60 a measurable shortfall. A fishery cannot be certified if a score below 60 is recorded for any PI. As it is not considered possible to allocate precise scores, a scoring interval of five is therefore used in evaluations.

A procedure for determining scores was agreed before scoring took place. In all cases, the team would aim to agree a score (a consensus approach). In situations where team members could not agree on the score that should be awarded for a PI, the lowest score proposed was used as a precautionary measure.

6.4.4 Risk Based Framework (RBF) Use

The assessment team evaluated the need to use the RBF prior to the announcement of the fishery assessment. The rationale for use of the RBF is set out in Table 17 below.

Table 17: Summary of the Performance Indicators assessed using the Risk Based Framework (RBF) and the rationale for use in each case.

Performance Indicator	Rationale for use of RBF
PI 2.1.1: Retained Species	Stock status reference points are not available for the P2 species most likely to be retained in the fishery (grenadier, <i>Macrourus holotrachys</i>).
PI 2.2.1: Discarded Species	Stock status reference points are not available for the P2 species most likely to be discarded from the fishery (grenadier, skate species, and blue antimora).
2.4.1: Habitats	Although some information about the habitats encountered by the fishery is available, information is not available about habitat impacts of the fishery under assessment.
2.5.1: Ecosystems	Information is not presently available to support an analysis of the impact of the fishery on the ecosystem.

6.4.4.1 Stakeholder Comments on Use of RBF

No stakeholder comments were received on the consultation about the use of the RBF published on 29th September 2017.

6.4.4.2 RBF Consultation Process Summary

Stakeholder engagement is an important aspect of the use of the RBF. Acoura Marine has taken several steps during the assessment of this fishery to encourage stakeholder input into the RBF assessment. These steps are summarised here.

Stakeholders were advised that the RBF was due to be used for assessing Performance Indicators 2.1.1, 2.2.1, 2.4.1 and 2.5.1 of this fishery prior to the site visit, both by notices posted on the MSC website, and by direct e-mail contact from Acoura Marine. These notices included the text required by the MSC (CR v2.0 at PF2.3.2).

The assessment team planned a stakeholder consultation strategy prior to the site visit in accordance with the MSC CR v1.3. In summary, a range of stakeholders were identified and asked to participate in the assessment process. A workshop was organised as part of the site visit, with all local stakeholders invited to attend. Non-local stakeholders were invited to participate remotely.

All stakeholders identified for this fishery were also invited to participate in the assessment remotely using an on-line questionnaire (a copy of the questionnaire is appended at section 11.3.1, and responses are included in section 0). This questionnaire provides a further opportunity for stakeholders to provide their expert opinions to support the RBF process.

The information gathered through these consultation processes has been used to inform the use of the RBF in this assessment.

6.4.5 Scoring elements

Scoring elements were identified and agreed by the team prior to scoring the fishery. The scoring elements considered in this assessment under Principles 1 and 2 are listed in Table 18 below.

Table 18: Scoring elements considered in this assessment.

Component	Scoring elements	Main / not main species*	Data-deficient or not
1.1.1 – Stock Status	<i>Dissostichus eleginoides</i>	Main	No
2.1.1 – Retained non-target species	Bait species: S. Atlantic squid (<i>Illex argentinus</i>) Sardines (<i>Sardina pilchardus</i>)	Main Main	Yes No
	Catch species Grenadiers (<i>Macrourus spp</i>)	All Minor	Yes
	Bait species Mackerel (<i>Scomber sp.</i>)		No
2.2.1 – Discarded non-target species	Blue antimora (<i>Antimora rostrata</i>) Ray species	Minor Minor	Yes Yes
2.3.1 – ETP species	Marine birds Marine mammals	NA	NA
2.4.1 – Habitats	Benthic habitats	NA	Yes
2.5.1 Ecosystems –	Ecosystem function	NA	Yes

* The MSC make a distinction in some Performance Indicators between “main species” (typically those forming 5% or more of the catch) and “minor species” (less than 5%). The MSC rules for identifying main species are set out in MSC Guidance on Certification Requirements v1.3 at section GCB3.5.2. (Note that this still applies when CRv2.0 procedures are used along with a CRv1.3 assessment tree).

7 Traceability

7.1 Eligibility Date

The target eligibility date for fishery certification is the 7th March 2019. This date will ensure continuity of certification for the client fishery, as the current period of certification will end on the 6th March 2019.

7.2 Traceability within the Fishery

A description of the procedures in place that prevent non-certified fish from being mixed with certified fish prior to entering Chain of Custody is presented in Table 19 below. The client, CFL, has set out clear procedures to ensure traceability in its “*Transshipment and data analysis manual*” (CFL, 2014), which is presently being revised to take account of changes in weighing and refrigeration equipment on board the new vessel CFL *Hunter*.

Table 19: Traceability Factors within the Fishery:

Traceability Factor	Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)
Potential for non-certified gear/s to be used within the fishery	<p>The client’s vessel CFL Hunter (and any other vessels that the client may from time to time charter to fish in the fishery) is a purpose-built longline vessel. It is not capable of using non-certified fishing gear.</p> <p>The risk of non-certified gear being used within the fishery is therefore considered to be low.</p>
Potential for vessels from the UoC to fish outside the UoC or in different geographical areas (on the same trips or different trips)	<p>The UoC vessel is only licensed to fish within the FICZ and FOCZ areas. The client may from time to time charter other vessels to assist in utilisation of the toothfish quota.</p> <p>All vessels are required to be equipped with two VMS transmitters that transmit its position (one VMS transmitter to meet CCAMLR DCD requirements and the other to meet Falkland Island Government requirements). It is also equipped with AIS. The position of the vessel within the UoC is therefore known at all times.</p> <p>Any movements of vessels outside the UoC (or into any closed areas within the FOCZ) would be detected by the FIFD. During the site visit the assessment team verified that VMS and AIS monitoring of the <i>Hunter</i> and also the vessel <i>Global Pesca</i> that had been chartered by CFL were both being monitored by FIFD.</p> <p>The risk of vessels fishing outside the UoC in different geographical areas, either on the same trip or different trips during routine operations is therefore considered to be very low.</p>

Traceability Factor	Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)
	<p>There is a possibility that the <i>Hunter</i> may participate in scientific studies of the stock and fish outside the FOCZ. Any such activity would be conducted under a licence from FIFD and with scientists & observers on board. The catch would be kept separate from fish caught within the FOCZ. The risk of comingling of MSC and non-MSC certified fish on any such trips is therefore considered to be low.</p>
<p>Potential for vessels outside of the UoC or client group fishing the same stock</p>	<p>There is a bycatch of small toothfish in the Falkland Islands squid and fin fish trawl fisheries which take place in shallower waters. These toothfish are landed in Spain. They cannot become mixed with UoC fish.</p> <p>There is a small high seas fishery for toothfish on the edge of the FOCZ. This fishery is prosecuted by several Korean and Ukrainian vessels. The activity of these vessels is carefully monitored by FIFD. Toothfish caught by these vessels are landed at different locations to the ports used by the UoC.</p> <p>The risk of mixing of MSC and non-MSC catch with trawl vessels is considered to be negligible.</p>
<p>Risks of mixing between certified and non-certified catch during storage, transport, or handling activities (including transport at sea and on land, points of landing, and sales at auction)</p>	<p>They only non-certified catch which may be retained on board the toothfish longlining vessels from time to time is a small quantity of grenadier (<i>Macrourus holotrachys</i>). The grenadiers are easily distinguished from toothfish. They are skinned and filleted before storage, and are packed, labelled and stored separately from toothfish.</p> <p>MSC and non-MSC fish aboard the vessel are kept in clearly labelled packaging (boxes for most fish and bags for larger fish), to enable them to be kept separate throughout the supply chain.</p> <p>The risk of mixing certified toothfish with non-certified grenadier is considered to be very low.</p>
<p>Risks of mixing between certified and non-certified catch during processing activities (at-sea and/or before subsequent Chain of Custody)</p>	<p>They only non-certified catch which may be retained on board the toothfish longlining vessels from time to time is a small quantity of grenadier (<i>Macrourus holotrachys</i>). The grenadier are easily distinguished from toothfish. They are skinned and filleted before storage, and are packed, labelled and stored separately from toothfish.</p>

Traceability Factor	Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)
	The risk of mixing certified toothfish with non-certified grenadier is considered to be very low.
<ul style="list-style-type: none"> Risks of mixing between certified and non-certified catch during transshipment 	There is no transshipment of fish at sea in this fishery.
<ul style="list-style-type: none"> Any other risks of substitution between fish from the UoC (certified catch) and fish from outside this unit (non-certified catch) before subsequent Chain of Custody is required 	<p>Fish are unloaded from the vessel (either in Stanley or in Montevideo) in accordance with CFL procedures. Landings of fish are reconciled with the hold inventory and catch records before dispatch to customers.</p> <p>The unloading of the vessel is supervised by an independent 3rd party observer from Lloyds, whose job is to verify the effective implementation of the CCAMLR DCD and DED requirements.</p> <p>The fish are dispatched from the landing points in sealed transport containers. Each consignment of fish is accompanied with documentation including a bill of lading which records the species, weight of fish, and the point of capture (as well as the documentation required by the CCAMLR DCD & DED).</p> <p>The risk of substitution of UoC fish with non-UoC fish before it reaches subsequent Chain of Custody is therefore considered to be very low.</p>

7.3 Eligibility to Enter Further Chains of Custody

Acoura Marine has evaluated the eligibility of fish from this fishery to enter into further chains of custody as required by MSC Fisheries Certification Requirements at §7.12 below.

a) Eligibility to enter further certified chains of custody

Tracking and traceability information for this fishery is considered sufficient for product to be eligible to enter further chains of custody.

b) Parties eligible to use the fishery certificates

The only fishing company eligible to use the fishery certificate is Consolidated Fisheries Ltd.

c) Eligible points of landing

The eligible points of landing are Port Stanley and Montevideo.

d) Point of change of ownership from which Chain of Custody certification is required

The point of change of ownership for product from the fishery will be acceptance of fish by customers into their own storage and processing facilities. All merchants and processors

wishing to sell MSC certified fish that has been purchased from this fishery will therefore require their own Chain of Custody certification.

7.4 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to Enter Further Chains of Custody

There are no IPI stocks involved in the certification.

8 Evaluation Results

8.1 Principle Level Scores

The performance of this fishery in relation to MSC Principles 1, 2, and 3 is summarised in the table below.

Table 20: Summary of MSC Principle level scores for the Falkland Islands Toothfish Longline Fishery.

Final Principle Scores	
Principle	Score
Principle 1 – Target Species	91.3
Principle 2 – Ecosystem	91.3
Principle 3 – Management System	96.8

8.2 Summary of Scores

The scores assigned to each Performance Indicator for this fishery are shown in Table 13.

8.3 Summary of Conditions

The fishery attained a score of 80 or more for all Performance Indicators. As a result there are no conditions of certification.

8.4 Recommendations

Recommendations are often made by assessment teams where there are opportunities for improving the score of Performance Indicators that meet the MSC score of 80. Recommendations do not have to be implemented to maintain certification, and accordingly the action taken and timescales are at the discretion of the client.

The assessment team has made 5 Recommendations with respect to this fishery assessment. These are listed below.

1. Non-target species (PI2.1.1 & 2.2.1):

The fishery meets all of the requirements for non-target (retained and discarded) species under MSC CRv1.3. However, some bait supplies which may be used, notably the Cantabrian Sea and Atlantic Iberian waters sardine, are currently below limit reference points. While current levels of bait use would not affect rebuilding of this stock, the client should consider specifying supplies from stocks in a demonstrably healthy condition.

2. Non target species - review of alternative measures:

Although the fishery meets all of the MSC CR v1.3 requirements with respect to managing impacts on non-target species, it is a requirement under MSC FCR v2.0 to review the potential effectiveness and practicality of alternative measures to reduce UoA-related mortality of unwanted catches of both primary and secondary species (PI2.1.2e & 2.2.2e). The SG80 standard requires that there is a **regular review** of

such measures, and that they are implemented as appropriate. It is recommended that a system for regular review of unwanted mortality is established during this period of certification in order to ensure that the fishery is compatible with this change to the MSC Certification Requirements.

3. Habitat management (PI2.4.2):

The fishery meets all of the requirements for habitat management under MSC CR v1.3. The management plan for the fishery is currently undergoing its quinquennial review. The scoring of the PIs relating to habitat management under CRv1.3 (and looking ahead, to reassessment under FCRv2.0) would be improved if the new management plan took account of emerging norms for habitat management, including the adoption of a “move-on rule” for vulnerable marine ecosystems.

4. Habitat outcome & information (PI2.4.1 & 2.4.3):

Again, while the MSC CR v1.3 requirements are fully met for these PIs, the information required to allow the assessment of the fishery against PI2.4.1 in CR v2.0 is more onerous. In particular the new CR requires that there is an understanding of impacts on “commonly encountered” habitats and “vulnerable marine ecosystems”. The scoring of these PIs under CR v1.3 (and looking ahead, to reassessment under CRv2.0) would be improved by the work currently being carried out to investigate the extent and character of benthic habitats., particularly if this were to include consideration of all commonly encountered and sensitive habitats (“vulnerable marine ecosystems”) over the area of the fishery.

5. Consultation, roles & responsibilities (PI 3.1.2):

It is recommended that consultation processes should facilitate the effective engagement of all interested parties (for instance through the use of the internet).

6. Fishery specific objectives (PI 3.2.1):

It is recommended that the client encourages the FIFD to develop measurable management objectives for habitat impacts within this period of certification.

8.5 Determination, Formal Conclusion and Agreement

The fishery attained a score of 80 or more against each of the MSC Principles and did not score less than 60 against any Indicators.

The assessment team has concluded that the Falkland Islands Toothfish Longline Fishery (as defined in this report) should therefore be certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fisheries.

Table 21 Scores for the Falkland Islands Toothfish Longline Fishery. Scores shaded green attain the unconditional pass level. Yellow shading indicates a conditional pass. Red shading indicates a fail.

Principle	Component	PI No.	Performance Indicator (PI)	Score
One	Outcome	1.1.1	Stock status	90
		1.1.2	Reference points	90
		1.1.3	Stock rebuilding	
	Management	1.2.1	Harvest strategy	95
		1.2.2	Harvest control rules & tools	100
		1.2.3	Information & monitoring	90
		1.2.4	Assessment of stock status	85
Two	Retained species	2.1.1	Outcome	100
		2.1.2	Management	80
		2.1.3	Information	90
	Bycatch	2.2.1	Outcome	100
		2.2.2	Management	80
		2.2.3	Information	90
	ETP species	2.3.1	Outcome	100
		2.3.2	Management	100
		2.3.3	Information	100
	Habitats	2.4.1	Outcome	100
		2.4.2	Management	80
		2.4.3	Information	80
	Trophic function	2.5.1	Outcome	100
		2.5.2	Management	85
		2.5.3	Information	85
Three	Governance and policy	3.1.1	Legal & customary framework	100
		3.1.2	Consultation, roles &	90
		3.1.3	Long term objectives	100
		3.1.4	Incentives for sustainable fishing	100
	Fishery specific management system	3.2.1	Fishery specific objectives	90
		3.2.2	Decision making processes	100
		3.2.3	Compliance & enforcement	100
		3.2.4	Research plan	100
		3.2.5	Management performance	90

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10 Appendix 1: Scoring & Rationales

10.1 MSC Principles & Criteria

Below is a much-simplified summary of the MSC Principles and Criteria, to be used for over-view purposes only. For a fuller description, including scoring guideposts under each Performance Indicator, reference should be made to the full assessment tree, complete with scores and justification, contained in this report. Alternatively a fuller description of the MSC Principles and Criteria can be obtained from the MSC website (www.msc.org).

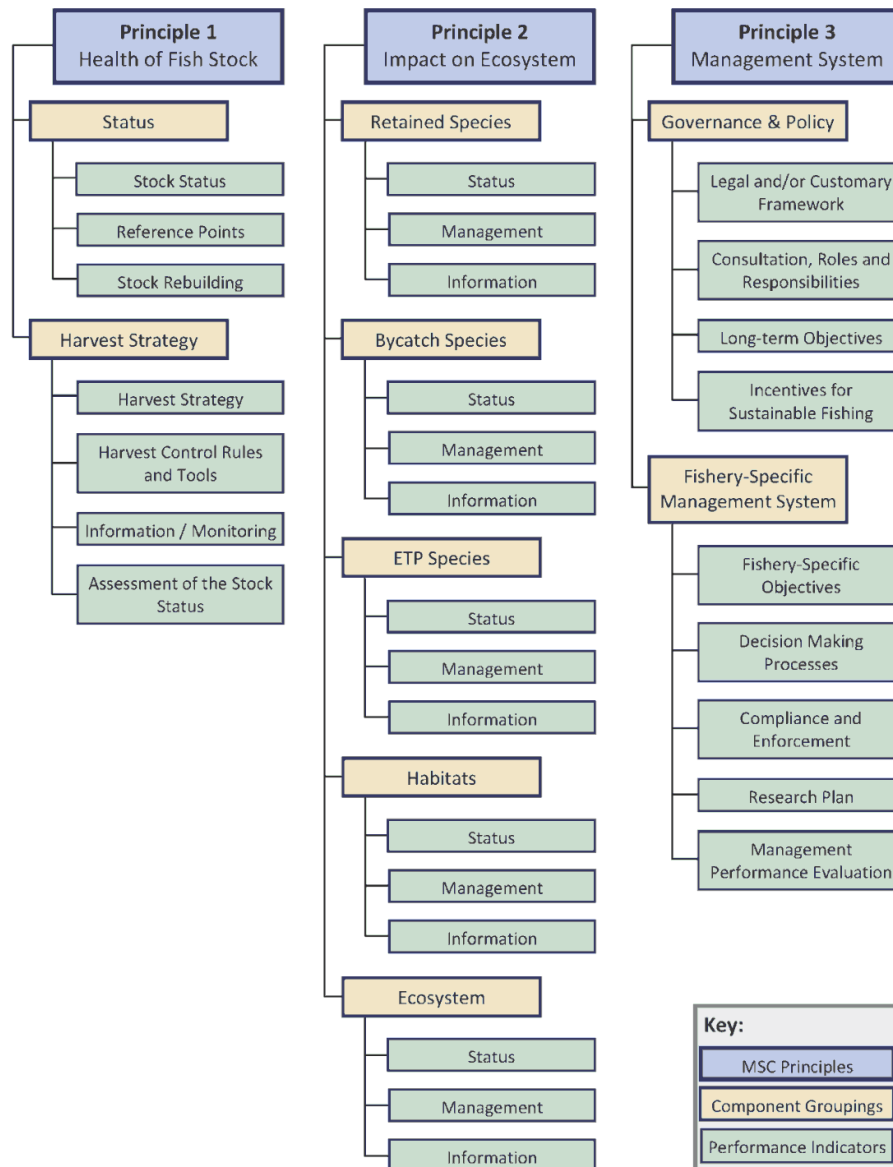


Figure A1 – Graphic of MSC Principles and Criteria

Principle 1

A fishery must be conducted in a manner that does not lead to over-fishing or depletion of the exploited populations and, for those populations that are depleted, the fishery must be conducted in a manner that demonstrably leads to their recovery.

Intent:

The intent of this Principle is to ensure that the productive capacities of resources are maintained at high levels and are not sacrificed in favour of short-term interests. Thus, exploited populations would be maintained at high levels of abundance designed to retain their productivity, provide margins of safety for error and uncertainty, and restore and retain their capacities for yields over the long term.

Status

- » The stock is at a level that maintains high productivity and has a low probability of recruitment overfishing.
- » Limit and target reference points are appropriate for the stock (or some measure or surrogate with similar intent or outcome).
- » Where the stock is depleted, there is evidence of stock rebuilding and rebuilding strategies are in place with reasonable expectation that they will succeed.

Harvest strategy / management

- » There is a robust and precautionary harvest strategy in place, which is responsive to the state of the stock and is designed to achieve stock management objectives.
- » There are well defined and effective harvest control rules in place that endeavour to maintain stocks at target levels.
- » Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.
- » The stock assessment is appropriate for the stock and for the harvest control rule, takes into account uncertainty, and is evaluating stock status relative to reference points.

Principle 2

Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends

Intent:

The intent of this Principle is to encourage the management of fisheries from an ecosystem perspective under a system designed to assess and restrain the impacts of the fishery on the ecosystem.

Retained species / Bycatch / ETP species

- » Main species are highly likely to be within biologically based limits or if outside the limits there is a full strategy of demonstrably effective management measures.
- » There is a strategy in place for managing these species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species.
- » Information is sufficient to quantitatively estimate outcome status and support a full strategy to manage main retained / bycatch and ETP species.

Habitat & Ecosystem

- » The fishery does not cause serious or irreversible harm to habitat or ecosystem structure and function, considered on a regional or bioregional basis.
- » There is a strategy and measures in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types.
- » The nature, distribution and vulnerability of all main habitat types and ecosystem functions in the fishery area are known at a level of detail relevant to the scale and intensity of the fishery and there is reliable information on the spatial extent, timing and location of use of the fishing gear.

Principle 3

The fishery is subject to an effective management system that respects local, national and international laws and standards and incorporates institutional and operational frameworks that require use of the resource to be responsible and sustainable.

Intent:

The intent of this principle is to ensure that there is an institutional and operational framework for implementing Principles 1 and 2, appropriate to the size and scale of the fishery.

Governance and policy

- » The management system exists within an appropriate and effective legal and/or customary framework that is capable of delivering sustainable fisheries and observes the legal & customary rights of people and incorporates an appropriate dispute resolution framework.
- » Functions, roles and responsibilities of organisations and individuals involved in the management process are explicitly defined and well understood. The management system includes consultation processes.
- » The management policy has clear long-term objectives, incorporates the precautionary approach and does not operate with subsidies that contribute to unsustainable fishing.

Fishery specific management system

- » Short and long term objectives are explicit within the fishery's management system.
- » Decision-making processes respond to relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner.
- » A monitoring, control and surveillance system has been implemented. Sanctions to deal with non-compliance exist and there is no evidence of systematic non-compliance.
- » A research plan provides the management system with reliable and timely information and results are disseminated to all interested parties in a timely fashion.

10.2 Principle 1

10.2.1 PI1.1.1 Evaluation Table

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	It is likely that the stock is above the point where recruitment would be impaired.	It is highly likely that the stock is above the point where recruitment would be impaired.	There is a high degree of certainty that the stock is above the point where recruitment would be impaired.
	Met?	(Y)	(Y)	(Y)
	Justification	<p>The 2017 assessment of the status of the stock in 2016 shows that the total biomass and spawning stock biomass were 30,288t and 10,337t respectively. The ratio of the SSB current to the unfished spawning biomass (SSB₀) was 0.452.</p> <p>The spawning stock is therefore around 45% of its unexploited state and at this level there is a high degree of certainty that it is well above any point where recruitment would be impaired. It is also well above the 20% level which is the current trigger point for the closure of the longline fishery and the MSC default biomass limit level (CR v1.3: CB2.3.3.5).</p> <p>The draft update of stock status in 2017 shows a spawning biomass of 30,277t and an SSB of 10,510t. The ratio of SSB₂₀₁₇ to SSB₀ was estimated at 48.8%, an increase from the ratio of 45.2% in the 2017 model.</p> <p>SG60, SG80 and SG100 are therefore met.</p>		
b	Guidepost		The stock is at or fluctuating around its target reference point.	There is a high degree of certainty that the stock has been fluctuating around its target reference point, or has been above its target reference point, over recent years.
	Met?		(Y)	(N)
	Justification	<p>The management objective is to maintain SSB at levels above 45% (BMSY proxy) of the unexploited spawning stock size. The latest assessment indicated that the stock status is around 45 % of its unexploited state and has been at or around this level in recent years therefore SG80 is met.</p> <p>However retrospective analysis in 2017 has shown that the ratio was marginally below this level in 2015 (44.5%) and is predicted to reduce to only slightly above the trigger reference point of 40% before it increases again. Because of the degree of uncertainty which this creates, the team have concluded that there is not a “high degree of certainty” that the stock has been fluctuating around its target reference point, or has been above its target reference point over recent years, SG 100 is not met.</p> <p>The ratio of SSB₂₀₁₇ to SSB₀ was estimated at 48.8%, an increase from the ratio of 45.2% in the 2017 model.</p>		
References		FIFD, 2014; FIFD, 2015, Stock assessment; FIFD 2016a, Sustainability Measures; FIFD 2016,b.Stock assessment; 2017a, Sustainability Measures: 2016-2017 FIFD, 2018: (Draft) Sustainability Measures. 2017-2018		

PI 1.1.1	The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Stock Status relative to Reference Points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Target reference point	Bmsy trigger	45% SSB ₀ (unfished spawning biomass)	SSB 2016: 45% SSB ₀ SSB 2016 10,337t 2017 Provisional 10,510t
Limit reference point	Blim	20% SSB ₀ (Default)	SSB 2016: 45% SSB ₀ SSB 2016 10,337t 2017 Provisional 10,510t
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			

10.2.2 PI 1.1.2 Evaluation Table

PI 1.1.2		Limit and target reference points are appropriate for the stock		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.	Reference points are appropriate for the stock and can be estimated.	
	Met?	(Y)	(Y)	
	Justification	Reference points are set such that they can be accurately estimated by the comprehensive set of fishery and observer-collected biological data, which are used in the current CASAL model. A limit reference point has been set at the default level of 20% of the unfished spawning biomass which is an acceptable method for a stock with average productivity and where Bmsy has not been determined analytically (CR v1.3:CB2.3.3.5). SG80 is met. The upper target reference point is set at 45% of the unfished biomass which is a precautionary level and above the MSC recommended level of 40% for stocks with average productivity (CR v1.3:CB2.3.3.5).		
b	Guidepost		The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of precautionary issues.
	Met?		(Y)	(Y)
	Justification	An explicit limit reference point has been set and accepted by management at the default level of 20% of the unfished spawning biomass. This value has been determined to be above a point at which there is an appreciable risk of impairing reproductive capacity after modelling this stock. This limit reference point is considered to be precautionary in relation to MSC guidelines and has been adopted due to modelling limitations and the influence of the trawl fishery (juvenile catch). Natural variability is also considered and has been well studied. SG80 and SG100 are met.		
c	Guidepost		The target reference point is such that the stock is maintained at a level consistent with B _{MSY} or some measure or surrogate with similar intent or outcome.	The target reference point is such that the stock is maintained at a level consistent with B _{MSY} or some measure or surrogate with similar intent or outcome, or a higher level, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of

PI 1.1.2		Limit and target reference points are appropriate for the stock		
				certainty.
	Met?		(Y)	(N)
	Justification	<p>The maximum sustainable yield biomass, B_{msy}, has not been analytically determined for this stock. As a consequence the target reference point is set at a level related to the unfished spawning stock biomass SSB_0. This target reference point is set at 45% of the unfished spawning biomass and is consistent with the likely productivity of the stock. This is more precautionary than the MSC guidelines permit for stocks with an average productivity (40%). Setting of an annual TAC is firmly based on this reference point (SG80)</p> <p>The constant quota applied as part of the harvest control rule is associated with an implied target fishing mortality which is consistent with high long-term yields and a low risk of depleting the productive potential of the stock. The target reference point is consistent with maintaining high long term yields and has the same intent as maximizing sustainable yields.</p> <p>Whilst there is ample evidence in support of the requirements at SG 80, and in part at SG100, the more rigorous requirements at this level for the ecological role of the stock to be explicitly considered with a high degree of certainty (95% probability) are not met.</p>		
d	Guidepost		For key low trophic level stocks, the target reference point takes into account the ecological role of the stock.	
	Met?		Not relevant	
	Justification	<p>[Note: Where relevant, insert rationale for status of stocks against key LTL criteria, in addition to further rationale that key LTL requirements are met.</p> <p>Patagonian toothfish is not a key low trophic level species.</p>		
	References	Bull et al, 2012; FIFD, 2014; FIFD, 2015, Stock assessment; FIFD 2016a, Sustainability Measures; FIFD 2016,b.Stock assessment; 2017a, Sustainability Measures; FIFD, 2018: Draft Sustainability Measures.		
OVERALL PERFORMANCE INDICATOR SCORE:				90
CONDITION NUMBER (if relevant):				

10.2.3 PI 1.1.3 Evaluation Table

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Where stocks are depleted rebuilding strategies, which have a reasonable expectation of success, are in place.		Where stocks are depleted, strategies are demonstrated to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the specified timeframe.
	Met?	(Y/N)		(Y/N)
	Justification	Not applicable: the stock is not depleted (PI 1.1.1)		
b	Guidepost	A rebuilding timeframe is specified for the depleted stock that is the shorter of 30 years or 3 times its generation time. For cases where 3 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	A rebuilding timeframe is specified for the depleted stock that is the shorter of 20 years or 2 times its generation time. For cases where 2 generations is less than 5 years, the rebuilding timeframe is up to 5 years.	The shortest practicable rebuilding timeframe is specified which does not exceed one generation time for the depleted stock.
	Met?	(Y/N)	(Y/N)	(Y/N)
	Justification	Not applicable: the stock is not depleted (PI 1.1.1)		
c	Guidepost	Monitoring is in place to determine whether the rebuilding strategies are effective in rebuilding the stock within a specified timeframe.	There is evidence that they are rebuilding stocks, or it is highly likely based on simulation modelling or previous performance that they will be able to rebuild the stock within a specified timeframe.	
	Met?	(Y/N)	(Y/N)	

PI 1.1.3		Where the stock is depleted, there is evidence of stock rebuilding within a specified timeframe
	Justification	Not applicable: the stock is not depleted (PI 1.1.1)
References		NA
OVERALL PERFORMANCE INDICATOR SCORE:		NA
CONDITION NUMBER (if relevant):		

10.2.4 PI 1.2.1 Evaluation Table

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The harvest strategy is expected to achieve stock management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points.
	Met?	(Y)	(Y)	(Y)
	Justification	<p>The FIFD have recently agreed an updating and improvement of the Harvest Strategy for the longline fishery based on precaution and adaptive management. It is similar in structure and intent to the strategy in place in the previous years. They now have in place an improved, robust strategy which underpins the Harvest Control Rules. The strategy is firmly based on the annual assessment of stock status and independent scientific advice.</p> <p>The strategy is based on a four-tier decision making matrix headed by an <i>Expansion Range</i>, followed by a <i>Target Range</i>, a <i>Trigger Point and Range</i> ending in a <i>Limit Reference Point</i>.</p> <p>Each of the four tiers have specified action points. This model is in keeping with numerous similar, well tried and tested, harvest strategies for the management of stocks, by ICES, in the North-East Atlantic area.</p> <p>The Harvest Strategy:</p> <p><u>Expansion range:</u> If the ratio of $SSB_{current}:SSB_0$ has remained above the upper target reference point (45%) for 3 consecutive years and the SSB projection with the current TAC shows no decrease below 45% for at least 10 years (one generation) under precautionary assumptions, the Director may authorize an increase in longline TAC to a level that continues to show no projected $SSB_{current}:SSB_0$ decrease in the ratio to below the 40% (trigger point) for at least 10 years under precautionary assumptions.</p> <p><u>Target range:</u> If the ratio of $SSB_{current}:SSB_0$ is between 40% and 45% (within the target range), current longline TAC is reviewed in relation to stock trends. Current TAC may be maintained if $SSB_{current}:SSB_0$ has increased from the previous assessment, or if the SSB ratio projection shows a level status under precautionary assumptions. TAC may not be increased, but it may be decreased if age-structure distributions anticipate weak recruitment.</p> <p><u>Trigger point and range:</u></p>		

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
		<p>If the ratio of SSB_{current}:SSB₀ falls to $\leq 40\%$ (trigger point), longline TAC will be decreased to a level that projects an increasing SSB trend under precautionary assumptions. The magnitude of the proposed TAC reduction will be examined using three methods (adapted from ICES, 2017):</p> <p>(a) Indexed to the reduction of the MSY estimates i. $TAC_{year} = TAC_{year-1} * (MSY_{year} / MSY_{year-1})$.</p> <p>(b) Indexed to the reduction of the SSB estimates i. $TAC_{year} = TAC_{year-1} * (SSB_{year} / SSB_{year-1})$</p> <p>(c) Indexed to the reduction in SSB ratios i. $TAC_{year} = TAC_{year-1} * (SSB_{ratioyear} / SSB_{ratioyear-1})$</p> <p>TACs obtained from all three methods will be projected forward in the stock assessment model and the trends in SSB will be compared. The final method will be chosen based on it returning the SSB ratio to above 40% within 10 years (one generation time) of the SSB ratio falling below 40%. If more than one method meets this requirement, the chosen method will also depend on discussions between the Fisheries Department and industry.</p> <p><u>Limit reference point:</u> If the ratio of SSB_{current}:SSB₀ is $\leq 20\%$, the longline fishery will be closed pending comprehensive evaluation of conditions required to rebuild the stock. The Director may authorize test fishing to measure biological parameters of the stock, subject to close monitoring by the Fisheries Department.</p> <p>This harvest strategy is clearly designed to be responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points. Indeed there is now clear evidence from the recent management of the stock through changes in the annual TAC that the strategy is achieving stock management objectives reflected in the target and limit reference points. SG100 is met.</p>		
b	Guidepost	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	(Y)	(Y)	(N)
	Justification	<p>The harvest strategy is subject to routine review through the normal management processes.</p> <p>Parts of this review are made public, such as the fisheries advice and sustainability measures reports. There is evidence that this information is being used in decision making by the Falkland Islands Government.</p> <p>The quality of the data from the fishery in support of the stock assessment, on which the harvest strategy is based, is kept under regular review. The catches are well monitored both from the longline and trawl fisheries and the adequacy of the biological data in support of the assessment is also kept under review.</p> <p>The evidence of the success of the harvest strategy is explicit in the status of the</p>		

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
		<p>stock based on the ratio of current spawning biomass compared with the level of unexploited spawning biomass. This has been maintained close to the target range expressed in the previous strategy (0.50) and above the Expansion range (0.45) in the current revised harvest strategy. Furthermore the annual longline TAC, generated by the harvest strategy, has been progressively reduced from 1,500 t in 2007 to its current level of 1,040t in line with the requirements of the Harvest Strategy.</p> <p>There is clear evidence that the recently improved harvest strategy is achieving its objectives (SG 80) and is clearly able to maintain the stock at its target levels. However there is not yet sufficient evidence that the performance of the revised strategy has been fully evaluated therefore the requirements at SG 100 are not fully met.</p>		
c	Guidepost	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	(Y)		
	Justification	Landings data are routinely collected from the longline and trawl fisheries together with the necessary biological data in support of the annual stock assessment modelling. The stock assessment estimates current SSB and compares it with the unexploited spawning biomass. This provides all the relevant data needed to evaluate the performance of the harvest strategy and to determine whether it is working satisfactorily. SG60 is met.		
d	Guidepost			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			(Y)
	Justification	<p>Regular assessments and reviews of the whole process are undertaken by the Fisheries Department. The evidence of that process is in the recent changes to improve the harvest strategy.</p> <p>The TAC has been reduced from 1500t in 2007 based on the 2006 stock assessment to a current level of 1,040t, based on more recent analyses and stock assessments and the revisions of the Harvest Strategy. Evidence of the review and refinement of the harvest strategy is provided in the "Sustainability Measures" over the past few years, which aim to ensure the long term sustainability of the toothfish fishery and prevent overfishing. The measures contain the commitment t to maintain the SSB at a minimum of 45% of the unfished biomass (SSB₀). These 'Sustainability Measures' are evaluated and reviewed annually</p> <p>Based on scientific advice, Burdwood Bank was closed from 2006 during the spawning period. The original duration of the seasonal closure on the Burdwood Bank spawning ground from 1st July to 31st August has now been extended by a month and now extends from 1st June to 31st August. The spatial extent of this closed area has also been increased. The effectiveness of this measure, to protect</p>		

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
		spawning adults, is kept under regular review based on scientific surveys. These actions taken together constitute an adequate system of review and improvement of all aspects of the harvest strategy and SG100 is met.		
e	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	Not relevant to this fishery		
References		FIFD, 2014; FIFD, 2015, Stock assessment; FIFD 2016a, Sustainability Measures; FIFD 2016,b.Stock assessment; 2017a, Sustainability Measures:2016-2017 FIFD, 2018: Draft Sustainability Measures. Sustainability Measures 2017-2018 (Draft)		
OVERALL PERFORMANCE INDICATOR SCORE:				95
CONDITION NUMBER (if relevant):				

10.2.5 PI 1.2.2 Evaluation Table

PI 1.2.2		There are well defined and effective harvest control rules in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Generally understood harvest rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.	Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.	
	Met?	(Y)	(Y)	
	Justification	The firm basis from which the harvest control rules and tools have been developed is the four tier harvest strategy detailed in PI 1.2.1 above. The high level target for the fishery is to maintain the spawning biomass at or above 45% of the unfished spawning biomass SSB_0 . This four tier strategy is used to determine the annual TAC. The strategy has well defined rules which progressively reduces the annual TAC in line with a reduction of the SSB below the 'expansion range' level of 45% of unfished spawning biomass. The lower tier of the harvest strategy triggers the complete closure of the longline fishery if the ratio of $SSB_{current}:SSB_0$ is $\leq 20\%$. This is the level at which it has been determined that there is an appreciable risk of impairing recruitment (PI 1.1.2) and is the MSC default level in CR v1.3:CB2.3.3.5 . SG80 is met.		
b	Guidepost		The selection of the harvest control rules takes into account the main uncertainties.	The design of the harvest control rules takes into account a wide range of uncertainties.
	Met?		(Y)	(Y)
	Justification	<p>In support of the rules to determine the annual exploitation level, based on the harvest strategy, the FIFD have implemented a number of other control measures to ensure the sustainable exploitation of the stock. These measures are designed to take into account areas of uncertainty not specifically addressed in setting an annual TAC. This meets the SG80 requirements.</p> <p>In relation to the annual TAC the FIFD and industry have agreed that irrespective of stock status in relation to the harvest strategy, fishing mortality will be capped at a maximum of 2/3rds F_{msy}.</p> <p>There is a measure in place which permits up to 15% of the annual TAC to be carried forward to the next year or to be brought forward from the next year. These permissible carry overs can only operate from one year to the next and cannot accumulate over multiple years. Any revision of the TAC can override any such adjustments in the TAC.</p> <p>There is a spawning area closure in place to protect over exploitation on vulnerable spawning fish and juveniles. The closure operates on the Burdwood Bank from 1 June to 31 August each year and is rigorously enforced.</p>		

PI 1.2.2		There are well defined and effective harvest control rules in place		
		<p>There are measures in place to minimise the by-catch of juvenile toothfish in other fisheries on the shelf.</p> <p>Although there is currently little evidence of IUU fishing in the toothfish fishery, the impacts of possible unseen IUU fishing is examined in computer-based simulations. Other sources of uncertainty are taken into account through precautionary measures and a highly conservative TAC, taking account of a wide range of undertainties and meeting the SG100 requirements.</p>		
c	Guidepost	There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.
	Met?	(Y)	(Y)	(Y)
	Justification	There is clear evidence from the fishery that the rules are being successfully implemented in controlling exploitation at a sustainable level. The assessment of stock status in 2017 shows that the ratio of SSB 2016: SSB0 (current spawning biomass to unfished spawning biomass) was 45.2%. This is in keeping with the upper target level in the revised harvest strategy and provides clear evidence that the raft of rules in place are achieving exploitation levels determined by the Harvest Strategy. This conclusion is strongly supported by the successive reductions in the annual TAC over recent years in order to maintain SSB at or above 45% of the unfished spawning biomass. SG 100 is met.		
References		FIFD, 2014; FIFD, 2015, Stock assessment; FIFD 2016a, Sustainability Measures; FIFD 2016,b.Stock assessment; 2017a, Sustainability Measures: FIFD, 2018: Draft Sustainability Measures.		
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				

10.2.6 PI 1.2.3 Evaluation Table

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	(Y)	(Y)	(Y)
	Justification	<p>The life history of toothfish is well known and documented, including spawning grounds and the areas where eggs, larvae and juvenile fish disperse. Compared to many fisheries, relatively large amounts of data are available on stock structure and information on the fleets exploiting the stock is complete.</p> <p>It was reported at the site meeting that a very wide range of data is currently collected for stock assessment of the toothfish fishery. This includes the role of toothfish in the wider ecosystem, and other data that helps understand the biology and ecology of <i>D. eleginoides</i>. Stock assessment data includes length, weight, and age relationships, CPUE, reproductive status, spawning periodicity and location (including tag-recapture). Otolith aging for age-length keys is verified by a 2nd reader, and occasionally by a 3rd external reader. Other ecological relationships include studies on diet composition and variability. General biology includes parasitology and evolution of ontogenetic growth. Stock discrimination work includes otolith shape, otolith microchemistry, toothfish morphology and demography. Oceanographic data are collected monthly. This wide range of information is considered to be comprehensive and is generally more than sufficient to support the harvest strategy.</p> <p>The sustainable management of any fish stock assessed under the MSC certification process requires that the stock is sufficiently discrete and catches can be reliably ascribed to a particular stock.. This is the main factor which impacts on the discreteness of a fishable stock. This element was a weakness in the first assessment and had to be addressed with a Condition. The Patagonian toothfish stock continues to be managed as a discrete unit. There are now numerous research projects in place which are all serving to provide evidence in support of this assumption.</p> <p>A report was presented to the team, at the site visit, summarizing all the work that had been done to determine whether the Falkland Islands stock of toothfish is distinct from adjacent stocks. All of the available information (from otolith morphology and chemistry analyses, from tagging and from satellite tagging studies) indicates that the Falklands stock of toothfish spawns mainly on Burdwood Bank, that eggs and fish larvae drift inshore and recruit to the shallow waters around the Falkland Islands, and that they migrate into deeper waters before migrating to spawn.</p>		

PI 1.2.3		Relevant information is collected to support the harvest strategy		
		<p>There appears to be distinct Northern and Southern components of the Falklands toothfish stock. This is indicative of an additional spawning area within the FOCZ, but it has not yet been located.</p> <p>Biological information, whilst not directly related to the management of the stock, is adequate and, as noted above, various research programmes have been implemented to provide more information on growth, age structure, spawning and adult migration.</p> <p>The information available meets the SG60 and 80 requirements. Some information that is not directly relevant to the harvest control rule is also available., The wide range of information presented in the report, and summarised in the comments above, is clearly comprehensive in relation to stock structure, stock productivity, fleet composition, stock abundance and fishery removals. Other information such as environmental information, including some that may not be directly related to the current harvest strategy, is also available. The requirements at SG 100 are fully met</p>		
b	Guidepost	Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	(Y)	(Y)	(N)
	Justification	<p>A suite of high quality data is available for accurate monitoring of the stock. These come in the form of daily catch reports (both longline and trawl fisheries), comprehensive observer data collection during observer periods, and independent catch verification of landed fish.</p> <p>Catch and effort data necessary for stock assessments are recorded daily and analysed on a monthly basis. Biological data is collected by Scientific Observers as often as possible. Observer coverage on the CFL <i>Gambler</i> has been approximately 50% every year, and this will continue on the new vessel, the CFL <i>Hunter</i>. Toothfish data from the trawl fishery are collected whenever toothfish are caught, either in daily catch reports (fish > 30cm approx. are processed), or when observers are on trawlers. Statistical (spatial and temporal) uncertainty is considered in the sampling design (spatial and temporal breadth and resolution). Biological uncertainties are addressed through reviews of knowledge, examination of pattern, and ongoing research programs.</p> <p>This level of monitoring, coupled with CPUE indices, satisfies the requirements at SG 80, However there are a number of other issues of uncertainty which are currently being addressed. They include; changes to the maturity ogive which impacts directly on the estimate of SSB (problems of differentiating between</p>		

PI 1.2.3		Relevant information is collected to support the harvest strategy	
		immature developing gonads and mature resting gonads) reliably estimating the level of illegal underreported and unregulated catches; possible over estimation of depredation rates in the current longline fishery As a consequence the team considered that, whilst some elements of SG 100 are met the more rigorous requirements, in relation to uncertainty are not yet fully met and SG 100 is not achieved.	
c	Guidepost		There is good information on all other fishery removals from the stock.
	Met?		(Y)
	Justification	<p>Important quantities of toothfish are caught in two other Falklands fisheries: finfish trawl, of which toothfish is not a target but commercially valuable bycatch, and calamari (<i>Doryteuthis gahi</i>) squid trawl, of which toothfish is also a bycatch. Individuals caught in this fishery are too small to be commercially valuable. The fisheries access different parts of the toothfish population in different areas. Longlining occurs on the slope and in deep water, finfish trawling on the shelf primarily north and west of the Falkland Islands, and calamari trawling also on the shelf, east of the Falkland Islands. These catches are all recorded and used in the stock assessment process.</p> <p>Non-FK-licensed longline catches, including out-of-zone catches, are estimated as a separable factor in the stock assessment, together with unrecorded whale depredation.</p> <p>There is therefore good information on all other fishery removals from the stock and SG80 is met.</p>	
References		<p>Arkhipkin, A. I., and Laptikhovskiy, V. V. 2010; Ashford et al. 2007; Ashford et al 2012; Brown et al. 2010; Brown, 2011; Brickley, et al. 2016; FIFD, 2015, Stock assessment; FIFD 2016a, Sustainability Measures; FIFD 2016,b.Stock assessment; 2017a, Sustainability Measures:2016-2017 . FIFD, 2017,b,c,d,. Oceanographic Reports; Sustainability Measures: FIFD, 2018: Draft Sustainability Measures.2017-2018 Laptikhovskiy, et al. 2006; ; Laptikhovskiy, et al. 2008; Payne et al. 2005:</p>	
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			

10.2.7 PI 1.2.4 Evaluation Table

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost		The assessment is appropriate for the stock and for the harvest control rule.	The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.
	Met?		(Y)	(Y)
	Justification	<p>There is a large knowledge base regarding toothfish ecology and biology in the Falkland Islands on which a relatively robust assessment of stock status is achieved. The model used for stock assessment is the CASAL age structured production model (ASPM). This model is used in many toothfish fisheries in the Southern Ocean by CCAMLR. The model uses the CPUE of the longline fishery as a tuning index but includes the catches of all three fisheries, the longline, finfish trawl and Loligo trawl fisheries in the assessment. In 2016 changes were made to the stock assessment. The inclusion of out of zone catches in order to better represent time series impacts on the toothfish population, optimising natural mortality within the model and addressing the impact of the 'umbrella factor' in the longline fishery. <i>The umbrella is a longline gear modification to protect the baited hooks and minimise predator depredation.</i> Therefore, this modelling package is appropriate for the Falkland Island toothfish fishery. The assessment methodology and level of accuracy is sufficient to apply the harvest control rule effectively. The assessment is therefore appropriate for the stock and for the harvest control rule. SG 80 is met.</p> <p>In 2017 further modifications were made to the stock assessment to better address the nature of the fishery. All non-FK-licensed longline catches, including out-of-zone catches, were estimated as a separable factor in the assessment, together with unrecorded whale depredation. The Spanish-system longline and umbrella-system longline were modelled as different fisheries, rather than empirically adjusting their CPUEs through a scaling factor. The two components of the CASAL ASPM objective function were re-weighted to equalize between the CPUE index fits and the catch-at-age distribution fits.</p> <p>With the improvements to the model and the treatment of data all the requirements at SG 100 are now fully met.</p>		
b	Guidepost	The assessment estimates stock status relative to reference points.		
	Met?	(Y)		

PI 1.2.4		There is an adequate assessment of the stock status		
	Justification	The stock size is estimated on an annual basis and its status relative to biological reference points is assessed and reported, meaning SG60 is met.		
c	Guidepost	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	(Y)	(Y)	(N)
	Justification	<p>The major uncertainties have been identified in the stock assessment process and their implications examined and reported as part of the management advice. These uncertainties are described in scoring issue (a) above together with the recent improvements in the way these uncertainties are handled in the assessment process.</p> <p>The current approach adopts a number of measures to reduce and take uncertainty into account. Many aspects of the fishery are monitored on a daily, monthly and annual basis in both the longline and two trawl fisheries which covers a large part of the toothfish life cycle. In addition, research has shown where likely spawning grounds are located, and ongoing research is investigating other aspects of their reproductive biology and ecology. Precautionary measures include the use of the umbrella system for reducing depredation by whales. A suite of tools are used for fishery surveillance, and it is generally considered that IUU fishing is very low in the Falklands Conservation Zone. Both depredation and IUU uncertainties are taken into account explicitly in computer-based model projections. Some uncertainty exists in model implementation, primarily in setting SSB_0 and B_0, and as such a highly conservative (precautionary) TAC is set to take this into account. The requirements at SG 80 are fully met</p> <p>However the model outputs are not currently presented in a probabilistic way for example with upper and lower confidence intervals on the estimates of spawning biomass and fishing mortality. Therefore the requirements at SG 100 for the evaluation of stock status relative to reference points in a probabilistic way are not fully met.</p> <p>At the surveillance audit meeting in March 2018 the client reported that work was currently underway to address the requirement for a more probabilistic analysis of the stock assessment outputs. A brief summary of the work (draft) has been added to the report at the end of the Principle 1 section Titled 'Additional analysis with 2017 stock assessment'</p>		
d	Guidepost			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			(N)

PI 1.2.4		There is an adequate assessment of the stock status	
	Justification	<p>The age structured production model (ASPM) was used for the assessment from 2007 to 2011. In 2012 the approach was changed to the ASPM using CASAL and that basic modelling procedure has been used since then. Two versions of the same model were tested in 2015 and version II adopted and used in 2015 and 2016. Further minor amendments were made to the stock assessment process in 2017 related to the way various data were handled.</p> <p>It is clear that improvements to the stock assessment process are under constant consideration. There is clear evidence of the success of this process in the changes which have been made over recent years both to the model approach and data handling. However all the attention since 2012 has been to address changes to the existing model and no clear evidence has been presented that alternative hypotheses and assessment approaches have been rigorously explored.</p>	
e	Guidepost	The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?	(Y)	(N)
	Justification	<p>The assessment is subject to internal review within the fishery department. The process produces a consensus report which has been signed by staff to ensure quality assurance. The most recent assessments are being carried out in CASAL software, which is reviewed and used in New Zealand fisheries and in CCAMLR. In addition to the rigorous review of the annual assessment important factors which contribute to the assessment process are also subject to regular internal review. Internal Peer review of assessment control rules, tools, and information is ongoing as research progresses. Evidence for this is indicated by the regular assessment of the fishery itself (fishing methods, temporal ban), by modifications to data collection and quality (e.g. regular evaluation of conversion factors, implementation of electronic log books), the decision to maintain an industry co-funded research position in the department for continuation of research programs and development of new research programs, and the adoption of new modelling techniques. (SG 80).</p> <p>Whilst the process of internal review of a wide range of factors contributing to the assessment of stock status is comprehensive, there is no evidence of a similar rigorous system yet in place for external review. It was reported at the site visit that ad-hoc external reviews have been periodically undertaken and that a strategy is being developed to put in place regular thorough external reviews. A contract has subsequently been let for an external peer review of both the stock assessment and the fishery management system. This review may result in the fishery meeting the SG100 requirements in the near future.</p>	
	References	Brown et al. 2010; Bull et al, 2012; des Clers et al, 1996; FIFD, 2015, Stock assessment; FIFD 2016a, Sustainability Measures; FIFD 2016,b.Stock assessment; 2017a, Sustainability Measures; FIFD, 2017b: Draft Sustainability Measures; Payne, A.G., et al. 2005; Winter, A. 2016.	
OVERALL PERFORMANCE INDICATOR SCORE:			85
CONDITION NUMBER (if relevant):			

10.3 Principle 2

10.3.1 Evaluation Table for PI 2.1.1

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Main retained species are likely to be within biologically based limits (if not, go to scoring issue c below).	Main retained species are highly likely to be within biologically based limits (if not, go to scoring issue c below).	There is a high degree of certainty that retained species are within biologically based limits and fluctuating around their target reference points.
	Met?	Y – grenadier N – sardine; SI c N – Illex squid; SI c	Y – grenadier N – sardine; SI c N – Illex; SI c	Y – grenadier N – sardine N – Illex N - Mackerel
	Justification	<p>The only retained species is the grenadier, <i>Macrourus holotrachys</i>. This is occasionally retained albeit in low quantities with total catches below 100 t of which less than 10 tonne per annum of retained product is expected. This is therefore considered a retained species. As most catches are M holotrachys, and grenadiers comprise >5% of the catch, this is considered a main species.</p> <p>Bait species are mainly sardine from south west Europe and <i>Illex</i> squid from Falkland Islands and Argentina. These were species were discussed by stakeholders during the RBF workshop and considered of less significance than Grenadier in terms of impacts from the fishery.</p> <p>There is no assessment of grenadier stocks, and so the effect of the fishery cannot be quantitatively determined. Accordingly, the RBF was used in this assessment to evaluate the outcome status.</p> <p>The conclusion of the RBF analysis was an MSC score of 100 for grenadier (Appendix 2). SG100 is met for this species.</p> <p>Two stocks of sardine could contribute to bait usage in the fishery – the Bay of Biscay and/or Cantabrian Sea and Atlantic Iberian waters stocks in some proportion. The Bay of Biscay stock is well above biologically based limits. The Cantabrian Sea and Atlantic Iberian waters stock is below biologically based limits and is considered in SI c. As the proportion of bait from each stock is not known, this is considered a main species and (on a precautionary basis) a worst-case scenario is considered with all sardine coming from the Cantabrian Sea and Atlantic Iberian waters stock. Evaluated under SI c.</p> <p><i>Illex</i> squid as a bait is from two sources, primarily from Falklands waters and some from Argentinian waters. This is a migratory species and the two</p>		

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species		
		<p>sources will be fishing on the same stock, making this a main species. This species is not conventionally managed according to limit reference points etc and so is considered under SI c.</p> <p>The mackerel species used is identified as being from the North East Atlantic. North East Atlantic mackerel is MSC certified and so would meet SG100; however the assessment team noted some uncertainty about the species used and felt that it was inappropriate to award this score. The quantity of mackerel used is small; this is not a main species, so it has not been scored.</p>		
b	Guidepost			Target reference points are defined for retained species.
	Met?			N/A
	Justification	See RBF Score.		
c	Guidepost	If main retained species are outside the limits there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.	If main retained species are outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.	
	Met?	Y	Y	
	Justification	<p>As discussed above, two stocks of sardine could contribute to bait usage in the fishery – the Bay of Biscay and/or Cantabrian Sea and Atlantic Iberian waters stocks in some proportion. The Bay of Biscay stock is well above biologically based limits. The Cantabrian Sea and Atlantic Iberian waters stock is below biologically based limits. As the proportion of bait from each stock is not known, this is considered a main species and (on a precautionary basis) a worse-case scenario is considered with all sardine coming from the Cantabrian Sea and Atlantic Iberian waters stock.</p> <p>The catches in the Cantabrian Sea and Atlantic Iberian waters stock are currently around 23 000 t, and sardine usage as bait in the fishery is at most 100 t, or <0.43% of total catches. The definition of 'does not hinder recovery</p>		

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species		
		<p>and rebuilding' is not well specified in CR v1.3 but is clarified further in CR v2.0. In particular, GSA 3.4.6 which states "<i>even if the total catch of a species is clearly hindering recovery, UoA catches of less than 30% of the total catch of a species may not normally be influential in hindering a recovery in a marginal sense, i.e., nothing the UoA does would be likely to change the situation</i>". This is clearly the case here and so SG80 is met.</p> <p><i>Illex</i> squid as a bait is from two sources, primarily from Falklands waters and some from Argentinian waters. This is a migratory species and the two sources will be fishing on the same stock, making this a main species. This species is not conventionally managed according to limit reference points. Bait usage as a percentage of FI catches alone is generally much less than 1%, and will be a much smaller percentage of total catches from the stock. The same argument as with sardine above therefore applies here and SG80 is met</p>		
d	Guidepost	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.		
	Met?	Y		
	Justification	See RBF score		
References	<p>CFL 2017 Grenadier catch data CFL 2017. Bait data FIFD 2012 Grenadier Fishery Information ICES 2017a ICES 2017b FIFD 2018 RSPB 2017 RBF Workshop, Appendix 2</p>			
OVERALL PERFORMANCE INDICATOR SCORE:				
<p>Grenadier: 100 Sardine: 80 <i>Illex</i> squid: 80 Mackerel: 80</p>				85

PI 2.1.1	The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species
CONDITION NUMBER (if relevant):	-

10.3.2 Evaluation Table for PI 2.1.2

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a strategy in place for managing retained species.
	Met?	Y	Y	N
	Justification	<p>The measures in place to support the strategy for controlling exploitation of toothfish, specifically input controls (a limit on the number of vessels operating in the fishery), output controls (through a TAC), seasonally closed areas and close monitoring through the observer programme will also provide an effective partial strategy controlling exploitation of retained species (grenadiers).</p> <p>The use of the umbrella system is designed to minimise depredation by toothed whales – the main source of unobserved mortality; although designed to protect toothfish catch, this will also help to ensure good data on total bycatches. This combination of measures comprises a partial strategy relating to grenadiers, but as this is not designed specifically for retained species, is not a strategy to manage retained species per se; nevertheless, the collection of measures are considered a ‘partial strategy’ as they work together and are evaluated by FIFD as to their effectiveness. While grenadiers may be taken in other fisheries, the output of the RBF evaluation was that the small bycatch in the toothfish fishery would neither compromise the population status (noting that a precautionary TAC of 4000t has been set for a potential grenadier fishery) nor its potential to recover. It is also noted that hook trials have taken place to attempt to minimise bycatches of grenadiers.</p> <p>For bait, and as discussed under PI 2.1.1, the quantity of bait purchased in the fishery (sardine, <i>Illex</i> squid and to a lesser extent mackerel) would not compromise the maintenance of any stock at healthy levels nor contribute to hindering of recovery of any depleted populations (notably the Cantabrian Sea and Atlantic Iberian waters sardine stock). Constraints on the size of the fishery therefore also represents an effective partial strategy limiting bait usage [See also Recommendation 1].</p>		

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species		
		The partial strategies therefore meet the SG80 requirement; the lack of a specific strategy means that SG100 is not met.		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	N
	Justification	<p>The toothfish fishery is extremely well controlled and monitored, by both FIFD and CFL. As above, maintaining the relatively minor grenadier percentage of the total toothfish catch means that catches will remain at levels which would not affect the population status. A proposed grenadier fishery, with predicted sustainable catch levels of 4000t per year has been proposed, bycatches in the toothfish fishery (50-80 tonne/year) are well below this level.</p> <p>Quantities of bait purchased are well recorded.</p> <p>There is an objective basis for confidence that the partial strategies will work, based on some information directly about the fishery and the species and so SG80 is met; the lack of a specific strategy means that SG100 is not met.</p>		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	N
	Justification	<p>The toothfish fishery is extremely well controlled and monitored, by both FIFD and CFL, including around 50% observer coverage and fishery inspections as detailed in Principle 3. Bait usage is recorded. This provides clear evidence that the partial strategy is being implemented successfully and so SG80 is met; the lack of a specific strategy means that SG100 is not met.</p>		
d	Guidepost			There is some evidence that the strategy is achieving its overall objective.

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species		
	Met?			N
	Justification	The lack of a specific strategy means that SG100 is not met.		
e	Guidepost	It is likely that shark finning is not taking place.	It is highly likely that shark finning is not taking place.	There is a high degree of certainty that shark finning is not taking place.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	No retained species are sharks.		
References		CFL 2017 Grenadier catch data CFL 2017. Bait data ICES 2017a ICES 2017b FIFD 2018 FIFD 2012 Grenadier Fishery Information RBF Workshop, Appendix 2 FIFD 2017. Hook trial cruise report FIFD 2017 Sustainability Measures FIFD 2017 Fishing Licence - general conditions for the CFL Hunter		
OVERALL PERFORMANCE INDICATOR SCORE:				80
CONDITION NUMBER (if relevant):				-

10.3.3 Evaluation Table for PI 2.1.3

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Qualitative information is available on the amount of main retained species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
	Met?	Y	Y	N
	Justification	<p>Accurate reporting of catches via the electronic logbook system, together with 50% observer coverage, provides accurate and verifiable quantitative information on the catch of grenadiers (the retained species). SG80 is therefore met.</p> <p>Bait is purchased, and so complete records are kept, including inventory.</p> <p>The lack of an assessment of grenadier stocks, however, means that it is not possible to quantitatively determine the consequences of such catches for the status of the affected populations and so SG100 is not met.</p>		
b	Guidepost	Information is adequate to qualitatively assess outcome status with respect to biologically based limits.	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	This scoring issue was not scored as the RBF was used to score PI 2.1.1.		
c	Guidepost	Information is adequate to support measures to manage main retained species.	Information is adequate to support a partial strategy to manage main retained species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	Y

PI 2.1.3		Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species	
	Justification	<p>Excellent information on the nature and extent of retained species catches is available from the observer programme and vessel e-logbooks; this would be sufficient to support and monitor any future strategies to manage retained species populations within the fishery. Observers also record any evidence of depredation (heads remaining on hooks); observations cover around 50% of trips and are considered likely to cover at least a quarter of all hauls, with results extrapolated to provide representative data on the fishery.</p> <p>Total catches are monitored in fisheries from which bait is purchased.</p> <p>Although a strategy does not exist for retained species, the information is adequate to support one, as and when required; SG100 is therefore met.</p>	
d	Guidepost	Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
	Met?	Y	Y
	Justification	The observer programme is ongoing and, with e-logbook data, provides comprehensive data on catches of retained species; SG100 is met.	
References		<p>CFL 2017 Grenadier catch data CFL 2017. Bait data FIFD 2012 Grenadier Fishery Information RBF Workshop, Appendix 2</p>	
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			-

10.3.4 Evaluation Table for PI 2.2.1

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Main bycatch species are likely to be within biologically based limits (if not, go to scoring issue b below).	Main bycatch species are highly likely to be within biologically based limits (if not, go to scoring issue b below).	There is a high degree of certainty that bycatch species are within biologically based limits.
	Met?	Y	Y	Y
	Justification	Significant bycatch species are the blue antimora, skate species complex and porbeagle and sleeper sharks. None of these, however is considered a main species (the skate complex comprises >2% of the total catches, but this is comprised of up to six species). The RBF was used in this assessment to evaluate the outcome status of the blue antimora, the species considered most susceptible to fishery-related effects. The conclusion of the RBF analysis was an MSC score of 100.		
b	Guidepost	If main bycatch species are outside biologically based limits there are mitigation measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding.	If main bycatch species are outside biologically based limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery and rebuilding.	
	Met?	N/A	N/A	
	Justification	See RBF Score		

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups		
c	Guidepost	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the bycatch species to be outside biologically based limits or hindering recovery.		
	Met?	N/A		
	Justification	See RBF Score		
References		CFL 2017 Catch data RBF Workshop, Appendix 2		
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				

10.3.5 Evaluation Table for PI 2.2.2

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary, that are expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a strategy in place for managing and minimizing bycatch.
	Met?	Y	Y	N
	Justification	<p>The measures in place to support the strategy for controlling exploitation of toothfish, specifically input controls (a limit on the number of vessels operating in the fishery), output controls (through a TAC), seasonally closed areas (notably on Burdwood Bank), exclusion from territorial seas and inland waters and close monitoring through the observer programme will also control exploitation of bycatch species. The use of the umbrella system is designed to minimise depredation by toothed whales – the main source of unobserved mortality; although designed to protect toothfish catch, this will also help to ensure good data on total bycatches.</p> <p>The FIFD Sustainability Measures and Licence conditions contain specific measures for bycatch species such as the requirement to remove hooks from skates and rays and return these to the sea (a process which has shown good survivorship in other fisheries).</p> <p>This combination of measures comprises a strong partial strategy relating to bycatch species, but as this is not designed specifically to manage bycatch species, is not a strategy to manage retained species per se. The output of the RBF evaluation was that the small bycatch of blue antimora (the most vulnerable species) in the toothfish fishery would neither compromise the population status nor its potential to recover.</p> <p>It is also noted that hook trials have taken place to attempt to minimise bycatches, although this relates principally to grenadiers.</p> <p>The partial strategy therefore meets the SG80 requirement; the lack of a specific strategy means that SG100 is not met.</p>		

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or species involved.
	Met?	Y	Y	N
	Justification	The toothfish fishery is extremely well controlled and monitored, by both FIFD and CFL. As above, maintaining the relatively minor bycatch percentage of the total toothfish catch means that catches will remain at levels which would not affect the population status of any affected species. There is an objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and the species and so SG80 is met; the lack of a specific strategy means that SG100 is not met.		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	N
	Justification	The toothfish fishery is extremely well controlled and monitored, by both FIFD and CFL, including around 50% observer coverage and fishery inspections as detailed in Principle 3. This provides clear evidence that the partial strategy is being implemented successfully and so SG80 is met; the lack of a specific strategy means that SG100 is not met.		
d	Guidepost			There is some evidence that the strategy is achieving its overall objective.
	Met?			N
	Justification	The lack of a specific strategy means that SG100 is not met.		
References		RBF Workshop, Appendix 2 FIFD 2017. Hook trial cruise report FIFD 2017 Sustainability Measures FIFD 2017 Fishing Licence - general conditions for the CFL Hunter		

PI 2.2.2	There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations
OVERALL PERFORMANCE INDICATOR SCORE:	80
CONDITION NUMBER (if relevant):	-

10.3.6 Evaluation Table for PI 2.2.3

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Qualitative information is available on the amount of main bycatch species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main bycatch species taken by the fishery.	Accurate and verifiable information is available on the catch of all bycatch species and the consequences for the status of affected populations.
	Met?	Y	Y	N
	Justification	Accurate reporting of catches via the electronic logbook system, together with 50% observer coverage, provides accurate and verifiable quantitative information on all bycatches. SG80 is therefore met. The lack of an assessment of the affected stocks, however, means that it is not possible to quantitatively determine the consequences of such catches for the status of the affected populations and so SG100 is not met.		
b	Guidepost	Information is adequate to broadly understand outcome status with respect to biologically based limits	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	This scoring issue is not scored as the RBF has been used to score PI 2.1.1.		
c	Guidepost	Information is adequate to support measures to manage bycatch.	Information is adequate to support a partial strategy to manage main bycatch species.	Information is adequate to support a strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	Y

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch	
	Justification	<p>Excellent information on the nature and extent of all bycatch species catches is available from the observer programme and vessel e-logbooks; this would be sufficient to support and monitor any future strategies to manage bycatch species populations within the fishery. Observers also record any evidence of depredation (heads remaining on hooks); observations cover around 50% of trips and are considered likely to cover at least a quarter of all hauls, with results extrapolated to provide representative data on the fishery.</p> <p>Although a specific strategy does not exist to manage bycatch species, the information is adequate to support one, as and when required; SG100 is therefore met.</p>	
d	Guidepost	Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).	Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.
	Met?	Y	Y
	Justification	The observer programme is ongoing and, with e-logbook data, provides comprehensive data on all bycatches; SG100 is met.	
References		RBF Workshop, Appendix 2 FIFD 2017. Catch data	
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			-

10.3.7 Evaluation Table for PI 2.3.1

PI 2.3.1		The fishery meets national and international requirements for the protection of ETP species The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species.	The effects of the fishery are known and are highly likely to be within limits of national and international requirements for protection of ETP species.	There is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species.
	Met?	Y	Y	Y
	Justification	National limits are in place for the protection of seabirds from direct mortality. The limit on bird mortality in the NPOA since 2006/07 has been 0.002 birds per 1000 hooks (around 16 birds in a season). This limit was met in 2005/06. Only two mortalities have been recorded since 2010, a giant petrel which flew into the deck overnight and a black-browed albatross which was caught up in a Tori line buoy. Given that there is 50% observer coverage, with specific recordings of seabird interactions, here is a high degree of certainty that the effects of the fishery are within limits of national requirements for protection of ETP species. SG100 is met.		
b	Guidepost	Known direct effects are unlikely to create unacceptable impacts to ETP species.	Direct effects are highly unlikely to create unacceptable impacts to ETP species.	There is a high degree of confidence that there are no significant detrimental direct effects of the fishery on ETP species.
	Met?	Y	Y	Y
	Justification	As noted in Sla above, there is a high degree of confidence that there are no significant detrimental direct effects of the fishery on seabird species. Although there are no regulatory limits for interactions with marine mammals, only one incident has been recorded since 2003 – a minke whale which was accidentally entangled in the gear. Again, with 50% observer coverage across the fishery, there is a high degree of confidence that there are no significant detrimental direct effects of the fishery on any ETP species. SG100 is met.		
c	Guidepost	Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	There is a high degree of confidence that there are no significant detrimental indirect effects of the fishery on ETP species.	

PI 2.3.1		The fishery meets national and international requirements for the protection of ETP species	
		The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species	
Met?		Y	Y
Justification	<p>As the fishery does not apparently affect critical habitats for ETP species, and disturbance would not be an issue (particularly for a single vessel), then the only obvious indirect effect would be changes to the feeding patterns of the ETP species.</p> <p>Mitigation measures developed in the fishery – notably the use of the Chilean ‘umbrella’ hook system, offal management measures and use of the ‘Brickle-curtain’ - will significantly reduce indirect effects of depredation of hooked toothfish by toothed whales and foraging on bait by seabirds. The presence of offal away from the boat is probably beneficial. Together with the low level of fishing activity (by predominantly a single vessel) these provide a high degree of confidence that there will be no significant detrimental indirect effects of the fishery. SG100 is met</p>		
References	<p>Seabird NPOA longline 2004. Seabird NPOA longline 2011 update Licence conditions CFL Hunter 2017 FIFD data ETP interactions 2017 RSPB 2017 FIFD Sustainability Measures 2017</p>		
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			-

10.3.8 Evaluation Table for PI 2.3.2

PI 2.3.2		<p>The fishery has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species. 		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place that minimise mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	Y	Y	Y
	Justification	<p>The fishery effects on ETP species will relate to seabirds. The NPOA for seabirds, enacted through Sustainability Measures and Licence Conditions, provides a comprehensive strategy for managing effects on ETP seabirds. Components of the strategy include:</p> <ul style="list-style-type: none"> • use of bird-scaring devices (tori lines to CCAMLR or equivalent specification) • weighting of the longline to ensure rapid sinking (specified at >0.45 m/sec) • setting lines at night, with deck lighting at a minimum • use of thawed bait • offal management (no dumping during setting, discharge on opposite side to longline) • hooks to be removed from fish and bycatch • a device to be used to discourage birds during hauling (the Brickle curtain) <p>Measured identified have minimised mortality to well below target levels. Impacts on mammals are negligible, indirect effects are reduced through the use of the Chilean 'umbrella' hook system. The requirements achieve above national requirements for the protection of ETP species; SG100 is met.</p>		

PI 2.3.2		<p>The fishery has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species. 		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the strategy will work, based on information directly about the fishery and/or the species involved.	The strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	Y	Y	Y
	Justification	The strategy has been developed based on research within the Falklands and similar nearby CCAMLR fisheries (e.g. the Brickle curtain). The efficacy of the mitigation measures is continually evaluated through e-logbook and observer data. SG100 is met		
c	Guidepost		There is evidence that the strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	Y
	Justification	Compliance with Sustainability Measures and Licence Conditions is good, and is supported by high observer coverage which provides clear evidence that the ETP management strategy is being implemented successfully. Analysis of data from any occasional incidents of ETP interactions allows for any modifications to requirements to be made. SG100 is met.		
d	Guidepost			There is evidence that the strategy is achieving its objective.
	Met?			Y
	Justification	E-logbook and observer data provide evidence that the strategy is achieving its objectives (particularly in terms of seabird mortality). SG100 is met.		

<p>PI 2.3.2</p>	<p>The fishery has in place precautionary management strategies designed to:</p> <ul style="list-style-type: none"> • Meet national and international requirements; • Ensure the fishery does not pose a risk of serious harm to ETP species; • Ensure the fishery does not hinder recovery of ETP species; and • Minimise mortality of ETP species.
<p>References</p>	<p>Seabird NPOA longline 2004. Seabird NPOA longline 2011 update Licence conditions CFL Hunter 2017 FIFD data ETP interactions 2017 RSPB 2017 FIFD Sustainability Measures 2017</p>
<p>OVERALL PERFORMANCE INDICATOR SCORE:</p>	<p>100</p>
<p>CONDITION NUMBER (if relevant):</p>	<p>-</p>

10.3.9 Evaluation Table for PI 2.3.3

PI 2.3.3		<p>Relevant information is collected to support the management of fishery impacts on ETP species, including:</p> <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species. 		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Information is sufficient to qualitatively estimate the fishery related mortality of ETP species.	Sufficient information is available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.	Information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty.
	Met?	Y	Y	Y
	Justification	The species of principal concern in relation to longline interactions in the Falkland Islands is the black-browed albatross. Breeding populations (breeding, survival and other population parameters) are monitored annually. The overall status of other 'straddling' populations (seabirds and marine mammals) are monitored e.g. through IUCN. Any mortality associated with the fishery is accurately recorded through e-logbooks and observer data. This information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty; SG100 is met.		
b	Guidepost	Information is adequate to broadly understand the impact of the fishery on ETP species.	Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species.	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	Y	Y	Y
	Justification	Information from e-logbooks is considered accurate. This can be supplemented and verified by observer data. These cover all impacts, mortalities and injuries as identified by data on interactions since 2010. Information on affected populations is sufficient to determine the consequences of the interactions recorded (which are essentially negligible). SG100 is met.		

PI 2.3.3		<p>Relevant information is collected to support the management of fishery impacts on ETP species, including:</p> <ul style="list-style-type: none"> • Information for the development of the management strategy; • Information to assess the effectiveness of the management strategy; and • Information to determine the outcome status of ETP species. 		
c	Guidepost	Information is adequate to support measures to manage the impacts on ETP species.	Information is sufficient to measure trends and support a full strategy to manage impacts on ETP species.	Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	Y	Y	Y
	Justification	Information is comprehensive and verifiable; it is collected and analysed in relation to the Sustainability Measures and NPOA, which are regularly revised (annually for the Sustainability Measures) on the basis of information collected. The information has been shown to provide a high degree of certainty that the strategy has achieved, and continues to meet, its objectives; SG100 is met.		
References		Seabird NPOA longline 2004. Seabird NPOA longline 2011 update Licence conditions CFL Hunter 2017 FIFD data ETP interactions 2017 RSPB 2017 FIFD Sustainability Measures 2017		
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				-

10.3.10 Evaluation Table for PI 2.4.1

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	There is evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
	Met?	Y	Y	Y
	Justification	<p>The RBF was used to evaluate this PI, the conclusion of the RBF exercise was that the fishery would cause no detectable change to habitat structure and function – equivalent to an MSC score of 100.</p> <p>In addition, and completed since the RBF workshop, additional work has been undertaken to model the distributions of sensitive habitats (identified by the expected presence of Vulnerable Marine Ecosystems (VME) indicator species and to calculate based on fishing locations and intensities the impact of gear on these habitats. This analysis is considered to be precautionary in that the most sensitive method for setting impact thresholds has been tested and a highly precautionary estimate of the area affected by longlines has been adopted (a 600m swath).</p> <p>The results of this analysis are that no VME indicator is affected at more than 16% gear footprint of the total area of the distribution within the FOCZ (the VME indicator most affected being sea whips and fans). Similar habitats would be expected to extend in the region beyond the FOCZ, adding another level of precaution in the analysis. The conclusion of the study is that the longline fishery in the Falklands is likely having a limited impact on the regional distribution of VME habitats and species.</p> <p>The current assessment is undertaken against CR v1.3 which defines serious harm as gross changes in habitat types or abundances, and disruption in the role of the habitats; irreversibility means changes that represent some form of regime shift from which recovery may not automatically occur. It is also noted that CR v2.0 defines serious or irreversible harm of VMEs as reductions in habitat structure and function below 80% of the unimpacted level. The evidence from the modelling is that neither of these definitions of serious or irreversible harm are met.</p> <p>There is, therefore, evidence from both the RBF workshop, and modelling of VME indicator species distributions, that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm. SG60, 80 and 100 are met.</p>		

PI 2.4.1	The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function	
References	RBF Workshop, Appendix 2 Brewin 2018	
OVERALL PERFORMANCE INDICATOR SCORE:		100
CONDITION NUMBER (if relevant):		-

10.3.11 Evaluation Table for PI 2.4.2

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of the fishery on habitat types.
	Met?	Y	Y	N
	Justification	<p>The conclusion of the RBF workshop (consistent with evaluations of other Southern Ocean toothfish longline fisheries using similar gear on similar habitats (such as for South Georgia; the Macquarie Islands, Ross Sea, and the Australian Heard Island and McDonald Islands), and modelling of fishing impacts on VME indicator species distributions, was that the risk posed by the fishery to vulnerable and sensitive habitats is low (PI 2.4.1. score of 100).</p> <p>The Sustainability Measures include, among the conservation and management priorities:</p> <ul style="list-style-type: none"> • <i>Better understand the habitats and VMEs in the areas where longlining takes place.</i> • <i>Reduce the impacts of fishing on sensitive benthic ecosystems.</i> <p>Measures to implement these priorities include:</p> <ul style="list-style-type: none"> • <i>Restricting longline fishing to specific areas, excluding known sensitive habitats in territorial seas and inshore waters</i> • <i>Restrict the fishery to a single vessel</i> • <i>Maintaining observer coverage at 50%, including ongoing collection of invertebrate samples</i> • <i>Deployment of underwater cameras on longlines during and after the 2017 CFL Hunter research cruise. The primary aims being to assess the benthic biodiversity in areas targeting toothfish in the FICZ/FOCZ and to assess the impacts of umbrella-system longline on the benthos. This deployment has now begun with data being collected across the area of the fishery.</i> • <i>Continued development of the invertebrate and fish taxonomic collection held at FIFD, using observer-derived samples.</i> • <i>Conduct research into efficient and responsive “move-on” rules for bycatch and VME species.</i> <p>These measures are considered to comprise a ‘partial strategy’, expected (by stakeholders and the assessment team) to achieve at least the SG 80</p>		

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types		
		<p>level for PI 2.4.1. SG60 and SG80 are met.</p> <p>It is noted that other measures are in development, such as investigating move-on rules, MPAs and extended seasonally closed areas, but these are not yet in place and so would only be considered as and when implemented.</p> <p>There is not a specific strategy in place at present to address impacts on habitats and so SG100 is not currently met (it is noted that the recent work of Brewin (2018) has identified additional management actions relevant to sensitive habitats appropriate for further research and development).</p>		
b	Guidepost	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).	There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved.	Testing supports high confidence that the strategy will work, based on information directly about the fishery and/or habitats involved.
	Met?	Y	Y	N
	Justification	<p>The restriction of the fishery to longline gear, used in specific areas and limited to a single vessel would be expected to restrain habitat impacts within bounds of any serious or irreversible harm, as demonstrated in PI 2.4.1. SG60 and SG80 are met.</p> <p>The lack of a specific strategy means that SG100 is not met.</p>		
c	Guidepost		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully.
	Met?		Y	N
	Justification	<p>The levels of surveillance and monitoring of the fishery (see PI 3.2.3) provide evidence that the measures related to control of gear use, fishing location and observer coverage and activities will be implemented successfully. SG60 and SG80 are met.</p> <p>The lack of a specific strategy means that SG100 is not met.</p>		
d	Guidepost			There is some evidence that the strategy is achieving its objective.
	Met?			N

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types	
	Justification	The lack of a specific strategy means that SG100 is not met.	
References		FIFD Sustainability Measures 2017 (SCS Global 2012, 2017, MacAlister Elliott & Partners Ltd 2013, Intertek Fisheries Certification 2014, Acoura Marine 2015).	
OVERALL PERFORMANCE INDICATOR SCORE:			80
CONDITION NUMBER (if relevant):			-

10.3.12 Evaluation Table for PI 2.4.3

PI 2.4.3		Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There is basic understanding of the types and distribution of main habitats in the area of the fishery.	The nature, distribution and vulnerability of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.
	Met?	Y	Y	N

PI 2.4.3	Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types			
	Justification	<p>As detailed during the RBF workshop, the fishery is known to take place on a variety of seabed types, ranging from muddy to sandy (the predominant fishing habitat) to rocky areas. Most of the seabed in the areas that is fished is muddy, with occasional rock outcrops where erect benthic organisms may be found. There are also known rocky seabed areas on the Burdwood Bank.</p> <p>In response to a condition raised as part of the initial MSC assessment of the fishery, the distribution of sensitive habitats within the Falkland Islands Conservation Zones has been modelled based on environmental suitability for Vulnerable Marine Ecosystem (VME) indicator species. VME groups with good spatial coverage were selected for analysis; Soft corals, Stony corals, Whips and fans, Sponges, and Sea pens – these were considered to be good indicators of VME structures and habitats. An overlay of fishing locations and intensity on likely sensitive habitat areas has been undertaken (see PI 2.4.1), demonstrating that for these sensitive habitats the information available is at a level of detail relevant to the scale and intensity of the fishery. SG60 and SG80 are met.</p> <p>The distribution of all habitat types over the FOCZ/FICZ has not been established, and although particular attention has been given to vulnerable habitat types, this does not extend over their range within the wider Patagonian Shelf area. SG100 is not met.</p>		
b	Guidepost	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.	Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.	The physical impacts of the gear on the habitat types have been quantified fully.
	Met?	Y	Y	N

PI 2.4.3		Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types	
	Justification	<p>Sufficient generic information is available to determine the nature of impacts (contact with weighted lines) on habitats. This is now being supplemented by direct video observations, suggesting that dragging of weights during hauling is the main source of impact.</p> <p>With electronic logbooks, VME and circa 50% observer coverage, there is excellent information on the extent, timing and location of fishing operations. For sensitive habitats, characterised by the presence of VME indicator organisms, information on expected habitat distributions and the information on fishing areas and intensities, has allowed potential impacts to be quantified (as discussed under PI 2.4.1). SG60 and SG80 are met.</p> <p>As all habitat types are not known across the area of the fishery, there has not been full quantification of the physical impacts of the gear on all habitats. SG100 is not met.</p>	
c	Guidepost	Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Changes in habitat distributions over time are measured.
	Met?	Y	N
	Justification	<p>Ongoing monitoring of fishing operations and gear use (through electronic logbooks, VMS, observer coverage, compliance monitoring) is considered sufficient to determine any increase in risk to habitat. Modelling work on characterisation of potential sensitive habitat is also expected to continue, supported by ongoing observer data on benthic organisms caught on lines and underwater camera footage. SG80 is met.</p> <p>The distribution of all habitat types is not known, however, and so changes in their distributions over time are not measured. SG100 is not met.</p>	
References		<p>Brewin 2018</p> <p>RBF Workshop, Appendix 2</p>	
OVERALL PERFORMANCE INDICATOR SCORE:			80

PI 2.4.3	Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types		
CONDITION NUMBER (if relevant):			-

10.3.13 Evaluation Table for PI 2.5.1

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Y	Y	Y
	Justification	This PI was evaluated as part of the RBF workshop. An MSC score of 100 was considered appropriate following a Scale Intensity Consequence Analysis.		
References		RBF Assessment: Appendix 2		
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				-

10.3.14 Evaluation Table for PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are measures in place, if necessary.	There is a partial strategy in place, if necessary.	There is a strategy that consists of a plan, in place.
	Met?	Y	Y	N
	Justification	<p>There is not a specific strategy in place at present to address impacts on the ecosystem, but an effective partial strategy exists which controls the effects of the fishery on each of the ecosystem components relevant to the fishery:</p> <ul style="list-style-type: none"> a) A conservative harvest strategy and controls on toothfish depredation limit trophic disturbances b) input and output controls also serve to limit catches of retained and bycatch species c) Biodiversity (ETP species) are adequately protected by specific strategies, particularly relating to seabirds d) Habitat impacts are restricted by avoidance of identified sensitive areas (territorial seas and inland waters), input controls (limiting to a single vessel), gear restrictions (limiting to longline gear) and ongoing monitoring. <p>These are synthesised in the Sustainability Measures and, together with accompanying monitoring and review, are considered to represent an appropriate 'partial strategy' for ecosystem effects. SG80 is met.</p> <p>It is noted that several initiatives have taken place to drive environmental management in the Falkland – such as the Biodiversity strategy and State of the Environment reporting. These do not, however, appear to provide the integrated marine ecosystem management required by a 'strategy' and so SG100 is not considered to be met.</p>		

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
b	Guidepost	The measures take into account potential impacts of the fishery on key elements of the ecosystem.	The partial strategy takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.	The strategy, which consists of a plan, contains measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and the Components and elements of the ecosystem. This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm.
	Met?	Y	Y	N
	Justification	The Sustainability Measures take account of all available environmental information and knowledge of ecosystem interactions and seeks to address significant effects of the fishery on the ecosystem - including control of harvest of target species, bycatch and ETP species, habitat and Vulnerable Marine Ecosystem, and identification of further information requirements. The conclusion of the RBF workshop (consistent with evaluations of other Southern Ocean longline fisheries) was that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. (PI 2.5.1. score of 80). SG80 is met; the lack of a full strategy means that SG100 is not met.		
c	Guidepost	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved.
	Met?	Y	Y	N

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function	
	Justification	The key measure of the partial strategy – in limiting fishing effort to essentially a single vessel while monitoring target species, other affected populations and habitats – is similar to that adopted in other MSC certified toothfish fisheries and would be expected to work. This was also the unanimous view of stakeholders at the RBF workshop. SG80 is met; the lack of a full strategy means that SG100 is not met.	
d	Guidepost		There is some evidence that the measures comprising the partial strategy are being implemented successfully.
	Met?	Y	Y
	Justification	There is evidence that the measures are being implemented successfully.	
	Justification	Direct information on the fishery through the FIFD Observer Programme and compliance monitoring (see Principle 3) provides objective evidence of the compliance of the fishery with the Sustainability Measures, and their successful implementation. SG100 is met.	
References	<p>FIFD 2017 Catch Data SAERI 2017. GAP Project Factsheet Falkland Islands State of the Environment Report 2008 FI Government 2008. Biodiversity Strategy 2008-2018 Seabird NPOA longline 2004. Seabird NPOA longline 2011 update Licence conditions CFL Hunter 2017 FIFD data ETP interactions 2017 RSPB 2017 FIFD Sustainability Measures 2017</p>		
OVERALL PERFORMANCE INDICATOR SCORE:			85
CONDITION NUMBER (if relevant):			-

10.3.15 Evaluation Table for PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	The trophic structure of shelf and deep-water communities is broadly understood, as is the function of toothfish as a high-level predator. Community composition and productivity patterns are broadly understood from monitoring and science associated with the suite of Falkland Island fisheries. Biodiversity is monitored in terms of ETP species and sensitive benthic species and habitats. These key aspects of the ecosystem are therefore broadly understood and many are fairly well understood. SG80 is met.		
b	Guidepost	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, and have not been investigated in detail.	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information and some have been investigated in detail.	Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated in detail.
	Met?	Not relevant	Not relevant	Not relevant
	Justification	This scoring issue is not scored as the RBF has been used to score PI 2.5.1		
c	Guidepost		The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.	The impacts of the fishery on target, Bycatch, Retained and ETP species are identified and the main functions of these Components in the ecosystem are understood.

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem	
	Met?		Y N
	Justification	<p>Also as detailed in preceding PIs, the main function of target, bycatch, retained and ETP species and habitats are known. This is based on information specific to the Falklands, or comparison with other fisheries in similar latitudes. SG80 is met.</p> <p>Not all impacts of the fishery (especially on habitats) are fully identified, however, and so SG100 is not met.</p>	
d	Guidepost	Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.	Sufficient information is available on the impacts of the fishery on the Components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		Y Y
	Justification	<p>Notwithstanding comment in SI c, there appears sufficient information on the impacts of the fishery (nature and extend of all catches, fishing location, nature of gear and main habitats affected) to allow the main consequences for the ecosystem to be inferred. This was demonstrated in the RBF workshop, where there was sufficient information and understanding of the effects of the fishery to determine the status of all Principle 2 outcome PIs. All consequences are currently considered to be at acceptable levels. SG100 is met.</p>	
e	Guidepost	Sufficient data continue to be collected to detect any increase in risk level (e.g., due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Information is sufficient to support the development of strategies to manage ecosystem impacts.
	Met?		Y N

PI 2.5.3	There is adequate knowledge of the impacts of the fishery on the ecosystem	
	Justification	<p>An increase in risk level would arise if the operation of the fishery changed substantially, or the status of affected ecosystem components changed, or if management measures were relaxed. The operation of the fishery, including compliance with Sustainability Measures, is very well monitored. Further development of the Sustainability Measures, with accompanying information collection, will maintain and improve current levels of data collection. This would be sufficient to detect any increase in risk level resulting from any changes in the operation of the fishery. Data collection on other ecosystem components includes detailed information on catches and stock assessment of toothfish, the information gathered by observers for non-target and ETP species, as well as the monitoring of seabed habitats and the distribution of fishing activity carried out by FIFD. These sources of information would be sufficient to detect an increase in risk level to the main ecosystem components; target, non-target, ETP species and marine habitats. SG80 is met.</p> <p>The information available in relation to several ecosystem components (e.g. stock status of retained and bycatch species, detailed information on habitat impacts) does not appear sufficient to support the development of integrated strategies to manage ecosystem impacts; SG100 is not met.</p>
	References	<p>FIFD 2017 Catch Data SAERI 2017. GAP Project Factsheet Falkland Islands State of the Environment Report 2008 FI Government 2008. Biodiversity Strategy 2008-2018 Seabird NPOA longline 2004. Seabird NPOA longline 2011 update Licence conditions CFL Hunter 2017 FIFD data ETP interactions 2017 RSPB 2017 FIFD Sustainability Measures 2017</p>
OVERALL PERFORMANCE INDICATOR SCORE:		85
CONDITION NUMBER (if relevant):		-

10.4 Principle 3

10.4.1 PI 3.1.1 Evaluation Table

PI 3.1.1		<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework. 		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	<p>There is an effective national legal system and <u>a framework for cooperation with other parties</u>, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2</p>	<p>There is an effective national legal system and <u>organised and effective cooperation</u> with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.</p>	<p>There is an effective national legal system and <u>binding procedures governing cooperation with other parties</u> which delivers management outcomes consistent with MSC Principles 1 and 2.</p>
	Met?	Y	Y	Y
	Justification	<p>There is evidence available (see P1) that the Falkland Islands toothfish stock is distinct from toothfish stocks elsewhere in the South Atlantic. It is therefore appropriate for the review of the legal system and other management measures in Principle 3 to focus on the national management procedures implemented in the Falkland Islands and any international agreements that the Falkland Islands Government is party to.</p> <p>The management system for the fishery is set out in the Falkland Islands <i>Fisheries (Conservation and Management) Ordinance 2005</i>. This legislation establishes fisheries and nature conservation measures for the FICZ and FOCZ that are compatible with relevant local, national and international laws and standards. Compliance with international conservation and management measures is explicitly addressed in §8 <i>et seq</i> of the Fisheries Ordinance 2005.</p> <p>The Fisheries Ordinance 2005 created binding mechanisms for governing cooperation between the Fisheries Department and stakeholders. §7 of the Ordinance requires that there should be a Fisheries Committee and §191 creates a Falkland Islands Fishing Companies Association.</p> <p>Management outcomes that are consistent with MSC Principles 1 and 2 have resulted from this management system, including decisions to set a TAC and adjust it in line with stock status and also to establish the Burdwood Bank closed area (consistent with MSC Principle 1). Outcomes consistent with Principle 2 include the licence conditions</p>		

<p>PI 3.1.1</p>	<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework. 			
	<p>that require the use of bird mitigation measures, and also the implementation of an observer programme to monitor interactions with non-target fish species, birds, whales and benthic communities.</p> <p>The national legal system in place and the evidence of management outcomes that are consistent with MSC Principles 1 & 2 meet the SG60, 80 and 100 requirements.</p>			
<p>b</p>	<p>Guidepost</p>	<p>The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.</p>	<p>The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.</p>	<p>The management system incorporates or subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.</p>
	<p>Met?</p>	<p>Y</p>	<p>Y</p>	<p>Y</p>
	<p>Justification</p>	<p>A transparent mechanism for the resolution of disputes is set out in Part V of the <i>Fisheries (Conservation and Management) Ordinance 2005</i>.</p> <p>There have been no legal disputes in this fishery in recent years; however this mechanism was tested and proven to be effective when there was a bird bycatch issue in the fishery in 2005, which was addressed by swift and decisive legal action.</p> <p>The SG60, 80 and 100 requirements are therefore fully met.</p>		

PI 3.1.1		<p>The management system exists within an appropriate legal and/or customary framework which ensures that it:</p> <ul style="list-style-type: none"> • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework. 		
d	Guidepost	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	Y	Y	Y
	Justification	<p>No-one is dependent on this fishery for food. All fishing is commercial.</p> <p>The management system is founded upon a system of Individually Transferable Quotas that were based on a qualifying period of activity in the fishery. This system provides a formal commitment within the management system to respect the legal and customary rights of people dependent on the fishery for their livelihood.</p> <p>The SG60, 80 and 100 requirements are fully met.</p>		
References		<p>Fisheries (Conservation and Management) Ordinance 2005; Department of Natural Resources, 2017 Section 5.4 of this report.</p>		
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				NA

10.4.2 PI 3.1.2 Evaluation Table

PI 3.1.2		<p>The management system has effective consultation processes that are open to interested and affected parties.</p> <p>The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</p>		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	Y	Y	Y
	Justification	<p>The roles of organisations and individuals in the management system are identified and well established. These include the Falkland Islands Government’s Natural Resources Department – Fisheries Department which is responsible for stock assessment, management advice, monitoring, compliance and surveillance of the fishery; the Fisheries Committee established under §7 of the Fisheries Ordinance; the Falkland Islands Fishing Companies Association and the Falkland Fisheries Liaison Group (see section 5.4.2.1 of this report).</p> <p>The functions of these different organisations are explicitly defined, either in the Fisheries Ordinance 2005 or in their individual terms of reference. There are both statutory and non-statutory organisations involved in the management process.</p> <p>Mechanisms for interaction are well understood by all participants, and the responsibilities of the management bodies are set out in legislation. The SG60, 80 and 100 requirements are all met.</p>		

PI 3.1.2		<p>The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties</p>		
b	Guidepost	<p>The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.</p>	<p>The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.</p>	<p>The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.</p>
	Met?	(Y)	Y	Y
Justification		<p>The management system specifies consultation processes associated with any changes to the sustainability measures associated with the fishery (Fisheries Ordinance 2005 at §12). These arrangements require that information is sought from interested parties including:-</p> <p style="text-align: center;"><i>“...such persons or organisations within the Falkland Islands [...] who are representative of persons having an interest in the stock or the effects of fishing on the marine environment and environmental interests before setting or varying any sustainability measure”</i></p> <p>The consultation arrangements that are customarily used include discussions between the Government and stakeholders at the different consultation groups (summarised in section 5.4.2 of this report), and publication of consultation notices in the Falkland Islands Gazette, the Government’s official publication.</p> <p>The Fisheries Ordinance also requires that after setting or varying any sustainability measure the reasons for any decision are published. This is achieved through the production of minutes for the various consultative groups, and also the publication of official notices in the Falkland Islands Gazette.</p> <p>These consultation processes meet the SG60, 80 and 100 requirements.</p>		

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties	
c	Guidepost		The consultation process provides opportunity for all interested and affected parties to be involved.
	Met?		Y
	Justification	The consultation processes include publication in the Falkland Islands Gazette of notices of intent to change any management measures and consultation with interested parties via the various groups that have been established within the Falkland Islands to provide opportunities for stakeholder engagement. Any and all interested and affected parties are able to make submissions either in person or in writing in response to these consultation opportunities. These processes meet the SG80 requirements fully. The SG100 scoring guidepost is not met, because the Falkland Islands are remote from the location of some interested and affected parties, and consultation with them is not currently facilitated (for instance by using the internet to engage interested parties in consultation processes).	
References		Fisheries (Conservation and Management) Ordinance 2005; Department of Natural Resources, 2017; Section 5.4.2 of this report.	
OVERALL PERFORMANCE INDICATOR SCORE:			90
CONDITION NUMBER (if relevant):			NA

10.4.3 PI 3.1.3 Evaluation Table

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are implicit within management policy	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy.
	Met?	Y	Y	Y
	Justification	<p>This Performance Indicator examines the fishery-specific objectives. The fishery specific objectives for the fishery are set out in documents produced by the Falkland Islands Government in accordance with the United Kingdom’s ratification of international conventions such as the UN Convention on the Law of the Sea.</p> <p>A hierarchy of long term objectives for the fishery is set out in the Falkland Islands Economic Development Strategy (which is to develop “<i>a sustainable economic future for the Falkland Islands.</i>”); the mission statement of the Department of Natural Resources (which “<i>is charged with facilitating and enabling wealth creation in fishing and farming whilst promoting and regulating the conservation and sound stewardship of natural resources.</i>”); and the Falkland Islands Fisheries Department (which is: “<i>wealth creation by achieving the maximum sustainable yield from fish and squid stocks in Falkland and adjacent waters. This process is to be underpinned by effective fisheries science, fisheries protection, and administration.</i>”)</p> <p>Long term objectives are explicitly set out in the management policy for all Falkland Islands fisheries in the Fisheries Ordinance 2005 (at §8, 9, 10, 11 and 13). These policy objectives require, <i>inter alia</i>, that fish stocks are managed sustainably; that the fishery should not affect the viability of associated or dependent species; that biological diversity shall be maintained; that habitats of particular significance for fisheries management shall be protected; and that decision makers shall use the best available information, consider uncertainties in information, and be cautious when information is uncertain, unreliable or inadequate.</p> <p>Section 13 of the Fisheries Ordinance specifically requires that the Director of fisheries shall pursue the objectives set out in the Ordinance, and therefore establishes a policy requirement that clear long-term objectives are in place.</p>		

PI 3.1.3	The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach	
	The SG60 and SG80 requirements are met by the long term objectives for the sustainable management of both fisheries and the marine environment set out in the Islands Plan and relevant policy documents. These objectives exceed the requirement for “precautionary” management; they aim to achieve “maximum sustainable yield” (i.e. a higher biomass and lower fishing mortality than required by the precautionary approach). The Fisheries Ordinance sets out an explicit requirement to develop and pursue these objectives, meeting the SG100 requirements.	
References	Fisheries (Conservation and Management) Ordinance 2005; Department of Natural Resources, 2017; section 5.4.3 of this report.	
OVERALL PERFORMANCE INDICATOR SCORE:		100
CONDITION NUMBER (if relevant):		NA

10.4.4 PI 3.1.4 Evaluation Table

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that perverse incentives do not arise.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and explicitly considers incentives in a regular review of management policy or procedures to ensure they do not contribute to unsustainable fishing practices.
	Met?	Y	Y	Y
	Justification	<p>There are no subsidies within the management system.</p> <p>The fishery management system addresses both Principle 1 and 2 outcomes with various incentives. The Falkland Islands Government specifies the fishing effort (through a long-term ITQ and an annual TAC that is set by reference to the fish stock and potential environmental impacts). Additional technical measures (such as the gear specification and requirements to use equipment to mitigate impacts on birds) are specified as statutory licence conditions. A range of pre-determined statutory penalties, including fines and imprisonment, are set out in the legislation and provide incentives for compliance.</p> <p>A further incentive is provided by the CCAMLR <i>Dissostichus</i> Catch Documentation System (CDS) requirements, which requires verifiable evidence of legal fishing activity to accompany all consignments of toothfish. Non-compliance with CDS requirements would render the catch unmarketable. This is a powerful incentive to ensure compliance with the CDS and all relevant regulations.</p> <p>The Fisheries Ordinance 2005 explicitly requires that the Falkland Islands Government Executive Council should carry out at least one review every 12 months to determine whether the Director of Fisheries is delivering the specified management objectives for the fishery (which include both the conservation of fish stocks and the protection of the marine environment), and whether any changes are required to the management policy in order to achieve these objectives. The performance of the management system and</p>		

PI 3.1.4	The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing	
	<p>the effect of its incentives are also subject to regular scrutiny by stakeholders including representatives of the fishing industry and environmental NGOs.</p> <p>In addition to the scrutiny of incentives provided by the management system in the Falklands, the harvest controls applying to the toothfish longline fishery are informed by and compatible with CCAMLR requirements even though the fishery is outside CCAMLR waters. These requirements are subject to review annually at the CCAMLR meetings in Tasmania.</p> <p>Together, these mechanisms ensure that the management system actively and explicitly considers and reviews management policies and procedures including the incentives in place to encourage sustainable fishing, and is capable of responding to evidence of any unsustainable fishing practices arising from these incentives, meeting the SG60, 80 and 100 requirements.</p>	
References	Fisheries (Conservation and Management) Ordinance 2005; Department of Natural Resources, 2017; Sections 5.4.1.2, 5.4.2, 5.4.4 & 5.4.7 of this report.	
OVERALL PERFORMANCE INDICATOR SCORE:		100
CONDITION NUMBER (if relevant):		NA

10.4.5 PI 3.2.1 Evaluation Table

PI 3.2.1		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery's management system	Short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.	Well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.
	Met?	Y	Y	Partial
	Justification	<p>Well defined and measurable short and long term objectives are set out in the <i>"Toothfish Sustainability Measures"</i> documents (the most recent covering the period 2017-18) produced by the Falkland Islands Fisheries Department in response to scientific advice and in consultation with the fishing industry.</p> <p>These objectives include, <i>inter alia</i>:-</p> <ul style="list-style-type: none"> • The long-term sustainable exploitation of toothfish (at an SSB in the target range of 0.45 - 0.40 SSB₀) • Reduction of incidental mortality on seabirds (with a limit set at 0.002 birds per 100 hooks) • Reduction of impacts on non-target species • Reduction of impacts on habitats and vulnerable marine ecosystems. <p>There are explicit requirements in the underlying statutory management system to apply these objectives to the short and long-term management of this fishery with respect to both the target stock and some of the Principle 2 components (the non-target species and ETP species) that could be affected by it.</p> <p>The explicit objectives in place meet the SG60 and SG80 requirements. The objectives are well-defined and measurable for the target stock and for some of the Principle 2 components (such as the principal non-target and ETP species). Measurable objectives are still being identified for other components of Principle 2 (habitats and vulnerable marine ecosystems). This area of work represents a long-term commitment and although research has been on-going for several years it has not yet been possible to identify objectives and associated management measures. There is a clear staff and resource commitment to developing measurable objectives for the remaining components of Principle 2. Nevertheless, these have not yet been produced, so the SG100 requirements are still only partially met.</p>		

PI 3.2.1	The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2	
	<p>The assessment team noted at the initial certification of the fishery that the scoring of this Performance Indicator would improve with a better understanding of habitat distributions and impacts associate with the fishery that would enable measurable management objectives to be defined for all of Principle 2. Evidence has been presented by the client to demonstrate that work is underway, and further work and management measures are under consideration which would provide the information and management . It is noted that this will enable the fishery to continue to meet developing requirements in the MSC standard.</p> <p>The assessment team would recommend that the client encourages the FIFD to continue to develop measurable management objectives for habitat impacts within this period of certification.</p>	
References	Fisheries (Conservation and Management) Ordinance 2005; Department of Natural Resources, 2017; section 5.4.5 of this report.	
OVERALL PERFORMANCE INDICATOR SCORE:		90*
CONDITION NUMBER (if relevant):		NA

* The SG100 standard is partially met. A "partial" score can be awarded for Performance Indicators that only have a single scoring issue (MSC FCR v2.0 at 7.10.6.3).

10.4.6 PI 3.2.2 Evaluation Table

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	There are some decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	Y	Y	
	Justification	<p>Established decision making processes are in place in the form of the statutory provisions of the Fisheries Ordinance 2005, and the processes that have been established to consider both annual stock assessment information and other information (such as advice on the modification of fishing gear, changes to fishing practices and fishery closures).</p> <p>These processes have resulted in the implementation of a range of statutory measures including the annual TAC for the fishery and its subsequent adjustment in 2008 and 2015 in response to changing perceptions of stock status; the changes to licence conditions that allowed the introduction of “umbrella” gear in the fishery in 2008; and the seasonal closure of the Burdwood Bank toothfish spawning area in 2006 and the extension of the closed season in 2015. The decision making processes in place have also allowed for the agreement and development of Sustainability Measures for the fishery, in accordance with the requirements of the Fisheries Ordinance 2005.</p> <p>The decision making processes in place and the evidence of measures and strategies that have resulted from them meet the SG60 and 80 requirements.</p>		

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.		
b	Guidepost	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	Y	Y	Y
Justification		<p>The Fisheries Ordinance 2005 requires that the management of the fishery takes account of the stock status of target species and the potential effects on non-target species, marine biodiversity, and marine habitats.</p> <p>The setting of an annual TAC ensures that these issues are kept under review, and the discussion of the stock assessment, TAC and management proposals through the consultation and liaison arrangements that have been established for the fishery ensure that all issues are scrutinised by a wide range of stakeholders.</p> <p>Evidence that the management process responses to such issues is provided by, <i>inter alia</i>, the adjustment of the TAC in 2008 and 2015 in response to changing perceptions of stock status; the spatial and seasonal closure of the Burdwood Bank toothfish spawning area in 2006 and the extension of the closed season in 2015; and the mitigation measures in place to prevent accidental mortality of birds in the fishery. More recently, the management system has responded to concerns about potential benthic ecosystem impacts by initiating research in this area.</p> <p>No evidence has been presented that any issues identified in relevant research have been ignored by decision makers.</p> <p>The response of the decision making processes to all issues identified in relevant research meets the SG60, 80 and 100 requirements for this Scoring Issue.</p>		

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.		
c	Guidepost		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Y	
	Justification	<p>The Fisheries Ordinance 2005 (at §10) requires that all decisions concerning the management of fisheries in the FICZ and FOCZ use the best available information, take full account of uncertainties, and are precautionary.</p> <p>Evidence of this precautionary approach and the use of the best available information is provided by the decisions to reduce the TAC for the fishery in 2008 and 2015, and by the creation of the Burdwood Bank closure, which is intended to protect what is thought likely to be a spawning area. These actions demonstrate that the decision making processes in place meet the SG80 requirements.</p>		
d	Guidepost	Some information on fishery performance and management action is generally available on request to stakeholders.	Information on fishery performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders provides comprehensive information on fishery performance and management actions and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?	Y	Y	Y

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.		
	Justification	<p>The Fisheries Ordinance 2005 requires that the response of the management system to findings and recommendations are formally reported to all interested stakeholders. This information is communicated directly, through minutes of stakeholder meetings, and via formal notices in the Falkland Islands Gazette. Information is also published on the internet (www.fig.gov.fk/fisheries).</p> <p>The reporting processes in place meet the SG60, 80 and 100 requirements.</p>		
e	Guidepost	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	Y	Y	Y
	Justification	Neither the management system nor the fishery is subject to any legal challenges. There is no evidence of any past breaches or violations of laws or regulations necessary for the sustainability of the fishery. The SG60, 80 and 100 requirements are therefore fully met.		
References		Fisheries (Conservation and Management) Ordinance 2005; Department of Natural Resources, 2017; FIFD, 2017fopm; Sullivan, 2004; Janzen et al, 2011; Fisheries Committee, 2012; section 5.4.6 & 5.4.7 of this report.		
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				NA

10.4.7 PI3.2.3 Evaluation Table

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Monitoring, control and surveillance mechanisms exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	Y	Y	Y
	Justification	<p>The fishery is closely monitored and controlled by the Falkland Islands Government which also operates a statutory surveillance system.</p> <p>The statutory system in force requires, <i>inter alia</i>, that the fishing vessel reports daily fishing activity (location and catch weight) to the FIFD; monitoring of landings that are reconciled with daily catch reports; surveillance of the fishing vessel using two VMS systems; direct observation of fishing trips, monitoring of fishing practices and sampling of catches by FIFD observers; and surveillance of fishing activity at sea by the patrol vessel <i>Protegat</i> as well as aircraft.</p> <p>Evidence was presented at the site visit that the control measures in place are capable of monitoring the activities of licensed fishing vessels within the FICZ and FOCZ as well as ensuring that IUU vessels which are not permitted to fish within the FOCZ & FICZ do not do so (see section 5.4.7.4.1 of this report).</p> <p>Additional monitoring and control measures are applied by the client and Government to ensure compliance with the CCAMLR toothfish management measures (the DCD and DED documentation system). As a consequence of this, any vessel calling at Stanley (whether fishing vessel or reefer) has to declare any toothfish on board. Any fishing vessels that dock in the Falklands have to submit to a full CCAMLR inspection before they are permitted to leave the Islands.</p> <p>This comprehensive system is capable of detecting breaches of management measures, strategies and rules. The level of compliance reported from the fishery is excellent, demonstrating the ability of the system to enforce these measures, strategies and rules.</p> <p>The assessment team note the proactive role of FIG fishery observers in both raising awareness of regulations in force and taking action to ensure that they are complied with. An example is provided in the observer report for the <i>Global Pesca I</i> in April-May 2017, where the observer provided</p>		

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
		<p>advice to the crew on improvements that could be made to the Tori Lines deployed from the vessel. A further example is provided by the decision to prosecute an operator in the squid trawl fishery on the basis of information gathered by a FIG fishery observer (see section 5.4.7.2 of this report).</p> <p>The monitoring, control and surveillance system in place meets the SG60, 80 and 100 requirements.</p>		
b	Guidepost	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	Y	Y	Y
	Justification	<p>A clear set of statutory sanctions are in place to support the Falklands Islands legislation. Schedule 3 of the Fisheries Ordinance 2005 sets out the manner in which offences shall be punished, providing assurance that sanctions shall be consistently applied.</p> <p>There have been no infringements of the Fisheries Ordinance or fishing licence conditions in the toothfish longline fishery. However evidence has been presented of the master and the owner of a fishing vessel operating in the squid trawl fishery being charged with offences under this legislation (all relating to the non-implementation of measures intended to mitigate seabird interactions and resulting from observations made by the FIG observer aboard the vessel – see section 5.4.7.2 of this report).</p> <p>The high level of compliance under this well monitored regime demonstrates that the system is both enforced and complied with; and there is evidence of the application of these sanctions in another fishery operating under the same monitoring and legislative regime. This evidence supports a conclusion that the sanctions provide demonstrably effective deterrence, meeting the SG60, 80 and 100 requirements.</p>		
c	Guidepost	Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	Y	Y	Y

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with	
	Justification	<p>The absence of any evidence of non-compliance under the regime of a high level of observer coverage in the fishery (49.7% in 2016); close monitoring of fishing activity using surveillance equipment, at-sea patrols; aerial monitoring; and inspection of landings provides a high degree of confidence that the fishery is complying with all relevant management measures.</p> <p>Further confidence is provided by information showing that there has been no enforcement or legal action taken against the fishery for over 12 years. The fishery also assists management through the provision of daily catch data via an electronic logbook scheme which supports effective stock management. The SG60, 80 and 100 requirements are therefore fully met.</p>	
d	Guidepost		There is no evidence of systematic non-compliance.
	Met?		Y
	Justification	Observer reports covering nearly 50% of fishing trips, catch monitoring and vessel monitoring reveals a high degree of compliance with the management system. There is no evidence of systematic non-compliance. The SG80 requirements are therefore met.	
References		Fisheries (Conservation and Management) Ordinance 2005; Department of Natural Resources, 2017;FIFD, 2017OBS; section 5.4.6 & 5.4.7 of this report.	
OVERALL PERFORMANCE INDICATOR SCORE:			100
CONDITION NUMBER (if relevant):			NA

10.4.8 PI 3.2.4 Evaluation Table

PI 3.2.4		The fishery has a research plan that addresses the information needs of management		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.	A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
	Met?	Y	Y	Y
	Justification	<p>An overall research strategy for Falkland Islands fisheries is set out in the Directorate of Natural Resources – Fisheries “<i>Science Plan 2015-17</i>”. This document provides a strategic context to coordinate the work of the 17 scientific staff in the department (grouped into four subsections – scientific observers, data management, stock assessment and fisheries studies). This strategy identified stock structure and stock assessment as important areas for research.</p> <p>A fishery-specific research plan is set out in the document “<i>Toothfish Sustainability Measures 2017-2018</i>”. This provides a brief update on recent progress and sets out current research objectives relating to the target species (P1) marine environment (P2) and also for effective management (P3).</p> <p>Much of the research carried out into this fishery has been published in peer-reviewed journals. A list of peer reviewed research papers is available on the FIFD website. This provides assurance that the research and its findings are credible and reliable. Departmental reports relevant to the fishery (such as ID guides for skates) are also freely available for download from the FIFD website.</p> <p>The research plan in place and the quality of the research conducted into the fishery meets the SG60, 80 and 100 requirements.</p>		
b	Guidepost	Research results are available to interested parties.	Research results are disseminated to all interested parties in a timely_fashion.	Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.

PI 3.2.4		The fishery has a research plan that addresses the information needs of management		
	Met?	Y	Y	Y
	Justification	<p>Research plans and the results of research work are submitted directly to the management bodies and stakeholders on the Falkland Islands in a predictable, timely fashion. Research information from the FIFD is also published on the Falkland Islands Government website (www.fig.gov.fk/fisheries). This information is widely and publicly available and published in a timely fashion.</p> <p>Much of the research work carried out by FIFD is also published in peer-reviewed journals, which brings it to the direct attention of the scientific community and also ensure that a high standard of research work is maintained.</p>		
	References	Fisheries (Conservation and Management) Ordinance 2005; Department of Natural Resources, 2017; FIFD 2018a, FIFD 2018b, FIFD 2018c; section 5.4.8 of this report.		
OVERALL PERFORMANCE INDICATOR SCORE:				100
CONDITION NUMBER (if relevant):				NA

10.4.9 PI 3.2.5 Evaluation Table

PI 3.2.5		There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	The fishery has in place mechanisms to evaluate some parts of the management system.	The fishery has in place mechanisms to evaluate key parts of the management system	The fishery has in place mechanisms to evaluate all parts of the management system.
	Met?	Y	Y	Y
	Justification	<p>There is a formal mechanism in place that requires annual review of the fishery management system by the Falkland Islands Government Executive Council (§6 of the Fisheries Ordinance 2005). The scope of this review is set out in the Act and encompasses, <i>inter alia</i>, the efficiency and cost-effectiveness of enforcement; the sustainability of fishery exploitation; and ensuring compliance with international fisheries agreements.</p> <p>FIFD are also subject to annual review by the Falkland Islands Government Auditors, who examine both financial propriety and compliance with all of the statutory responsibilities and duties of the Department.</p> <p>These regular internal reviews cover all aspects of the management system, meeting the SG60, 80 and 100 requirements.</p>		
b	Guidepost	The fishery-specific management system is subject to occasional internal review.	The fishery-specific management system is subject to regular internal and occasional external review.	The fishery-specific management system is subject to regular internal and external review.
	Met?	Y	Y	N

<p>PI 3.2.5</p>	<p>There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system</p>
<p>Justification</p>	<p>There is a formal mechanism in place that requires annual review of the fishery management system by the Falkland Islands Government Executive Council (§6 of the Fisheries Ordinance 2005).</p> <p>Evidence that FIFD carry out this requirement is provided in the annual review of fishing effort and TAC. FIFD are also subject to annual review by the Falkland Islands Government Auditors, who examine both financial propriety and compliance with all of the statutory responsibilities and duties of the Department.</p> <p>The management system described in section 5.4.2 of this report provides a mechanism for wide involvement in, and scrutiny of, management decisions. Minutes from recent meetings of the Fisheries Committee have been provided, which show that a wide range of issues (stock assessments, licensing, mammal bycatch) are kept under review by this Committee.</p> <p>These procedures provide for regular internal review of the management system and for the involvement of external parties in the existing management system. The procedures would, therefore, be capable of detecting any significant deficiencies in any aspect of the management system.</p> <p>The most recent formal external review of the management system was carried out in 2003, and informed the drafting and implementation of the Fisheries Ordinance 2005.</p> <p>Following recent changes in the harvest control rules for the fishery, the Fisheries Department has identified the review of the management system as a research priority for 2017-18.</p> <p>The procedures in place allow for regular internal review of the management system, with some external involvement and irregular ad-hoc external review on a more formal basis. The SG60 and 80 requirements are therefore met.</p> <p>The SG100 requirements may be met when the FIFD establishes a system for regular external review of the management system. As noted in PI1.2.4(d) above, at the time of this re-assessment the FIFD was in the process of commissioning an external review of the stock assessment and management system. At the present time, SG100 is not yet met.</p>
<p>References</p>	<p>Fisheries Policy Group, 2003; Fisheries (Conservation and Management) Ordinance 2005; FIFD, 2016; Fisheries Committee, 2017a, b; Section 5.4.2 & 5.4.9 of this report.</p>

PI 3.2.5	There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system
OVERALL PERFORMANCE INDICATOR SCORE:	90
CONDITION NUMBER (if relevant):	NA

11 Appendix 2: Risk Based Framework (RBF)

The MSC Risk-Based Framework was used for the assessment of aspects of this fishery where there was either insufficient information to allow the conventional assessment process to be used, or where there were no reference points against which the fishery could be evaluated under the conventional performance indicators.

Acoura Marine invited participation in the Risk-Based assessment of this fishery by ensuring that notices were posted on the MSC website, and circulating notices to all identified stakeholders in the fishery. These notices included an invitation to participate in a RBF workshop that was held in Stanley on the 16th November 2017 either through attendance or using electronic communication.

Acoura Marine also created an on-line questionnaire that stakeholders were invited to complete if they were unable to participate in the workshop.

The workshop participants are listed below.

Table 22: List of participants at the RBF workshop held in Stanley, Falkland Islands on 16th November 2017.

Name	Organisation	Role
Phoebe Socodo	Consolidated Fisheries Ltd	Office administrator & crew coordinator
Janet Robertson	Consolidated Fisheries Ltd	Sales & marketing manager
Clodagh Stewart-Reid	Consolidated Fisheries Ltd	Trainee
Jessica Jones	FIFD	PhD Intern
Tom Busbridge	FIFD	PhD Intern
B. Keningale	FIFD	Acting Observer Coordinator
A. Arkhipkin	FIFD	Senior Fisheries Scientist
J. Bates	FIFCA	Executive Secretary
Joost Pompert	Georgia Seafoods	General Manager
Megan Tierney	JNCC	ACAP Officer
Tim Cotter	Consolidated Fisheries Ltd	General Manager
Andrew Newman	Argos Froyanes Ltd	Stanley Manager
Haseeb Randhawa	FIFD	Fisheries Scientist
Bradley Roberts	Beauchene Fishing Co. Ltd.	Operations Manager
John Pollard	Sullivan / CFL	Director
Hamish	Seafish	General Manager
Jan Cheek	CFL	Shareholder / Director
Tom Blake	CFL	Shareholder / Director
Andreas Winter	FIFD	Stock assessor
Cian Derbyshire	FIFD	Fisheries observer
Denise Blake	FIFD	Data manager
Alex Blake	FIFD	Data analyst
Brendon Lee	FIFD	Toothfish Scientist
Amanda Kuepfer	FIFD	Seabird observer
Michael Gras	FIFD	Stock assessment scientist
Thomas Farrugia	FIFD	Stock assessment scientist

Acoura Marine received no request to participate remotely from any stakeholders, nor any questionnaire responses in advance of the workshop.

At the start of the workshop the Lead Assessor provided the stakeholders with a briefing on the MSC assessment process and the RBF approach to fisheries assessment prior to presenting the information that the team had gathered on the interactions of the fishery with MSC Principle 2 components, including maps of the extent of fishing activity and maps showing the known extent of the various species and habitat features that the fishery may interact with.

The views of the workshop participants were recorded in SICA tables during the workshop. The results of the RBF assessment that was carried out by Acoura Marine with this stakeholder input are set out on the following pages.

11.1 Scale-Intensity-Consequence Analysis (SICA)

11.1.1 Principle 2 SICA Scoring Template for PI 2.1.1 Retained Species:

Performance Indicator	Risk-causing activities from fishery under assessment	Spatial scale of activity	Temporal scale of activity	Intensity of activities	Relevant subcomponents	Consequence score	MSC Score
PRINCIPLE TWO: Retained Species Outcome Species: Grenadier, <i>Macrourus holotrachys</i>	<ul style="list-style-type: none"> Fishing Gear loss Bait collection Other identified risk-causing activities (please specify) 	2	5	1	Population size Reproductive capacity Age/size/sex structure Geographic range	1	100

Rationale:

A small quantity of grenadier (*Macrourus holotrachys*) from the fishery are retained for sale in the domestic market. The quantity of fish is up to 8.5 t per annum, which is around 10% of the grenadier catch (and consequently around 0.5% of the total catch). The workshop therefore considered the effect that this fishery could have on the *M. holotrachys* stock.

All other non-target species presently caught in the fishery are returned directly to the sea as discards. The introduction of the 'umbrella' fishing system, which encloses the catch during hauling, is designed to minimise the main source of unobserved mortality, depredation by toothed whales; as described below, fishing mortality is therefore the most important risk-causing activity.

The views of the RBF workshop on the potential retention of *M. holotrachys* in the fishery are set out below.

Risk Causing Activity

It was agreed that the removal of *M. holotrachys* by fishing was the risk causing activity most likely to affect the (potential) retained species.

Spatial Scale

M. holotrachys is widely distributed in the Southern hemisphere. It was felt that the toothfish longline fishery covers 1-15% of the population range. A Score of 2 is therefore appropriate for the spatial scale.

Temporal Scale

The fishery is conducted on 200-300 days of the year. A temporal score of 5 is therefore appropriate.

Intensity

As only a single vessel is engaged in the fishery, and operates over a very wide area, there was considered remote likelihood of detection. An intensity score of 1 was therefore considered appropriate.

Relevant subcomponent

It was agreed that the size and sex structure were the subcomponents most likely to be affected by the removal of *M. holotrachys*. This was because the fishery tended to catch larger fish, which are predominantly female. While both size and sex structure are likely to be affected, it was the effect on size structure that was considered in the workshop to be of greatest significance.

Consequence

It was felt that the effect of retaining less than a tonne of *M. holotrachys* per year would be undetectable on the size structure (or sex structure) of the population. A preliminary stock assessment has predicted a sustainable catch of 4000t in an exploratory grenadier fishery. A score of 1 was considered appropriate. This is equivalent to an MSC Score of 100. This is the score that will be used in this assessment for this Performance Indicator (MSC Certification Requirements v1.3 Pl 2.1.1).

References

Further information about retained non-target species, including references to relevant publications, is presented in section 3.4.1 of this report.

11.1.2 Principle 2 SICCA Scoring Template for PI 2.2.1 Bycatch (Discarded) Species:

Performance Indicator	Risk-causing activities from fishery under assessment	Spatial scale of activity	Temporal scale of activity	Intensity of activities	Relevant subcomponents	Consequence score	MSC Score
PRINCIPLE TWO: Bycatch Species Outcome Species: Blue Antimora, Antimora rostrata	<ul style="list-style-type: none"> Fishing Gear loss Bait collection Other identified risk-causing activities (please specify) 	2	5	1	Population size Reproductive capacity Age/size/sex structure Geographic range	1	100

Rationale:

Several species are known to be discarded from the fishery, and the quantities of discards have been reported by the fishing vessel on a daily basis since 1992, and since 2001 have also been recorded by Government observers who are currently present on 50% of longline fishing trips. It was noted that changes were made to the fishing gear in 2007, with a switch to the “umbrella” system, and this had resulted in lower discard levels in the fishery.

The most significant non-target species recorded in the past 5 years are: -

- Grenadier (*Macrourus holotrachys* and occasional *M. carianatus*): typically 70-95t have been discarded per year, principally of the species *M. holotrachys* (*M. carianatus* is predominantly found in waters shallower than the 600m minimum depth at which the longline fishery is permitted to take place). This represents around 6% of the toothfish catch, by weight.
- Skates (several species): the total weight of all skate species discarded is between 21 and 55t per year. It was noted that studies in other longline fisheries indicate that survival of skate after discarding (cutting from lines) can be quite good (Endicott & Agnew, 2004)
- Blue antimora (*Antimora rostrata*): since 2007, discards have been between 10-24t per year, average 1.34% of total landings.

Also significant, due to their vulnerability are shark species, including sleeper and porbeagle sharks; porbeagle sharks are listed in the

Convention on Migratory Species, and the Falkland Islands are signatories to this convention. A Memorandum of Understanding prohibiting any directed fishery for this species has been ratified by the Falkland Islands Government.

It was noted that because the grenadier species *M. holotrachys* has been classified as a “retained” non-target species, it cannot also be considered as a “discarded” non-target species. It was agreed that the next most abundant individual species in the catch is the blue antimora (*Antimora rostrata*) and that this should be considered the most vulnerable sub-component (‘skates’ being a complex of up to 5 separate species).

The views of the RBF workshop on the effect of catching *A. rostrata* in the fishery are set out below, the same conclusions would apply to skate species affected by the fishery – the next most vulnerable species.

Risk Causing Activity

It was agreed that fishing was the risk causing activity most likely to affect the discarded species.

Spatial Scale

It was felt that the toothfish longline fishery covers 1-15% of the population range of affected species. A Score of 2 is therefore appropriate for the spatial scale.

Temporal Scale

The fishery is conducted on 200-300 days of the year. A temporal score of 5 is therefore appropriate.

Intensity

With a single vessel operating over the FICZ and FOCZ intensity was considered to be very low. A score of 1 was considered appropriate.

Relevant subcomponent

It was agreed that the size and sex structure were the subcomponents most likely to be affected by the capture and discarding (and subsequent mortality) for both antimora and skate. This was because the fishery tended to catch larger fish, which are predominantly female. While both subcomponents are likely to be equally affected, it was the effect on size structure that was considered in the workshop to be of greatest significance.

Consequence

It was felt that the effect of discarding would be undetectable on the size structure (or sex structure) of the antimora population (the same conclusion also applied to skate). The risks to affected skate populations are further reduced as hooked skates are cut from the lines prior to landing; research in other fisheries has demonstrated high survivorship following cutting from longlines. A score of 1 was therefore considered appropriate. This is equivalent to an MSC Score of 100. This is the score that will be used in this assessment for this

Performance Indicator (MSC Certification Requirements v1.3 at PI 2.2.1).

References

Further information about discarded non-target species, including references to relevant publications, is presented in section 5.3.2 of this report.

11.1.3 Principle 2 SICCA Scoring Template for PI 2.4.1 Habitats:

Performance Indicator	Risk-causing activities from fishery under assessment	Spatial scale of activity	Temporal scale of activity	Intensity of activities	Relevant subcomponents	Consequence score	MSC Score
PRINCIPLE TWO: Habitat Outcome Habitat: Complex biogenic reef	<ul style="list-style-type: none"> • Fishing • Gear loss • Bait collection • Anchoring/mooring • Other identified risk-causing activities (please specify) 	1	3	2	Habitat types	1	100
					<u>Habitat structure and function</u>		
<p>Rationale</p> <p>The workshop discussed the effect that the fishery might have on marine habitats. The fishery was known to take place on a variety of seabed types, ranging from muddy to sandy to rocky areas. Most of the seabed in the areas that is fished is muddy, with occasional rock outcrops where erect benthic organisms may be found, and which could be damaged by physical impact from the fishing gear. It was agreed that the habitat that was most vulnerable to any impact would be the rocky seabed areas on the Burdwood Bank, particularly where this supported biogenic habitats.</p> <p>Risk Causing Activity</p> <p>The aspect of the fishery that was considered most likely to affect benthic marine habitats was the anchoring and weighting of the fishing gear, and also physical abrasion of the seabed by ropes and under circumstances where the gear may drag across the seabed.</p> <p>Spatial Scale</p> <p>The rocky seabed habitat and associated species found on the Burdwood Bank and other parts of the fishing area are widespread throughout the South Atlantic. The overlap between the habitat and the fishery was considered to be 1-15%, equivalent to a score of 1.</p> <p>Temporal Scale</p>							

The fishery takes place within the area of the most vulnerable habitat on 1-100 days per year, a temporal scale of 3.

Intensity

With a single vessel operating over the FICZ and FOCZ intensity was considered likely to be minor, equivalent to a score of 2.

Relevant subcomponent

If the fishery had any adverse effect on marine habitats it was agreed that the most likely effect would be on habitat structure and function, resulting from the physical impact of the gear on fragile habitats and / or habitat forming species.

Consequence

It was felt that the fishery would cause no detectable change on habitat structure and function. A consequence score of 1 was felt to be appropriate because interactions were considered unlikely to be detectable against natural variation, equivalent to an MSC score of 100. This is the score that will be used in this assessment for this Performance Indicator (MSC Certification Requirements v1.3 at PI 2.4.1).

References

Further information about marine habitats relevant to this fishery, including references to relevant publications, is presented in section 3.4.4 of this report.

11.1.4 Principle 2 SICCA Scoring Template for PI 2.5.1 Ecosystem:

Performance Indicator	Risk-causing activities from fishery under assessment	Spatial scale of activity	Temporal scale of activity	Intensity of activities	Relevant subcomponents	Consequence score	MSC Score
PRINCIPLE TWO: Ecosystem Outcome	<ul style="list-style-type: none"> • Fishing • Gear loss • Bait collection • Other identified risk-causing activities (please specify) 	1	5	1	Species composition		
					Functional group composition		
					Distribution of the community		
Rationale The role of toothfish in the ecosystem was discussed. Adult toothfish are a high trophic level species. Smaller toothfish feed mainly on rock cod (<i>Patagonotothen ramsayi</i>) and Loligo (<i>Doryteuthis gahi</i>) while in shallower water on the shelf. Larger adults in deeper water feed on larger pelagic fish. Orca and sperm whales are known to depredate on toothfish. Toothfish are not understood to form part of the natural diet of Orcas, which are opportunistic scavengers of fish from longlines. Toothfish are known to be part of the natural diet of Sperm whales.					It was noted that the fishery may have other, currently unquantified, ecosystem effects. These included the effect on the ecosystem of discarding of fish and offal at the surface, which could have a beneficial effect on seabirds and cetaceans, but which has not been investigated in this fishery.		
Risk Causing Activity The activity considered most likely to affect the ecosystem was the removal of toothfish by fishing.					The most likely effect of removing toothfish from the ecosystem was considered to be an increased abundance of their prey species and a reduction in the abundance of toothfish as food for sperm whales.		

Spatial Scale

The fishery area occupies a relatively small proportion of the South Atlantic ecosystem, and an overlap of 1%, equivalent to a score of 1, was felt to be appropriate.

Temporal Scale

The fishery takes place on 2-300 days per year, equivalent to a temporal scale score of 5.

Intensity

With a single vessel operating over the FICZ and FOCZ, an intensity score of 1 was considered appropriate.

Relevant subcomponent

The most likely effect of removing toothfish from the ecosystem was considered to be an increased abundance of their prey species, which would be a change to the trophic structure of the ecosystem.

Consequence

The workshop participants felt that there was no evidence of changes in the abundance of toothfish prey species, and that any changes arising from fishery removals at their current level would be undetectable. No changes in the abundance of toothfish predators have been noted or associated with the fishery.

It was noted that the fishery removes around 1,000t of a SSB of 21,000t annually. The stock assessment shows that this harvest is sustainable, and that is has no adverse consequences for the overall trophic size/structure.

The effects of the fishery on the internal dynamics of the ecosystem were considered unlikely to be detectable against natural variation. A consequence score of 1 was therefore felt to be appropriate, which is equivalent to an MSC score of 100. This is the score that will be used in this assessment for this Performance Indicator (MSC Certification Requirements v1.3 at PI 2.5.1).

References

Further information about ecosystems relevant to this fishery, including references to relevant publications, is presented in section 3.4.5 of this report.

11.2 Productivity-Susceptibility Analysis (PSA)

All of the Scale Intensity Consequence Analysis (SICA) scores exceed 80. There are no adverse interactions with any ETP species. There is therefore no need to carry out any Productivity-Susceptibility Analysis (PSA) for any of the Performance Indicators assessed using the Risk Based Framework (see MSC Certification Requirements v1.3, Figure CC1).

11.3 Risk Based Framework (RBF) questionnaire

11.3.1 Copy of questionnaire

Falkland Islands Toothfish Longline Fishery

The Falkland Islands Toothfish Longline Fishery is currently being assessed against the Marine Stewardship Council (MSC) Standard by a team of independent experts from Acoura Marine.

We are using the MSC "Risk Based Framework" to assess the effect that this fishery may have on the marine environment. This approach makes use of stakeholder views to inform the assessment of the fishery by a team of independent experts.

We are aware that some stakeholders may be unable to meet the assessment team during the site visit to the Falkland Islands that is scheduled for the 13th-17th November 2017. If you are unable to attend the site visit, this on-line questionnaire provides you with an opportunity to inform the assessment team of your views.

This questionnaire considers the effect of the fishery on:-

- Retained non-target species
- Discarded non-target species
- Endangered, threatened & protected species
- Habitats
- Ecosystems

We have tried to simplify the complexities of the MSC assessment process to produce this questionnaire, but it still remains complicated. If you have any queries about the MSC process, you can find more information at the MSC website (www.msc.org), or you can get in touch with me.

The full questionnaire has a total of 47 questions, but not all of them require an answer. If you are concerned about just one aspect of the fishery, you should be able to provide a response in 5 minutes or less. If you have a wide range of views it may take a little longer.

This questionnaire will remain open for responses until the 30th of November 2017.

The other aspects of the fishery (the status of the target species and the management of the fishery) are being assessed during the site visit using the conventional MSC assessment methodology. The MSC provide an official template for stakeholder comments which you can use if you have views on these aspects of the fishery. The template can be downloaded at <https://www.msc.org/documents/get-certified/stakeholders>

Thank you for taking the time to participate in this assessment.

JIM ANDREWS
Lead Auditor
Acoura Marine
jim.andrews@acoura.com

The Fishery Under Assessment

This page provides a brief description of the Falkland Islands Toothfish Longline Fishery that is under assessment.

The fishery under MSC assessment (the "Unit of Certification") is defined as:-

- Species: Patagonian toothfish (*Dissostichus eliginoides*)
- Geographical Area: Falkland Islands Conservation Zones (FICZ, FOCZ)
- Method of Capture: Longline
- Stock: Stock located within FICZ, FOCZ
- Management System: Falkland Islands Government Fisheries Department
- Client Group: Consolidated Fisheries Ltd
- Fishing Fleet: One vessel, CFL Gambler.

For the purposes of MSC Assessment under Principle 2, we are focusing on the impact of this Unit of Certification on the marine environment. Please bear this in mind when responding to the questions that follow.

Background information about the fishery is available to inform your input to the fishery assessment. This is summarised and documented in the Public Certification Report that was published for this fishery in 2013 and the subsequent annual surveillance reports. These can all be accessed on the MSC website here: <https://fisheries.msc.org/en/fisheries/falkland-islands-toothfish/@/view>

If you have any queries about the Unit of Certification or the MSC assessment procedure, please contact me.

JIM ANDREWS
Lead Auditor
Acoura Marine
jim.andrews@acoura.com

About You

Before you start the questionnaire, we need to have your contact details so that we can keep in touch with you as the assessment proceeds. This will ensure that you are kept fully up to date with progress and that you have further opportunities to participate in the assessment process.

We respect your privacy and security, and will only use this information in accordance with the statement below.

Privacy, Transparency and Confidentiality

1. We will ask you for your e-mail address in case we need to contact you for clarification of your comments.
2. The MSC process requires assessment inputs to be transparent and verifiable. We will list you as a stakeholder that has contributed to this assessment and may publish your interview response in assessment documents.
3. Your privacy is important to us. We will not publish your e-mail address nor will we share it with any third parties.

* 1. Please give us your contact details.

Name:

Company:

City/Town:

Country:

Email Address:

Phone Number:

* This information is vital. Once you have provided all of the contact information above you can start to fill in the questionnaire.

Retained non-target species

The fishery under assessment may result in the capture of certain non-target species which are then landed ashore.

We are keen to hear your views on the effect of this fishery on retained non-target species to guide our assessment.

(Please note - if you are concerned about the effect of the fishery on discarded species or on marine wildlife, these are dealt with by later sections of the questionnaire).

* 2. Are you concerned about the effect of the Falkland Islands Longline Toothfish Fishery on retained non-target species?

- No (if you select this choice you will skip on to the next page)
- Yes (you will now be asked questions about impacts on retained species)

Once you have made your choice, please click on the "Next" button below to proceed.

Retained Non-target species Questionnaire

The fishery under assessment may result in the capture and retention of certain non-target species. The questions in this section seek your views about the effect that the fishery may have on these species.

3. Which non-target species do you think are caught and retained by the Falkland Islands Toothfish Longline Fishery? (You can select several options.)

This list includes the bait species that are used in this fishery, and the effect of the fishery on these species is considered here.

- Grenadiers (Macrourus spp.)
- Greenland / Southern Sleeper shark (Somniosus antarcticus)
- Skate - Bathyraja meridionalis
- Skate - Bathyraja papilionifera
- Skate - Bathyraja cousseauae
- Skate - Bathyraja multispinis
- Skate - Amblyraja frerichsi
- Skate - Amblyraja doellojuradoi
- Bait species: sardines (Sardina spp.)
- Bait species: squid (Illex spp.)
- Other species (please specify)

6. Spatial scale: what is the scale of the overlap between the Falkland Islands Toothfish Longline Fishery and the stock of the non-target species most likely to be affected by the fishery? (Please select just one option).

- Less than 1% overlap with stock area
- 1-15% overlap with stock area
- 16-30% overlap with stock area
- 31-45% overlap with stock area
- 46-60% overlap with stock area
- Over 60% overlap with stock area

Please explain the basis for your choice.

7. Temporal scale: how often does the Falkland Islands Toothfish Longline Fishery interact with the non-target species most likely to be affected by the fishery? (Please select just one option).

- 1 day every 10 years or so
- 1 day every few years
- 1-100 days per year
- 100-200 days per year
- 200-300 days per year
- 200-365 days per year

Please explain the basis for your choice.

8. Intensity: how intense is the effect of the Falkland Islands Toothfish Longline Fishery on the retained non-target species most likely to be affected by the fishery? (Please select just one option).

- Remote likelihood of effect of activity being detected at any spatial or temporal scale.
- Activity occurs rarely or in a few restricted locations, and evidence of activity even at these scales is rare.
- Moderate detection of activity at broader spatial scale or obvious but local detection.
- Detectable evidence of activity occurs reasonably often at broad spatial scale.
- Easily detectable localised evidence of activity or widespread and frequent evidence of activity
- Local to regional evidence of activity or continual and widespread evidence.

Please explain the basis for your choice.

9. Effect - what aspect of the retained non-target species is most likely to be affected by the Falkland Islands Toothfish Longline Fishery? (Please select just one option).

- Population size
- Reproductive capacity of population
- Age structure of population
- Size structure of population
- Sex structure of population
- Geographic range of species

Please explain the basis for your choice.

10. Consequence - what do you think are the consequences of the impact of the fishery on the retained species most likely to be affected by it? (Please select just one option).

- Interactions are unlikely to be detectable against natural variation.
- Possible detectable change but minimal impact on population size / dynamics / structure / range.
- Detectable change but long-term population / recruitment dynamics not adversely damaged.

Please explain the basis for your choice.

Discarded non-target species (bycatch / discards)

The fishery under assessment may result in the capture and discarding of certain non-target species. These "discards" or "bycatch" are often discarded at sea immediately after capture.

If you are concerned about interactions with Endangered, Threatened or Protected species (such as birds or marine mammals), these are considered in the next section of the questionnaire and you can skip this section.

* 11. Are you concerned about the effect of the Falkland Islands Longline Toothfish Fishery on discarded non-target species?

- No (if you select this choice you will skip on to the next page)
- Yes (you will now be asked questions about impacts on discarded species)

Once you have made your choice, please click on the "Next" button below to proceed.

Discarded non-target species questionnaire

The fishery under assessment may result in the capture and discarding of certain non-target species. The questions in this section seek your views about the effect that the fishery may have on these species.

12. Which non-target species do you think are caught and discarded by the Falkland Islands Toothfish Longline Fishery? (You can select several options).

- Grenadiers (Macrourus spp.)
- Blue antimora (Antimora rostrata)
- Greenland / Southern Sleeper shark (Somniosus antarcticus)
- Skate - Bathyrāja meridionalis
- Skate - Bathyrāja papilionifera
- Skate - Bathyrāja cousseauae
- Skate - Bathyrāja multispinis
- Skate - Amblyraja frerichsi
- Skate - Amblyraja doellojuradoi
- Other species (please specify)

13. Discarded species:- which one of the non-target species caught and discarded in the Falkland Islands Toothfish Longline Fishery do you feel is most likely to be adversely affected? (Please select just one option).

- Grenadiers (Macrourus spp.)
- Blue antimora (Antimora rostrata)
- Greenland / Southern Sleeper shark (Somniosus antarcticus)
- Skate - Bathyrāja meridionalis
- Skate - Bathyrāja papilionifera
- Skate - Bathyrāja cousseauae
- Skate - Bathyrāja multispinis
- Skate - Amblyraja frerichsi
- Skate - Amblyraja doellojuradoi
- Other (please specify)

14. Fishing activity - what aspect of the toothfish longline fishery is most likely to affect the status of the discarded non-target species that is most likely to be affected by the fishery? (Please select just one option).

- Direct capture
- Unobserved mortality (such as from gear loss)
- Capture as bycatch / discards in other fisheries
- Other (please specify)

Please explain the basis for your choice.

15. Spatial scale: what is the scale of the overlap between the Falkland Islands Toothfish Longline Fishery and the stock of the discarded non-target species that is most likely to be affected by the fishery? (Please select just one option).

- Less than 1% overlap with stock area
- 1-15% overlap with stock area
- 16-30% overlap with stock area
- 31-45% overlap with stock area
- 46-60% overlap with stock area
- Over 60% overlap with stock area

Please explain the basis for your choice.

16. Temporal scale: how often does the Falkland Islands Toothfish Longline Fishery interact with the non-target species that is most likely to be affected by the fishery? (Please select just one option).

- 1 day every 10 years or so
- 1 day every few years
- 1-100 days per year
- 100-200 days per year
- 200-300 days per year
- 200-365 days per year

Please explain the basis for your choice.

17. Intensity: how intense is the effect of the Falkland Islands Toothfish Longline Fishery on the discarded non-target species that is most likely to be affected by the fishery? (Please select just one option).

- Remote likelihood of effect of activity being detected at any spatial or temporal scale
- Activity occurs rarely or in a few restricted locations, and evidence of activity even at these scales is rare.
- Moderate detection of activity at broader spatial scale or obvious but local detection.
- Detectable evidence of activity occurs reasonably often at broad spatial scale.
- Easily detectable localised evidence of activity or widespread and frequent evidence of activity
- Local to regional evidence of activity or continual and widespread evidence.

Please explain the basis for your choice.

18. Effect - what aspect of the discarded non-target species is most likely to be affected by the Falkland Islands Toothfish Longline Fishery? (Please select just one option).

- Population size
- Reproductive capacity of population
- Age structure of population
- Size structure of population
- Sex structure of population
- Geographic range of species

Please explain the basis for your choice.

19. Consequence - what do you think are the consequences of the impact of the fishery on the discarded species most likely to be affected by it? (Please select one)

- Interactions are unlikely to be detectable against natural variation.
- Possible detectable change but minimal impact on population size / dynamics / structure / range.
- Detectable change but long-term population / recruitment dynamics not adversely damaged.

Please explain the basis for your choice.

Endangered, Threatened & Protected Species

We are keen to know about any interactions between this fishery and wildlife species that are endangered, threatened or protected ("ETP species").

In the MSC Scheme "ETP species" are defined as those that are protected by legislation and / or listed in Appendix 1 of the Convention on International Trade in Endangered Species (CITES).

* 20. Are you concerned about the effect of the Falkland Islands Longline Toothfish Fishery on endangered, threatened or protected (ETP) species?

- No (if you select this choice you will skip on to the next page)
- Yes (you will now be asked questions about impacts on ETP species)

Once you have made your choice, please click on the "Next" button below to proceed.

ETP Species Questionnaire

The questions below seek your views on the interactions between this fishery and any Endangered, Threatened or Protected Species that it may affect.

21. Which ETP species do you think are affected by the Falkland Islands Toothfish Longline Fishery? (You can select several options).

- Black-browed albatross (*Thalassarche melanophrys*)
- White chinmed petrel (*Procellaria aequinoctialis*)
- Cape petrel (*Daption capense*)
- Sperm whale (*Physeter macrocephalus*)
- Orca (*Orcinus orca*)
- Other species (please specify)

22. Which ETP species do you think is most likely to be adversely affected by the Falkland Islands Toothfish Longline Fishery? (Please select just one option).

- Black-browed albatross (*Thalassarche melanophrys*)
- White chinmed petrel (*Procellaria aequinoctialis*)
- Cape petrel (*Daption capense*)
- Sperm whale (*Physeter macrocephalus*)
- Orca (*Orcinus orca*)
- Other (please specify)

23. Fishing activity - what aspect of the toothfish longline fishery is most likely to affect the status of the ETP species that is most likely to be affected by the fishery? (Please select just one option).

- Direct capture
- Unobserved mortality (such as from gear loss)
- Capture as bycatch / discards in other fisheries
- Other (please specify)

Please explain the basis for your choice.

24. Spatial scale: what is the scale of the overlap between the Falkland Islands Toothfish Longline Fishery and the range of the ETP species that is most likely to be affected by the fishery? (Please select just one option).

- Less than 1% overlap with stock area
- 1-15% overlap with stock area
- 16-30% overlap with stock area
- 31-45% overlap with stock area
- 46-60% overlap with stock area
- Over 60% overlap with stock area

Please explain the basis for your choice.

25. Temporal scale: how often does the Falkland Islands Toothfish Longline Fishery interact with the ETP species that is most likely to be affected by the fishery? (Please select just one option).

- 1 day every 10 years or so
- 1 day every few years
- 1-100 days per year
- 100-200 days per year
- 200-300 days per year
- 200-365 days per year

Please explain the basis for your choice.

26. Intensity: how intense is the effect of the Falkland Islands Toothfish Longline Fishery on the ETP species that is most likely to be affected by the fishery? (Please select just one option).

- Remote likelihood of effect of activity being detected at any spatial or temporal scale.
- Activity occurs rarely or in a few restricted locations, and evidence of activity even at these scales is rare.
- Moderate detection of activity at broader spatial scale or obvious but local detection.
- Detectable evidence of activity occurs reasonably often at broad spatial scale.
- Easily detectable localised evidence of activity or widespread and frequent evidence of activity
- Local to regional evidence of activity or continual and widespread evidence.

Please explain the basis for your choice.

27. Effect - what aspect of this ETP species is most likely to be affected by the Falkland Islands Toothfish Longline Fishery? (Please select just one option).

- Population size
- Reproductive capacity of population
- Age structure of population
- Size structure of population
- Sex structure of population
- Geographic range of species

Please explain the basis for your choice.

28. Consequence - what do you think are the consequences of the impact of the fishery on the ETP species most likely to be affected by it? (Please select one)

- Interactions are unlikely to be detectable against natural variation.
- Possible detectable change but minimal impact on population size / dynamics / structure / range.
- Detectable change but long-term population / recruitment dynamics not adversely damaged.

Please explain the basis for your choice.

Marine Habitats

Marine fisheries can have an affect on marine habitats. Different fisheries can have different effects. The scale of any effects caused by a fishery can be dependent on the type of fishing gear, the scale of the fishery, and the sensitivity and vulnerability of marine habitats.

We are keen to know your views on the effects of this fishery on marine habitats to guide our assessment.

* 29. Are you concerned about the effect of the Falkland Islands Longline Toothfish Fishery on marine habitats?

- No (if you select this choice you will skip on to the next page)
- Yes (you will now be asked questions about habitat impacts)

Once you have made your choice, please click on the "Next" button below to proceed.

Marine Habitats Questionnaire

30. Which marine habitats do you think are affected by the Falkland Islands Toothfish Longline Fishery?
(You can select several options).

- Biogenic reefs
- Rocky reefs / seabed
- Sandy seabed
- Muddy seabed
- Vents & seeps
- Trenches
- Seamounts
- Water column
- Other species (please specify)

31. Which one marine habitat do you think is most likely to be adversely affected by the Falkland Islands Toothfish Longline Fishery? (Please select just one option).

- Biogenic reefs
- Rocky reefs / seabed
- Sandy seabed
- Muddy seabed
- Vents & seeps
- Trenches
- Seamounts
- Water column
- Other (please specify)

32. Fishing activity - what aspect of the toothfish longline fishery is most likely to affect the marine habitat that is most likely to be affected by the fishery? (Please select just one option).

- Fishing
- Gear loss
- Bait collection
- Anchoring of gear
- Mooring of vessel(s)
- Other (please specify)

Please explain the basis for your choice.

33. Spatial scale: what is the scale of the overlap between the Falkland Islands Toothfish Longline Fishery and the range of the habitat that is most likely to be affected by the fishery? (Please select just one option).

- Less than 1% overlap with stock area
- 1-15% overlap with stock area
- 16-30% overlap with stock area
- 31-45% overlap with stock area
- 46-60% overlap with stock area
- Over 60% overlap with stock area

Please explain the basis for your choice.

34. Temporal scale: how often does the Falkland Islands Toothfish Longline Fishery interact with the habitat that is most likely to be affected by the fishery? (Please select just one option).

- 1 day every 10 years or so
- 1 day every few years
- 1-100 days per year
- 100-200 days per year
- 200-300 days per year
- 200-365 days per year

Please explain the basis for your choice.

35. Intensity: how intense is the effect of the Falkland Islands Toothfish Longline Fishery on the habitat that is most likely to be affected by the fishery? (Please select just one option).

- Remote likelihood of effect of activity being detected at any spatial or temporal scale
- Activity occurs rarely or in a few restricted locations, and evidence of activity even at these scales is rare.
- Moderate detection of activity at broader spatial scale or obvious but local detection.
- Detectable evidence of activity occurs reasonably often at broad spatial scale.
- Easily detectable localised evidence of activity or widespread and frequent evidence of activity
- Local to regional evidence of activity or continual and widespread evidence.

Please explain the basis for your choice.

36. Effect - what aspect of this habitat is most likely to be affected by the Falkland Islands Toothfish Longline Fishery? (Please select just one option).

- Habitat distribution / range
- Habitat structure
- Habitat function
- Other (please specify)

Please explain the basis for your choice.

37. Consequence - what do you think are the consequences of the impact of the fishery on the habitat most likely to be affected by it? (Please select one)

- No direct impact on habitat type.
- Interactions are unlikely to be detectable against natural variation.
- Recovery time from any impacts on the scale of hours to days.
- Detectable impact on habitat distribution / structure / function.
- Recovery time from impacts within a year.
- Reduction in distribution of habitat range / structure / function (in range of 20-50%)
- Recovery time up to 20 years.

Please explain the basis for your choice.

Ecosystems

Marine fisheries can have an affect on marine ecosystems. Different fisheries can have different effects. The scale of any effects caused by a fishery can be dependent on the type of fishing gear, the scale of the fishery, and the sensitivity and vulnerability of marine ecosystems.

We are keen to know your views on the effects of this fishery on marine ecosystems to guide our assessment.

* 38. Are you concerned about the effect of the Falkland Islands Longline Toothfish Fishery on marine ecosystems?

Yes (you will now be asked questions about ecosystem impacts)

No (if you select this choice you will skip to the end of the questionnaire)

Once you have made your choice, please click on the "Next" button below to proceed.

Ecosystems Questionnaire

We are keen to know about any interactions between this fishery and marine ecosystems.

Your input will help to guide our assessment of this fishery.

39. Which aspects of the marine ecosystem do you think may be affected by the Falkland Islands Toothfish Longline Fishery? (You can select more than one option).

- Species composition
- Functional group (e.g. plankton)
- Distribution of communities
- Trophic structure
- Size structure
- Other aspects of ecosystem.

40. Which aspect of the marine ecosystem do you think is most likely to be adversely affected by the Falkland Islands Toothfish Longline Fishery? (Please select one option).

- Species composition
- Functional group (e.g. plankton)
- Distribution of communities
- Trophic structure
- Size structure
- Other (please specify)

41. Fishing activity - what aspect of the toothfish longline fishery is most likely to affect the aspect of the ecosystem that is most likely to be affected by the fishery? (Please select one).

- Fishing
- Gear loss
- Bait collection
- Anchoring of gear
- Mooring of vessel(s)
- Other (please specify)

Please explain the basis for your choice.

42. Spatial scale: what is the scale of the overlap between the Falkland Islands Toothfish Longline Fishery and the ecosystem feature that is most likely to be affected by the fishery? (Please select one).

- Less than 1% overlap
- 1-15% overlap
- 16-30% overlap
- 31-45% overlap
- 46-60% overlap
- Over 60% overlap

Please explain the basis for your choice.

43. Temporal scale: how often does the Falkland Islands Toothfish Longline Fishery interact with the ecosystem feature that is most likely to be affected by the fishery? (Please select one).

- 1 day every 10 years or so
- 1 day every few years
- 1-100 days per year
- 100-200 days per year
- 200-300 days per year
- 200-365 days per year

Please explain the basis for your choice.

44. Intensity: how intense is the effect of the Falkland Islands Toothfish Longline Fishery on the ecosystem feature that is most likely to be affected by the fishery? (Please select one).

- Remote likelihood of effect of activity being detected at any spatial or temporal scale
- Activity occurs rarely or in a few restricted locations, and evidence of activity even at these scales is rare.
- Moderate detection of activity at broader spatial scale or obvious but local detection.
- Detectable evidence of activity occurs reasonably often at broad spatial scale.
- Easily detectable localised evidence of activity or widespread and frequent evidence of activity
- Local to regional evidence of activity or continual and widespread evidence.

Please explain the basis for your choice.

45. Effect - what aspect of this ecosystem feature is most likely to be affected by the Falkland Islands Toothfish Longline Fishery? (Please select one)

- Species composition
- Functional group composition
- Distribution of the ecosystem
- Trophic size
- Trophic structure
- Other (please specify)

Please explain the basis for your choice.

46. Consequence - what do you think are the consequences of the impact of the fishery on the aspect of the ecosystem most likely to be affected by it? (Please select one)

- Interactions are unlikely to be detectable against natural variation.
- Interactions are likely to cause up to a 5% change in the feature; and / or recovery from impacts is likely to take up to 5 years.
- Interactions are likely to cause up to a 10% change in the feature; and / or recovery from impacts is likely to take up to 20 years.

Please explain the basis for your choice.

Further Comments

47. Further comments: do you have any further comments about this fishery assessment?

Thank You

Thank you for sharing your views with us. Your responses will be analysed by the assessment team and will help us to progress our assessment of this fishery against the MSC Standard.

We will add you to our database of stakeholders for this fishery to ensure that you are kept up to date with progress. If you have any queries about the assessment, please get in touch with us.

Kind Regards

JIM ANDREWS
Lead Auditor
Acoura Marine
jim.andrews@acoura.com

11.3.2 Questionnaire responses

No responses were received.

12 Appendix 3: Conditions of Certification

There were no conditions of certification.

13 Appendix 4: Peer Review Reports

13.1 Peer Review A

Overall Opinion

<i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i>	Yes	Conformity Response	Assessment	Body
<i>Justification:</i> This is a small well-managed fishery. In first assessment conditions were set and these made a significant improvement to the fishery. The assessment has used V1.3 – the CAB has taken the initiative to strengthen aspects of the assessment where there have been changes significant changes (such as habitat). These aspects reflect in the overall score for the fishery which suggests there are no major issues and the operation is highly compliant with management measures (and in many areas goes beyond requirements). Because of the limited scale of the fishery, the stakeholders and operators are closely engaged in the management of the fishery and supportive of the harvest strategy and comfortable with the overall precautionary approach that aims for long-term sustainability of the resource exploited.		Comments noted, no response required.		

<i>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</i>	Yes	Conformity Response	Assessment	Body
<i>Justification:</i> There are no conditions only recommendations – these are appropriate		Comments noted, no response required.		

If included:

<i>Do you think the client action plan is sufficient to close the conditions raised?</i>	NA	Conformity Response	Assessment	Body
<i>Justification:</i> There is no action plan or response to recommendations		Comments noted, no response required.		

General Comments on the Assessment Report (optional)

I have restricted my general comments to each PI and scoring issues as needed. See also my further comments after the Table below.

Performance Indicator Review
Please complete the table below for each Performance Indicator which are listed in the Conformity Assessment Body's Public Certification Draft Report.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.1.1	Yes	Yes	NA	A score of 90 is given. The scoring rationale are clear and references appropriate. I agree with the uncertainty associated with the target ref point and rationale used for scoring SI(b) at 80. Fishery is well above PRI and evidence presented to support this suggests recruitment overfishing is not taking place.	Comments noted, no response required.
1.1.2	Yes	Yes	NA	A score of 90 is given. The assessment is precautionary (according to MSC guidelines) and the scoring rationale appropriate. The background information could be improved by providing comparative information used for other patagonian toothfish stocks, in particular adjacent chilean and argentinian fisheries.	Comments noted, no response required.
1.1.3	NA	NA	NA		

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.1	Yes	No	NA	A score of 100 is given. I find the rationale provided weak to support the scoring of Si1.2.1(b). The discussion regarding reviews is more appropriate for Si(d). Si(b) relates to testing of the harvest strategy. Rationale provided in Si(a) is extensive and elements of that would support Si(b). While the scores would seem appropriate overall, the rationale between Sis needs restructuring as scoring Si(b) does not respond explicitly to the SG80 and SG100 relating to testing of the HCR.	We have revised the scoring rationale in response to these comments, and assigned a score of 95 for this PI.
1.2.2	Yes	Yes	NA	A score of 100 given. I find the scoring rationale appropriate for all scoring issues.	Comments noted, no response required.
1.2.3	Yes	No	NA	A score of 90 is given. Overall I would agree with the score of 90. However as with 1.2.1 the structure of the rationale to each SG is not sufficiently clear. I would suggest that the scoring rational be restructured to respond explicitly to each SG in Si(a) in particular the rationale at SG100. For Si(b) the rationale used at SG80 is appropriate. The ref in the text to "in part" should be directed at SG100 rationale.	We have revised the scoring rationale in response to these comments.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.4	Yes	Yes	NA	A score of 85 is given. SI(a) the rationale for both SG80 and SG100 should be stated (and not assume that SG100 subsumes SG80. For SI(b) SG100 as stated is not required – it is SG60. The last 2 paras relating to scoring at SG100 in SI(c) need revising with the reference to SG100 not being met shown at end of text (for clarity).	We have revised the scoring rationale in response to these comments.
2.1.1	Yes	Yes	NA	A score of 85. The use of RBF of grenadier is appropriate and score 100 would seem justified. I could find no ref to raising factor of product weight for whole mass estimates and also no clarity on how discard mass is estimated from Observer or other methods i.e. the actual total retained and discard proportions are not clear although the volumes are small and grenadier are nevertheless main (this could be in the ref material though). For bait species the worst case scenario would seem appropriate for sardine. The rationale of proportionately very low proportions of bait species relative to stock biomass would seem appropriate and scoring justified.	For information, Table 7 provides the catch composition in kg. Samples are retained by observers for biological analysis (weight, sex, size etc).

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.1.2	Yes	N	NA	A score of 80 is given. I would agree with this overall score. However the rationale for a partial strategy is weak. The depredation argument relates to toothfish only. There is no explicit measure in place such as a % limit or move on rule if bycatch proportions exceed xx etc. For a partial strategy I would think 50% observer coverage is a strong argument, particularly if observer sampling directives give management the option to stop fishing. Supporting material to this effect would strengthen the partial strategy. The likely implementation of a grenadier TAC implies management of the species (although there is no stock assessment).	Explicit measures such as % limits would tend towards a strategy rather than a partial strategy. The low levels of bycatch, however, support the evaluation that the combination of measures are effective in ensuring the UoA achieves the SG80 outcome level. Measures to limit depredation of toothfish are assumed to also limit depredation of bycatch – although this is not central to the scoring which would anyway achieve SG80.
2.1.3	Yes	N	NA	Score of 90 is given. I would not agree with SI(c) at SG100 re adequacy of information. Table 5 and 8 (ETP) re grenadier (2017) needs synergising or explanation. Elaborate on how the information actually supports the partial strategy i.e. it is just not monitoring – how does management respond to the bycatch reported ?	SI c refers to information availability, rather than the management response (which is P1 2.1.2). The information available is excellent, and certainly sufficient to support a strategy and monitor its effectiveness, were one required.
2.2.1	Yes	Yes	NA	Score of 100 and use of RBF is appropriate.	No response required.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.2.2	Yes	No	NA	Score 80. I could find no reference in P3 to how the bycatch measures are effected through legislation – accepting that SG100 is not met. Hook trials are mentioned (ref noted) for grenadier – expanding this in the background text would be informative and recognition that bycatch measures are being considered – reference to the CCAMLR conservation measures and the extent to which these may or may not be considered in the Falkland Island fishery would be helpful.	It is not clear from the comments why SG80 scoring is not supported. The measures controlling the exploitation of the fishery also serve to limit bycatches – the basis of the partial strategy – and compliance and enforcement of these measures is described in P3. Hook trials have been undertaken, although no effect on the operation of the fishery is yet realised and so these do not affect scoring. This does, however, show an awareness of the issue and willingness to improve performance. The FI measures are separate from CCAMLR, but are developed in light of CCAMLR experiences.
2.2.3	Yes	No	NA	Score 90. Clearly the high % of observer coverage provides good information. For Si (c) no rationale is provided that there is a high degree of certainty that the information is adequate, particularly as there is no explicit bycatch strategy (only partial) – score of 100 needs to be fully justified.	The response to 2.1.3 seems also to apply here – the information available and ongoing monitoring is very good and sufficient to support any further measures which may be identified.
2.3.1	Yes	Yes	NA	Score 100. The scoring rationale is appropriate	No response required.
2.3.2	Yes	Yes	NA	Score 100. The scoring rationale is appropriate. The measures are adaptable and responsive to issues.	No response required.
2.3.3	Yes	Yes	NA	Score 100. The scoring is appropriate.	No response required.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.4.1	Yes	Yes	NA	Score 100: Noting fishery is assessed using V1.3. Score is appropriate.	No response required.
2.4.2	Yes	Yes	NA	Score 80: Score is appropriate - the measures are comprehensive with spatial measures, and more than a partial strategy (SI (a) = Y at SG100. The scoring is conservative probably anticipating V2.0	No response required, although the scoring does reflect our feeling that no specific strategy designed to manage the impact of the fishery (such as move-on rules) is yet in place.
2.4.3	Yes	Yes	NA	Score 80: Scoring rationale and scores appropriate.	No response required. This PI was the subject of a condition and much work by the client and FIFD; the reviewers agreement with the scoring comments is well noted.
2.5.1	Yes	Yes	NA	Score 100 : Noting RBF used – process appears thorough and score justified.	No response required.
2.5.2	Yes	Yes	NA	Score 90 : SI (a) input and output controls are indirect measures relating to bycatch – unless explicit bycatch measures are in place input /output measures are unlikely to limit bycatch on their own (i.e. I do not see the relevance to a partial strategy). 3 of 4 Sis at SG100 = 85 (not 90) to check.	The limits of input and output will constrain the extent of catch. Assuming a fairly constant proportion of bycatch (supported by the data) then limiting catches will limit bycatches and having a single vessel will avoid exploiting new areas etc. The reviewer is correct on scoring and is thanked for spotting the error which has been corrected and a score of 85 has been assigned to the PI.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.5.3	Yes	Yes	NA	Score 85: Score is appropriate. I am surprised that no direct reference is made to trophic studies and or attempts within the PTF ecosystem either off the Falklands or other fisheries certified for toothfish. Comparison or reference to the broader antarctic ecosystem would strengthen the scoring rationale.	We are aware of krill-based ecosystem models used in CCAMLR fisheries, but have not been presented with any evidence that these are applicable in the Falkland Islands / Patagonian Shelf.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.1.1	Yes	Yes	NA	<p>The Cab scored 100: The scoring rationale supports the score adequately. While Falklands maintain autonomy of the management of the fishery, the extent to which the FFID management system is consistent with the CAMLR convention and CCAMLR measures is not adequately elaborated in my view. Although the pertinent ordinance is referenced – it would strengthen the assessment if, in both the description of the management regime (e.g. para. 5.4.1.2) and the scoring rationale, referred to the CCAMLR conservation measures and the extent to which these were synergised with measures applied in the Falklands EEZ. This fishery, while it is assumed stocks are discrete, nevertheless has many commonalities with other certified fisheries (in CCAMLR) both with respect to fishery measures and operations, but also stock assessments and harvest strategies. This PI requires interpretation with respect to MSC principles 1 and 2 and in this regard reference to CCAMLR measures would be appropriate. While the harmonisation aspects have been stated in Para 6, it is my view that that the vessels operating in the Falklands also fish in CCAMLR and that consistent implementation of measures where there are common objectives (e.g. bird mitigation) is appropriate.</p>	<p>Whilst accepting the logic of these comments, the facts are that the FOCZ lies outside the CCAMLR area. The Falkland Islands Government has implemented a management regime that is very similar to the CCAMLR approach, but there is no requirement for consistent implementation at present.</p> <p>We consider that the current rationale and scoring are appropriate for the current regime.</p>

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.1.2	Yes	No	NA	Cab scored 90: In my view consultation with CCAMLR as an interested party needs to be stated and the extent to which CCAMLR is consulted in particular fisheries for PTF in adjacent waters to Falklands.	
3.1.3	No	No	NA	Cab scored 100: The rationale broadly covers precautionary approach – there is no direct reference to the PA and where it is explicitly required in the Falkland Islands legislation. I could find no direct reference to any pertinent international instruments (e.g. UNCLOS, UNFSA, PSMA)	We have amended the text in response to these comments, including a reference to UNCLOS and also identifying how the Falkland Island's Government objectives set a higher standard (MSY) than that required by the precautionary approach.
3.1.4	Yes	Yes	NA	Score 100 : scoring and rationale is appropriate	UNFSA is not considered relevant to this fishery because it is regarded as a discrete rather than a straddling stock. PSMA – the Port States Management Agreement is not considered to set out any fishery-specific objectives that would be relevant to the scoring of this PI.
3.2.1	Yes	Yes	NA	Score 90: The score and rationale is appropriate	Comments noted, no response required.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.2.2	Yes	Yes	NA	Score 100 : The score and rationale provided is appropriate	Comments noted, no response required.
3.2.3	Yes	No	NA	Score 100 : The score and rationale provided is appropriate. I can find no reference to pertinent international instruments – PSMA, NPOAA on IUU and other NPOAs.	Comments noted. We have reviewed the legislation (national and international) in force in the Falkland Islands. There are no pertinent NPOAs that would affect the scoring of this PI. The UK is signatory to the Port States Management Agreement. The approach of the Falkland Islands Government to managing and preventing IUU fishing is set out in section 5.4.7.4.1 of the report. We have made a reference to this information in our scoring rationale in response to these comments. The scoring is unaffected.
3.2.4	Yes	Yes	NA	Score 100 : Score and rationale provided is appropriate.	Comments noted: no changes necessary.
3.2.5	Yes	Yes	NA	Score 90 : Score and rationale provided is appropriate. Text should reflect explicitly that SI (b) SG100 is NOT met.	Comments noted. We have revised the text for SIb as suggested.

For reports using the Risk-Based Framework:

Performance Indicator	Does the report clearly explain how the process used to determine risk using the RBF led to the stated outcome? Yes/No	Are the RBF risk scores referenced? Yes/No	Justification:	Conformity Assessment Body Response:
1.1.1	NA	NA	NA	
2.1.1	Yes	Yes	The RBF process was followed closely and stakeholder engagement clearly demonstrated and referenced. SICCA application and score justified for retained species incl. bait.	
2.2.1	Yes	Yes	Discard species As above (2.1.1).	
2.4.1	Yes	Yes	Habitat : Application of SICCA appropriate and well demonstrated noting that this assessment anticipates V2.0 assessment.	
2.5.1	Yes	Yes	As above for SICCA and PSA	

13.2 Peer Review B

Overall Opinion

<i>Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?</i>	Yes	Conformity Response	Assessment	Body
<u>Justification:</u> The report is thorough, comprehensive and well organized. Apart from the few minor and inconsequential issues identified below, evidence supports all score determinations.		Comment noted, no response required.		

<i>Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?</i>	Yes/No NA	Conformity Response	Assessment	Body
<u>Justification:</u> SG80 is met or exceeded throughout with adequate justification (see below)		Comment noted, no response required.		

If included:

<i>Do you think the client action plan is sufficient to close the conditions raised?</i>	Yes/No NA	Conformity Response	Assessment	Body
<u>Justification:</u>				

General Comments on the Assessment Report (optional)

The report is comprehensive and well organized. Evidence cited in support of scoring is clear, accurate and unambiguous. A few minor inconsistencies are noted.

AM Response: comments noted, no response required.

Performance Indicator Review
Please complete the table below for each Performance Indicator which are listed in the Conformity Assessment Body's Public Certification Draft Report.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
1.1.1	Yes	Yes	NA	<p>For SI a there is a high degree of certainty the the stock is above the point where recruitment would be impaired – evidence is provided which supports the determination that current SSB is at or above 45% of unfished spawning biomass. SG100 is met.</p> <p>For SI b evidence provided from the assessment and 2017 retrospective analysis support the finding that then stock is at or fluctuating around its target RP (45% of unfished spawning biomass). However, projections suggest this will decrease and approach the trigger RP before increasing again. Nevertheless, it could be argued that there is a high degree of certainty that the stock has been at, or fluctuating around the target RP in recent years. The authors are taking a conservative approach in their finding that SG80 is met and SG100 is not and this is defensible.</p>	Comments noted, no response required.
1.1.2	Yes	Yes	NA	<p>For SI a, reference points are appropriate and can be estimated. SG80 is met For SI b, the LRP is precautionary and is set</p>	Comments noted, no response required.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				<p>above the level at which the risk of impairing reproductive capacity is appreciable. SG100 is met.</p> <p>For SI c, the target RP is precautionary and is maintained at a level consistent with an appropriate Bmsy proxy (SSB₀). Several precautionary issues are taken into account so it could be argued that a finding of SG100 mis supported. However, the assessors have made a determination of SG80 and this is defensible.</p>	
1.1.3				<p>NA Stock is not depleted</p>	<p>Comment noted, no response required.</p>
1.2.1	Yes	Yes	NA	<p>For SI a, it is evident that the harvest strategy (as recently updated and improved) is robust and properly takes into account annual stock assessment results to achieve its objectives. This supports the SG100 finding.</p> <p>For SI b, there is substantive evidence that the harvest strategy is meeting its objectives and is effective in maintaining stocks at target levels. The finding of SG100 is supported.</p> <p>For SI c, Monitoring is evidently more than adequate to determine the effectivness of the harvest strategy so SG60 is met.</p> <p>For SI d, the strategy is reviewed and improved regularly and this supports the SG100 determination.</p>	<p>Comments noted, no response required.</p>

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.2	Yes	Yes	NA	<p>For SI a, the HCRs are well-defined and consistent with the harvest strategy. Exploitation rate is reduced as the Itp is approached and the fishery is closed when SSB₀ is less than or equal to .2. This supports the SG80 determination.</p> <p>For SI b, the management authority have added additional, conservative control rules as precautionary measures. This supports the SG100 finding.</p> <p>For SI 3, evidence is provided to indicate that HCRs are being implemented effectively in controlling exploitation rates. This supports the SG100 finding.</p> <p>For SI 3, Monitoring is evidently more than adequate to determine the effectiveness of the harvest strategy so SG60 is met.</p>	Comments noted, no response required.
1.2.3	Yes	Yes	NA	<p>For SI a, a comprehensive range of information and observations are available and collected with sufficient regularity and frequency. These include some elements which are not directly related to the harvest strategy. The finding of SG100 is supported.</p> <p>For SI b, abundance and removals are monitored regularly and accurately. The use of CPUE as an index is appropriate given the singular gear type and that only one vessel participates in the fishery. Some uncertainties remain but the</p>	Comments noted, no response required.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
1.2.4	Yes	Yes	NA	<p>overall harvest strategy is precautionary. The finding of SG80 is supported although SG100 could also, arguable, be met.</p> <p>For SI c, the quality and comprehensiveness of information regarding other removals of the stock support the SG80 finding.</p> <p>For SI a, substantive information is provided in support of the appropriateness of the assessment and the extent to which it takes into account major relevant features of the species and stock, especially given recent improvements. The finding of SG100 is supported.</p> <p>For SI b, the assessment does estimate stock status relative to RPs. However, this should be scored as SG60 and not SG100 since SG60 is the only allowable score for this SI</p> <p>For SI c, the finding of SG80 is supported because the assessment does take uncertainty into account but results are not presented in a probabilistic manner. The finding of SG80 is supported.</p> <p>For SI d, the assessors appear to be arguing that SG100 (the only allowable determination) has not been met but this is not stated explicitly. This finding is supported.</p>	We have corrected the rationale for SIb. All other comments are noted, no response required.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				For SI e, the finding of SG80 is supported because the assessment has not yet been externally reviewed.	
2.1.1	Yes	Yes	NA	For SI a, the grenadier, <i>M. holotrachthys</i> is the only retained species. Based on the SICa score (under the RBF) SG100 is determined correctly for this SI. SI b, N/A under RBF SI c, the determination of SG80 is justified for sardine and squid For SI d, no scoring is indicated but the SG60 (only allowable) score is met.	No response required
2.1.2	Yes	Yes	NA	For SI a, the argument that management and conservation measures for the target species constitute a partial strategy for managing the retained species is supported so the finding of SG80 is correct Similarly, for SI b, while there is some evidence that the partial strategy will work, this has not been tested so SG80 is met. For SI c, the partial strategy is being implemented effectively but a specific strategy is lacking. SG80 is met. SI d cannot be scored because a specific strategy is lacking	No response required

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.1.3	Yes	Yes	NA	For SI a, the finding of SG80 is supported because, even though accurate information on the retained species catch is available for this fishery, the consequence for the status of affected populations is unknown. SI b, N/A For SI c, adequate information is available to manage retained species even though a strategy is currently lacking. This supports SG100. For SI d, data obtained from the fishery and from observers is sufficient to assess mortality of retained species. This supports SG100	No response required
2.2.1	Yes	Yes	NA	Under SI a, the SICCA score was correctly determined to be SG100. This is applicable to blue antimora and also to the skate species. SI b, SI c, N/A	No response required
2.2.2	Yes	Yes	NA	Under SI a, there is no explicit strategy in place for managing and minimizing bycatch even though a partial strategy is in place. This supports SG80. Under SI b, there is substantive evidence that fishery management measures will ensure that the partial strategy will be effective but a specific	No response required

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				<p>strategy is lacking. This supports SG80. Under SI c, even though there is substantive evidence that the partial strategy is being implemented successfully, a specific strategy is not in place. SG80 is supported. Under SI d, the lack of a specific strategy means that no score can be applied.</p>	
2.2.3	Yes	Yes	NA	<p>SI a, the finding of SG80 is correct because even though accurate data are available, it is not possible to determine the effect of these removals on the status of the affected stocks. SI b – N/A SI c – even though a specific strategy is not in place, available information would support such a strategy so SG100 is supported. SI d, Monitoring of bycatch data is clearly sufficient to allow assessment of mortalities of bycatch species on an ongoing basis. This supports SG100</p>	No response required
2.3.1	Yes	Yes	NA	<p>For SI a, limits are established and monitoring provides for a high degree of certainty that they are not exceeded. SG100 is supported. For SI b, Evidence supports the finding that there is a high degree of confidence that the fishery has no significant detrimental effects on ETP species. SG 100 is supported. For SI c, there is demonstrably a high degree of confidence that there are no significant indirect</p>	No response required

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.3.2	Yes	Yes	NA	<p>detrimental impacts on ETP species. SG100 is supported.</p> <p>For SI a, the National Plan of Action for seabirds constitutes a comprehensive strategy for managing fishery impacts on seabirds. This fishery meets the requirements of this plan and has in place additional precautionary measures which comprise an effective and comprehensive strategy. SG100 is supported.</p> <p>For SI b, the strategy is highly relevant to this, and similar nearby fisheries and confidence that the strategy will work is high. SG100 is supported.</p> <p>For SI c, monitoring data indicates a high degree of compliance; modifications to avoidance measures are implemented in response to observed interactions. SG100 is supported.</p> <p>SI d, logbook and observer data provide evidence that this strategy is effective. SG100 is supported.</p>	No response required
2.3.3	Yes	Yes	NA	<p>For SI a, fishery and observer monitoring ensure that there is sufficient information to estimate the outcome status of ETP species (primarily black-browed albatross) with a high degree of certainty. SG 100 is supported.</p> <p>Similarly, for SI b, adequate and verifiable information allows for determination of the consequences of interactions on the status of ETP species. SG100 is supported.</p> <p>For SI c, information provided is sufficient to</p>	No response required

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
				support a comprehensive strategy and determine whether the strategy is meeting its objectives. SG100 is supported.	
2.4.1	Yes	Yes	NA	2.4.1 was evaluated under the RBF. SICCA scoring is appropriate and the determination of SG100 is supported	No response required
2.4.2	Yes	Yes	NA	<p>SI a - Even though there is no specific strategy in place, through the RBF workshop and consistent with evaluation of similar fisheries in similar habitats, it has been demonstrated that the risk posed to vulnerable and sensitive habitats is low. SG80 is supported.</p> <p>SI b – Exclusive use of longline gear, areal restrictions, and very low fishing effort serve to constrain potential impacts on habitat. However, a specific strategy is not in place. SG80 is supported.</p> <p>SI c – high levels of monitoring and surveillance provide evidence that a partial strategy is being implemented successfully. But a specific strategy does not exist. SG80 is supported.</p> <p>SI d – the lack of a specific strategy precludes scoring at the only allowable level (SG100).</p>	No response required
2.4.3	Yes	Yes	NA	SI a – recent analytical work now allows the	No response required

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification	Conformity Assessment Body Response
2.5.1	Yes	Yes	NA	SI a - 2.5.1 was evaluated under the RBF. SICCA scoring is appropriate and the determination of SG-100 is supported	No response required
2.5.2	Yes	Yes	NA	SI a – Even though a specific strategy is not in place, an effective partial strategy does exist because the impact of the fishery on predators, bycatch species, biodiversity (relative to ETP species) and habitats is controlled and limited.	No response required

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
2.5.3	Yes	Yes	NA	<p>SG80 is supported.</p> <p>SI b – the partial strategy takes into account available information and is expected to restrain ecosystem impacts. However, more comprehensive understanding of relationships among ecosystem components, and the fishery are unknown and a full strategy or plan is not in place. This supports SG80.</p> <p>SI c – The partial strategy is expected to be effective based on gear type, low effort, temporal and spatial coverage and comparative information from similar fisheries. SG80 is supported.</p> <p>SI d – The finding of SG100 is supported based on information from fishery and observer monitoring.</p>	No response required
3.1.1	Yes	Yes	NA	<p>SI a – The stock is distinct and jurisdiction is entirely under the purview of the FI Government. The legal framework under which this fishery is managed in clearly defined and requires compliance with international conservation and management measures. The law also establishes</p>	Comments noted; no response required.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				<p>binding mechanisms for cooperation between the Fisheries Department and stakeholders and establishes the Fisheries Committee and FI Fishing Companies Association the Fisheries Committee. Managing outcomes are consistent with MSC Principles 1 and 2. The SG100 finding is supported.</p> <p>SI b - The law and management system incorporate a transparent mechanism for dispute resolution. This system was tested and proven to be effective when an incident occurred in 2005. SG100 is supported.</p> <p>SI d – All fishing is commercial and no individuals or entities are dependent on the fishery for food. The fishery is managed through a system of ITQs which includes mechanisms embodying a formal commitment to respect the legal and customary rights of those who depend on the fishery for a living. The finding of SG100 is supported.</p>	
3.1.2	Yes	Yes	NA	<p>SI a – The roles of individuals and organizations are clearly and explicitly defined and well understood. SG100 is supported.</p> <p>SI b – Consultative processes are defined under the management system. Information must be sought from interested parties regarding the stock and its fishery as well as fishing effects on the ecosystem. If sustainability measures are set or</p>	Comments noted, no response required.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
				<p>changed, the reasons for making such decisions must be published. The requirement for SG100 is satisfied.</p> <p>SI c – The consultative process provides opportunities for all interested and affected parties to be involved. However, the assessor suggests that, due to the remoteness of the FI, consultation with some interested parties is not facilitated but they do not indicate if any such parties have been excluded. Nevertheless, the suggestion that additional measures, such as through use of the internet, might facilitate broader consultation is constructive. The finding of SG80 is conservative but is supported.</p>	
3.1.3	Yes	Yes	NA	<p>SI a – Long-term objectives are clearly articulated and guide-decision making which is consistent with MSC principles and criteria, and with the precautionary approach. This is explicit and required under the management policy. SG100 is supported.</p>	Comments noted, no response required.
3.1.4	Yes	Yes	NA	<p>SI a – The management system incorporates multiple mechanisms and incentives to encourage sustainable fishing practice and is motivated to take decisive action should unsustainable practices become apparent. There are no subsidies within the system. SG100 is supported.</p>	Comments noted, no response required.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.2.1	Yes	Yes	NA	Short and long-term objectives are consistent with the outcomes sought by MSC Principles 1 and. However, explicit outcomes for some Principle 2 (habitats and vulnerable marine ecosystems) are lacking although this need is now being addressed. Consequently, SG80 is supported but SG100 is not. The assessors did not score this SI but indicated "P" instead of "N" under SG100/Met?. The scoring should, if necessary, be adjusted.	We have clarified the scoring table and also provided a reference to the section of the CR that allows for partial scoring of a scoring issue where there is only one for a PI.
3.2.2	Yes	Yes	NA	<p>SI a – Established decision-making processes are in place and result in measures which achieve objectives for this fishery. SG80 is supported.</p> <p>SI b – It is apparent that this fishery's decision-making processes are fully responsive, consultative and adaptive, and take broader implications into account. SG100 is supported.</p> <p>SI c – The precautionary approach is used and decision-making is based on best available science. SG80 is supported.</p> <p>SI d - Responses of the management system to findings and recommendations are formally reported to all interested stakeholders. SG100 is supported.</p>	Comments noted, no response required.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.2.3	Yes	Yes	NA	<p>SI e – There is no evidence of current or past legal challenges. SG100 is met.</p> <p>SI a – The MCS system is comprehensive and relies on multiple sources of information. These include VMS, various reporting requirements, monitoring at-sea by observers at a high level of coverage (~ 50%) and surveillance by sea and air. Evidence suggests that this system is highly effective. SG100 is supported.</p> <p>SI b – Sanctions are clearly defined by regulation which also require that they be applied consistently. This fishery has been fully compliant but evidence of the effectiveness of the MCS system can be found in other fisheries. SG100 is supported.</p> <p>SI c – The fact that the fishery has experienced no violations and has ~50% observer coverage provides a high degree of confidence that fishers comply with the system and that the information submitted to meet manage needs is reliable. SG100 is supported.</p> <p>SI d – there is no evidence of non-compliance even though the MCS system is comprehensive and observer coverage is high. SG80 is supported.</p>	Comments noted, no response required.

Performance Indicator	Has all the relevant information available been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary.	Conformity Assessment Body Response
3.2.4	Yes	Yes	NA	<p>SI a – A comprehensive research plan is in place which addresses research needs across all three MSC principles. A progress update has recently been provided. The FI Directorate of Natural Resources has 17 scientific staff and an admirable publication record. SG100 is supported.</p> <p>SI b – Research results are widely and publicly available and frequently published in peer-reviewed journals. SG100 is supported</p>	Comments noted, no response required.
3.2.5	Yes	Yes	NA	<p>SI a – Formal mechanisms are in place to evaluate the entire management system internally. SG100 is supported.</p> <p>SI b – The management system for this fishery is subject to regular (annual) internal reviews but only infrequent external review. SG80 is supported.</p>	Comments noted, no response required.

For reports using the Risk-Based Framework:

Performance Indicator	Does the report clearly explain how the process used to determine risk using the RBF led to the stated outcome? Yes/No	Are the RBF risk scores referenced? Yes/No	Justification:	Conformity Assessment Body Response:
1.1.1	RBF not used			
2.1.1	Yes	Yes	Process appears to have been followed correctly. SICCA scores are well-documented and appropriate	Comment noted, no response required.
2.2.1	Yes	Yes	Process appears to have been followed correctly. SICCA scores are well-documented and appropriate	Comment noted, no response required.
2.4.1	Yes	Yes	Process appears to have been followed correctly. SICCA scores are well-documented and appropriate	Comment noted, no response required.
2.5.1	Yes	Yes	Process appears to have been followed correctly. SICCA scores are well-documented and appropriate	Comment noted, no response required.

14 Appendix 5: Stakeholder submissions

14.1 Site visit & information gathering

14.1.1 Verbal submissions

14.1.1.1 Interview with Consolidated Fisheries Ltd

Attendees:

- Consolidated Fisheries Ltd**
 - Janet Robertson
 - Timothy Cotter
- Falkland Islands Fisheries Department**
 - Thomas Farrugia
- Acoura Marine**
 - Jim Andrews

Date: 14th November 2017

Time / Location: 1000, CFL Offices, Stanley

Subjects discussed: Falkland Islands Toothfish

- Vessel operations
- Traceability arrangements

Meeting attendance

Prior to the meeting starting the Team Leader asked the CFL staff whether they were happy for Dr Farrugia to attend the meeting. They confirmed that they had in fact invited Dr Farrugia to attend the meeting and were happy for him to be present throughout the discussion.

1. Vessel Operations

- a. New vessel: CFL Hunter
 - i. The new vessel CFL Hunter arrived in Stanley on 26th May 2017 and left for its first fishing trip on 26th June. It has now completed two fishing trips, and has landed toothfish at Stanley and Montevideo in Chile.
 - ii. The vessel is similar in design and operation to its predecessor but represents a significant upgrade. It is designed to be quieter and more efficient than the previous vessel. It also includes design features to minimise its environmental impacts which include a CFC-free refrigeration system; impressed-current corrosion protection (rather than zinc anodes); closed sewage system and fat separation from kitchen waste; and silicon-based paint on the hull rather than conventional antifouling.
 - iii. The factory area of the vessel is similar to the previous vessel, but with more space allowed for fishery observers (this aspect of the vessel was designed with input from FIFD). There are two waste storage tanks aboard the vessel. One of these has a capacity of 40t, which is enough for an entire trip. The other is smaller and is used to store offal when the vessel is hauling gear, for subsequent discharged when the vessel is steaming. All fish offal is macerated before discharge. All hooks are removed from the waste before discharge.

- iv. The design of the vessel allows for easier deployment of bird mitigation measures (Tori lines and “Brickle” curtain).
 - v. The vessel has been equipped with a CCTV system covering the landing bay, setting area, factory and galley. The main purpose of this system is to ensure crew safety, but it could also be used to assist monitoring of fishing activities.
- b. Licensing
- i. The vessel operates under an “L” (longline) licence. Vessel operations are subject to licence conditions (such as the spatial and temporal closure around Burdwood Bank to protect spawning fish).
 - ii. Occasionally the vessel operates under an “E” (experimental) licence when it is required to conduct fishing activities for scientific purposes. In June 2017 the vessel operated under an “E” licence in the Burdwood Bank closed area so that spawning fish could be tagged in this area. When operating under an “E” licence, all of the untagged fish can be landed

2. Principle 1

- a. Stock status
- i. CFL feel that the most recent stock assessment is consistent with their own perception of toothfish abundance. The CASAL-based model is being continually refined and improved which increases confidence in its outputs (for instance, the pre- and post- umbrella fisheries are now treated separately in the model, and it also now takes better account of the deployment of hooks on the line).
 - ii. CFL note the reports of an increased abundance of small fish that have been caught in the squid and groundfish trawl fisheries in shallower waters. This increase in the abundance of small fish is considered to demonstrate that the harvest controls in place are working effectively.
- b. Harvest control rules
- i. CFL are supportive of the new harvest control rules that have been developed by the FIFD in consultation with the industry.
- c. Tagging
- i. CFL work with FIFD scientists to tag fish to inform the stock assessment. They are working towards a target of tagging 3,000 fish by the end of 2019.
 - ii. When tagging fish, CFL slightly modify their normal fishing practice in order to optimize fish survival. Line soak times are reduced, and the tagged fish are generally taken from those caught in the first 15 minutes of hauling.
- d. Hook trials
- i. CFL have worked closely with FIFD on a recent trial of different sizes and designs of hooks to see if this might improve gear selectivity (in terms of reducing non-target species catch).

3. Principle 2

- a. Non-target species
- i. The client reported that a small quantity of grenadier (*Macrourus holotrachys*) is retained and landed in Stanley for local sale and consumption.
 - ii. No changes in the overall catch composition have been noted; this is monitored and reported by FIFD observers.
- b. ETP species

- i. There have been no adverse interactions with ETP species in recent years. The most recent mortality was of a bird that became entangled in a Tori line.
- c. Habitats
 - i. The fishing gear is considered to be intrinsically low-impact. Most of the fishing grounds are composed of mud, with occasional rock outcrops.
 - ii. CFL are supporting work by an independent consultant to use data from the fishery and other sources in order to improve understanding of the character and distribution of seabed habitats within the UoC area. This work is still in progress, but an interim report has been provided to the assessment team.
 - iii. Experimental work is being carried out using underwater cameras to try to improve understanding of how the gear interacts with the seabed, and also to compare fished and unfished areas. More camera work is planned in February 2018.
 - iv. The sonar system on the Hunter has been installed with the long-term aim of gathering better information about seabed character in the UoC. Some technical issues are delaying progress with this but these are expected to be resolved shortly.
- d. Ecosystems
 - i. No ecosystem impacts have been noted.

4. Principle 3

- a. Legislation
 - i. There have been no changes (other than minor amendments) to the Fisheries Ordinance 2005, which provides the foundation of the management system.
- b. Decision making processes
 - i. CFL participate in the Falkland Fisheries Liaison Group, FIFCA, COLTO, and chair the MSC Steering Group.
- c. Non-compliance
 - i. There have been no issues of non-compliance apart from during one fishing trip when the CCAMLR VMS stopped polling (but the Falkland Islands' VMS continued).

5. Traceability

- i. Traceability arrangements in the fishery were discussed with respect to MSC requirements, and a draft "Traceability" assessment will be drawn up for comment.

6. Actions

- a. Acoura Marine
 - i. Provide note of meeting to client for comment.
 - ii. Produce draft "traceability" text for client comment.
- b. CFL
 - i. Provide updated transshipment and unloading procedures document.

14.1.1.2 Interview with Natural Resources Department - Fisheries

- Attendees:**
- Falkland Islands Fisheries Department**
 - Thomas Farrugia, Stock Assessment Scientist
 - Andreas Winter, Stock Assessment Scientist
 - Kyran Evans, Fisheries Protection Officer
 - Chris Peck, Fisheries Protection Officer
 - John Barton, Director
 - South Atlantic Environmental Research Institute (SAERI)**
 - Paul Brewin (off-site, participating via Skype)
 - Acoura Marine**
 - Jim Andrews
 - John Nichols (off-site, participating via Skype)
 - Andrew Hough (off-site, participating via Skype)
- Date:** 15th November 2017
- Time / Location:** 0900-1700, Fisheries Department Offices, Stanley
- Subjects discussed:** Falkland Islands Toothfish
- Principle 1
 - Principle 2
 - Principle 3

1. Principle 1

- a. Stock assessment & status
 - i. The evolution of the stock assessment model, monitoring work and the most recent (2017) stock assessment were discussed. The total stock biomass in 2016 was estimated at 30,288t and SSB estimated at 10,337t.
 - ii. The changes that have been made to the model include a revision of natural mortality (a response to catches of fish older than 35y, the previous value of T_{max}); and also consideration of out-of-zone catches. The model also now regards the pre-2007 Spanish longline fishery and post-2007 “umbrella” longline fishery as two separate fisheries, with the 2008 fishing year used to calibrate CPUEs for the two different gears.
 - iii. Annual updates are made to the model, to take account of the latest CPUE, otolith and age structure information.
 - iv. The status of the fishery is measured relative to the virgin spawning stock biomass (SSB_0). SSB_0 is taken as the biomass of the spawning stock if there were no fishing present. The Department agreed to provide a table of historical SSB_0 estimates, as well as estimates of the total biomass before there was a targeted toothfish fishery, B_{1987} .
 - v. The ratio of $SSB_{2016} : SSB_0$ was estimated at 45.2%. Forward projections suggest a decline to 40.6%-41.6% SSB_0 is likely by 2022. These values all lie in or above the target range.
 - vi. The stock assessment and setting of the TAC takes account of fishery removals by the *Loligo* and groundfish trawl fisheries. These fisheries catch smaller fish, so their catch is raised by a constant which takes account of this when setting the TAC.

- vii. It was noted that the inshore trawl fisheries and the offshore longline fishery do not overlap. This is a result of the minimum depth restriction on the longline fishery and the practical obstacle of trawling in deep waters.
 - viii. Annual groundfish trawl surveys are conducted by the Department in February each year in shallower waters. In 2017 an additional survey was conducted in July. The July survey showed a significantly different size structure in the juvenile toothfish population when compared to the February survey, possibly due to the offshore movement of the older year classes.
 - ix. Plankton samples are carried out regularly. No substantial catches of toothfish eggs or larvae have been made.
- b. Stock discrimination
- i. A report was presented to the team summarizing the work that had been done to determine whether the Falkland Islands stock of toothfish is distinct from adjacent stocks. All of the available information (from otolith morphology and chemistry analyses, from tagging and from satellite tagging studies) indicates that the Falkland's stock of toothfish spawns mainly on Burdwood Bank, that eggs and fish larvae drift inshore and recruit to the shallow waters around the Falkland Islands, and that they migrate into deeper waters before migrating to spawn.
 - ii. There appears to be distinct Northern and Southern stocks of Falkland's toothfish. This is indicative of an additional spawning area within the FOCZ, but it has not been located yet.
 - iii. Some of the research on otolith morphology has been submitted for publication in a peer-reviewed scientific journal. Work on otolith growth histories is being carried out as part of PhD research on the Islands.
 - iv. Five fish have been satellite tagged, three of which have provided data. These tags recorded the depth, temperature and light intensity whilst attached to the fish. They were programmed to jettison and float to the surface after 3.5 months, and then to transmit the data that they had recorded to satellites. All of the satellite tagged fish remained in the FOCZ throughout this period.
 - v. The information suggests that whilst there may be some limited mixing of toothfish eggs and larvae with the nearby South American stock, the adult toothfish stock is relatively sessile. Of the over 1,000 toothfish tagged with conventional numbered tags, none have been reported more than 150km from their tagging location.
 - vi. Most of the work on stock discrimination is due to be completed in March 2018.
 - vii. CFL are providing 50% funding for a toothfish scientist at FIFD who is investigating stock structure.
- c. Harvest control rules
- i. The FIFD and industry have agreed new harvest control rules.
 - 1. Fishing mortality is capped at a maximum of $2/3 F_{msy}$ irrespective of stock status.
 - 2. If the stock biomass is above 45% SSB_0 for 3 or more years, an increase in TAC may be considered.
 - 3. If the stock biomass is in the target range (40-45% SSB_0), the TAC shall not be increased; it may be decreased.
 - 4. If the stock biomass should fall below the target range (40-45% B_0) then the TAC will be reduced. The TAC will be reduced under whichever of 3 management scenarios will return the SSB to 40% SSB_0 in 10 years (1 generation time) or less. In the event that

more than one scenario will achieve this, the Government will liaise with the industry to determine which option is favoured.

5. If stock biomass falls below 20%SSB₀, all targeted commercial fishing for toothfish will stop.
 - ii. “Banking and borrowing” arrangements were discussed. In brief, the department would allow up to 15% of the annual TAC to be “banked” and carried forward into the next TAC year in the event that it had been under-utilized (for instance, owing to vessel reliability problems or bad weather). The “banked” TAC had to be used in the following year; it is not possible to accumulate more and more TAC allocation year after year. In exceptional circumstances the FD might consider a request to “borrow” TAC from future year (if, for instance, it was known that scheduled vessel maintenance was likely to significantly impact fishing activities).
 - iii. The new harvest control rules were set out in the draft “Sustainability Measures” for 2017-18. FIFD would advise of the schedule for the formal adoption of these harvest control rules and the associated sustainability measures.
- d. Future research
- i. It was considered likely that the priorities for future research would be tagging (and satellite tagging) and also genetic studies. Juvenile mortality in the trawl fisheries will also be examined.

2. Principle 2

- a. Non-target species
 - i. Recent hook selectivity trials had provided an improved understanding of catch composition. These data, as well as long-term historical records of catches recorded by on-board observers were provided to the assessment team.
 - ii. The hook trial considered 4 different types of hook (2 different sizes and 2 different shapes) to see if this affected catch composition. The trial was conducted in June 2017. 52 longline hauls were used in the trial. Each longline was split into 12 sections, with 3 replicate sections of each hook type on each line. Preliminary analysis of the results suggests that hook type had no significant effect on catch species composition, but the different hook sizes may alter catch size composition.
 - iii. A secondary objective of the hook trial was to verify that the mean weights that are used to calculate the weight of discarded fish are appropriate (this is because the vessels & observers record the number rather than the weight of discards). There has been a slight downwards revision of the mean weights of some of these species (for example, for grenadiers the new mean weight estimate results in an estimated catch (by weight) of 5.7% of the total catch which is slightly lower than the previous estimate of 6%).
 - iv. Data on the spatial distribution of catches of non-target species was provided to the assessment team.
 - v. FIFD agreed to provide a more detailed breakdown of the “skates and rays” and “grenadiers” categories of non-target species catch.
 - vi. Data from the FIFD inshore trawl survey and from the groundfish trawl fishery are being used to inform stock assessments for rock-cod and then for other species caught in the trawl fishery (hake, hoki, blue whiting).
 - vii. The data available are that:-
 1. The only retained non-target species in the fishery are grenadiers.

2. The most abundant discarded non-target species in the fishery are blue antimora (*Antimora rostrata*), followed by some skate species, each of which make up less than 1% of the catch.
 - viii. A regulatory framework has been set up in anticipation of a targeted grenadier trawl fishery taking up to 3,000t of grenadier per year. To date, grenadier have only been targeted for one year, but there is still understood to be some interest in this fishery.
 - ix. The bait species used in the fishery were discussed. These are:
 1. Pilchards (*Sardina pilchardus*) (50.48t in January 2017) & mackerel (*Scomber* sp.) (49.16t in January 2017) from FAO Area 27 (North-East Atlantic).
 2. *Ilex* squid from the local (Falkland Islands) fishery.
 - x. It was agreed that the MSC Risk Based Framework would be needed in order to assess the potential impacts of the fishery on grenadiers and blue antimora.
 - xi. Observer coverage is 50% and observer data on catches has been provided
- b. ETP species
- i. Although ETP species (birds and cetaceans) are observed in the vicinity of the fishing vessel, there have been no records of adverse physical impacts (entanglement / strikes / drowning) in the fishery since 2014. This most recent incident occurred when an albatross became entangled in a Tori line that had been deployed as a bird mitigation measure.
 - ii. Bird bycatches are well below limit of 0.002 birds/1000 hooks (which equates to 16 birds)
 - iii. The very low levels of interaction observed coupled with the high time cost associated with observing seabird impacts has prompted a re-evaluation of the best observer strategy and most appropriate measures of success for ETP interactions.
 - iv. No target for acceptable levels of interaction with mammals has been identified. There is no NPOA for marine mammals. There are however measures in place that can be used to mitigate impacts, in case marine mammals are seen interacting with the longline gear on a more regular basis.
 - v. A specialist 'bird observer' is active in the wider Falkland's fleet. She is investigating reduced observer effort on seabirds in the longline sector to reflect lack of interaction.
- c. Habitats
- i. Paul Brewin (SAERI) provide the assessment team with an interim report on progress with habitat management in the conservation zone, and provided a verbal update on how this work was being progressed. In brief, the analysis is using available sources of information about marine habitats and the occurrence of VME species as the basis for producing a "likely distribution" map using habitat mapping software ("Maxent").
 - ii. The preliminary findings of this work are that most of the areas fished has a sandy / muddy seabed with occasional rock outcrops.
 - iii. The next phase of this work will attempt to estimate the area of seabed (and hence proportion of each habitat type) that may come into physical contact with the fishing gear.
 - iv. This work is intended to form the foundation of an appropriate management regime for mitigating any potential impacts of the fishery on marine habitats (such as a "move on" rule). Any such management

measures will be informed by the approach adopted in other toothfish longline fisheries, including those in the CCAMLR area.

- d. Ecosystems
 - i. No impacts of the fishery on ecosystem function had been identified.
 - ii. It was noted that SAERI are conducting a “gap analysis” and review of available ecosystem information for the oil and gas industry, which may be helpful in the assessment of fishery impacts on the local ecosystem. Report to be provided.

3. Principle 3

- a. Legislation
 - i. The Fisheries Ordinance 2005 remains the basis of the management regime. There have been some minor amendments to the legislation (for instance to change licence fees) but the overall framework is unchanged since the fishery was certified. There are no plans for a review of the legislation, which is considered to provide all necessary input and output controls for effective management of fisheries in the FICZ and FOCZ.
 - ii. A review of the need for MPAs around the Falklands is presently being carried out by SAERI. A report about MPAs (AFCAS) was presented to stakeholders in July 2017 for comment.
- b. Dispute resolution
 - i. There have been no disputes between the FI Government and CFL concerning the management of the toothfish fishery.
 - ii.
- c. Institutions & Decision making processes
 - i. Documentary evidence was presented to the team which described the various institutions involved in fisheries management in the Falkland Islands, which provide opportunities for stakeholder participation in management decisions as well as conduit for communicating the basis for decisions
- d. Objectives
 - i. Long-term objectives for management of the fishery are set out in The Islands Plan 2014-18, the Fisheries Department Business Plan 2017-19; and the Scientific Programme 2015-17.
 - ii. Fishery-specific objectives for management of the fishery are set out in the Sustainability Measures 2017-18. These include a harvest strategy and harvest control rules & tools that are designed to adjust fishing mortality in response to changes in stock status.
 - iii. Conservation and management priorities relevant to MSC Principles 1, 2, & 3 are reviewed annually and set out in the toothfish sustainability measures.
- e. Monitoring, Control and Surveillance
 - i. The assessment team visited the Fisheries Protection Operations Room to interview Fisheries Protection Officers and observe the use of VMS and AIS to monitor vessel movements in and around the FICZ and FOCZ. Inspection reports for the vessels currently operating in the UoC were scrutinized.
 - ii. The FPOs reported that there have been no recent issues of non-compliance in the toothfish fishery.
 - iii. The main issue of concern in recent years has been the activity of Korean and Ukrainian longline vessels that are fishing on the High Seas just outside the FOCZ. The FI Government has shared GIS information with the Korean Government to ensure that Korean-flagged vessels do not fish within the FOCZ. Evidence of monitoring of the movements of these

vessels was presented to the assessment team. (It was subsequently confirmed that the information on the intensity of fishing activity by these vessels is used by the FI fisheries scientists to inform the stock assessment model).

- f. Research plan
 - i. The assessment team was provided with a copy of the current Scientific Programme 2015-17. A new Scientific Programme is being prepared which will set out a research plan for the next 3 years.
 - ii. Examples of some of the outputs from research in the past few years were presented to the assessment team. These included research into scalefish otolith morphology and chemistry which has helped to confirm the stock identity. Work is being carried out to improve the stock assessment (for instance through a tagging programme); and also to model the distribution of benthic habitats around the Falkland Islands.
- g. Monitoring and management performance evaluation
 - i. Evidence of internal review of the effectiveness and efficiency of the management system by the FI government auditors was presented to the assessment team. Proposals for external review of both the stock assessment and the management system are being developed by the FIFD.

4. Actions

- c. Acoura Marine
 - iii. Provide note of meeting to FIFD for comment.
- d. Fisheries Department
 - ii. Provide Bull et al 2012 reference relating to B_0 .
 - iii. Provide table of historic estimates of B_0 .
 - iv. Enquire to South Georgia scientists about their success (or otherwise) at catching planktonic toothfish eggs or larvae.
 - v. Confirm date for adoption & implementation of "Draft Sustainability Measures 2017-18".
 - vi. Provide maps showing enforcement activity by FPV Protegat
 - vii. Provide maps demonstrating monitoring of adjacent High Seas longline fishing activity.
 - viii. Provide copy of SAERI "gap analysis" report.
 - ix. Confirm the relationship between the FIFD "mission statement" and other strategic planning documents (such as the Island Plan).
- e. Consolidated Fisheries Ltd
 - i. Provide confirmation of the quantities of all bait species used in the past 2-3 years and confirm the species used.

14.1.2 Written submissions

14.1.2.1 Falkland Islands Fisheries Department

MSC Reassessment Post Site Visit Materials

Additional data requested during the site visit 14 – 16 November, 2017

- ⇒ **Jim: Where does the toothfish product from finfish trawlers in the Falkland waters go? What form does the product take?**
The toothfish caught in the trawl fisheries are usually smaller individuals. They are retained, filleted, frozen and sold in Spain with mixed finfish product. The product is not MSC certified.

- ⇒ **Is there any quantification of gear loss (hooks, umbrella or line)?**

Table 1. Reported number of hooks set and retrieved per year.

	Total Hooks Set	Total Hooks Retrieved	Total Hooks Lost	Hooks Lost
2012	1,485,056	1,481,680	3,376	0.23%
2013	2,533,894	2,521,306	12,588	0.50%
2014	2,328,236	2,325,161	3,075	0.13%
2015	2,045,190	2,044,015	1,175	0.06%
2016	1,756,950	1,755,817	1,133	0.06%
2017	1,144,644	1,140,580	4,064	0.36%
Total	11,293,970	11,268,559	25,411	0.22%

- ⇒ **Grenadier may be considered a ‘retained’ species, so need to quantify what % of the grenadier are retained and made into product.**

Retention percentages of grenadier were calculated at an average of about 9% retained per year – see ‘Grenadier Discards 2012-2017.docx’.

- ⇒ **John: Can we get a copy of the Bull et al. 2012 pdf on the CASAL model?**

See the attached document ‘Bull 2012 CASAL Manual.pdf’.

- ⇒ **John: Can we get a table of the SSB₀ calculations going backwards? Also a retrospective table of initial biomass estimated each year?**

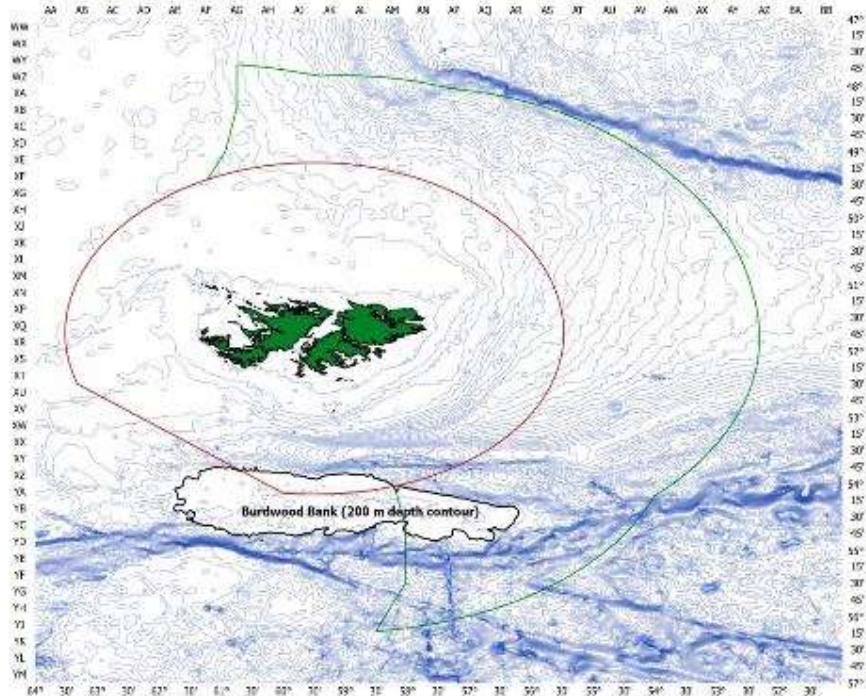
Table 2. Retrospective analysis of the ‘initial’ biomass in 1987 (B_{1987}) and the virgin spawning stock biomass (SSB₀) estimated by the stock assessment model using data up to each year between 2010 and 2016. For each data year, the set of possible SSB ratios ($SSB_{year}:SSB_0$) is also calculated (i.e. with data up to 2013, it was possible to calculate $SSB_{2010}:SSB_0$, $SSB_{2011}:SSB_0$, $SSB_{2012}:SSB_0$, and $SSB_{2013}:SSB_0$).

Data Year	B_{1987}	SSB ₀	SSB ₂₀₁₀	SSB ₂₀₁₁	SSB ₂₀₁₂	SSB ₂₀₁₃	SSB ₂₀₁₄	SSB ₂₀₁₅	SSB ₂₀₁₆
			:	1:	2:	3:	4:	5:	6:
			SSB ₀	SSB ₀	SSB ₀	SSB ₀	SSB ₀	SSB ₀	SSB ₀
	66,169.	23,206.							
2010	4	4	0.555						
2011	8	5	0.550	0.542					
2012	5	3	0.570	0.561	0.553				
2013	63,593.	23,904.	5	6	0.573	0.557	0.543	0.524	
2014	62,071.	23,223.	0	8	0.555	0.540	0.527	0.510	0.496

	59,952.	22,604.								
2015	8	1	0.552	0.534	0.518	0.496	0.477	0.459		
	61,108.	22,867.								
2016	8	5	0.564	0.547	0.532	0.510	0.491	0.472	0.452	
Avg.	63,080.0	23,095.6	0.560	0.547	0.535	0.510	0.488	0.465	0.452	

⇒ **John: What is special about Burdwood Bank that attracts spawning toothfish?**
 Burdwood Bank is a shallow bank (about 200 m depth) that rises from the edge of the Patagonian shelf south of the Falkland Islands. It presents some unique features in the regions, such as a very steep slope on both the north and south edges of the bank. This steep slope presents depths ranging from 200 m to over 2,000 m in a very short distance.

The steepness of the slope intercepts the Patagonian and Falklands currents coming from the south, creating an upwelling area, which is very rich in nutrients and plankton, and attracts a rich diversity of fish and birds (Croxall and Wood, 2002). The presence of steep slopes, strong currents, and nutrients may be what attracts toothfish to spawn in this area.



⇒ **John: What do we know about egg transport, and how can we look into it? What has been done in South Georgia on this?**
 Although there hasn't been much work done on egg transport in the Falklands, toothfish eggs are thought to be spawned at Burdwood Bank between 800 and 1,200 m depth. From there, eggs are most likely transported north with the Falklands current. The presence of upwellings and eddies may allow for most of the eggs to be retained within the Falkland waters. For more detail on this, see Judith Brown's PhD thesis ('Judith Brown PhD Toothfish.pdf', specifically pages 271-273).

Katie Bridgen, a PhD student working with SAERI on South Georgia toothfish, is developing an individual-based model to examine the spatial and temporal distribution of toothfish eggs and larvae. This modelling-based approach is necessary

as it is difficult to consistently capture eggs and larvae of toothfish. Katie's model from around South Georgia shows that although timing of spawning does not drastically influence the number of eggs retained in the area, location of spawning is very important, with eggs being transported or retained due to the local oceanographic currents. Further work on modelling toothfish egg and larval transport in South Georgia and the Falkland Islands is currently being planned.

⇒ **Andy: Can we get a catch table by species of grenadier and skates based on observer data?**

See the word document 'Grenadier and skate catches by species.docx'. To build these tables, I used observer data to determine the overall catch composition of grenadiers and skates by species, then extrapolated that composition to the total catch. About 95% of the grenadiers are *Macrourus holotrachys*, which then represents about 5.55% of the total catch. For skates, the most common species are *Bathyraja griseocauda* (43%) and *Amblyraja georgiana* (22%), which represent 1.2% and 0.6% of the total catch, respectively.

⇒ **Andy: Does FIFD have a threshold number of interactions with marine mammals that can take place like we do with birds?**

Not at this time. There is no specific NPOA developed for marine mammals like there is for birds, so we do not have a threshold number. This is because direct interactions with marine mammals in the longline fishery are so rare. The only instance we know of was in 2011 when a minke whale got entangled in the line (see Observer report '874CFLGambler.pdf'). We do have environmental regulations, specifically the Marine Mammal Ordinance (see 'Marine Mammals Ordinance 1992.pdf' in Appendix 6), that give authority to the government to take action if marine mammals are being taken too frequently, but it has not had to be exercised.

⇒ **Andy: Need to know the weight and species of bait used annually for at least 1 year (more would be better).**

Please see the attached document 'Bait Analysis.xlsx'.

⇒ **What kind of research is being done to better understand the overall ecosystem of the Falkland Islands waters?**

The GAP project was initiated by SAERI to examine knowledge gaps in our understanding of the Falkland Islands ecosystem, specifically to address potential impacts from hydrocarbon extraction activities. This project has included objectives on marine predators, benthic ecosystems, oceanography and impacts to fisheries. The first phase of this project has been completed and a final report produced (see 'GapI_FinalReport.pdf' and 'GapI_FinalReport_Summary.pdf').

⇒ **Find information that led to the expansion of the Burdwood Bank closure, and communication to CFL that this happened.**

The temporal and spatial expansion of Burdwood Bank was first officially proposed in the License Advice for 2015 (see Appendix 1 in the previous materials sent). This expansion was a conservation measure taken by FIFD in response to a lack of increase in CPUE despite a decrease in TAC six years earlier. In order to address this, and to ensure the continuing sustainability of the fishery, the TAC was further reduced and the spawning aggregations of Burdwood Bank were protected for a longer portion of the year and over a wider area.

This proposed expansion was communicated to and discussed with CFL before the license advice officially came out. There were several informal meetings between Fisheries and CFL where the need for the expansion and its details were discussed. CFL was given ample time to discuss the expansion internally, and analyse how this

change would affect their fishing operations and revenue. CFL agreed that this was a precautionary step that should be taken along with the reduction in TAC, and since then CFL has complied fully with this closed area expansion. For some of the email conversation between FIFD and CFL, see the folder 'Correspondence with CFL on Burdwood Bank'.

⇒ **Can we get estimates of catch from the out-of-zone longliners (Korean and Ukrainian)?**

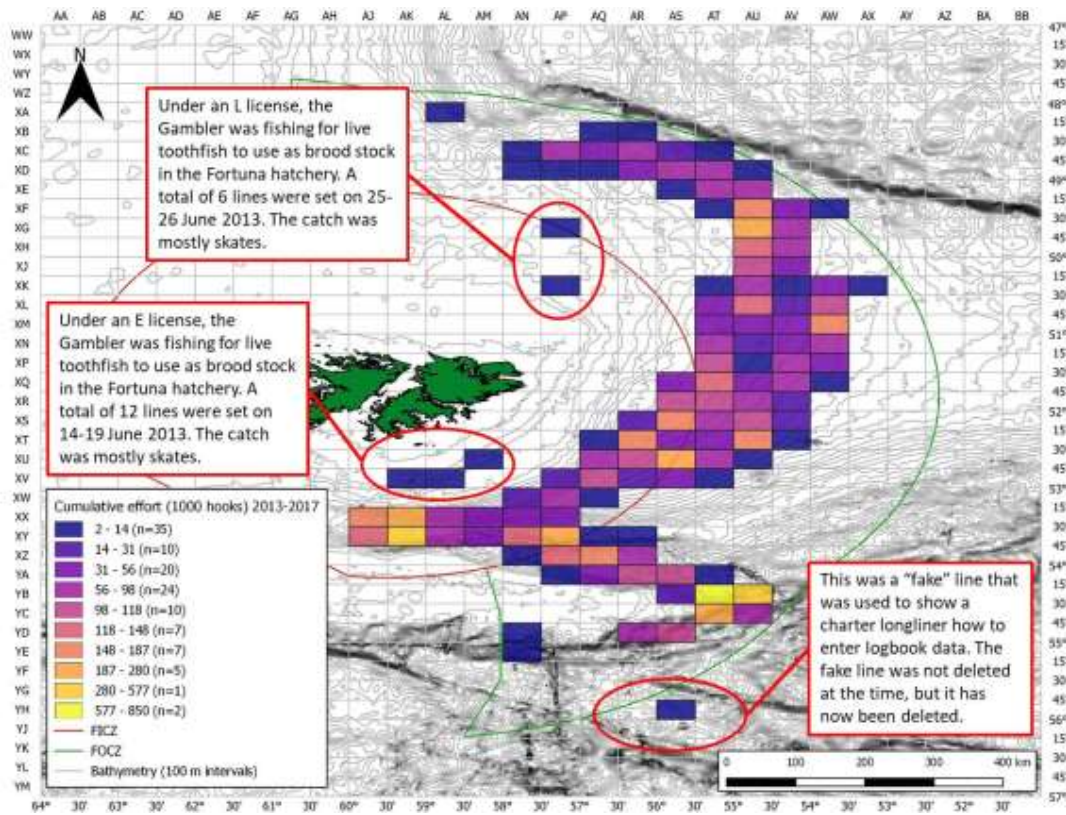
We are currently examining two methods to better describe the out-of-zone toothfish catches, one based on the literature of research on catches in international waters, and one based on a small sample of the vessels being inspected on rare occasions.

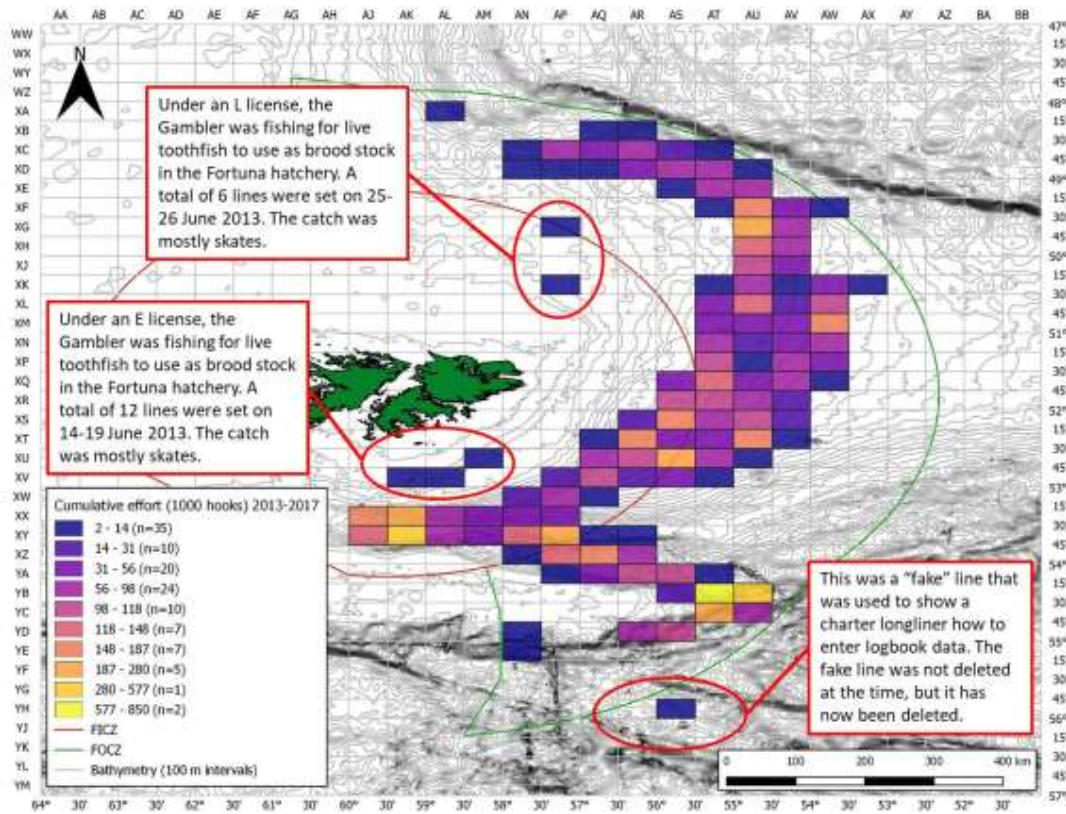
- 1) Literature: As in the stock assessment model, data from two publications were used. Table 1 in Agnew (2000) (see 'Agnew 2000 IUU toothfish in southern ocean.pdf') gives estimated total toothfish catches in Falkland waters from 1987 to 1999. Table 2 in Agnew et al. (2009) (see 'Agnew 2009 Estimating the worldwide extent of illegal fishing.pdf') gives estimated percentages of illegal / unreported fishing by region and averaged by 5-year period between 1980 and 2003. The data of the Antarctic region in Table 2 of Agnew et al. (2009) were used as these data pertain specifically to toothfish. For years since 2003, we took grey-literature estimations (e.g., CCAMLR estimates of IUU catches inside convention areas) that showed illegal / unreported fishing in the southern oceans has decreased significantly, and extrapolated unreported fishing 2% lower than the period up to 2003. These analyses estimated an average of 60 tonnes per year over the last 10 years in IUU fishing outside the Falkland waters (see Table A4 in the 2017 stock assessment report).
- 2) Sampled vessels: Data are provided by the Captains on the rare occasions when the out-of-zone vessels come into Stanley for supplies or are inspected, but no catch verification occurs. There are generally 4 vessels that fish on the outskirts of the FOCZ. We have data from 3 of these which cover 113 fishing days. Total catches (derived by applying the FIG conversion factor to product weight on board) is 52.39 tonnes. Although we do not have exact data, it seems reasonable to assume that each vessel spends approximately 200 days fishing in the area. In 2017, a new vessel (Calypso) began fishing in the area. This is the old Gambler and will be fishing in addition to the other 4. Therefore, for 2017, we can estimate 1000 fishing days on the edge of the zone. If we extrapolate, this would equate to $(52.39 \text{ t} / 113 \text{ days}) * 1000 \text{ days} = 463.6 \text{ tonnes}$ of toothfish caught on the edge of the FOCZ by foreign vessels. We are trying to get the U.K. Foreign Commonwealth Office involved in assisting in getting data from the Governments of Ukraine, South Korea, and Chile. However, it may take some time before we can access the information that we need.

⇒ **Check on grid squares outside of the normal fishing zone. How many lines do those represent and why were they fishing there?**

There were six grid squares in the map of longline effort that seemed to be outside the normal fishing areas. Five of these were in quite shallow water (around 300m) and one was outside the FOCZ (see 'Unusual grid squares 2013-2017'). The 5 inshore grids (total 18 lines) were fished over a period of two weeks in 2013 as a way of capturing small live toothfish to use as brood stock for the onshore toothfish hatchery owned by Fortuna. An observer was on board for part of this trip, and most of the catch was of skates. The sixth grid square outside the FOCZ was an error in

the database. The one line in that grid square was created as a test when one of the charter longliners started fishing in 2013 to show them how to use the logbook system. That record was not deleted at the time as it should have been. It has now been deleted from the database.





⇒ **Confirm the relationship between the FIFD “mission statement” and other strategic planning documents (such as the Island Plan).**

The mission statement of the Falkland Island Fisheries Department (FIFD) is: “wealth creation by achieving the maximum sustainable yield from fish and squid stocks in Falkland and adjacent waters. This process is to be underpinned by effective fisheries science, fisheries protection, and administration.” This mission is a natural focusing of the overall mission of the Department of Natural Resources, which “is charged with facilitating and enabling wealth creation in fishing and farming whilst promoting and regulating the conservation and sound stewardship of natural resources.”

The mission of the Department of Natural Resources works towards the vision of the Falkland Islands Economic Development Strategy, which is to develop “a sustainable economic future for the Falkland Islands.” This works to support the Islands Plan “to progress the sustainable, economic, social and political development of the Falkland Islands for the benefit of all residents.”

Finally, the overall goal is operationally supported by the Fisheries Ordinance of 2005, which lays out the purpose, principles and practices to ensure that the vision of the Islands Plan is being followed by the fisheries operating in the Falkland waters.

14.2 Comments on Public Comment Draft Report

To be added after PCDR consultation.

15 Appendix 6: Variation Request for team presence on site visit

15.1 Acoura Marine Variation Request

Marine Stewardship Council - Variation Request

Date submitted to MSC	6 th September 2017
Name of CAB	Acoura Marine
Fishery Name/CoC Certificate Number	Falkland Islands toothfish longline
Lead Auditor/Programme Manager	Jim Andrews
Variation prepared by:	Louise Allan with Jim Andrews
Scheme requirement(s) for which variation requested	FCR 7.9.1
Is this variation sought in order to fulfil IPI requirements (FCR 7.4.14)?	No

1. Proposed variation
It is proposed that the re-assessment site visit (due to take place the week commencing November 13 th 2017) to the Falkland Islands will be carried out by one member of the assessment team, the Lead Assessor, rather than all 3 members of the team. The other members of the team will participate in the site visit from a remote location.
2. Rationale/Justification
<p>The purpose of the site visit is to enable the team to interview stakeholders and gather information.</p> <p>The Falkland Islands are sparsely populated and remote from many of the key stakeholders and information sources relevant to the fishery. There is also just one vessel in the unit of certification. The costs of the entire team travelling to the Falklands for a brief site visit with relatively few stakeholders is not likely to be matched by the benefits to the quality and integrity of the subsequent assessment.</p> <p>We propose, as an alternative, that one member of the team should visit the Falkland Islands to meet with local experts. The team has established links with many of the experts associated with this fishery that are based in the UK, and has contacted stakeholders with an interest in the fishery. The team are satisfied that these parties will be capable of participating in the assessment independent of the site visit.</p> <p>During the site visit, the off-site members of the team will participate using appropriate means of communication (internet / telephone / correspondence) to ensure that all stakeholder have an opportunity to discuss the assessment with the relevant expert, and that all of the experts are exposed to the full range of stakeholder opinions.</p> <p>The proposal for off-site participation by team members will be publicised when the site visit is announced, and this will provide an opportunity for stakeholder comment. The team may respond to request from stakeholders to participate directly in the site visit by convening further meetings at alternative locations and / or through the use of alternative communication methods (internet / phone / correspondence).</p>

Document: MSC Variation Request Form v2.0	Page 1
Date of issue: 8 October 2014	© Marine Stewardship Council, 2014

3. Implications for assessment (required for fisheries assessment variations only)	
<i>N/A</i>	
4. Have the stakeholders of this fishery assessment been informed of this request? (required for fisheries assessment variations only)	Stakeholders will be informed when the notification of the site visit is published on the MSC website.
5. Further Comments	
<i>Please include any further relevant information.</i>	

15.2 MSC Response to Variation Request



Marine Stewardship Council

Jim Andrews
Acoura Marine
6 Redheughs Rigg
Edinburgh
United Kingdom
EH12 9DQ

Sent by email

Date: 07/09/2017

Subject: Request for variation to the MSC Certification Requirement v2.0 FCR-7.9.1 for Falkland Island toothfish

Dear Jim Andrews,

I write with reference to your submission on 06/09/2017 of a request for variation to the MSC Certification Requirement (CR) to allow:

It is proposed that the re-assessment site visit (due to take place the week commencing November 13th 2017) to the Falkland Islands will be carried out by one member of the assessment team, the Lead Assessor, rather than all 3 members of the team. The other members of the team will participate in the site visit from a remote location.

As you are aware, the CR procedures relating to v2.0 FCR-7.9.1 state:

7.9.1 The team shall carry out the on-site assessment as planned. The team shall: ■
7.9.1.1 Conduct stakeholder interviews to make sure that the team is aware of any concerns or information that stakeholders may have: a. The team shall allow private interviews with the team for stakeholders who request one; b. The team shall use any information provided in private in conformity with the confidentiality requirements in 4.4; c. If stakeholders do not wish or are not able to be interviewed, the team shall inform them that they may send written information to the team

These are integral to ensuring all MSC accredited Conformity Assessment Bodies operate in a consistent and transparent manner. The MSC intends that these requirements be met across all fisheries and CoC certificate holders, except in exceptional, well-justified circumstances, as part of the MSC programme.

MSC notes the factors presented supporting your request, including:

- The Falkland Islands are remote and sending the whole time is cost prohibitive.
- One team member will be on site and linked up with local experts while off-site team members will participate in the audit remotely. The team has established links with many of the experts associated with this fishery that are based in the UK.
- The team are satisfied that all parties will be capable of participating in the audit and stakeholders will be informed prior to the site visit.

Given the rationale provided, the MSC is willing to grant a variation to the CR in this case subject to the following conditions:

- CABs make clear that all members of the team are available to meet with stakeholders by virtual or other means, including at mutually convenient physical locations where it is shown that this would be necessary to effectively communicate key issues.

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Marine Stewardship Council

If you have any questions regarding this response, please do not hesitate to contact the relevant Fisheries Assessment Manager for this fishery.

Marine Stewardship Council
cc: Accreditation Services International

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16 Appendix 6: Surveillance Frequency

The MSC Fisheries Certification Requirements v2.0 specify that after each certification, surveillance and re-certification the Certified Accreditation Body (CAB) shall determine the level at which subsequent surveillance of the fishery shall be undertaken.

The surveillance levels available under the MSC Fisheries Certification Requirements are reproduced below in **Error! Reference source not found.** of this report.

The MSC require that surveillance audits should be conducted at the default level, unless the team decides on a reduced programme (for instance because there has been good progress towards meeting the conditions; there is confidence that the CAB can verify information remotely; and/or that there are few (or no) conditions).

This fishery presently has no conditions of certification, has returned a high score against all 3 MSC Principles, and has demonstrated an excellent track record of compliance with the MSC Scheme requirements as well as conditions of certification generated during the previous period of certification.

The assessment team has concluded that **Surveillance level 3** is appropriate for this fishery.

Table 23: Surveillance programme.

Surveillance Level	Year 1	Year 2	Year 3	Year 4
Level 3	Off-site surveillance audit.	Off-site surveillance audit.	Off-site surveillance audit	On-site surveillance audit. Reassessment

17 Appendix 7: Objections Process

(REQUIRED FOR THE PCR IN ASSESSMENTS WHERE AN OBJECTION WAS RAISED
AND ACCEPTED BY AN INDEPENDENT ADJUDICATOR)

The report shall include all written decisions arising from an objection.

(Reference: FCR 7.19.1)