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Certification Report For

South Georgia Patagonian Toothfish Longline Fishery

Client: Government of South Georgia and the South Sandwich Islands

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1 INTRODUCTION

This report sets out the results of the certification assessment of the South Georgia Patagonian Toothfish Longline Fishery, carried out on behalf of the Government of South Georgia and the South Sandwich Islands.

The aims of the assessment are to determine the degree of compliance of the fishery with the Marine Stewardship Council (MSC) Principles and Criteria for Sustainable Fishing, as set out in Section 5.

1.1 The fishery proposed for certification is:

Species: Patagonian Toothfish *Dissostichus eleginoides*

Geographical Area: The fishery is located around the island of South Georgia and the associated plateau to the west around Shag Rocks, within the Government of South Georgia and the South Sandwich Islands (GSGSSI) 200 nm Maritime Zone. Adult Patagonian Toothfish are found in deep water, in the range 200 – 2000m, but the fishery tends to concentrate in waters less than 1500 m. The fishery falls within CCAMLR sub-area 48.3 (Figure 1). Those parts of the GSGSSI Maritime Zone which fall within other CCAMLR sub-areas (48.2; 48.4, including the South Sandwich Islands) are NOT considered as part of the fishery proposed for certification.

Method of Capture: Bottom set longlines. Smaller amounts are also taken by pots, but only the longline fishery is considered as part of this certification.

Management System: Directed ultimately by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) which develops fisheries management systems for all Southern Ocean waters. Within the Maritime Zone, management is implemented by the GSGSSI. As an Overseas Territory of the UK, international relations relating to SGSSI are the responsibility of the UK Government and are dealt with through the Polar Regions Section of the Overseas Territories, of the Foreign and Commonwealth Office, UK (FCO). In particular, the FCO is the competent UK Authority on CCAMLR matters, including representing the interests of the Government of South Georgia and the South Sandwich Islands.

It must be stressed that this assessment is concerned only with the fishery defined above. No assessment is made here of the management of any other toothfish fishery.

1.2 Special considerations for this assessment

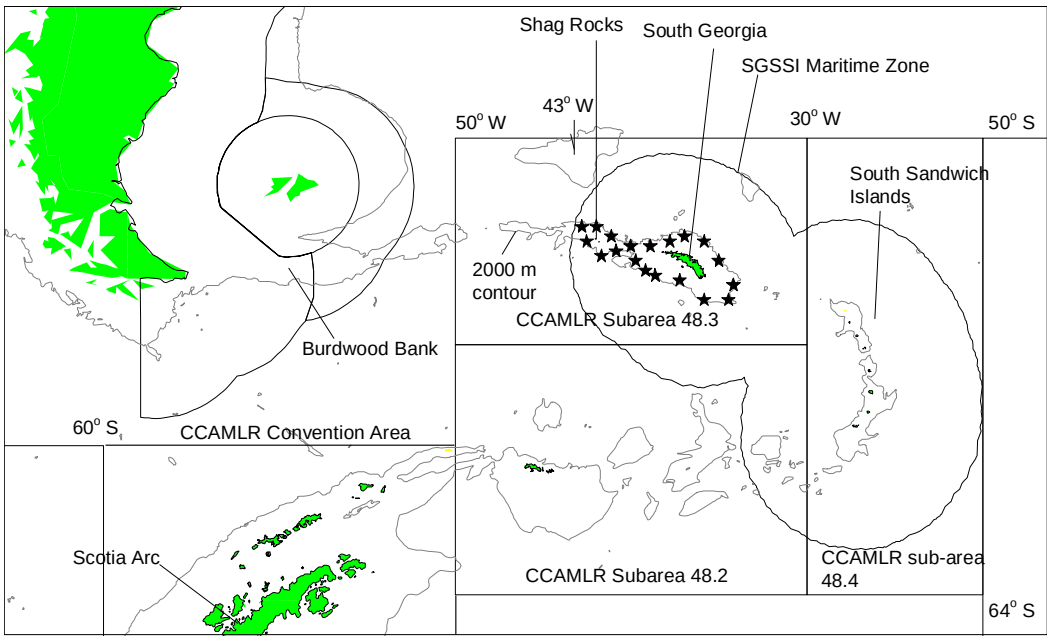
Stock definition: The MSC Principles and Criteria for Sustainable Fishing require certification of a specific population of a species – a separate stock. The definition of a separate stock has therefore been considered in detail in the assessment.

Illegal, Unregulated and Unreported (IUU) Fishing: Control of IUU fishing is recognised in all *D. eleginoides* fisheries as an extremely important factor, in terms of preserving toothfish stocks and those species impacted by the fisheries, particularly seabirds. The control of IUU fishing within the South Georgia Maritime Zone is considered to be the responsibility of the management authorities; GSGSSI and CCAMLR. In those areas outside of the

Maritime Zone (or other state sovereignty) but inside the CCAMLR Convention Area it is the responsibility of CCAMLR. The measures implemented by CCAMLR and GSGSSI to control IUU fishing are taken into account as key parts of this assessment. The extent and impacts of the IUU fishing are considered in tandem with those of the licensed fishery, including the possibility that IUU fishing in surrounding areas may have implications for the assessed fishery by impacting the same stock.

Figure 1. Map of the area, showing the main fishing ground around South Georgia and Shag Rocks, the South Georgia and South Sandwich Islands Maritime Zone, the CCAMLR Convention Area and, specifically, Subarea 48.3, and the bathymetry (2000m contours presented). Map provided by MRAG Ltd.

★ Fishing area



1.3 Information sources used

Information used in the main assessment has been obtained from interviews and correspondence with stakeholders in the fishery, notably:

Government of South Georgia and the South Sandwich Islands
- Russ Jarvis, Assistant Commissioner and Director of Fisheries
- Gordon Liddle, Operations Manager
- Richard McKee, Marine Officer, South Georgia
- Pat Lurcock, Marine Officer, South Georgia

Falklands Islands Government
- John Barton, Director of Fisheries
- Steve Waugh, CCAMLR Fisheries Inspector
- Emma Jones, CCAMLR Fisheries Inspector
- John Adams, CCAMLR Fisheries Inspector

Marine Resources Assessment Group (MRAG) Ltd
- Dr David Agnew, Senior Consultant

- Dr Graham Pilling, Consultant (pre-assessment only)
- Dr Tom Marlow, Consultant (pre-assessment only)

British Antarctic Survey (BAS)
- Dr Inigo Eversen, Head of Marine Living Resources Section (pre assessment only)
- Dr John Croxall, (formal stakeholder response received)
- Dr Mark Belchier, South Georgia Project

Antarctic and Southern Ocean Coalition (ASOC) and the Antarctica Project
- Beth Clarke, Director, The Antarctica Project
- Mark Stevens, Fisheries Campaigner, The Antarctica Project
- Indrani Lutchman, Advisor to ASOC
- Formal response to consultation prepared by ASOC

Birdlife International
- Euan Dunn (formal stakeholder response received)

World Wildlife Fund (WWF)
- Formal response prepared for WWF by I Lutchman
- Scott Burns, Director, Marine Conservation Program, WWF-US

National Audubon Society
- Eric Gilman, Pacific Representative, Living Oceans Program (formal stakeholder response received)

Greenpeace International
- Matthew Gianni, Oceans Campaign Coordinator

Falklands Conservation
- Becky Ingham, Conservation Officer

CCAMLR Observers
Five experienced observers (i.e. previously worked as observers on Patagonian Toothfish boats in South Georgia waters) were interviewed in confidence during the observer training workshop.

Boat-based observations
One of the team spent 10 days aboard the fishery patrol boat MV Sigma on a patrol of the South Georgia maritime zone and CCAMLR sub-area 48.3 in May, 2001. During this period observations were carried out aboard the Isla Allegranza (registered in Uruguay) on 13 May, and the Moresko 1 (registered in Korea) on 14 May.

Further information on the consultation exercise, stakeholder responses and concerns raised are detailed in Section 7.

Published information, reports or papers in prep:

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Further information provided by GSGSSI/MRAG/Falklands Islands Government

- CCAMLR Observer Information: Logbook (blank example).
- CCAMLR Observer Information: Twenty four examples of observer reports from winter 1999 (13 reports) and 2000 (11 reports) seasons.
- CCAMLR International Scientific Observer Supplementary Briefing and Guidance Notes, plus Annex 1: Longline Fishery for *Dissostichus eleginoides*.
- CCAMLR Inspection System; Text of the.
- Summary of CCAMLR patrols in CCAMLR zone 48.3 including South Georgia Maritime Zone since 1995.
- Summary of sightings of illegal longlining activity in SGSSI Maritime Zone from 1995 onwards.
- MRAG, 2000. South Georgia fishery for Patagonian toothfish *Dissostichus eleginoides*. A summary of information prepared for the MSC certification process by MRAG Ltd June 2000.
- Terms and conditions of licensing.
- Examples of GSGSSI longliner daily report and logsheet.
- Correspondence from D Agnew to Guy Duhamel regarding IUU fishing.

- GSGSSI, 1997. South Georgia and South Sandwich Islands Fishery Protection. Patrol reports (examples from 02-20 December 2000, 8-20 May 2001).
- Government of South Georgia and the South Sandwich Islands. Fisheries Licensing Policy. Licence Applications: Criteria, February 2002.
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2 ADMINISTRATIVE CONTEXT

All of the SGSSI Maritime Zone falls within the boundaries of the Convention on the Conservation of Antarctic Marine Living Resources, conservation measures for which are set by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), a multinational organisation. Although the Maritime Zone covers three CCAMLR statistical subareas, the entire catch for this fishery comes from within only one: subarea 48.3 (Figure 1).

The convention was adopted in 1980 and entered into force in 1982. To date there are 24 members of its Commission (the executive body), including the European Community. The aim of the Convention is the conservation of Antarctic marine life. Conservation is defined to include rational use, although there is no activity directed at management of seals and whales as harvestable resources, these being covered by other conventions.

Fisheries management in South Georgia waters is therefore based directly on the annual scientific advice and recommended management measures of CCAMLR. As an Overseas Territory of the UK, GSGSSI has no formal direct contact with CCAMLR, but is represented at CCAMLR by the Polar Regions Section of the Overseas Territories, Foreign and Commonwealth Office of the UK.

GSGSSI puts into effect the conservation measures set by CCAMLR, which is advised by its Scientific Committee (SC-CCAMLR), which is in turn advised by its Working Group on Fish Stock Assessment. Some conservation measures are aimed at preservation of the target stock while others are aimed at the reduction of direct or incidental impacts on other species. Conservation measures for target species of fisheries include the setting of annual Total Allowable Catches (TACs) for each species according to individual sub-areas.

Further information on conservation objectives and measures of GSGSSI and CCAMLR are given in 3.4.1.

CCAMLR does not have any direct control over licensing of vessels. Any CCAMLR Party must license its flagged-vessels to fish in CCAMLR waters. However, in so doing the party must undertake to abide by the conservation measures in force for that sub-area and species. This includes a responsibility to supply daily catch data to CCAMLR via the flag state every five days, and (for vessels fishing for toothfish) to provide an international observer on all vessels for collection of scientific data on the fishery.

GSGSSI licenses a number of longliners each year to fish for Patagonian Toothfish within the South Georgia Maritime Zone. This license does not allow fishing in other parts of sub-area 48.3. As well as the responsibility of supplying daily catch data every five days to CCAMLR, as above, there is an additional responsibility to supply catch and position reports to the South Georgia Government every day. These data are collected and processed by the GSGSSI designated marine officer at King Edward Point, South Georgia. In 2001 for the first time the TAC was divided into non-transferable TACs for each licensed boat instead of a single TAC

for the whole fishery.

The responsibility for ensuring compliance with CCAMLR measures lies both with Flag States and GSGSSI. For the latter, there are three main methods of fulfilling this responsibility:

- Issue of licenses by GSGSSI takes into account past history of the vessel applying for the license (IUU fishing and compliance with CCAMLR measures according to CCAMLR Inspectors' records and scientific observers)
- GSGSSI provides fishery patrol and CCAMLR inspectors via a contractual arrangement with Falkland Islands Government (FIG).
- The GSGSSI marine officer at King Edward Point carries out inspections, whilst in port, of every vessel for compliance with CCAMLR measures prior to the vessel commencing fishing, and checks catch documents against recorded catches.

Closure of the fishery is carried out by CCAMLR using a prediction of completion of the TAC for Subarea 48.3 CCAMLR also operates a system of closed/open seasons, with longlining only allowed between May and August. In addition to this CCAMLR system, each vessel fishing within the SGMZ is allocated an individual quota, which is monitored by GSGSSI. The fishery is closed to that vessel when its quota is exhausted. This system, introduced in 2001 by GSGSSI, has been very effective in reducing the race to fish and the error in under- or over- shoot of the CCAMLR Subarea 48.3 TAC. It should be noted that a certain amount of fishing is possible in Subarea 48.3 outside the SGMZ, which is taken into account in CCAMLR's calculations of TAC and closure dates.

Licensed longliner in the South Georgia Maritime Zone. May 2001

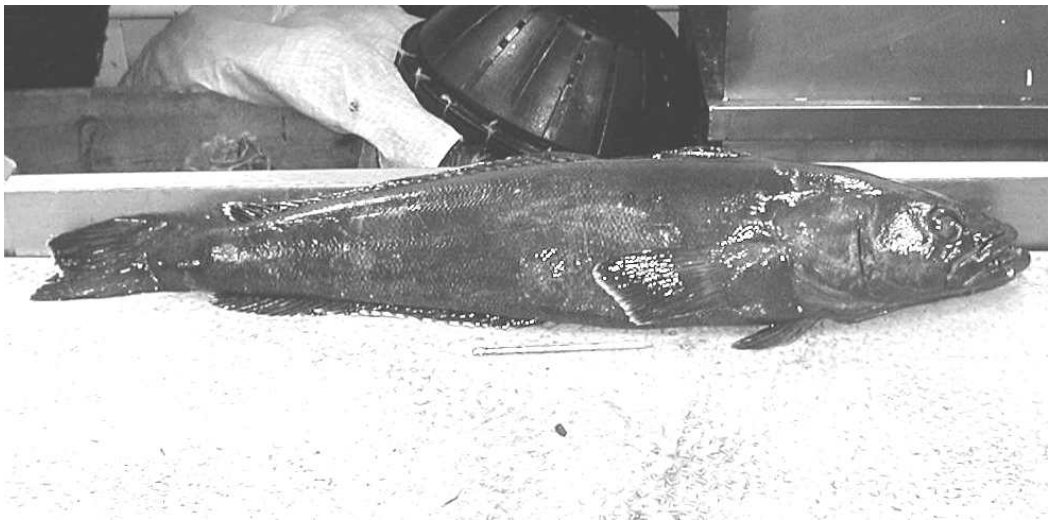
3 THE SOUTH GEORGIA PATAGONIAN TOOTHFISH LONGLINE FISHERY

3.1 Background to the target species - the Patagonian Toothfish *Dissostichus eleginoides*

The Patagonian Toothfish inhabits deep waters. Larger animals are typically found at between 200 and 2000m, although younger fish inhabit shallower areas. It lives in cold waters off Peru, Chile and New Zealand in the Pacific, and Argentina and the Falkland Islands in the Atlantic, and around many sub-Antarctic islands and seamounts from South Georgia in the west to Macquarie Islands in the east (Gon & Heemstra, 1990). It is slow growing with a maximum length of over 2m. It is also long lived (maximum age 24 years in the South Georgia population according to Cassia, 1998). Females mature at or in excess of ten years, at a length of roughly 90-100 cm, while males mature at a somewhat smaller size and younger age. Size distribution is widely reported to be strongly correlated with depth, with larger fish found in deeper waters, and there are thus differences in the depth distribution of mature males and females. *D. eleginoides* is carnivorous, adults in the South Georgia area feeding mainly on a variety of fish and decapods, and juveniles mainly on a variety of small fish and krill. Other prey, including cephalopods and isopods, feature occasionally in the diet.

Breeding in the South Georgia/Shag Rocks area is mainly in winter (July/August), although there is some evidence of a smaller spawning event in April/May, at least in some years. Spawning occurs in deep water and the planktonic eggs subsequently rise into the upper 500 m over the shelf slope according to Evseenko et al (1995). The young settle in relatively shallow water and gradually migrate to deeper water with age.

Patagonian Toothfish is a high value fish with major markets in the USA, EU and Japan, often being sold under the name of Chilean Sea Bass, especially in the USA, and Mero in Japan.



Patagonian Toothfish Dissostichus eleginoides

3.2 Fishery

3.2.1 Background

Around 58% of all finfish catch in Antarctic waters reported to CCAMLR between 1969 and 1997 took place around South Georgia. Finfishing, predominantly with bottom trawls, began in the mid-1960s, before the South Georgia Maritime Zone was put into effect in 1993. A rapid depletion in a number of rockcod (Nototheniidae) stocks occurred, notably Marbled Rockcod *Notothenia rossii*, firstly around South Georgia and, by the end of 1980 throughout the Antarctic. Other species caught in bottom trawls, such as *Gobionotothen gibberifrons* and *Lepidonotothen squamifrons* were also reduced throughout the Antarctic by the early 1980s. Marbled Rockcod remains at less than 5% of its pre-exploitation abundance.

Gaffing a Patagonian Toothfish, May 2001

Fishing for Patagonian Toothfish occurred at an exploratory scale in Chilean waters as early as 1955, but it was not until the later development of deep-water longline systems that it was exploited on a larger scale. Exploitation of Patagonian Toothfish around South Georgia began in the 1970s as by-catch from a bottom trawl fishery. Longlining was introduced to the South Georgia area in the late 1980s and early 1990s, and allowed exploitation of older, mature fish in areas where trawls could not be used. Longlining is now the only method allowed commercially in sub-area 48.3 (although trawling still takes place around some other sub-Antarctic islands). Potting is presently being carried out experimentally around South Georgia.

Large amounts of Illegal, Unreported and Unregulated (IUU) fishing for Patagonian Toothfish occurred in sub-Antarctic Atlantic waters during the 1990s, reaching an estimated four times the regulated catch in 1997. Measures have been put into place by CCAMLR in an attempt to deal with this, including most recently a Catch Documentation Scheme adopted at the 1999 CCAMLR meeting. In South Georgia waters, three arrests of vessels fishing illegally were made in 1994 - 1996 and illegal fishing is reported to have declined rapidly thereafter. At-sea surveillance records are consistent with the reported declines in IUU fishing.

Mortality of seabirds caught during setting of longlines can be high, and longline fisheries for Southern Bluefin Tuna (*Thunnus maccoyii*) and Patagonian Toothfish have been strongly implicated in reducing populations of several species of albatross and petrels. A number of measures to combat seabird bycatch have been introduced by CCAMLR, and bird mortalities associated with Patagonian Toothfish fishing in the South Georgia area recently have been greatly reduced as a consequence.

3.2.2 Fishing Location

The fishery is located in the South Atlantic, around the island of South Georgia and the associated plateau to the west around Shag Rocks (Figure 1). The fishery boundary is within the 200 nm Maritime Zone around South Georgia and the South Sandwich Islands. Although this Maritime Zone spans three CCAMLR subareas, the fishery occurs entirely within CCAMLR subarea 48.3. Some small amounts of fishing takes place within international waters in subarea 48.3, but outside the Maritime Zone. These activities are still subject to CCAMLR. Enforcement is not the responsibility of GSGSSI, but CCAMLR official Inspections are carried out by the UK patrol vessel in these waters, and any infringements of Conservation Measures are reported to the Flag State which may prosecute the vessel on the basis of this evidence.

The amount of fishing outside the South Georgia Maritime Zone but still within sub-area 48.3 appears small. This area can probably sustain very few commercial vessels that cannot access the SG zone, making this area a minor issue in the management regime. Legal fishing in this area is reported to CCAMLR and therefore is included in the stock assessment and the TAC for 48.3, even if such fishing is not under the legal jurisdiction of SGSSI.

3.2.3 Processing and Transshipment

Ship-board processing is usually to headed and gutted, or headed, gutted and tailed product, sometimes with other parts of the fish packaged separately (for instance the cheeks). Occasionally fish are filleted. Fish are stored in freezer holds in bags or boxes.

Transshipment onto refrigerated transport ships within the South Georgia Maritime Zone is allowed only at King Edward Point. Transshipment also takes place in the Falkland Islands and at Montevideo (Uruguay), and occasionally elsewhere such as South African ports.

3.2.4 Other Fisheries

Patagonian Toothfish is fished in a number of other locations around the Southern Ocean

including other island groups and off the coasts of South America. However, the South Georgia and Shag Rocks stock is considered to be distinct (see 3.3.2 below). Possible interchange of fish between this stock and those in other areas, such as the high seas/Burdwood bank area to the west, is being investigated by a recently implemented tagging programme.

The only other species of Toothfish fished (the Antarctic Toothfish, *D. mawsoni*) has a more southerly distribution and has not been reported to occur around South Georgia, although the two species may overlap in distribution in other parts of the Antarctic, including the South Sandwich Islands.

There are fisheries within the GSGSSI Maritime Zone for Icefish (Channichthyidae) and Antarctic Krill (*Euphausia superba*) both using midwater trawls, the latter operating in shallower water than the Patagonian Toothfish fishery and crab (potting, distribution overlaps with Patagonian Toothfish fishery). Other fisheries that are currently allowed but are not actively pursued are an exploratory fishery for squid (jigging) and a midwater trawl fishery for myctophids (lanternfish). No bottom trawling is allowed in the area.

3.3 The Management Unit

3.3.1 The Management Area and its Main Divisions

The area under direct GSGSSI control is the 200nm Maritime Zone. CCAMLR sets conservation measures for the whole of subarea 48.3. With respect to the fishery, the areas coincide, with only a small proportion of the fishable biomass of the stock extending out of the Maritime Zone. All Patagonian Toothfish fisheries in this area are currently managed as a single unit.

3.3.2 Stocks

The issue of whether the South Georgia stock is separate from other stocks is a critical one. Fish stocks are defined scientifically as a self-contained population. In practice, the definition is looser as a stock or management unit need only be self-contained to the extent that it can respond to locally implemented management measures. Therefore it is possible for effective management to be implemented, even if a population has limited exchange with other populations.

The most likely way populations of Patagonian Toothfish among the islands and shelves of the sub-Antarctic would inter-mix would be through recruitment. The ecology of the species suggests that adults are not highly migratory and are not found at the great depths which separate the islands and shelves within the species range. The larvae are released into open water, however, and may be distributed widely among populations dependent on oceanographic processes, such as gyres and currents.

Although studies on allozyme frequencies cannot eliminate the possibility of some mixing, a more sensitive test based on allele frequencies in microsatellite DNA and mitochondrial DNA studies suggests that the populations around sub-Antarctic islands, including South Georgia, appear to be reproductively separate from each other and from other populations such as the South American Shelf/Falklands region (Smith and Gaffney 2000; Smith and McVeagh unpublished data). The hypothesis that the Antarctic populations among the shelves and islands are separate is further supported by studies on Toothfish parasite populations (MacKenzie *et al.* 1996), meristic/morphological characteristics (Zacharov 1976) and studies of oceanographic circulation, which suggest that the source water for the South Georgia and Shag Rocks area lies well to the south and south west where there are thought to be no major populations of *D. eleginoides* (see e.g. Brandon *et al.* 1999 for a summary; Peterson and Whitworth 1989). Tagging studies have found that adults usually do not move far from their

capture site, and no recaptures have indicated movement across deep water channels. Growth rates between the Falkland Islands stock and South Georgia have recently also been shown to be different (CCAMLR WG-FSA 00/44). On balance, therefore, the South Georgia Patagonian Toothfish population is considered to be well defined.

3.3.3 By-Catch and Discards

3.3.3.1 Fish

Discarding in the SGSSI Toothfish fishery is uncommon, but there are occasional accidental losses of fish from hooks. These losses usually result from difficulties in gaffing fish when weather conditions are poor. There is also very occasional discard of fish with a condition known as jellymeat which makes the flesh unfit for sale.

By-catch in the fishery involves mainly rays (Rajidae) and grenadiers (Macrouridae). Most rays are discarded alive by knocking the fish off the snood before they are landed. An investigation in South Georgia waters in 1999 found that total ray catches (i.e. before any fish were knocked off the snood) averaged 0.7/thousand hooks against 34.7/thousand hooks for Patagonian Toothfish and 2.2/thousand hooks for grenadier species (Agnew *et al*, 1999b). The impact of this by-catch on these species populations is currently unknown, but is the subject of an ongoing research programme.

3.3.3.2 Seabirds

Seabirds, particularly petrels and albatrosses, are also caught, and often killed, as by-catch. This occurs mainly as the line is being set, but also during hauling, and mortality rates have historically been very high. Actions have been taken in the legal fishery to minimise this impact through CCAMLR conservation measures (particularly restriction of fishing to winter months when the affected species have largely left the area; setting of lines only at night when the birds forage less; use of appropriate streamer lines to keep birds away while setting; discharge of offal on the opposite side to hauling to reduce foul-hooking; use of appropriate line weighting regimes and defrosting of bait so that lines quickly sink below the foraging depth of the birds). It is presumed here that such conservation measures to protect seabirds are not undertaken in the IUU fishery, although for operational reasons, such measures, in some degree, may in fact be implemented.

3.3.4 Externalities – IUU Fishing

IUU fishing has been identified as a significant issue for Patagonian Toothfish fisheries on the scale of the entire Southern Ocean. A key issue in this evaluation is the extent to which IUU is significant in terms of the SGSSI fishery for this species.

Previous estimates of IUU catches and bird mortalities are not considered reliable and the rationale behind the numbers provided unclear. However, given the number of patrols, these were probably more accurate for subarea 48.3 than for most other areas in the Southern Ocean. Also, given the high surveillance presence in the SGSSI Management area, IUU fishing in sub-area 48.3 is considered likely to be substantially lower than in many other parts of the Southern Ocean, and lower than in the mid 1990s, prior to full implementation of the current fishery management system. The IUU fishery has a direct impact on the regulated fishery in terms of catches and by-catch. See section 3.8 for further information.

As part of this assessment, however, a separate analysis of IUU fishing in CCAMLR Subarea 48.3, and the consequences of this, has been undertaken (MRAG 2002). The request for this analysis recognises the potential significance of this issue for the management of the fishery.

As the report produced contains a great deal of information on the operation of surveillance in

the South Georgia Maritime Zone (SGMZ), it necessarily must be considered confidential. A summary of the MRAG report, however, is reproduced as an Appendix to this report. The report has, however, been reviewed by each member of the assessment team. The unanimous opinion of the team was that the report was based on a sound and robust methodology and provides results of sufficient rigor to be included in this assessment. Indeed, this is a method that should be continued within the SGMZ and is commended for adoption by CCAMLR.

3.4 The Fishery Management System

3.4.1 Management Objectives

The current long-term objectives of management are "To manage fishery activities in the Maritime Zone in a sustainable manner so that they do not cause deleterious impacts on the marine environment, its biota and dependent species; and to ensure that obligations to, and the provisions of CCAMLR are met." (McIntosh & Walton, 2000, Environmental Management Plan for South Georgia).

CCAMLR provides specific management objectives through its conservation measures and the text of the Convention itself. The aim of CCAMLR is the conservation of Antarctic marine life. Conservation is defined to include rational use, although there is no activity directed at management of seals and whales as harvestable resources, these being covered by other conventions.

CCAMLR's stated conservation principles, as set down in the Convention require that:

i) exploited populations must not be allowed to fall below a level close to that which ensures their greatest net annual increase;
ii) depleted populations must be restored to such levels;
iii) ecological relationships between harvested, dependent and related species must be maintained; and
iv) risks of changes to the marine ecosystem that are not potentially reversible over two or three decades must be minimised.

It is believed by GSGSSI/UK Government that by adhering to CCAMLR measures, these conservation principles should also be achieved, although the right is reserved to go beyond the requirements of CCAMLR if it is deemed necessary. Besides catch quotas, CCAMLR has issued many measures to control how operations are conducted, intended to minimise the impact of fisheries on non-target species, such as seabirds (3.4.2.2).

A secondary aim of the GSGSSI is to maximise the earnings from licence fees. The management of the SGSSI area is self-funded and all management costs, including the provision of observers, and enforcement and monitoring, are derived from licence fee income. The fee is based on the market value of the licence, which is reevaluated annually.

CCAMLR and its Scientific Committee have been developing an ecosystem approach to the regulation of fisheries. This includes management approaches which assess the status of the ecosystem and its health.

3.4.2 Management Systems

3.4.2.1 Bodies involved in management related issues

Like all fisheries around South Georgia and the South Sandwich Islands, this fishery is managed by the Government of South Georgia and the South Sandwich Islands (GSGSSI).

GSGSSI puts into effect the conservation measures set by CCAMLR, which is advised by its

Scientific Committee (SC-CCAMLR), which is in turn advised by the SC-CCAMLR Fish Stock Assessment Working Group.

Advice is also provided to the GSGSSI from UK research companies and institutes, principally Marine Resources Assessment Group (MRAG; fisheries assessment and management issues) and British Antarctic Survey (BAS; fisheries ecology and biology), both of whom have prepared five year research plans. The University of Aberdeen is also involved in research into the use of deep towed cameras for stock assessment (Aberdeen University Deep Ocean Submersible, AUDOS). Presently, recruitment is estimated from biannual trawl surveys (MRAG/BAS) in relatively shallow areas (to c. 400 m) on the South Georgia and Shag Rocks shelves, where the smaller Toothfish occur.

In addition, the GSGSSI supports a field station, run by BAS, on South Georgia, which aims to process samples from the fishery (for examples, scales or otoliths for age determination) and to undertake fisheries-related research in the inshore waters around South Georgia.

The Environmental Management Plan for South Georgia requires fishery activities in the Maritime Zone to be managed in a sustainable manner, so as not to cause deleterious impacts on the marine environment, its biota and dependent species, and to ensure that obligations to the provisions of CCAMLR are met.

The Falklands Islands Government provides fishery protection vessels and fishery patrol officers on a contract basis.

3.4.2.2 Conservation Measures

CCAMLR conservation measures include not only controls on vessel activities, but also reporting requirements for monitoring the fishery. Strict compliance with these measures is required as a condition of obtaining a fishing licence. The following are the main conservation measures relevant to the *Dissostichus eleginoides* fishery.

CM 29/XIX - Minimising incidental mortality of seabirds in the course of longline fishing or longline fishing research in the conservation area.

CM51/XIX - Five-day catch and effort reporting system.

CM 63/XV - Regulation of the use and disposal of plastic packaging bands on fishing vessels.

CM118/XVII - Scheme to promote compliance by non-Contracting Party vessels with CCAMLR conservation measures.

CM119/XVII - Licensing and inspection obligations of contracting parties with regard to their flag vessels operating in the convention the area.

CM121XIX - Monthly fine-scale biological data reporting system for trawl and longline fisheries.

CM122/XIX - Monthly fine-scale catch and effort data reporting system for trawl and longline fisheries.

CM146/XVII - Marking of fishing vessels and fishing gear.

CM147/XVII - Co-operation between contracting parties to ensure compliance with CCAMLR conservation measures with regard to their vessels.

CM148/XVII - Automated satellite-linked vessel monitoring systems.

CM170/XIX - Catch documentation scheme for *Dissostichus eleginoides*.

CM180/XVIII - Catch documentation scheme for *Dissostichus eleginoides* and *Dissostichus*

mawsoni in statistical subarea area 48.4.

CM196/XIX - Limits on the fishery for *Dissostichus eleginoides* in statistical subarea 48.3 for the 2000/2 001 season. (This conservation measure is normally varied annually to adjust the TAC and other requirements).

The fishing season for longline vessels is presently limited to the months May - August inclusive (austral winter), which has been set to minimise the possibility of incidental mortality of seabirds.

3.4.2.3 TAC and Quotas

CCAMLR sets annual catch limits for various stocks of Toothfish, including that for sub-area 48.3. These are calculated by the CCAMLR Working Group on Fish Stock Assessment.

Total allowable catch (TAC) for 1999/2000 was set at 5,310 tonnes and for 2000/2001 was 4,500 tonnes (with a total recorded catch of 4050 t). The latest assessment estimates a current spawning biomass of about 155,000t, compared with a virgin biomass of 170,000t (WG-FSA-01 via D Agnew). The latest TAC has been calculated at 5820 t.

The number of licences (with an individual quota allocation) is limited to the number thought sufficient to attain the quota within the season based on past catch-per-unit-effort data. Fifteen vessel were licenced to fish for toothfish using longlines in 2002. These vessels typically set lines with 8,000-10,000 hooks. Pot vessels are unrestricted in their season of access since they do not cause incidental mortality of seabirds.

3.5 Data Collection

3.5.1 Longliner logsheets

The logsheet requirements and daily reporting are set out in the “Longline Logsheet Guidance Notes”.

Daily logsheets are completed by vessel captains, one sheet for each 24 hours. Information is recorded for each haul (i.e. set of hooks attached to the same buoyed mainline). A header identifies the vessel, and other information gives time spent on different activities and numbers of lines set. Detailed longline records include effort (setting and hauling location, depth, bait, number of hooks, hook spacing, soak period) and catch (number and weight of retained catch). The logsheet also offers space for recording incidental mortality, although explicit discards are not requested. The completed logsheet is returned to the marine officer at King Edward Point, South Georgia, on completing each licensed fishing trip

3.5.2 Daily Summary Reports

Particular fields from the logsheets are reported daily to the marine officer at King Edward Point. Each faxed or radioed report consists of the header and summary of the daily logsheet. The catch information is used to monitor the catch against the quota.

CCAMLR requires regular five-day reports summarising daily fishing activities. Again this information is based upon the logsheet data.

3.5.3 Observers

Observers collect a variety of data during their monitoring of fishing activities at sea. Although they provide information that may be later used to measure compliance, they do not enforce CCAMLR conservation measures.

Observers record a wide range of data on fishing operations, including the dates and location of the trip, the number of hooks set and the bait used. More general information such as meteorological and fishing conditions is recorded. Of particular interest, by-catch and interactions between the vessel and seabirds and marine mammals, including incidental mortality, is recorded. These data are used subsequently to check compliance of the fishing operations with CCAMLR conservation measures and to judge their effectiveness.

Observers monitor the catch. They conduct all biological sampling on board the vessel during fishing operations. The length, weight, sex and maturity of the fish are recorded for samples taken from the processing area according to a pre-defined sampling system. The conversion factor, used to allow calculation of 'green' weight (i.e. weight of the fish before processing) from product weight, is regularly calculated by the observers. This is essential because the only practical way to obtain total catches through the weight of product. In a modification of procedure introduced in 2001, standard conversion ratios calculated from previous years' data are used initially but, if data so indicate, these can be altered during the fishing season.

The CCAMLR Observer reports are given to the vessel Captain on completion of the trip. Copies are sent back to CCAMLR and on to the vessel flag state. Copies are not automatically sent elsewhere.

The UK Government receives all observer reports from sub-area 48.3. The management authority (the Director of Fisheries, GSGSSI) then receives copies of the observer reports via the UK Government. These are distributed to the flag states involved (observer and vessel countries), presumably under the assumption that CCAMLR provides the management authority with all the information it requires. Although the connection between GSGSSI and CCAMLR appears tenuous, working as it does through the UK (Overseas Territory delegation), the relationship seems to work to the extent that SGSSI appears to receive all the information it requires.

3.5.3.1 Other CCAMLR Data

Fine-scale data are reported to CCAMLR by the flag state. There is evidence, from errors reported in the WG-FSA 2000 report, that this is carefully checked (CCAMLR 2000).

3.6 Stock Assessment

3.6.1 Data

3.6.1.1 Surveys

Biomass surveys are conducted once every two years by the UK and usually once a year by other CCAMLR Parties, notably Russia and Argentina. They are primarily directed at estimating the standing stock of the Mackerel Icefish *Champsocephalus gunnari*, but are also used for estimating the biomass and number of 2-4 year old Toothfish and biomass of all other species in the catch. The surveys in 2000 were conducted by the UK in January-February and Russia in February. Twelve surveys are thought accurate enough to have been used in the stock assessment.

3.6.1.2 Catch and Effort

Estimated IUU catches are added to the reported catches. IUU catches are estimated by CCAMLR based on an estimate of IUU effort and known CPUE in each area where fishing occurs. It is recognised by CCAMLR that the estimates may be very poor and probably represent a minimum. Illegal catches are thought to centre on CCAMLR area 58 in the

southern Indian Ocean. The IUU catch for area 48.3 is probably better estimated than for other areas as it is based on sightings by enforcement vessels, which also serve as a deterrent to IUU fishing. However, IUU fishing remains a significant source of uncertainty for the management of this stock. As noted above, an alternative methodology for assessing IUU fishing has now been developed which would improve this situation.

Catch-per-unit-effort (kg/hook) is used as a biomass index. It is standardised across vessels by fitting a generalised linear model to remove the statistically significant effects of vessel nationality, season and depth.

3.6.1.3 Other parameters

The growth rate and natural mortality parameters were chosen through an analysis reconciling the survey length densities with the growth model. Some variability (uncertainty) was allowed in the model, but parameters are generally constrained to reasonable values. The working group also tends to adopt parameters giving lower yields, suggesting that a conservative approach is being taken.

Stock assessments are conducted by the CCAMLR Working Group on Fish Stock Assessment. They depend upon specially conducted research activities and on fisheries data held in the CCAMLR database.

3.6.2 Modelling

The stock assessment uses an age-structured model to estimate the future development of the stock under different fishing quotas. The general modelling approach (Constable and de la Mare 1996) is standard for CCAMLR, but not widely used elsewhere. The model is based upon differential equations, which describe changes in cohort size due to fishing and natural causes. Other models are used to describe gear selectivity by size, weight-at-age, and the proportion spawning within each age class. These models are combined and solved as necessary to obtain seasonal stock projections for particular model parameters and data. An average fishing mortality is fitted to obtain the observed catch-at-age in each year. The selectivity, recruitment, natural mortality, weight-at-age and so on, are all provided separately. Therefore, each potential annual yield will determine the average fishing mortality for that scenario, which together with the selectivity functions, will determine the new age structure at the beginning of each year. An estimate of the current age structure makes use of the age structure at the start of the fishery, catch for each subsequent year, recruitment estimates from the annual recruitment survey, and parameter estimates for the various models. The currently accepted assessment includes the following features

- Mean annual natural mortality is taken randomly from a distribution U[0.132,0.198] for all ages.
- Selectivity is length (not age) based. The selectivity is a linear function from a minimum to maximum size.
- Growth is modelled using the von Bertalanffy curve (mean length at age) with parameters fitted from age and length data collected in 1991.
- Recruitment is modelled as a log normal function with fixed mean and variance estimated from a set of biannual trawl survey data of 2-4 year old fish. Actual observed recruitments can now be added into the model (WG-FSA-00/39).

The stock is projected forward from the present using the recruitment model. All parameters for all models can be drawn at random from probability distributions, rather than assumed to be constant. This allows full variability to be estimated using Monte Carlo simulations.

Recently the CPUE series has been integrated with the Monte Carlo simulations by using a sample weighting method. The relative weight for each scenario, or its "importance", is the relative likelihood of the set of observed biomasses from the Monte Carlo simulations given the CPUE series.

The justification for this modelling approach is consistency in terms of how CCAMLR treats its different fisheries. The available information varies considerably from fishery to fishery, so a flexible model is required which can make use of available data, but is not dependent upon it. The general Monte Carlo simulation approach allows for this as well as using a risk-based decision rule.

Alternative assessment models and parameters are being explored. WG-FSA-00/46 reports development of a dynamic age-structure production model which can be compared with the model currently used. Similarly, a new method attempting to estimate natural mortality was presented at the last CCAMLR scientific meeting (WG-FSA-00/52) and growth parameters have been re-estimated several times to improve accuracy.

The use of the growth model is probably the weakest aspect of the assessment. The model does not take into account the different growth rates likely to exist between males and females. Also, using a growth model to convert to age will be inaccurate particularly for older fish. For example, there is some suggestion there may be density dependent growth, and growth rate differs between the sexes. Neither of these factors is currently taken into account, but the working group has given a high priority to developing reliable methods for age determination.

Incomplete spawning, where a significant proportion of females skip years in the spawning cycle may lead to an overestimate the effective spawning stock size. Incomplete spawning has been observed and quantified in this species, and including this factor in the stock assessment model may make it more realistic. However, as this factor affects the unexploited as well as exploited stock, its inclusion may have little impact on the reference points or decision rules currently used.

The WG-FSA appears not to have carried out a retrospective analysis to see how well the assessment method is performing. This would require a reasonable time series of data, which may as yet be inadequate. However, some sort of check on the TAC generation for bias would still be useful for increasing confidence in the model and this approach.

3.6.3 Management Advice

The population dynamics model is used to identify the CCAMLR reference points and decision procedures over a simulation period of 35 years. In the case of Patagonian Toothfish, the model uses recruitment biomass estimates based on trawl surveys and available data on past catches to estimate the current age structure. This age structure, with variable recruitment around some mean value, is projected forward under a fixed quota regime. For scenarios with different constant quotas over the 35 years, the probability of the spawning stock falling below the reference point of 20% of the median pre-exploitation spawning biomass is estimated. The recommended quota is the harvest that yields a probability of 0.1 of falling below the reference point level over 35 years. The rule is static, although an assessment is undertaken each year.

3.7 Current and Projected Harvest

In the 1999/2000 season the TAC was set to 5310t, and 5210t was caught. The TAC for the 2000/2001 season was set at 4500t. The decrease in TAC is primarily due to a decrease in

recruitment as estimated by the trawl surveys.

In the last three seasons there has been a decrease in average length. Analyses suggested that these changes are consistent with a large recruitment in the immediately preceding years and changes in selectivity as vessels are fishing in shallower water (SC-CCAMLR XIX/4, 2000).

3.8 Enforcement and Monitoring

Direct enforcement is carried out by a variety of methods. CCAMLR conservation measures regarding gear and record keeping are checked through port inspections by the marine officer at King Edward Point (KEP) so far as is possible (catch documents authorised by ship owner are checked; bird scaring streamer lines measured; offal discharge point on the vessel (or on-board processing facilities) is checked. Plastic banding on bait boxes, if used, must be cut off and disposed of before the vessel receives its license; markings on fishing gear checked; VMS checked; line weights checked; presence of a copy of CCAMLR conservation measure in appropriate language verified). Inspection reports go to fisheries patrol officers who can follow up on any potential issues. The most usual non-compliance picked up on KEP inspections is inadequate bird scaring streamer lines. It is often possible to improve them.

Issues regarding fishing operations, such as night setting, regular use of streamer lines etc are monitored by the on-board observers. The results of their observations are summarised by CCAMLR and made available to GSGSSI for consideration during the licensing procedure for the following year. Fisheries inspectors and the marine officer at KEP regularly speak to the observers by radio so that major issues quickly become known, although in doing so, it is necessary to respect the role of Observers whose role is to report factually on fishing operations, rather than to monitor compliance.

GSGSSI contracts the Falklands Islands Government to provide fishery protection vessels, and has the capability of undertaking a patrol for two weeks out of every month.. The Falklands Islands Government also supplies experienced fishery patrol officers who are also UK-designated CCAMLR inspectors. Further information and support comes from occasional Royal Navy ships in the area and from occasional RAF flyovers. The use of satellite monitoring systems is also being tested, although it is not yet possible to evaluate their effectiveness.

Details of the operation of enforcement methods are not reported for reasons of security and future effectiveness, but were investigated thoroughly as part of the inspection of the fishery.

Allied to these efforts is the use of the Catch Document Scheme for Toothfish, which was implemented to reduce demand for IUU Toothfish in general. The program is too new for documentation to be available on its effectiveness at rendering IUU Toothfish unmarketable However, there are a number of reported positive developments, including strongly substantiated reports of a rapidly developing price premium for fish with a valid CDS; participation in the scheme of a number of non CCAMLR contracting parties including China; and rejection of IUU Toothfish from a number of ports. There are also reported to have been a small number of fake Catch Documents detected. The fact that they were detected suggests the CDS is being treated seriously, although the number of undetected fake documents that may have been in circulation is unknown.

3.9 Management Issues

Current stock status and stock projections were not available to the review team. There was an in depth discussion of problems with the assessment (including diagnostic graphs etc.) and potential solutions in the WG-FSA 2000 of CCAMLR, but final results are simply presented as the TAC recommendation. Although risks are included in the decision rule, presenting

results as a single number does not communicate risks to managers who could use the information in contingency planning. For example, as well as the most likely projections, management should be aware of less likely possibilities for changes in recruitment which may require long term changes in TAC. These may not alter the short term TAC, but could lead to changes in financial planning and research programmes.

4 BACKGROUND TO THE EVALUATION

4.1 Evaluation Team;

Evaluation Leader: Dr Andrew Hough: Moody Marine Limited

Dr Hough has a PhD in marine ecology from the University of Wales, Bangor and eleven years post-doctoral experience in commercial marine and coastal environmental management projects. He is Director of the Centre for Marine and Coastal Studies and is scheme manager for MSC Fishery Certification within Moody Marine. He has acted, or is acting, as lead assessor on four main assessments and has taken part in all MSC certification workshops.

Assessor: Dr Terry Holt**,** Moody Marine Ltd.

Dr Holt has seventeen years post-doctoral experience in marine biology (mainly commercial, some academic) including the last ten years in commercial marine and coastal environmental management projects covering a wide cross section of marine issues. He has worked with A Hough and others on development of Moody Marine certification procedures. MSC assessment experience includes pre-assessment and assessment of Burry Inlet Cockle fishery (now at Peer Review); pre-assessment of S. Georgia Patagonian Toothfish. Invited participant at MSc workshop on certification methods 2000.

Expert Advisor: Dr Paul Medley: Independent fisheries consultant, UK.

Experienced in mathematical modelling of fisheries and ecological systems and data management, including data acquisition to fit and test models. Bioeconomic modelling, with particular reference to interactions between longline and purse seine tuna fishing fleets formed the main subject of Paul's Ph.D. thesis. Has developed new techniques for multispecies stock assessment based on maximum likelihood and Bayesian methods. He has been an invited expert for a number of stock assessment working group meetings. He has worked on Falklands fisheries in the late 1980's on development of licensing conditions. Paul took part in assessment of the Thames Blackwater herring fishery and pre-assessment of the S. Georgia Patagonian Toothfish fishery for the MSc certification process. He was an invited participant at a MSc workshop on certification methods, 2000.
Paul has a wide practical experience in marine biology, including design and implementation of surveys and fisheries experiments. This includes addressing wider environmental issues of ecological management, including maintenance of marine biodiversity.

Expert Advisor: Mr John Cooper: Chief Research Officer of the Avian Demography Unit of the University of Cape Town, South Africa.

Academic staff member of the Percy FitzPatrick Institute of African Ornithology, University of Cape Town, from 1973 to 1996, conducting and managing primarily ecological research on seabirds in South Africa, in the sub-Antarctic and on the Antarctic Continent. 1996-1997:18-months as a Ministerial Advisor to Professor Kader Asmal, the South African Minister for

Water Affairs and Tourism, involved with the Independent World Commission on the Oceans.

From November 1997 to March 2001 he coordinated the Seabird Conservation Programme of Birdlife International, funded by the UK's Royal Society for the Protection of Birds. Past Secretary and Chair (and remains a member) of the Bird Biology Subcommittee of the Scientific Committee on Antarctic Research and of the Antarctic Advisory Committee of the World Conservation Union (IUCN). Past Vice-Chair for Antarctica of IUCN's World Commission on Protected Areas. He serves on the management committees of both the Prince Edward Islands Special Nature Reserve (South Africa) and the Gough Island Nature Reserve (United Kingdom), as well as on three IUCN and one CCAMLR specialist or working groups. Conservation Officer of the Government of Tristan da Cunha. Co-Editor of the international journal, Marine Ornithology, which he founded in 1976, and Chair of the African Seabird Group. Regional Director of the International Journal of Ornithology from 2001.

Expert Advisor: Dr Jake Rice: Canadian Stock Assessment Secretariat, Department of Fisheries and Oceans, Ottawa, Canada.

Jake is responsible for coordinating all national and regional processes for peer review and provision of scientific advice on fisheries and marine science issues within the Department of Fisheries and Oceans. The job includes integrating traditional knowledge with scientific results (and fishers with scientists at peer review meetings), thereby ensuring all review processes are open and transparent to all clients, while maintaining highest standards for objectivity and scientific quality. Responsible for organizing and chairing review meetings and workshops on trans-regional topics, chairing many national working groups, and serving as Headquarters liaison for many Regional science review and advisory groups. Jake also represents Canada at many international fisheries science bodies, such as the ICES Advisory Committee on Fisheries Management. He retains some research activities of international stature, particularly in the areas of ecosystem management, the effects of fishing on marine ecosystems, and integrating traditional and modern scientific knowledge in the development of advice on resource management. Jake's early career included considerable amounts of work on ornithology and he has published on fishing/seabird interactions. Twenty-five years academic and management involvement in fisheries.

CV's of the members of the project team are provided as Appendix A.

4.2 Previous Certification Evaluations

No previous certification evaluations have been carried out for this fishery.

5 STANDARD USED

5.1 MSC Principles and Criteria used for the Evaluation;

The MSC Principles and Criteria for Sustainable Fisheries form the standard against which the fishery is assessed and are organised in terms of three principles. Principle 1 addresses the need to maintain the target stock at a sustainable level; Principle 2 addresses the need to maintain the ecosystem in which the target stock exists, and Principle 3 addresses the need for an effective fishery management system to fulfil Principles 1 and 2 and ensure compliance with national and international regulations. The Principles, and their supporting Criteria are presented below.

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. [1]:

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.

Criteria:

1. The fishery shall be conducted at catch levels that continually maintain the high productivity of the target population(s) and associated ecological community relative to its potential productivity.
2. Where the exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level consistent with the precautionary approach and the ability of the populations to produce long-term potential yields within a specified time frame.
3. Fishing is conducted in a manner that does not alter the age or genetic structure or sex composition to a degree that impairs reproductive capacity.

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.

Criteria:

1. The fishery is conducted in a way that maintains natural functional relationships among species and should not lead to trophic cascades or ecosystem state changes.

2. The fishery is conducted in a manner that does not threaten biological diversity at the genetic, species or population levels and avoids or minimises mortality of, or injuries to endangered, threatened or protected species.

3. Where exploited populations are depleted, the fishery will be executed such that recovery and rebuilding is allowed to occur to a specified level within specified time frames,

[1] The sequence in which the Principles and Criteria appear does not represent a ranking of their significance, but is rather intended to provide a logical guide to certifiers when assessing a fishery. The criteria by which the MSC Principles will be implemented will be reviewed and revised as appropriate in light of relevant new information, technologies and additional consultations

consistent with the precautionary approach and considering the ability of the population to produce long-term potential yields.

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.

A. Management System Criteria:

1. The fishery shall not be conducted under a controversial unilateral exemption to an international agreement.

The management system shall:

2. demonstrate clear long-term objectives consistent with MSC Principles and Criteria and contain a consultative process that is transparent and involves all interested and affected parties so as to consider all relevant information, including local knowledge. The impact of fishery management decisions on all those who depend on the fishery for their livelihoods, including, but not confined to subsistence, artisinal, and fishing-dependent communities shall be addressed as part of this process;

3. be appropriate to the cultural context, scale and intensity of the fishery – reflecting specific objectives, incorporating operational criteria, containing procedures for implementation and a process for monitoring and evaluating performance and acting on findings;

4. observe the legal and customary rights and long term interests of people dependent on fishing for food and livelihood, in a manner consistent with ecological sustainability;

5. incorporates an appropriate mechanism for the resolution of disputes arising within the system[2];

6. provide economic and social incentives that contribute to sustainable fishing and shall not operate with subsidies that contribute to unsustainable fishing;

7. act in a timely and adaptive fashion on the basis of the best available information using a precautionary approach particularly when dealing with scientific uncertainty;

8. incorporate a research plan – appropriate to the scale and intensity of the fishery – that addresses the information needs of management and provides for the dissemination of research results to all interested parties in a timely fashion;

[2] Outstanding disputes of substantial magnitude involving a significant number of interests will normally disqualify a fishery from certification.

9. require that assessments of the biological status of the resource and impacts of the fishery have been and are periodically conducted;

10. specify measures and strategies that demonstrably control the degree of exploitation of the resource, including, but not limited to:

    a) setting catch levels that will maintain the target population and ecologicalcommunity's high productivity relative to its potential productivity, and account for the non-target species (or size, age, sex) captured and landed in association with, or as a consequence of, fishing for target species;
    b) identifying appropriate fishing methods that minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;
    c) providing for the recovery and rebuilding of depleted fish populations to specified levels within specified time frames;
    d) mechanisms in place to limit or close fisheries when designated catch limits arereached;
    e) establishing no-take zones where appropriate;

11. contains appropriate procedures for effective compliance, monitoring, control, surveillance and enforcement which ensure that established limits to exploitation are not exceeded and specifies corrective actions to be taken in the event that they are.

B. Operational Criteria

Fishing operation shall:

12. make use of fishing gear and practices designed to avoid the capture of non-target species (and non-target size, age, and/or sex of the target species); minimise mortality of this catch where it cannot be avoided, and reduce discards of what cannot be released alive;

13. implement appropriate fishing methods designed to minimise adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;

14. not use destructive fishing practices such as fishing with poisons or explosives;

15. minimise operational waste such as lost fishing gear, oil spills, on-board spoilage of catch, etc.;

16. be conducted in compliance with the fishery management system and all legal and administrative requirements; and

17. assist and co-operate with management authorities in the collection of catch, discard, and other information of importance to effective management of the resources and the fishery.

6 THE EVALUATION PROCESS

6.1 Inspections of the Fishery

A pre-assessment visit to the offices of MRAG took place on 3 October, 2000 which included interviews with representatives of MRAG and BAS.

For the main assessment of the fishery against the MSC Principles and Criteria, the following visits, inspections and interviews were carried out:

A training workshop for CCAMLR Scientific Observers for sub-area 48.3, run by MRAG and BAS at MRAG offices, Imperial College, London, was attended on 26 March, 2001. Five experienced observers (i.e. those who had previously worked as observers on Toothfish boats in South Georgia waters) were interviewed in confidence during the workshop.

Dr T Holt spent ten days aboard the fishery patrol Boat MV Sigma on a patrol of the South Georgia maritime zone and CCAMLR sub-area 48.3 in the company of a senior representative from MRAG, one of the CCAMLR inspectors, and (for part of the time) marine officers from King Edward Point, South Georgia.

During the fisheries patrol, observations were carried out aboard two longliners: the "Isla Allegranza (registered Uruguay)" on 13th May, 2001, and the Moresco 1, Korean-registered on 14 May 2001.

Marine Officers at King Edward Point were interviewed on 12 and 18 May, 2001 and computerised records inspected. The BAS base at KEP was also visited.

The fishery representatives in Stanley, Falkland Islands were visited from 8th May to 11th May inclusive and again on 20 May 2001. Offices of the Dept of Fisheries (Falklands Islands Government, contracted to supply services, especially provision of fisheries patrol and CCAMLR inspectors, to the GSGSSI) were visited and the director of fisheries, licensing officer and fisheries officers were interviewed. Interviews were held with representatives of GSGSSI responsible for fisheries (operations manager and assistant commissioner).

Representatives of eight licensed fishing vessel owners holding licenses for the present season were interviewed in Stanley, Falkland Islands between 9 and 11 May 2001.

Representatives of MRAG and BAS attended the team meeting on 3 July in order to clarify points and representatives of ASOC met with the panel on July 4 to ensure that their concerns were understood by the panel.

6.2 Evaluation process

Collation of information and stakeholder consultation took place from March 2001 onwards. Inspections were carried out mainly in May 2001, (although the observers workshop was attended in February 2001). An assessment team meeting took place in early July 2001, during which representatives of the fishery advisors and stakeholders presented further information.

The team meeting of July 2001 evaluated most aspects of the fishery against the MSC Principles and Criteria. However, the available information on IUU fishing was considered to contain a level of uncertainty that prevented completion of a full and complete assessment. Accordingly, a request was made to the Government of South Georgia and the South

Sandwich Islands (GSGSSI), *inter alia*, that a statistically more rigorous estimate of IUU effort be prepared. This was specifically to provide estimates of bird by-catch and IUU catch of toothfish and include both summer and winter information.

In response to this request, GSGSSI commissioned MRAG Ltd to produce such a report.

The implications of this report, and other updates in fishery management information, were reviewed by the assessment team in May 2002 and included herein.

7 STAKEHOLDER CONSULTATION

7.1 Identification of Stakeholders:

Consultation with 'stakeholders' (i.e. those organisations and individuals with a significant interest or involvement in the operation of the fishery, such as management authorities, NGO's, fishermen's organisations, processors etc) is an integral component of the MSC Certification Process.

Accordingly, a wide range of organisations were contacted during assessment of the South Georgia Patagonian Toothfish Fishery. The principal aim of consultation is to facilitate identification of issues pertinent to the sustainable management of the fishery.

Consultation involved:

- Direct contact by letter with follow up contacts, wherever appropriate, by e-mail, telephone or letter. Consultees appropriate for direct contact were identified by Moody Marine and fishery managers. In addition, every effort was made to facilitate wider dissemination of consultation materials throughout the stakeholder communities. With the clients approval, this included circulation of the fishery pre-assessment report to further inform stakeholders of Moody Marine's understanding of the status of the fishery prior to commencement of the main assessment.
- Notification of the Certification Assessment in Fishing News International (Appendix B)
- Notification on the MSC web site (Appendix C)
- Publication of scoring indicators used for the fishery is on the MSC website, with direct re-contact of all stakeholder to inform of this documents availability and inviting any updates of views or information prior to the May 2002 assessment team meeting (Appendix D)

7.2 Summary of Relative Use-Rights;

There is no history of exploitation of Patagonian toothfish around South Georgia and Shag Rocks before the last three decades, and no claims of relative use rights.

7.3 Stakeholders Consulted:

Stakeholders consulted by letter (from 11 June 2001), and responses received by Moody Marine, are as follows.

Name	Affiliation	Response(s) received
Dr Euan Dunn	Birdlife International	12 June 2001 *
Dr Edith Fanta	Scientific Committee on Antarctic Research (SCAR)	No response
Scar Secretariat	Scott Polar Research Institute	No response
Prof J Croxall	Scientific Committee on Oceanic Research (SCOR)	2 May 2001
Ross Shotton	FAO	3 April 2001
Dr Karl-Hermann Kock	International Whaling Commission (IWC)	No response
Mr Marl Stevens	The Antarctica Project	20 March 2001 12 April 2001 13 June 2001* 24 July 2001
Dr Mike Richardson	Foreign and Commonwealth Office	No response
Scott Burns Indrani Lutchman Louise Heaps	WWF	19 July 2001 *
Glen Sant	TRAFFIC Oceania	No direct response received but TRAFFIC report on toothfish published 2001.
Dr Aldo Berruti	BirdLife South Africa	Birdlife response from Euan Dunn
Dr Becky Ingham	Falklands Conservation	6 June 2001
Matthew Gianni	Greenpeace International	22 June 2001
Eric Gilman	National Audubon Society	3 May 2001
Ms Frances Marks	UK Overseas Territories Conservation Forum	No response
David Taylor	South Atlantic Working Group	No response

* Substantial documentation received

These stakeholders were re-contacted in February 2002.

Stakeholder responses are attached as Appendix E.

In addition, meetings were held within the Falklands Islands on 9-11 May 2001 with local stakeholders, including industry representatives. These were:

Sally Poncet	South Georgia Environmental Baseline Survey
Drew Irvine	Argos
Alison Roose Alex Reid	Polar Ltd
Coleen Alazia Cheryl Roberts	Beauchene
Mike Summers	Quark Fishing
Andrea Clausen	Falklands Conservation

Nicolas Huin	
Grant Munro	Consolidated Fisheries

Further to the above contact, on 1 June 2001, Dr Andrew Hough of Moody Marine, accompanied by Dr Duncan Leadbitter of MSC, attended a meeting in Washington DC, USA, with key NGO's concerned over the proposed certification. The aim of the meeting was to provide a clear understanding of the aims and limitations of the MSC certification process and to ascertain the main concerns of the stakeholders represented. These concerns were then raised by Andrew Hough during the certification process.

The meeting of 1 June was attended by the following:

Andrew Hough	Moody Marine
Duncan Leadbitter	MSC
Scott Burns	World Wildlife Fund
Gerry Leape	National Environmental Trust/Greenpeace
Indrani Lutchman	World Wildlife Fund
Mark Stevens	The Antarctica Project
Beth Clark	Director, The Antarctica Project

During a team meeting to discusse the assessment of the fishery, presentations were also made by representatives of MRAG/British Antarctic Survey (3 July 2001) and ASOC/WWF (4 July 2001). Meetings took place at Moody Marine offices in Merseyside, UK.

Meeting attendance was as follows:

3 July 2001

David Agnew	MRAG
Neil Ansell	MRAG
Mark Belchier	British Antarctic Survey

4 July 2001

Indrani Lutchman	World Wildlife Fund
Mark Stevens	The Antarctica Project

Subsequent to the above meeting, additional information was supplied to the team by MRAG in consultation with GSGSSI and other UK parties.

Finally, the scoring indicators and guideposts used for the assessment were published on the MSC website (www.msc.org) for public comment following extensive review by the assessment team. Stakeholder comments were received from ASOC.

7.4 Stakeholder Issues

A number of key issues have been raised by stakeholders and are considered in turn below.

The following key issues were identified by consultees during the stakeholder consultation exercise. These are not necessarily expressed in any order of priority, but we seek here to capture the main concerns and views of the consultees.

Incidental mortality of seabirds (or seabird bycatch)

This issue was of specific concern to a number of stakeholders, including ASOC, National

Audubon Society, Birdlife International and WWF

The chief area of concern was in relation to the illegal (IUU) fishers. On the basis of a worse-case scenario, it is expected that illegal fishers would not implement any of the CCAMLR measures designed to minimise seabird bycatch.

In terms of the legal fishery, there was a general feeling that the CCAMLR measures, as implemented by GSGSSI, were effective in reducing seabird by-catch to acceptable levels. Indeed British Antarctic Survey point out that "current mortality rates are recognised (by a multinational review group incorporating members of some prominent NGO's) to be of negligible concern for the species concerned". Given the proximity of the fishery to breeding grounds of globally threatened albatrosses and petrels, BAS also pointed out the importance of (demonstrably) fully adequate mitigation and monitoring measures in any future extension of the fishing season. .

National Audubon Society and Birdlife International's responses, however, highlight the problem of illegal (IUU) fishers operating as a part of the fishery (i.e. the 'fishery' comprising both legal and illegal fishers). In this case, these consultees consider that the illegal fishery would undermine the management of the legal fishery and certification of the legal fishery would represent certification of the fishery as a whole (including the illegal fishery). Falklands Conservation also state that "the burden of proof should be on the SG Government to demonstrate convincingly that illegal fishing in the SG fishery is not significant".

Birdlife International's response also points out the lack of information on the seabird by-catch rates within the illegal fishery (and presentation of information on the legal fishery).

In this context, the National Audubon Society express the view that "if the level of fishing, legal or pirate, is unsustainable, or threatening seabirds with extinction, then fishing has to be adjusted, and this may have to be done by restricting legal toothfish fisheries".

A call for a moratorium on all toothfish fishing has been made by ASOC and Greenpeace. A principal justification for such a moratorium is the incidental mortality of seabirds, principally albatross and petrel (other reasons being a lack of knowledge on toothfish, impacts on the ecosystem and the sustainability of commercial fishing).

ASOC also point out non-compliances with CCAMLR conservation measures within the legal fishery.

The approach of the assessment team to this issue is that the control of IUU fishing is part of the overall fishery management responsibility. The impacts of IUU fishing on seabirds must therefore be considered as an impact of the fishery. This consideration must also take into account the ongoing status of seabird populations and the contribution of bycatch within the SGSSI fishery to bycatch levels from other toothfish fishery areas. This issue also prompted the request for better definition of the extent of implications of IUU fishing (discussed above) within the SGMZ.

Other bycatch

WWF and ASOC point out the additional problem of bycatch of skates and rays, particularly the fact that estimates of bycatch may under-record those fish which fall from the line on hauling.

The discrete nature of the SGSSI toothfish stock

The perceived overall uncertainty over the discrete nature of the exploited toothfish population was raised by WWF and ASOC. WWF comment that the SG stock "may be shared with neighbouring areas such as the Patagonian shelf and the Falkland Islands… at least at the larval distribution stage". WWF also point out that this uncertainty would raise questions over the 'unit of certification' (i.e. the stock being evaluated).

The extent to which the SGSSI 'stock' may be part of a larger stock was of concern to many consultees. Birdlife International point out the problem of possible illegal fishing effects on such a wider stock.

The extent to which the Patagonian toothfish 'stock' within the GSGSSI maritime zone represents a separate stock was therefore a key consideration during the assessment. Fortunately, considerable information on this issue was available for review by the assessment team, as described in this report.

Other factors relevant to the composition of the SGSSI stock

WWF point out uncertainties concerning, in particular, recruitment, growth and natural mortality.

ASOC also note signs which may indicate depletion of the stock, particularly a move to fishing in shallower waters, a reduced TAC , a reduced modal length and a failure to account for sexual dimorphism.

These issues are considered in the scoring commentary provided below.

Control of IUU fishing

Overarching views on the control of IUU fishing related to possible certification were expressed as follows.

ASOC and WWF expressed concern over the effects of IUU fishing on exploited stocks and on the wider ecosystem and the ability of management bodies to accurately assess the extent of IUU fishing (a recurring theme in consultation responses). This was also of concern to the assessment team and has been considered in a separate report.

Birdlife International expressed concern over certification of the fishery being subject to potential future improvements, particularly if sufficient measures were not in place at the outset to combat illegal fishing. However, it is necessary for a fishery to attain a satisfactory level in relation to all three of the MSC Principles for Sustainable Fishing in order to be certified. Future improvements would address particular issues, not retrospectively bring a fishery to a sufficient level of performance to be certified.

The CCAMLR catch documentation scheme

The CCAMLR catch documentation scheme (CDS) is a recent innovation (as described above) designed to provide verification that toothfish entering the open market are from a legal fishery. The ultimate objective of the CDS being that illegally caught fish will have a much smaller market and lower market price – making IUU fishing ultimately uneconomical.

The CDS has been the object of various criticism during the consultation. However, given the recent implementation of the scheme and lack of information on its success or otherwise, this scheme has not been considered as material to the assessment of the fishery as it currently stands, other than as a potential device to reduce IUU fishing in the future.

Chain of Custody Certification

WWF make the point that fishery certification is of dubious benefit without accompanying Chain of Custody certification and could cause confusion to consumers.

Whilst Chain of Custody considerations are outside the scope of a fishery certification assessment, this point is noted as requiring consideration by the client and merchants, processors etc.

Geopolitical considerations/Legal status of fishery management

Two stakeholders have raised concerns over the legal and geopolitical status of the fishery. Both of these concerns relate to the dispute over sovereignty of South Georgia and the South Sandwich Islands between the United Kingdom and the Argentine Republic.

The issue was raised by His Excellency the Argentine Ambassador to the UK. This centered on whether UK legislation implemented in the South Georgia Maritime Zone was in contradiction to CCAMLR agreements, as the Argentine Republic has expressly rejected within CCAMLR, UK jurisdiction over the area. Fishery management and conservation measures implemented by the UK were therefore interpreted as being "a controversial unilateral exemption to an international agreement".

The second stakeholder, ASOC, raised concerns over the effects of certification on relationship with South American countries and resulting impacts on the overall effectiveness of CCAMLR in managing toothfish fisheries.

However, the aim of certification, and the role of the assessment team, is to evaluate the management of the fishery against the MSC standard. Fundamental to the MSC Standard is the compliance of the fishery with international and national legislation relevant to fishery management. It was therefore key to the assessment fishery that the fishery be in full compliance with any conservation measures, resolutions or decisions of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) relevant to its functioning. A controversial unilateral exemption to such measures, resolutions or decisions would be fundamental to the fishery meeting MSC Principle 3.
The assessment noted that, "UK Government was in no doubt about its sovereignty over South Georgia and the South Sandwich Islands". The conclusion of the assessment was that the UK does not exempt South Georgia from any such conservation measures, resolutions or decisions. In particular, it is noted that CCAMLR allows for the implementation of national conservation measures within waters adjacent to islands within the CCAMLR area over which the existence of state sovereignty is recognised by all Contracting Parties (Statement by the Chairman of the CCAMLR, 1980). Whilst we acknowledge the dispute over which state has sovereignty, the existence of sovereignty by some state, and the acknowledgement by CCAMLR of a states ability to implement National measures within adjacent waters, seems clear. The assessment therefore considered both CCAMLR management measures and measures implemented by the relevant authority in South Georgia, as established by the Chairman of the CCAMLR, 1980.

The more general issues raised by ASOC are noted. These are, however, entirely beyond the scope of the assessment team in evaluating the effectiveness of management of the fishery in question. We would hope, however, that the results of the assessment would further the effective management of toothfish fisheries throughout the region and the ecosystem on which these depend

Overall Views

A number of consultees expressed what could only be classed as an overall viewpoint on the certification of the fishery. Where an opinion has been expressed as to whether certification should be conferred, (WWF, ASOC, Greenpeace) the opinion is that **any** Patagonian toothfish fishery should not be certified.

In addition, WWF and ASOC have provided detailed comments in relation to the assessment (and for WWF for each of the scoring criteria used here). These comments were taken into account during the assessment, including through a presentation to the assessment team by representatives of ASOC and WWF, and are reproduced in Appendix X.

WWF point out a number of serious concerns related to the fishery, but also recognise a number of "positive aspects of the fishery" in relation to toothfish fisheries elsewhere. Nevertheless, the overall view is that the remaining problems are sufficient to prevent certification.

While these views are recognised, it is necessary for the certification team to make decisions based only on the fishery applying for certification and the evidence available at the time. We are sure that all consultees will appreciate this need for certification to be an impartial and scientific evaluation if the MSC scheme is to maintain its credibility.

Scoring Indicators and Guideposts

Comments received from ASOC were, overall, that the minimum requirement guideposts (80 level) were too low and that the 100 level guideposts would need to be met for a fishery to be certified. It should be borne in mind, however, that the guideposts used have been developed in conjunction with the MSC and other certifiers to provide a 'standard' against which fisheries may be evaluated. Comments in relation to this standard can only be addressed by the standard-setting body - the MSC.

ASOC also required that the indicators and guideposts address the issues they identify as being of main concern; uncertainty over IUU fishing, uncertainty over the status of the target population, the impact of toothfish fishing on the wider ecosystem, inadequacy of CCAMLR measures to distinguish between IUU and legally caught toothfish and enforcement of CCAMLR measures. The team have addressed these issues throughout the assessment as set out in the commentary on the scoring process in the Table below.

8 OBSERVATIONS AND SCORING

8.1 Introduction to Scoring Methodology

Application of the MSC Principles and Criteria for Sustainable Fishing

The MSC Principles and Criteria, provide guidance on the overall requirements necessary for certification of a sustainably managed fishery.

The certification methodology adopted by the MSC – the application of the Principles and Criteria - involves the interpretation of these Principles and Criteria into a hierarchy of 'Indicators' and 'Scoring Indicators'. Indicators represent separate areas of important information (e.g. Criterion 1.A requires a sufficient level of information on the target species and stock, 1.B requires information on the effects of the fishery on the stock and so on). These indicators therefore provide a detailed checklist of factors necessary to meet the MSC Criteria in the same way as the Criteria provide the factors necessary to meet each Principle.

Scoring Methodology

At the scale of the Scoring Indicators, performance of a fishery is determined on the basis of a percentage compliance with pre-specified scoring guidelines, with 80 representing the level required to comply fully with the MSC requirement (i.e. a "pass"). In order to make the assessment process as clear and transparent as possible, the scoring guidelines are presented in the scoring table (below) and describe the level of performance necessary to achieve 100 (substantially exceeds necessary performance standard) 80 (meets necessary performance standard), and 60 (falls below the necessary performance standard) scores for each Scoring Indicator. A score below 60 would represent a major non-compliance with the requirements of the MSC standard and would normally cause a fishery to automatically fail.

Each score is discussed by the assessment team and a consensus reached. As it is not considered possible to allocate precise scores, scoring intervals of 5 units are used in the evaluation (with only one exception proving this rule).

Application of Indicators to the fishery

The generic Scoring Standards developed by Moody Marine have been identified on the MSC website (Certification Performance Criteria and Scoring Guidelines) and stakeholders informed of their publication.

The generic Scoring Standards are modified as appropriate in line with the nature of the fishery undergoing certification. In practice, this usually takes two forms. One is a rephrasing of the Scoring Indicators and scoring guidelines to preserve fully the level of performance expected of the fishery or management system, but to be directly applicable to the fishery in question. The second is a 'weighting' assigned to Indicators and Scoring Indicators.

At the top level, no weightings are assigned in terms of each Principle; a fishery must fully 'pass' (exceed 80) each of Principles 1, 2 and 3 in order to achieve certification. Within each Principle, there is a general presumption against allocating weightings to the Indicators which are generally considered to be equally important. Rather, weights are generally assigned at the scale of the Scoring Indicators. Where weights are assigned at a specific level of the hierarchy, these always sum to 100.

Scoring output

As described above, the performance of the fishery is assessed by assigning scores to each Scoring Indicator in relation to the scoring guidelines developed for the fishery. The weighted sum of scores are then taken across the Scoring Indicators for each Indicator, and averaged across the Indicators for each Principle. This then provides the final score for each of the three Principles,

This process is achieved by the use of AHP (Analytical Hierarchy Process) software, common to all MSC Certifiers.

Weights and scores for the South Georgia Longline Fishery are presented in Table 1 below.

Please note that due to the nature of the longline fishery, and the type of gear used, weightings were considered appropriate for this fishery in Principle 2 at the Indicator (2A to 2E) level. The effect of this was to 'down-weight' Indicator 2D (related to the effects of gear-use on the receiving ecosystem and extent and type of gear losses. In this case, it was felt that this indicator was more important in relation to other fishing methods such as bottom trawling and dredging etc. than to deep water longlining. Generically this is a fishing method with

relatively little direct impact (which is not to say none) on the "receiving ecosystem" (sea-bottom) and the importance of collecting this sort of information was therefore deemed to rank lower than the other indicators.

8.2 Evaluation Results

Observations are presented in the Scoring Table presented as a separate document, together with any weightings applied to the fishery and the scores allocated.

9 LIMIT OF IDENTIFICATION OF LANDINGS FROM THE FISHERY

Toothfish are processed on board longline vessels, generally to headed, tailed and gutted (HAT) product. This product is stored frozen in boxes or bags. The degree of labelling appears to vary from boat to boat, however, the labelling observed on the two boats inspected during this visit gave insufficient information on the contents to clearly identify fish from the South Georgia Longline fishery.

The limit of landings from the fishery would be the landing of toothfish onto longline vessels within the GSGSSI Maritime Zone. For any future Chain of Custody certification of South Georgia toothfish, clearly separate labelling and verification of landings from within and outside the fishery would be required on entering and leaving the maritime zone.

10 CERTIFICATION RECOMMENDATION

10.1 Certification Recommendation

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

MSC Principle	Indicator	Score	Overall Score
Principle 1: Sustainability of exploited Stock **Criteria**: 1, 3	1A 1B 1C 1D 1E 1F		**PASS**
Principle 2: Maintenance of Ecosystem **Criteria:** 1, 2	2A 2B 2C 2D 2E 2F		**PASS**
Principle 3: Effective Management System **Criteria:** 1 to 17	3A 3B 3C 3D 3E 3F 3G		**PASS**

It is therefore recommended that the ***South Georgia Patagonian Toothfish Longline Fishery should be certified according to the Marine Stewardship Council Principles and Criteria for Sustainable Fishing***

Continuing certification would, however, be subject to compliance with the following Conditions for Certification. Preparation of an action plan to meet these conditions should be agreed between the client and the certification body.

10.2 Pre-Conditions, Conditions or Recommendations Associated with Certification

As the fishery has passed against each MSC Principle, no pre-conditions for certification are required.

Conditions, with appropriate timescales for completion, are outlined below.

Recommendations for issues which, although not being fundamental to the management of this fishery, would improve its performance, are also made. The issues covered by these recommendations would be subject to ongoing surveillance and review in terms of their implications for fishery management.

10.2.1 Conditions for continuing certification

The following would be required according to the timescales indicated.

Condition 1. The fishery shall be subject to annual surveillance visits. As the fishery is seasonal (austral winter only) twelve monthly surveillance is considered sufficient

Condition 2. The level of surveillance, monitoring and associated measures required to achieve certification should be maintained or improved (e.g. through improved/increased surveillance or proven effects of Catch Documentation Scheme). Improvement should concentrate on development of verifiable indicators of IUU activity and its effects.

This is an ongoing requirement for the fishery.

Condition 3. Population estimates of rajids from by-catch and survey data, and ongoing surveys, should be used to provide points of reference to interpret the effects of by-catch on populations of these species. This may require further research on the biology of the species concerned. The biological basis of mitigation measures should be established. Interpretation should include information from IUU effort estimates.

This should be progressed within 12 months of certification and fully developed within three years following certification

Condition 4. The management measures used in the fishery are considered good, but need to be codified. A fishery management plan for toothfish is considered necessary for effective management of the fishery, as described in the FAO code of conduct. This should include:

- Contingency plan for future funding should revenues from operating fishery prove insufficient to fund monitoring and enforcement.
- Transparent information on licensing requirements, including a vessel code of conduct.
- A recovery plan should the stock fall below precautionary reference points
- External review of management plan.

This plan should be completed within 12 months of certification.

Condition 5. Independent, external, review of CCAMLR toothfish management measures does not currently take place. Accordingly, there should be a request from the UK (which may need to be channelled through the EC) for such an external review..

This request should be progressed within 12 months of certification.

Condition 6. At present, in allocating future harvests (TAC), IUU fishing is assumed to be

zero. Although IUU fishing is taken into account in determining stock status retrospectively, this is seen as a weakness of the current system. A more specific method is required to take account of likely IUU fishing in determining future TAC's. This should take account of new, and more comprehensive means of estimating IUU fishing (MRAG 2002).
It is assumed that this condition would require consent within CCAMLR. It should, however be progressed within 12 months of certification.

Condition 7. An estimate should be provided, for each vessel, of hooks discarded as part of fishery waste available to birds, primarily in fish heads.

This should be carried out within 12 months of certification. If identified as a significant issue, a regulation should be put into place to address this, with appropriate monitoring, as soon thereafter as practically possible.

10.2.2 Recommendations

The following are not considered to be fundamental issues in terms of compliance with the MSC Principles and Criteria, but are considered to be appropriate management measures for consideration by the fishery concerned.

Recommendation 1. Retrospective analysis to test the robustness of the stock assessment and the decision rule to the various uncertainties in the end points should be carried out. If full retrospective analysis is not possible due to insufficient time series of data, then quality control evaluation of past assessments should be carried out.

Recommendation 2. Development of an ecosystem model for the fishery should be considered. It is considered that this would provide considerable additional information relevant to the assessment of the consequences of the fishery. This is included only as a recommendation, however, as the team recognise that resource requirements to implement this would be high and the conditions outlined above are of much greater significance for the fishery.

Recommendation 3. Research should be directed at locating areas of complex benthic habitat, particularly biogenic features, within the areas exploited by fishers. This may be addressed through observer recording of evidence of biogenic features through retrieval in long-lines. If such areas are found, conservation benefits would accrue from efforts to protect these from gear impacts, including those associated with long-lines.

ANNEX A:

ANALYSIS OF THE EXTENT OF IUU FISHING IN SUBAREA 48.3

MRAG LTD, 2002

[Presented as a separate document]