



MSC PUBLIC CERTIFICATION REPORT

THE AUSTRALIAN MACKEREL ICEFISH FISHERY MSC RE-CERTIFICATION

Version 5, June 2011

The fishery evaluated in this report:

Species: *Champscephalus gunnari* (Figure 1)
Geographic Area: Australia's Heard Island and McDonald Islands (Subantarctic)
Fishing Method: Trawl (Bottom and midwater)
Fishery Management: Australian Fisheries Management Authority, Australian Antarctic Division, and CCAMLR (Commission for the Conservation of Antarctic Marine Living Resources).

Accredited Certification Body:
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Versions Issued

Version No.	Date	Description Of Amendment
1	September 2010	Client Comment Draft Report
2	January 2011	Draft Report for Peer Review
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4	May 2011	Final Report
5	June 2011	Public Certification Report

MSC scheme documents:

MSC Accreditation Manual Issue 4

MSC Fisheries Assessment Methodology (FAM) Version 2.1

MSC TAB Directives

MSC Policy Advisories

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PREAMBLE

This report is the sole responsibility of SCS. All advice and comments from Assessment Team members, peer reviewers, client, fishery managers and the MSC have been reviewed by SCS and incorporated into the report by SCS as deemed warranted.

ABBREVIATIONS

AAD	Australian Antarctic Division
AFMA	Australian Fisheries Management Authority
AFZ	Australian Fishing Zone
AHP	Analytical Hierarchy Process
ASI	Accreditation Services International
BMSY	Biomass at the Maximum Sustainable Yield
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CB	Certifying Body
CPUE	Catch Per Unit Effort
CRIS	Cost Recovery Impact Statement
DEWHA	Department of the Environment, Water, Heritage and the Arts
EEZ	Exclusive Economic Zone
ERM	Ecological Risk Management
ETP	Endangered, Threatened and Protected species
ERA	Ecological Risk Assessment
ESD	Ecologically Sustainable Development
FAM	Fisheries Assessment Methodology v2.1
FAO	Food and Agriculture Organization [of the United Nations]
LRP	Limit Reference Point
HIMI	Heard Island, McDonald Islands
ITQ	Individual Transferable Quota
IUCN	International Union for the Conservation of Nature
MAC	Management Advisory Committee
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
PI	Performance Indicator
RAG	Resource Assessment Group
SARAG	Sub-Antarctic Resource Assessment Group
SCIC	Standing Committee on Implementation and Compliance
SCS	Scientific Certification Systems
SG	Scoring Guidepost
SSB and R	Spawning Stock Biomass and Recruitment
TAB	Technical Advisory Board [of the MSC]
TAC	Total Allowable Catch
TRP	Target Reference Point
VMS	Vessel Monitoring System
WGFA	Working Group on Fish Stock Assessment

1. INTRODUCTION

The Marine Stewardship Council (MSC) is a non-profit organization dedicated to the long-term protection or “sustainability” of marine fisheries and related habitats. First started as a joint initiative between Unilever and the World Wildlife Fund (WWF), the MSC is now a fully independent organization that is governed by an independent Board of Directors advised by a panel of scientific, economic, and fishery experts.

The MSC’s original mission statement promoted responsible, environmentally appropriate, socially beneficial, and economically viable fisheries practices, as well as the maintenance of biodiversity, productivity and ecological processes of the marine environment. The current MSC mission statement (redrafted in 2001) provides a slightly more focused mission and reads,

“To safeguard the world’s seafood supply by promoting the best environmental choice”.

Dedicated to promoting “well-managed” or “sustainable” fisheries, the MSC initiative intends to identify such fisheries through means of independent third-party assessments and certification. Once certified, fisheries will be awarded the opportunity to utilize an MSC promoted eco-label to gain economic advantages in the marketplace. Through certification and eco-labeling, the MSC intends to promote and encourage better management of world fisheries, many of which have been suggested to suffer from poor management.

The MSC developed the original standards for sustainable fisheries management in a three-step process: 1) Assemble a group of experts in Bagshot (UK) to draft an initial set of Principles and Criteria; 2) Conduct an 18-month process to review the standard in 8 major international venues; and 3) Convene a second set of experts in Warrenton, Virginia (Airlie Conference Center, USA) to revise and finalize the MSC Principles and Criteria.

The MSC Fisheries Certification Methodology used for this report, the MSC Fisheries Assessment Methodology (FAM) and Guidance to Certification Bodies Including Default Assessment Tree and Risk-Based Framework Version 2.1 was issued on 1 May 2010.

2. SUMMARY

2.1 The Assessment Process

In order to ensure a thorough and robust assessment process, and a process in which all interested stakeholders could and would participate, SCS took the approach of allowing additional time as needed for both industry and stakeholders to respond to requests for information and participation.

To be thorough and transparent, SCS provided opportunities for input at all stages of the assessment process, whether required or not by MSC procedures. The general steps followed were:

- **Team Selection (March-April 2010)**
At this first step of the assessment process, SCS sought input from interested parties. SCS sent out an advisory through direct email and posting on select web sites requesting comment on the nominations of persons capable of providing the expertise needed in the assessment.
- **Setting Performance Indicators and Scoring Guideposts (April 2010)**
In accordance with the assessment procedures required by the MSC at the time, the assessment team confirmed that the 'Performance Indicators' and 'Scoring Guideposts' of

the Default Assessment Tree were suitable for assessing the Heard Island and McDonald Islands (HIMI) Mackerel Icefish fishery.

- **Input on fishery performance (April 2010)**
SCS requested that the applicants compile and submit written information to the assessment team illustrating the fishery's compliance with the required performance indicators (PI). At the same time, SCS requested that stakeholders submit their views on the fishery management system's functions and performance.
- **Meetings with industry, managers, and stakeholders (25th May 2010)**
SCS planned for and conducted meetings with the fishery client, managers and scientists as well as stakeholders on the 25th May 2010 in Hobart, Australia (see 3.3 for detailed list of participants).
- **Scoring fishery (26th May 2010)**
The assessment team scored the fishery using the required MSC methodology and the default assessment tree of the FAM and without input from the client group or stakeholders.
- **Drafting report (June-September 2010)**
The assessment team in collaboration with the SCS lead assessor, Dr Daume, drafted the report in accordance with MSC required process.
- **Selection of peer reviewers (December 2010)**
SCS, as required, released an announcement that was posted on the MSC website on the 16 December 2010) of potential peer reviewers soliciting comment from stakeholders on the merit of the selected reviewers.
- **Release of Public Comment Draft Report (March 2011)**
SCS releases the draft report for public comment, soliciting stakeholder response through posting on MSC website and direct email to known potential stakeholders. No comments were received.
- **Release of Final Report with Certification Decision (May 2011)**
SCS releases the final report with the certification decision for a 15 day objection period. Stakeholders were informed through posting on the MSC website and direct email to known stakeholders. No notice of objection was received.
- **Release of the Public Certification Report (June 2011)**

2.2 Meeting Conditions for Continued Certification

To be awarded an MSC certificate for the fishery, the applicants must agree in written contract to develop an action plan for meeting the required 'Conditions'; a plan that must provide specific information on what actions will be taken, who will take the actions, and when the actions will be completed. The Action Plan must be approved by SCS as the certification body of record. The applicant must also agree in a written contract to be financially and technically responsible for surveillance visits by an MSC accredited certification body, which would occur at a minimum of once a year, or more often at the discretion of the certification body (based on the applicant's action plan or by previous findings by the certification body from annual surveillance audits or other

sources of information). The contract must be in place prior to certification being awarded. Surveillance audits will be comprised in general of (1) checking on compliance with the agreed action plan for meeting pre-specified 'Conditions', and (2) sets of selected questions that allow the certifier to determine whether the fishery is being maintained at a level of performance similar to or better than the performance recognized during the initial assessment.

2.2.1. General Conditions for Continued Certification

The general 'Conditions' set for Austral Fisheries Pty. Ltd. are:

- Client must recognize that MSC standards require regular monitoring inspections at least once a year, focusing on compliance with the 'Conditions' set forth in this report (as outlined below) and continued conformity with the standards of certification.
- Client must agree by contract to be responsible financially and technically for compliance with required surveillance audits by an accredited MSC certification body, and a contract must be signed and verified by SCS prior to certification being awarded.
- Client must recognize that MSC standards require a full re-evaluation for certification (as opposed to yearly monitoring for update purposes) every five years.
- Prior to receiving final certification, the Client shall develop an 'Action Plan for Meeting the Condition for Continued Certification' and have it approved by SCS.

2.2.2. Specific Conditions for Continued Certification

In addition to the general requirements outlined above, Client must also agree in a written contract with an accredited MSC certification body to meet the specific conditions as described in Section 11 and summarized below (within the timelines that will be agreed in the Action Plan for Meeting the Condition for Continued Certification' to be approved by SCS).

Specific Conditions are:

1.1.2 Limit and target reference points are appropriate for the stock.

Score 75

Condition 1.1.2:

By the second annual surveillance, determine an explicit LRP that is appropriate for Mackerel Icefish, and demonstrate that it is set above the level at which there is an appreciable risk of impairing reproductive capacity.

1.2.2 There are well defined and effective harvest control rules in place.

Score 70

Condition 1.2.2:

By the third annual surveillance incorporate the LRP developed under Condition 1.1.2 into the harvest control rules so that the exploitation rate is reduced as this LRP is approached. Provide evidence to show that the currently applied harvest control rules are robust to uncertainties about the level of natural mortality, growth rates and size at first maturity, or develop and apply amended harvest control rules that are. Provide evidence that indicates that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.

2.4.3 Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types.

Score 70

Condition 2.4.3:

By the first annual surveillance audit, the client shall provide some evidence that the nature of the impacts of the fishery on different types of habitats is known and that monitoring is ongoing to detect any increase in risk. This shall include the completion of the ongoing study on habitat impacts in the region.

2.5.1 The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function.

Score 75

Condition 2.5.1:

By the first annual surveillance audit, the client shall provide some evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. The client shall consider including the results of peer reviewed studies identifying the role of Icefish in the ecosystem, with particular attention to their role as prey items in the diets of higher level predators including marine mammals, fish, and seabirds and some evaluation of the risk associated with the current 75% escapement rule, and whether that is appropriate given the trophic structure of the system.

2.5.3 There is adequate knowledge of the impacts of the fishery on the ecosystem.

Score 70

Condition 2.5.3

By the second annual surveillance audit, the client shall provide evidence on the main impacts of the fishery on the key ecosystem elements. This shall include evidence that the studies on the trophic role of Icefish have been completed.

2.3 Certification Determination

It is the consensus judgment of the assessment team and of the SCS Certification Determination Committee that the Australian Mackerel Icefish Fishery complies with the MSC Principles and Criteria. Therefore, SCS as the certification body of record recommends that the fishery be issued an MSC Fishery certificate. The lead assessor for the assessment team presented all evidence to the SCS Certification Panel, which agreed with the assessment team's decision and authorized certification of the fishery. The client has submitted for approval, and SCS has approved, an Action Plan (See Section 11) for meeting all Conditions placed on the certificate.

3. BACKGROUND TO THE REPORT

3.1 Assessment Team/Authors

Dr. Sabine Daume, Team Leader, Program Manager, SCS

Dr Daume is responsible for leading SCS's Sustainable Seafood Certification program, which includes both fishery and chain of custody certification under the auspices of the MSC, using the MSC methodology and standards. Dr. Daume has been involved and/ or lead numerous pre and full assessments, including the Western Australian Rock Lobster fishery, Mexican Spiny Rock Lobster fishery, Mexican Sardine fishery,

the Australian Lakes & Coorong fishery and the North Pacific Halibut fishery and the North Pacific Sablefish (Black Cod) fishery. Dr. Daume is a marine biologist with special expertise in the biology and ecology of exploited marine resources. She has over 10 years experience working closely with the fishing and aquaculture industry in Australia. In her role as the Senior Research Scientist at the Department of Fisheries in Western Australia, she lead research projects related to fishery enhancement and fishery habitats of temperate and tropical invertebrate species. She is also a lead auditor certified to the ISO 9001:2008 standard.

Mr. Alexander “Sandy” Morison, Consultant, Morison Aquatic Sciences

Mr. Morison is a consultant for Morison Aquatic Sciences, a private consulting firm specializing in fisheries and aquatic sciences. He has over 10 years experience in senior research positions for state and national organizations in Australia and over 25 years experience working in fishery science and assessment at state, national and international levels. This includes commercial and recreational fisheries in freshwater, estuarine and marine habitats. He has chaired a wide range of fishery assessment groups ranging from small inshore fisheries to large multinational offshore fisheries and has experience with invertebrate, chondrichthyan and teleost fisheries. He has particular expertise with fish age and growth and has been involved in the development and implementation of harvest strategies for several fisheries. Mr. Morison has participated as part of a team undertaking MSC pre-assessments for Australian Commonwealth-managed fisheries.

Ms. Mary Lack, Director Shellack Pty Ltd.

Ms. Lack has qualifications in agricultural and resource economics and has over 25 years experience in Australian and international fisheries management. She has been Director of Shellack Pty. Ltd., a consulting company, based in Canberra Australia, specializing in fisheries management and trade and working with government, non-government and intergovernmental organizations for the past 10 years. Prior to her work with Shellack Pty Ltd., Ms. Lack worked in various senior fisheries management roles in the Australian Government. During that time she has developed strong skills in fisheries management, domestic and international fisheries governance and fisheries trade analysis. In recent years her work has focused on sustainability and governance issues in Australian fisheries and in regional fisheries management organizations. Mary has extensive relevant experience with MSC methodology, particularly in the Australian-Antarctic region. She has been involved in pre-assessments, annual surveillances and re-assessments under the MSC standard.

Dr. Chris Wilcox, Commonwealth Scientific and Industrial Research Organization (CSIRO)

Dr. Wilcox holds a Doctorate in Conservation Biology from the University of California, Santa Cruz, USA. Chris’s expertise is in population dynamics and spatial ecology, with emphasis on the management of direct and indirect human impacts on ecological systems. Chris currently leads research for CSIRO on the biological-oceanographic interactions, dispersal and population dynamics of pelagic species. His research team at CSIRO contributes to the spatial management of marine resources in Australia, which is becoming increasingly important as marine protected areas and space-time closures are incorporated into traditional fisheries management frameworks.

3.2 Peer Reviewers

Mr. Jeff June, Natural Resources Consultants (NRC)

Mr. June is NRC’s chief scientist for field studies and other projects involving population dynamics and resource and habitat assessment. He also coordinates NRC’s work in the rapidly growing field of marine pollution and serves as technical advisor to several government agencies and environmental groups in this area. Part of this work is a lead role in the multi agency, highly publicized Puget Sound Derelict Fishing Gear Removal Program. Prior to joining NRC, Mr. June was a chief research scientist with the National Marine Fisheries Service and had extensive experience in development of commercial fisheries in South America, Micronesia, and Africa.

Dr. Simon Goldsworthy, South Australian Research and Development Institute (SARDI)

Dr. Goldsworthy is an Associate Professor at the Flinders University's School of Biological Sciences as well as a Principal Research Scientist at SARDI Aquatic Sciences. Simon's area of expertise includes ecosystem based fisheries management, the ecological effects of fishing and in protected species interactions with fisheries.

3.3 Summary of Meetings

The sites and people chosen for visits and interviews were based on the assessment team's need to acquire information about the management operations of the fisheries under evaluation. Agencies and their respective personnel responsible for fishery management, fisheries research, fisheries compliance, and habitat protection were identified and contacted with the assistance of the client group and stakeholders.

The assessment team met with managers and scientists on 25th May 2010. As with all assessments, there are always a number of issues that come to light when reviewing all the information with critical management and scientific personnel. Questions that arose after the meeting were handled through email and phone calls with the client and any other necessary entities.

Table 1. Assessment Meetings & Attendees

Meeting Attendees	Role	Organization	Method of Presence
Dr Sabine Daume	Assessment Team	SCS	In-person
Mary Lack	SCS	Shellack Pty Ltd	In-person
Sandy Morison		Morison Aquatic Sciences	In-person
Dr Chris Wilcox		CSIRO	In-person
Martin Exel	Client Representative	Austral Pty Ltd	In-person
Dr Dirk Welsford	Stock Status and Harvest Strategy	AAD	In-person
Dr Malcolm Haddon		CSIRO	In-person
Dennis Snowden	Management	AFMA	Conference line
Trysh Stone		AFMA	Conference line
Matt Daniel		AFMA	Conference line
Dr Ross Daley	Ecosystem/ ERA	CSIRO	In-person
Dr Cathy Bulman		CSIRO	In-person
Peter Trott	Stakeholder	WWF	In-person

3.4 Submission of Data on the Fishery

One of the most significant, and difficult, aspects of the MSC certification process is ensuring that the assessment team gets a complete and thorough grounding in all aspects of the fishery under evaluation. In even the smallest fishery, this is no easy task as the assessment team typically needs information that is fully supported by documentation in all areas of the fishery from the status of stocks, to ecosystem impacts, through management processes and procedures.

Under the MSC program, it is the responsibility of the applying organizations or individuals to provide the information required proving the fishery or fisheries comply with the MSC standards. It is also the responsibility of the applicants to ensure that the assessment team has access to any and all scientists, managers, and fishers that the assessment team identifies as necessary to interview in its effort to properly understand the functions associated with the management of the fishery. Last, it is the responsibility of the assessment team to

make contact with stakeholders that are known to be interested, or actively engaged in issues associated with fisheries in the same geographic location.

4. Heard Island and McDonald Islands Mackerel Icefish Fishery

A brief description of the Australian HIMI Mackerel Icefish Fishery assessed in this project is provided in the following subsections. The descriptions are general in nature and brief, since a good deal of this information is more fully discussed in Section 10, Assessment Team Performance Evaluations.

4.1 Target Species and Life History

The fishery targets Mackerel Icefish, *Champsocephalus gunnari* (see Fig. 1). The species is a member of the Family Channichthyidae and is one of a group of species exclusively found in the Southern Ocean known as 'white-blooded' fishes. These fishes survive without the red oxygen carrying pigment haemoglobin in their blood cells that other vertebrates have. This means their blood is colourless.

Mackerel Icefish grow to 44 cm long at Heard Island and McDonald Islands, and are thought to live 4-5 years but there are reports of fish up to 13 years old from South Georgia. Sexual maturation occurs between 22 cm to 26 cm (3-4 years).



Fig. 1: *Champsocephalus gunnari*

This species is found mainly around Heard Island and McDonald Islands, Kerguelen Islands and islands in the south Atlantic such as South Georgia. Mackerel Icefish is distributed widely in sub- Antarctic latitudes and typically occurs to depths of 200-350 meters in the HIMI region, although it has been found to depths of 700 meters in other areas. Mackerel Icefish was once the most abundant species found in near-shore waters of the sub-Antarctic but declines in population sizes in the 1970s and 1980s in some areas have been linked to overfishing. Recruitment, however, is quite variable and the biomass can fall to low levels even in the absence of fishing.

Juveniles and adult Mackerel Icefish form large schools and migrate each 24 hours from near the seafloor during the day to feed on plankton and small fish (including juvenile Mackerel Icefish) in midwater during the night. They are an important food for many seabirds and seals, and also other large fish.

4.2 Distribution

Mackerel Icefish *Champsocephalus gunnari* is found in both the Atlantic (Bouvet Island, South Georgia, South Sandwich, South Orkney, South Shetland Islands and the northern part of the Antarctic Peninsula) and Indian Oceans (Kerguelen and Heard Island and McDonald Islands) Within CCAMLR Division 58.5.2 (includes Heard Is.), Icefish are restricted to the shelf area in the vicinity of Heard Island in water generally shallower

than 500 m. Previous analyses indicate that stocks on the Heard Plateau and Shell Bank have different size structures and recruitment patterns and are therefore considered different stocks for the purpose of stock assessments (CCAMLR 2008). Icefish can be found distributed widely in sub-Antarctic latitudes and typically occurs to depths of 200-350 meters in the HIMI region, although it has been found to depths of 700 meters in other areas.

4.3 Geographic Setting of the Australian Mackerel Icefish Fishery

The species is now exploited only at South Georgia and in the Heard Island and McDonald Islands fishery, with occasional strong year classes at Kerguelen also being fished. The fishery for Icefish at South Orkney and South Shetland Islands ceased in the mid 1980s and was considerably reduced at South Georgia at about the same time. The focus of this assessment is restricted to the HIMI Mackerel Icefish Fishery, however, it is useful to note that the history of other Icefish fisheries demonstrates that they can be difficult to sustain unless effectively managed.

HIMI are external territories of Australia located in the Southern Indian Ocean about 4,000 km south-west of Perth. The islands lie within the Antarctic Convergence, and inside the Convention Area of CCAMLR but outside the Antarctic Treaty Area (see Appendix I).

The HIMI fishery, which includes both Patagonian toothfish *Dissostichus eleginoides* and Icefish, operates in shelf areas within the Australian Fishing Zone (AFZ) surrounding HIMI out to 200 nautical miles. It is managed by the Australian Fisheries Management Authority (AFMA). The AFZ adjoins the French fishing zone at the Kerguelen Islands.

Heard Island and McDonald Islands are the only unmodified example of a Sub-Antarctic island ecosystem in the world. They provide valuable breeding and feeding areas for many species of marine mammals and birds, while supporting a vast array of endemic invertebrates. Both HIMI and the territorial sea around the islands (to 12 nautical miles) were declared a Wilderness Reserve in 1992, managed by the Australian Antarctic Division (AAD). Subsequently, in 1997, the Australian Territory of Heard Island and McDonald Islands was added to the World Heritage List. This area is closed to fishing.

4.4 Background of the Australian Mackerel Icefish Fishery

While there are records of Soviet and Polish vessels fishing in the region since the 1970s (this activity seems to have ceased by 1978), fishing activity in the region has only concentrated in recent years. Commercial fishing by Australian operators was permitted by AFMA in 1995 (311t of Icefish), but did not commence until March 1997. Fishing in the HIMI region has been limited to a maximum of three Australian boats and is subject to stringent management arrangements.

The fishery extends from 13 nautical miles offshore to the edge of the 200 nautical mile Australian Exclusive Economic Zone (EEZ) around the Islands. The fishery lies in Statistical Division 58.5.2 of CCAMLR (see Appendix I), which has a strong influence over the management of the fishery. The area within 13 nautical miles of the islands is protected from fishing. Out to 12 nautical miles the area is listed on the World Heritage List and forms part of the Heard Island Wilderness Reserve. In addition, the islands are on the Register of the National Estate as the only unmodified example of a Sub-Antarctic Island ecosystem. One of the largest Marine Protected Areas in the world also exists in the HIMI region and preventing fishing. The Marine Reserve incorporates over 39% of all waters shallower than 1,000 metres in the HIMI EEZ.

Statutory Fishing Rights (SFRs) govern access to the fishery with each operator currently requiring a minimum quota holding of 25.5 % of the total number of SFRs (so limiting the number of boats to a maximum of 3). The fishing season extends from 1 December to 30 November each year.

The only fishing methods permitted in the fishery are demersal and midwater trawling. Trawl nets are limited to a minimum mesh size of 90 mm when targeting Icefish to enable juvenile fish to escape the net. The minimum size for legal fish is 24 centimeters.

4.5 Catch history of the fishery

There are records of Soviet and Polish vessels fishing in the region since the 1970s taking catches in excess of 15 000 tonnes. Commercial fishing by Australian operators was first permitted by AFMA in 1995 (311 tonnes of Icefish), but did not commence until March 1997. Fishing in the HIMI region has been limited to a maximum of three Australian boats. The history of catches and catch limits for the fishery are detailed in **Table 2**.

Table 2. Catch history for *Champscephalus gunnari* in Division 58.5.2

Season	Number of vessels	Catch limit (tonnes)	Reported catch (tonnes)
1971/72	-	-	5860
1973/74	-	-	7525
1974/75	-	-	9710
1976/77	-	-	15201
1977/78	-	-	5166
1989/90	-	-	2
1991/92	-	-	5
1992/93	-	-	3
1994/95	-	311	0
1995/96	-	311	0
1996/97	1	311	227
1997/98	3	900	115
1998/99	1	1160	2
1999/00	2	916	137
2000/01	2	1150	1136
2001/02	2	885	865
2002/03	2	2980	2345
2003/04	2	292	78
2004/05	2	1864	1851
2005/06	1	1210	660
2006/07	1	42	1
2007/08	1	220	199
2008/09	1	102	83
2009/10	1	1658	365

5. FISHERY MANAGEMENT SYSTEM

The HIMI Mackerel Icefish Fishery is located in waters that are not only in the Australian EEZ, but also inside the boundaries of the Convention on CCAMLR. The fishery is therefore managed by AFMA in accordance with the Fisheries Management Act 1991. In addition the AAD manages the fishery in accordance with the requirements of other domestic legislation, in particular the Environment Protection and Biodiversity Conservation Act 1999, and also in conjunction with the requirements of the Antarctic Marine Living Resources Conservation Act 1981 which applies where there is a need to do research sampling work. All

aspects of the fishery management system including the research, surveys, stock assessments, harvest strategies, and management controls are controlled by these two organizations.

5.1 Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)

The CCAMLR requirements for management of the Antarctic marine living resources are well recognized as being the world's leading example of a multi-lateral structure providing an ecosystem-based management framework for fisheries management. In particular, the requirements to make specific allocation of biomass for predators as a measure to protect against impacts of fishing, is a strong feature of the management process.

The HIMI Mackerel Icefish Fishery is managed in close accord with the requirements of CCAMLR for precautionary ecosystem-based management of fisheries. The principles of conservation governing all harvesting and associated activity in the Convention Area are set out in [Article II of the CCAMLR Convention](#). The three principles can be paraphrased as follows (CCAMLR 2000):

- (i) prevention of population decline to levels which threaten stable recruitment of harvested species,
- (ii) maintenance of ecological relationships between the harvested, dependent and related species, and
- (iii) minimization of the risk of ecosystem changes that are not potentially reversible in 20-30 yrs.

These guiding principles underpin the essential elements of CCAMLR's approach to management. They encompass both the precautionary and ecosystem approaches.

The CCAMLR process requires interested and responsible nations to come together in an annual multi-lateral forum to debate various scientific, fishing and conservation interests and issues and negotiate agreements on management measures that are enforceable and acceptable to all parties. Like all such international negotiations, specific issues may be used as bargaining chips to secure preferred outcomes for national delegations. However, crucially, CCAMLR operates by consensus and this decision-making framework has worked well for CCAMLR over a long period of time. The scientific and conservation requirements of ecosystem-based resource conservation and management are considered to be paramount by CCAMLR, and CCAMLR has an impressive record of agreeing to key measures, such as binding and sustainable catch limits, in line with the advice to the Commission from its Scientific Committee.

The Scientific Committee is supported by several constituent working groups that focus on specific areas of science. There are standing working groups on Fish Stock Assessment (WGFSAs), Ecosystem Monitoring and Management (WGEMM) and Incidental Mortality Arising from Fishing (WGIMAF). This hierarchical approach (management advice flows up from the working groups to the Scientific Committee to the Commission) means that technical advice is fed into the system at a level where national agendas are potentially less influential. Other than a focus on a specific geographic area and/or fish stock, such as HIMI in the case of Australia, the working group participants are not constrained in their scientific activities and the techniques they use by their country of origin. In addition, the content of the working groups' reports, which are a matter of public record, are a product solely of the participants at the meeting. There is no subsequent vetting or editing of the content by non-participants, or higher level bodies such as the Commission, that is not subject to the approval of the convener/chair (in the case of editorial changes) or the participants (in the case of any substantive changes reflecting matters of accuracy).

5.2 Australian Antarctic Division and Australian Fisheries Management Authority

There are two main components of the Australian Government with management responsibilities for HIMI and its surrounding waters: The AAD, a part of the Australian Government's Department of the Environment, Water (DEWHA), Heritage and the Arts, and AFMA, a commission, with policy input being provided to the Minister via the Department of Agriculture, Fisheries and Forestry.

AAD manages Australian government activity in Antarctica, provides transport and logistic support, maintains Australian research stations, and conducts and manages scientific research programs both on land and in the Southern Ocean. In this capacity, AAD manages both the land area of HIMI and the territorial sea as a Wilderness Reserve. The territorial sea is therefore closed to fishing. Given its location in the Southern Ocean (i.e. south of the Antarctic Convergence) AAD also carries out scientific research and provides management advice on fisheries within the AFZ around HIMI. AAD's Policy Coordination branch is responsible for developing policies, supporting Australian positions internationally, promoting the Antarctic program, ensuring environment protection requirements are met, and administering Australian Antarctic and Sub-Antarctic territories.

AFMA, established in 1992, undertakes the day to day management of the fisheries in the AFZ. For administrative purposes, AFMA manages more than 20 fisheries that are identified by species, fishing method and/or area. The Commonwealth model of fisheries management has a number of features that distinguish it from other countries, the most prominent of which is the partnership approach with industry and other stakeholders. Under this model, the involvement of industry is recognized as being vital to successful fisheries management.

While responsibility for the implementation of fisheries management decisions and AFMA's day-to-day business affairs resides with the Chief Executive Officer (CEO), AFMA's operations are overseen by nine Commissioners. The Commissioners are appointed on the basis of their high level of expertise in one or more of the fields of fisheries management, fishing industry operations, science, natural resource management, economics, business or financial management, law, public sector administration or governance. Commissioners cannot hold any executive position in a fishing industry association, nor can they have a controlling interest or executive role in any entity holding a Commonwealth fishing concession. The Commission is responsible for setting the policy framework and for ensuring that adequate resources and expertise are available to meet AFMA's legislative obligations. Two committees, the AFMA Research Committee and the Environment Committee, report to the Commission. The Audit and Risk Committee reports to the CEO. The outcomes of board meetings are reported to stakeholders as well as to the public through the AFMA website.

As part of AFMA's partnership approach to fisheries management, it has established Management Advisory Committees (MACs) for each major fishery that it manages. MACs are AFMA's main point of contact with client groups in each fishery and play an important role in helping AFMA to fulfill its legislative functions and pursue its objectives. The Committees provide advice to the AFMA Commission on a variety of issues, including on-going measures required to manage the fishery, the development of management plans and research priorities and projects for the fishery.

The MACs are intended to complement the work of fishery managers by providing a broader perspective on management options and a wide range of expertise, not dissimilar to that of the Commission. MACs therefore provide a forum where issues relating to a fishery are discussed, problems identified and possible solutions developed. The outcomes of these deliberations determine the recommendations that the MAC will make to the Commission.

AFMA's legislation limits the number of members on a MAC to seven, in addition to the Chairperson and an AFMA officer. Increasingly, and where appropriate, AFMA has included a broader range of interest groups in this consultative process. The Commission decides on a fishery-by-fishery basis the range of wider community interests that should be reflected on the MAC. As a general rule, revised membership arrangements are considered upon expiry of terms of appointment of existing members.

The MAC that covers the management of the HIMI fisheries, along with other Antarctic and sub-Antarctic fisheries under Australian jurisdiction is known as SouthMAC (Sub-Antarctic Management Advisory Committee). The seven statutory members of SouthMAC comprise two from industry, one from the conservation community (currently from the Tasmanian Conservation Trust), a research member (the chair of the Sub-Antarctic Resource Assessment Group SARAG – see below), and one from AAD (policy branch). In addition, there is an AFMA representative, an Executive Officer, and an independent Chair. Observers may also attend meetings of the MAC from time to time. SouthMAC has provided the public forum for the development of the management regime for the HIMI fishery through an extensive public consultation processes. The first meeting of SouthMAC was held in November 1998 and the most recent meeting was held in Hobart in December 2009.

Resource Assessment Groups (RAGs) have been established by AFMA to provide independent advice on fishery and stock status and to achieve transparency in the collection and analysis of data for fisheries management purposes. The HIMI Fishery stock assessment process is reviewed by SARAG which provides advice to SouthMAC and the Commission. SARAG is currently composed of a Chair and nine members including six government scientists (four from AAD and two from CSIRO, an AFMA member and, two industry members. Observers also attend these meetings.

5.3 Stock assessment and harvest strategies

There are both fishery dependent and fishery independent data collected annually, with the data used in annual assessments. In addition, there are required observers on each vessel ensuring accurate reporting of catch, both target and bycatch species, along with any other environmental information such as fishery interactions with seabirds, seals, and whales.

Assessments have been conducted annually since 1995/96, and are precautionary in nature. The precautionary approach used was adopted by CCAMLR in the mid-1990s and includes the objective of maintaining a stock at a proportion of its pre-exploitation abundance such that:

1. escapement of the spawning stock must be sufficient to avoid the likelihood of declining recruitment
2. abundance under exploitation must maintain a sufficient resource for the needs of dependant species (usually predators).

The available biomass of Mackerel Icefish is estimated each year using the results of a random stratified trawl survey (RSTS) that samples a minimum of 10 stations in each of nine strata over the Heard Island Plateau (Figure 2) (Nowara 2009). The Shell Bank is excluded from the survey as it is closed to fishing. Trawls used to estimate the abundance of Mackerel Icefish are undertaken during the day when Mackerel Icefish are concentrated near the bottom. Further details on how the harvest control rules are implemented are given in Section 11.1 under PI 1.2.2.

Because of the large distance to the fishery from home ports the fishery-independent survey is normally carried out while the vessels are on the fishing ground undertaking normal commercial fishing activities. Both the commercial fishery and the survey target both Patagonian toothfish and mackerel icefish. The survey is undertaken using a commercial vessel (but a standard survey trawl net) and usually takes place towards the beginning of the fishing season (March to June) after the vessel has taken on board about 100 t of fish (either

mackerel Icefish or Patagonian toothfish) to help with vessel stability (M. Exel pers. comm.). All catches taken during the survey are deducted from the TAC for that season.

The results of the survey are subsequently analysed by AAD and used in the stock assessment along with the fishery-dependent data collected during the fishing season. After AAD conducts its assessment, it is submitted to independent peer review and review by SARAG (Sub- Antarctic Resources Assessment Group). The Australian delegation then submits the finalized assessment to CCAMLR's Working Group on Fishery Stock Assessments, where it is open to further international scrutiny. A final recommendation then goes from the Working Group to the Commission via the Scientific Committee, and then the Commission makes the final determination of the yearly TAC. AFMA then reviews what is adopted by CCAMLR and sets TACs at or below the CAMMLR TACs for the new fishing season.

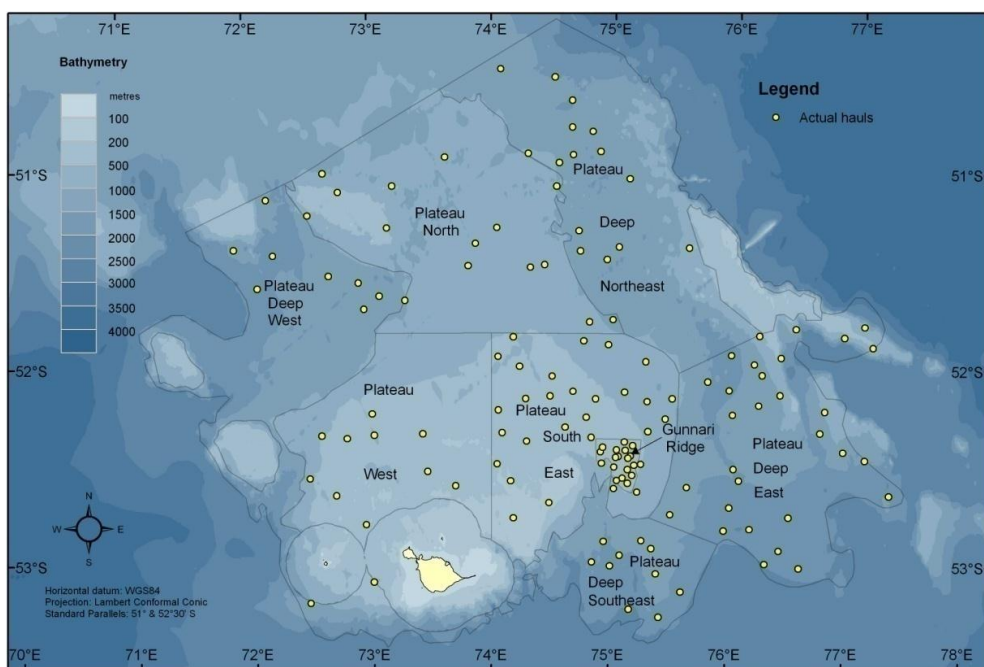


Fig. 2. Map showing the distribution of sampling hauls within strata for the random stratified trawl survey of the Heard Island plateau region for 2008. Hauls on the main fishing ground (Ground B) are not depicted (from Nowarra 2009).

6. FISHERY'S IMPACT ON ECOSYSTEM

6.1 Ecosystem

The fishery operates on the Kerguelen plateau, and is active in a relatively small portion of the ecosystem. The Australian region on the plateau was the subject of a bioregionalization which was done to identify unique portions of the system for inclusion in a set of representative marine protected areas (Meyer et al. 2000). The reserve covers 65,000 km² on the plateau including 39% of the waters shallower than 1,000 m in the Australian EEZ, with an additional 11,500 km² under consideration for addition to the reserve (see <http://www.environment.gov.au/coasts/mpa/heard/>, AFMA 2009b). The reserve is a class 1a reserve, and as

such all fishing is prohibited. In addition, there is a prohibition on fishing within 12 nautical miles of Heard Island and McDonald Islands as part of the nature reserve covering those islands (Meyer et al. 2000).

6.2 Bycatch - Retained and discard species

Bycatch consists of the incidental catch of non-target species that may or may not be landed. Seabirds and marine mammals that may form part of the bycatch or may be affected indirectly by the fishery are considered separately in section 6.3. All species caught in the fishery were the subject of an ecological risk assessment and management process (AFMA 2009a, AFMA 2009c, AFMA 2009d, AFMA 2009f). This process addressed the midwater trawl for Icefish, and the benthic trawl for Icefish and toothfish. After completion of the risk assessment and risk management steps, a residual risk assessment was conducted which identified black browed albatross and porbeagle sharks in the midwater trawl subfishery, and sleeper sharks and skates in the demersal subfishery as potential risks (AFMA 2009a, AFMA 2009f). However, none of these species were judged to be urgent issues as there are extensive measures in place to ensure there is no major impact on them.

The management measures to reduce the incidental catch of nontarget species include a marine protected area system covering significant areas in the ecosystem, catch limits on target and bycatch species based on either precautionary CCAMLR advice or assessments, prohibition on release of wastes including offal, handling and release procedures for nontarget species, gear restrictions to protect habitat from impact, move-on rules with specific triggers for catch weights of bycatch species, and minimization of lighting to reduce bird interactions along with a range of voluntary measures by industry (AFMA 2009c, AFMA 2009d). These measures go hand in hand with requirements including 100% observer coverage (2 full time observers per vessel), mandatory reporting of all interactions with any endangered, threatened or protected species (ETPS), shot by shot reporting of all bycatch, and ongoing consideration of bycatch by SARAG (AFMA 2009c, AFMA 2009d).

6.2.1. Retained species

AFMA requires that all species in the HIMI fishery that cannot be returned alive to the water be retained (AFMA 2009b). The majority of these are ground for fishmeal. Fishmeal is discarded outside the fishing zone because it is deemed unsuitable for sale. Only grey rockcod and unicorn Icefish are retained whole. Of these only unicorn Icefish are reported as caught in the Mackerel Icefish sector. All species caught in the fishery have TACs of 50 tons, unless otherwise specified. This limit is based on CCAMLR advice, and taken to be a precautionary limit (Phillips and Ansell 2008).

Unicorn Icefish (along with grey rockcod) have a specific upper catch limit, which is based on a stock assessment done in the late 1990's (Constable et al. 1998). This stock assessment has been noted as being in need of update as it is not based on parameters estimated from HIMI unicorn Icefish (Phillips and Ansell 2008). However, catches of unicorn Icefish are stable or increasing in the last 10 years (AFMA 2009b), suggesting that given the absence of significant targeting, it is unlikely that this species is suffering depletion. Discarding is prohibited in the fishery, and given the complete (i.e. 100%) observer coverage, is unlikely to be occurring (AFMA 2009b). Species caught in the fishery which are in adequate condition are returned alive to the water. These include corals and other benthic invertebrates, along with some fraction of skates and other species.

6.3 Endangered, threatened and protected (ETP) species

The fishery does interact with some ETPS. In particular they interact with seabirds, and to a lesser extent with marine mammals. Since 1997 there have been 41 seabird interactions in the HIMI fishery, 38 of which resulted

in death of the birds (AFMA 2009b). There have been a total of 34 interactions with marine mammals, 29 of which resulted in death of the animal (AFMA 2009b).

Fishers are required to report each interaction within 24 hours of its occurrence, and reports must include a response plan designed to minimize further interactions that is implemented immediately (AFMA 2009b).

There are a range of measures that have been implemented to reduce TEP interactions specifically, including: 1) limiting the fishery to a maximum of 3 vessels, 2) prohibiting the discharge of offal, 3) limiting the time of day and year that midwater trawling can be done, 4) minimizing lighting, 5) prohibition on disposal of waste. Compliance is likely to be very high, as there are two observers on each vessel with 100% coverage of all fishing activities. Take of Icefish in the HIMI fishery is managed with an escapement rule of 75% with the express purpose of preventing impacts on predators in the system that utilize Icefish, including marine mammals (see 5.1 above). No other significant risks of indirect interactions with ETP species were identified.

6.3.1. Habitats

Midwater trawling is unlikely to have any significant effect on habitats in the region; however, the bottom trawl sector of the HIMI fishery has the potential to cause impacts. AFMA considers the fishery to have no significant impact on the benthos as: 1) a small area is fished and bycatch is relatively modest, 2) assessment work suggests that there is adequate coverage of each habitat type in the reserve system, 3) trawl gear in the fishery has been modified to reduce benthic impacts (AFMA 2009b). The Fisheries Research and Development Corporation has jointly funded a study into benthic impacts with industry, AAD and AFMA, entitled “Demersal fishing interactions with marine benthos in the Australian EEZ of the Southern Ocean: an assessment of the vulnerability of benthic habitats to damage by demersal gears” which was due to run from 2006 to 2010 (AFMA 2009b). Preliminary results are now available from this project, with a description of habitat biota across habitat types in the region (Hibberd et al. 2008). However, an assessment of the impacts of demersal trawl gear has yet to be completed, but is expected to form a portion of the next progress report from the project (Constable 2008).

6.3.2. Trophic relationships

The CCAMLR system under which the HIMI fishery operates requires the ongoing collection of information on predators, prey and the environment where the fishery operates. This information is provided to the CCAMLR Working Group on Ecosystem Monitoring and Management for preparation of advice to the Scientific Committee. This advice is then converted into management arrangements for each of the management areas.

The basic tool in the fishery for managing the effect of the fishery on the trophic relationships in the system is the use of an escapement rule. This rule currently specifies that the fishery must have an escapement of 75% of the predicted biomass over a 2 year projection interval. The explicit goal of this measure is to avoid depleting the Icefish, which may serve as a prey item for marine mammals in the system. This approach is in keeping with best practice for fisheries managing harvesting of important prey species (Sainsbury 2008). The one outstanding issue with this escapement rule is that it was designed based on studies of krill, not specifically Icefish, in top predator diets.

Understanding of the role of icefish in the diets of their predators and the role of icefish in driving the abundance of their prey is still developing. The diet of icefish is somewhat understood, with stomach content studies available in the literature (e.g. Kock et al. 1994). There has long been evidence that that fish in this system play a significant role in the diets of a wide range of top predators (Hureau 1994). There is information

on the role of icefish in the diets of penguins at Heard Island (Klages et al. 1990), and Antarctic fur seals fur seals at Heard Island (Green et al. 1989, Green et al 1991). Evidence from Heard Island indicates that icefish may be very important for some portions of the life history of some of their predators. Some female Antarctic fur seals depend exclusive on icefish during the while they are lactating (Casper et al 2010). Icefish feed mainly on amphipods, eupausiids and other zooplankton (Duhamel et al. 1991, Kock and Everson 1997).

While these studies provide some information in terms of the impact of fishery removals on particular species in the ecosystem, there is no synthesis of the overall effects on the trophic structure, energy flows, standing biomass, species richness or other characteristics of ecosystem function. There is an ongoing study on the ecological impacts of fishing in the system, with a particular focus on predator prey interactions and the role of Icefish, which is expected to explore these issues in detail. This project is due for completion in 2013 (see 5.a in SARAG 2008).

7. TRACKING AND TRACING OF FISH AND FISH PRODUCTS AND TARGET ELIGABILITY DATE

This report does not cover processing beyond the point of landing. This report acknowledges that sufficient monitoring takes place to identify the fishery of origin for all landed fish via landing slips where the amount of catch and the fishing area are recorded for each set of the net during the fishing trip, and the slips. This is sufficient to allow a Chain of Custody to be established from the point of landing forward for all products derived from the fishery. MSC chain of custody certifications for the previous certification of this fishery were undertaken successfully, but have not been renewed or undertaken in this project, and therefore, need to be undertaken on a separate and individual basis for those entities that may wish to identify and/or label products derived from the fishery.

7.1 Actual Eligibility date

The actual eligibility date for the HIMI Icefish Fishery, the date from which product from a certified fishery is eligible to bear the label if the fishery is re-certified, is the 31 March 2011, which is less than 6 months before the release of the Public Comment Draft Report (PCDR).

8. OTHER FISHERIES IN THE AREA

There is only one other significant fishery that operates in the same territorial waters, and it is a fishery for Patagonian toothfish (*Dissostichus eleginoides*). Both fisheries Patagonian Toothfish and Icefish, operate in shelf areas within the Australian Fishing Zone (AFZ) surrounding HIMI out to 200 nautical miles. Both fisheries are conducted using Demersal Trawl and Long Line gear. Due to the concerns of illegal fishing on Toothfish, the Australian government in conjunction with other governments and Australian fishers provide one of the best monitoring and compliance efforts in the world. Illegal, Unregulated, Unreported (IUU) fishing was an issue in the HIMI region in the period from 1997 to 2005, but has been estimated to be near 0t since the 2006/2007 season, and all stock assessments take IUU catch estimates into account. This is a benefit to the Icefish fishery since it receives the same compliance and monitoring as a result of the concerns raised with the Toothfish Fishery.

9. SUMMARY OF PREVIOUS CERTIFICATION EVALUTIONS

The HIMI Mackerel Icefish Fishery was first certified in 2006. During the assessment 18 conditions were raised for continued certification. At the 4th annual surveillance audit in May 2010, several of the conditions remained open. These outstanding conditions have been addressed in detail in this assessment (Table 2). In summary, 8 conditions relating to Principle 1 remained open and 1 condition in each of Principle 2 and 3 were

still open. At the 4th annual surveillance audit, five conditions in Principle 2, 2 conditions in Principle 1 and 1 condition in Principle 3 were also rescored by the assessment team and closed.

The reassessment of the HIMI Mackerel Icefish fishery was undertaken using the default assessment tree with the Performance indicators (PI) and Scoring guideposts (SGs) of the new Fishery Assessment Methodology - FAM v2 (2009). All aspects of any conditions that remained open after the 4th annual surveillance audit were explicitly assessed against the new SGs of this FAM. The different requirements of the new SGs meant that there would not necessarily be a direct correspondence between these outstanding conditions and new ones from the reassessment. Where direct correspondence to a new condition was not logical the reasoning has been explained.

Table 2: Summary of Condition status after the 4th annual audit and mapping of outstanding issue to Performance Indicators (PIs) of the new Fishery Assessment Methodology - FAM v2 (2009) used for the reassessment of the fishery.

Condition	Indicator	Status of Condition after 4th Audit	Relevant PI of new FAM v2
1	1.1	Closed	N.A.
2	1.2	Open – On Target, ecological model and Management Strategy Evaluation (MSE) behind target.	1.2.3
3	1.3	Open – On Target, ecological model and MSE behind target.	1.1.2
4	1.4	Open – On Target, ecological model and MSE behind target.	1.1.2
5	1.5	Open – On Target, ecological model and MSE behind target.	1.2.4
6	1.6	Open – On Target, ecological model and MSE behind target.	1.1.1
7	1.7	Open – On Target, ecological model and MSE behind target.	1.1.1
8	1.8	Open – On Target, ecological model and MSE behind target.	1.2.2
9	1.9	Closed	N.A.
10	1.10	Open – On Target, ecological model and MSE behind target.	1.1.1
11	2.1	Closed	N.A.
12	2.2	Closed	N.A.
13	2.3	Closed	N.A.
14	2.4	Closed	N.A.
15	2.5	Open – On Target, food web studies behind target.	2.5.3
16	2.6	Closed	N.A.
17	3.1	Open – On Target, Management Strategy Evaluation (MSE) behind target.	1.2.2
18	3.2	Closed	N.A.

10. MSC PRINCIPLES AND CRITERIA

10.1 MSC Principle 1 – Stock Status and Harvest Strategy

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

Intent:

The intent of this principle is to ensure that the productive capacities of resources are maintained at high levels and are not sacrificed in favor 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.

MSC 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.

10.2 MSC Principle 2 – Ecosystem

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.

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

10.3 MSC Principle 3 – Management

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.

MSC Criteria:

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, artisanal, 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. incorporate an appropriate mechanism for the resolution of disputes arising within the system;
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;
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) set catch levels that will maintain the target population and ecological community'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) identify appropriate fishing methods that minimize adverse impacts on habitat, especially in critical or sensitive zones such as spawning and nursery areas;
 - c) provide for the recovery and rebuilding of depleted fish populations to specified levels within specified time frames;
 - d) have mechanisms in place to limit or close fisheries when designated catch limits are reached;
 - e) establish no-take zones where appropriate;
11. contain appropriate procedures for effective compliance, monitoring, control, surveillance and enforcement which ensure that established limits to exploitation are not exceeded and specify corrective actions to be taken in the event that they are.

B. MSC Operational Criteria:

Fishing operations 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); minimize 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 minimize 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. minimize 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.

10.4 Interpretations of MSC Principles for Performance Assessments

Along with developing a standard for sustainable fisheries management, the MSC also developed a certification methodology that provides the process by which all fisheries are to be evaluated. Accreditation Services International (ASI) accredits certification bodies that can show that the expertise and experience necessary to carry out MSC evaluation is present in the organization. In addition, each certification body must demonstrate its fluency with the MSC standards and evaluation methods through the use of these in a fishery evaluation

The methods are provided in great detail through documents that can be downloaded from the MSC website (www.msc.org). The Fisheries Assessment Methodology (FAM) Version 2.1, released 1 May 2010 is being used for the assessment of the HIMI Mackerel Icefish Fishery.

The MSC Principles and Criteria are general statements describing what aspects need to be present in fisheries to indicate that they are moving toward sustainable management. The certification approach or methodology adopted by the MSC requires that any assessment of a fishery or fisheries move beyond a management verification program that simply provides third-party assurances that a company's stated management policies are being implemented. The MSC's 'Certification Methodology' is designed to be an evaluation of a fishery's performance to determine if the fishery is being managed consistent with emerging international standards of sustainable fisheries.

11. ASSESSMENT TEAM PERFORMANCE EVALUATIONS

After completing all the reviews and interviews, the assessment team is tasked with utilizing the information it has received to assess the performance of the fishery. Under the MSC program, the process for assessing the fishery is performed by prioritizing and weighting the indicators relative to one another at each level of the performance hierarchy established when the assessment team developed the set of performance indicators and scoring guideposts for the fishery. Subsequent to this, the assessment team assigns numerical scores between <60 and 100 to each of the performance indicators. If a fishery scores less than 60 for any performance indicator, it is excluded from certification. All of this is accomplished using decision support software known as Expert Choice, which utilizes a technique known as AHP (Analytical Hierarchy Process). A full description of the AHP process can be found on the MSC web site (www.msc.org). In essence, the process requires that all team members work together to discuss and evaluate the information they have received for a given performance indicator and come to a consensus decision on weights and scores. Scores and weights are then combined to get overall scores for each of the three MSC Principles. A fishery must have normalized scores of 80 or above on each of the three MSC Principles to be recommended for certification. Should an individual indicator receive a score of less than 80, a ‘Condition’ is established that when met, would bring the fishery’s performance for that indicator up to the 80 level score representing a well-managed fishery.

Below is a written explanation of the assessment team’s evaluation of the information it received and the team’s interpretation of the information as it pertains to the fishery’s compliance with the MSC Principles and Criteria.

11.1 MSC 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.

1.1.1		
The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing.		
SG 60	SG 80	SG 100
It is <u>likely</u> that the stock is above the point where recruitment would be impaired.	It is <u>highly likely</u> that the stock is above the point where recruitment would be impaired. The stock is at or fluctuating around its target reference point.	There is a <u>high degree of certainty</u> that the stock is above the point where recruitment would be impaired. There is a <u>high degree of certainty</u> that the stock has been fluctuating around its target reference point, or has been above its target reference point, <u>over recent years</u> .

Score: 80

1.1.1 Scoring Rationale

Assessment against SGs

As described by Welsford (2009) the assessment method followed that described by CCAMLR (1997 - para 5.70) for assessing yield in Mackerel Icefish which was identical to that used to estimate yields for Mackerel Icefish on the Heard Island and McDonald Islands Plateau in 2008. The method uses a bootstrap algorithm to estimate the total biomass (mt) of Mackerel Icefish over the survey area, using the point estimates of density (mt.km⁻²) derived from each survey trawl, weighted by the area of each of the strata and the number of trawls conducted within each stratum. It is assumed that all Mackerel Icefish in the trawl path are caught, and the estimate makes no allowance for any Mackerel Icefish that may be higher in the water column than the headline of the trawl net.

The lower one-sided 95% confidence bound of the biomass estimate is then used as the biomass estimate, and in combination with the biological parameters and input settings, is used to estimate the fishing mortality and corresponding catch that meets the short-term decision rule i.e. that will result in a 75% escapement relative to the 2 year projection with no fishing mortality. The estimate of yield is the catch determined from applying that target fishing mortality to the biomass estimate.

The first assessment report for Mackerel Icefish (SCS 2006) concluded that the 75% escapement reference point was being used as a limit reference point but the current assessment team considered that the 75% escapement figure is in fact operating as a target reference point. We formed this view because the catch figure obtained is always the basis on which the TAC is set and because it is based on an estimate of biomass that is likely to exceed any estimate of BMSY and that is therefore maintaining stocks at well above the point at which recruitment may be impaired.

It is, however, acknowledged that the wording of the reference point (the median escapement for the fishery of the spawning biomass **shall not be less than** 75% over a two year projection), and the method of calculation (that reflects the desire to achieve this level of escapement with a high probability) resemble characteristics commonly seen in limit reference points.

The assessment team concluded that Mackerel Icefish reach the SG 80 level as it was “highly likely that the stock is above the point where recruitment would be impaired” and “is at or fluctuating around its target reference point”. This is based on

- the results of the annual fishery-independent surveys, which continue to show strong year classes,
- the conservative method used to estimate the available biomass, which makes it highly likely that the target is being achieved,
- the precautionary reference point chosen in the control rule, which makes it highly unlikely that fishing could deplete the stock,
- the complete observer coverage for the fishery, which mitigates the likelihood that reported catches are erroneous, and
- the absence of IUU fishing, which reduces the potential of there being unaccounted fishing mortality.

There was not considered to be the high degree of certainty about this conclusion required to reach the SG 100 level because of some important uncertainties previously identified or identified during the re-assessment. These uncertainties include

- the lack of any formal evaluation of either the appropriateness of the 75% escapement target or whether the desired level of escapement is being achieved,
- the lack of any evaluation of the sensitivity of the assessment to potential inter-annual or age-dependent variability in natural mortality,

- unknown density-dependent effects on the growth of Mackerel Icefish, and
- potential variability in the size at first maturity.

Collectively, these uncertainties were considered to reduce the likelihood that the desired 75% escapement was being achieved to below the level required for attributing a high degree of certainty to the outcome, which would be required to meet the SG 100 level.

Other uncertainties in the assessment include

- a lack of knowledge about the fate of fish older than 4 years (whether they move out of the area of the fishery or simply die),
- the distribution of fish in the water column and the use of only daytime survey shots, and
- observed inter-annual changes in availability, thought to be related to water temperature.

These latter uncertainties, however, act to make the assessment more precautionary, as only fish that were observed in the surveys are assumed to be available to the fishery.

Mackerel Icefish were assessed as not being overfished and not subject to overfishing in the latest of the Bureau of Rural Sciences' Fishery Status Reports (Phillips and Ansell 2009).

Carry-over issues from the first MSC Assessment

This performance indicator covers issues related to stocks status that were dealt with by the previous Assessment Tree under PI 1.1.5.1 (Current stock sizes are above associated limit reference points), 1.1.5.2 (Current exploitation rates are below associated limit reference points) and 1.3.2 (Data and stock assessment indicate no changes in structure that would alter reproductive capacity). There were three Conditions attached to these PIs in the first assessment that were deemed to remain open at the Fourth Annual Surveillance Audit: Conditions 1.6, 1.7 and 1.10:

Condition 1.6: Meet Condition 1.3. In meeting Condition 1.3, ensure that there is an assessment that shows the probability that the current spawning biomass lies above the chosen limit reference point for the Icefish stocks at HIMI. This report should be reviewed by AFMA, AAD, and CCAMLR.

Condition 1.7: Meet Condition 1.3. In addition, show with what probability subsequent survey estimates of the biomass of the residual spawning stock exceeded the levels predicted over recent years.

Condition 1.10: Estimate the expected changes in size and age at maturity, age composition, and fecundity and establish a routine comparison of observed data with these expected values to ensure that unexpected changes might be detected.

The score of 80 that has been assigned against this PI using the SGs of the current FAM, suggests that there is no need for any conditions to be attached to the latest assessment. The existence of open conditions from the last audit, however, indicates the need to explicitly consider the basis for these previous conditions and whether the score should be below 80 with one or more (potentially revised) conditions retained.

Condition 1.6 required a peer-reviewed estimate of the probability that the current spawning biomass is above the chosen limit reference point and Condition 1.7 required that there should be a comparison of observed and predicted biomasses. The first assessment report expressed concerns that the chosen biological reference point was being used as a limit reference point but without any assessment of the likelihood that this was being exceeded. The current assessment team shares some of these concerns but, as mentioned above, considers that

the 75% escapement figure is operating as a target reference point. The likelihood of exceeding this reference point is very important for a LRP, but less so for a TRP. The assessment team considered that the absence of an explicit estimate of the probability that 75% escapement was being achieved was not sufficient reason to score the current PI below 80. The conservative nature of the target itself and of the way the available biomass is estimated means that it is highly likely that the SG80 level of the new PI is being met.

The need for a review of the appropriateness of the selected limit reference point, that is part of Condition 1.3 and is linked to Conditions 1.6 and 1.7, is re-examined as part of PI 1.1.2.

Condition 1.10 required an estimation of the expected changes in size and age at maturity, age composition, and fecundity and a routine comparison of observed data with expected values so that any unexpected changes might be detected. This Condition was imposed for one of the three previous indicators of stock status. There is now only one such indicator. The assessment team agreed that although there was regular monitoring of the size and (inferred) age composition, and data on size at maturity were routinely collected, it would be desirable to make routine comparisons of observed data with the expected values. Under the latest PISGs, however, this was seen as a measure that could move the score above the 80 level, rather than as a requirement to meet it. The assessment team also noted that monitoring changes to fecundity were of less concern because the assessment approach did not make any assumptions about the relationship between current stock size and future recruitment levels and also because the level of recruitment was directly estimated each year using the results of the trawl survey.

In summary, the conditions that remained open after the Fourth Annual Surveillance Audit were not seen to be sufficient to warrant scoring the fishery for this PI below the SG80 level under the revised guidelines. There is therefore no need for any conditions under this PI.

1.1.1 Trace References

CCAMLR (1997), Nowara (2009), Phillips and Ansell (2009), Sainsbury (2008), SCS (2006), Welsford (2009)

1.1.2		
Limit and target reference points are appropriate for the stock.		
SG 60	SG 80	SG 100
<p><u>Generic</u> limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.</p>	<p>Reference points are appropriate for the stock and can be estimated.</p> <p>The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.</p> <p>The target reference point is such that the stock is maintained at a level consistent with BMSY or some measure or surrogate with similar intent or outcome.</p> <p>For low trophic level species, the target reference point takes into account the ecological role of the stock.</p>	<p>The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of relevant <u>precautionary issues</u>.</p> <p>The target reference point is such that the stock is maintained at a level consistent with BMSY or some measure or surrogate with similar intent or outcome, <u>or a higher level</u>, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.</p>

Score: 75

1.1.2 Scoring Rationale

The target reference point (at least 75% escapement over a 2 year projection) used is appropriate to the stock and can be estimated. This target was selected to provide for the food requirements of potential predators and therefore takes account of the low trophic status of Mackerel Icefish. It is set a level which is highly likely to be above BMSY. It is also consistent with the best practice default level identified for key prey species (Sainsbury 2008). In addition, the way that it is estimated, based on the lower one-sided 95% confidence level of estimated biomass, means that it is highly likely that this target will be met. Annual fishery-independent surveys also allow for regular updates of the actual biomass estimate and adjustments to the TAC.

The TRP, however, does not require an absolute minimum level of Mackerel Icefish biomass to be left as potential prey. The assumption behind the method of setting the TRP is that, because Mackerel Icefish populations naturally reach very low levels, there can be no obligate predators that are reliant on the species .

There are two limit reference points that have been proposed or documented for the Mackerel Icefish fishery. There is the limit reference point specified in the AFMA Annual Status Report “that the probability that spawning biomass will fall below 20% of the pre exploitation level over the two year projection period must not exceed 0.1” (AFMA 2009a). This is the default reference point from the Australian Harvest Strategy Policy (DAFF 2007) for Commonwealth Fisheries but, although it can be estimated, it is not appropriate for Mackerel Icefish. As noted in the original Mackerel Icefish assessment report (SCS 2006) the work of de la Mare *et al.* (1998) demonstrated that, because of the level of recruitment variability and the short life span of the species, the probability of the spawning stock falling below 20% of the median unexploited stock level was about 0.5, even in the absence of a fishery!

SCS (2006) also noted that CCAMLR had decided (also based on the work of de la Mare *et al.*, 1998) that an appropriate objective would be to ensure that the probability that, over a specified period, the spawning stock might fall below the 20% level was not “substantially increased” by fishing and that a value of 0.05 was the acceptable upper limit of this increase in probability. This second formulation of a limit reference point was used by de la Mare *et al.* (1998) to calculate precautionary catch limits under a constant catch harvest strategy over 20 year projections. The current harvest strategy, however, seeks to set TACs based on the results of annual biomass surveys. This approach takes advantage of the increased yields obtainable when strong year classes are evident and responds more rapidly to reduce TACs when there are weaker year classes evident in the Mackerel Icefish population. As a result, the latter LRP is not calculated or used during the currently applied assessment and TAC setting process. It may still be an appropriate LRP for Mackerel Icefish but there would need to be some formal analysis (such as MSE testing) to determine whether the harvest control rule used to calculate the proposed catch limit would meet the requirements of this LRP.

The assessment team therefore concluded that there is no explicit LRP set that is appropriate for Mackerel Icefish and that the TAC is set based on the TRP of 75% escapement. FAM guidance for the use of PI 1.1.2 states that “if a management strategy is based solely around a target reference point, the harvest control rule, when combined with the target reference point, shall ensure that the stock will remain well above the level where there is an appreciable risk that recruitment would be impaired and ensure that the exploitation rate is reduced as this point is approached.”

The assessment team considered that the conservative nature of the TRP and the harvest control rule do lead to there being a low risk that recruitment would be impaired. There is evidence that the stock is capable of spawning strong year classes from quite low levels of biomass. Nevertheless, other stocks of Mackerel Icefish,

both on the Kerguelen Plateau and in other areas, are considered to be overfished and have not recovered after many years with no fishing. The initial certification report noted a concern about the absence of a “bottom line” for predators (seals and penguins). There is also a concern that even the 75% escapement target may not be sufficiently precautionary when stocks are very low and that a “bottom line” may be needed to provide additional protection for Mackerel Icefish stocks themselves, regardless of any need to provide for predators. The issue of their being sufficient provision for predators is dealt with in more detail under Principle 2 (specifically PIs 2.5.1, 2.5.2 and 2.5.3) where the impact of the fishery on other components of the ecosystem is examined.

The remaining concern arising from the absence of an explicit or implicit limit reference point is that the harvest control rule does not reduce the exploitation rate regardless of the absolute biomass of the stock. The closure of the fishery on Shell Bank shows that management has responded to evidence of unusually low abundance, and would presumably do so for the rest of the fishery, but there is no formal rule that determines when this implicit limit reference point might be implemented or that the exploitation rate would be reduced as this point is approached. The TAC for 2008/09 was only 102 t, suggesting that the estimated biomass must fall below the level that produced this TAC (659.4 t – lower 95% confidence limit) before any additional escapement is considered necessary. The assessment team, however, is unaware of any analysis that has investigated what the minimum biomass must be to guarantee that recruitment is not impaired. The default assumption seems to be that it is safe to take up to 25% of whatever biomass is present, given that this is estimated very conservatively.

The fishery is considered to clearly meet the SG60 level and to meet the first, third and fourth elements of the requirements for the SG80 level. The second element, however, concerning the LRP is not met. This is consistent with a score of 75.

Carry-over issues from the first MSC Assessment

This performance indicator covers issues related to stock status that were dealt with by the previous Assessment Tree under PI .1.1.3.1 (Limit Reference Points or operational equivalents have been set) and 1.1.3.2 (Target Reference Points or operational equivalents have been set). There were two Conditions attached to these PIs in the first assessment that were deemed to remain open at the Fourth Annual Surveillance Audit: Conditions 1.3 and 1.4.

Condition 1.3:

The client should provide evidence that a comprehensive review has been or is being undertaken regarding appropriate Limit Reference Points for the Icefish fishery. Evidence should be provided that the LRPs used meet the AFMA requirements (are appropriate for maintaining both ecologically viable stocks of the target species and an ecologically sustainable fishery), are appropriate for the biology of the Icefish stock and takes into account available knowledge of fishery impacts on non-target species and the ecosystem, and ensure with high probability that the spawning biomass of the Icefish stock does not fall below a specified minimum level and that fishing mortality does not exceed a specified maximum level. The results of this review should be published.

Condition 1.4:

1. A review should be provided about what target reference points, which are based on the biology of the Icefish stock and take into account available knowledge of fishery impacts on non-target species and the ecosystem, should be specified for the Icefish fishery. The analysis should examine how target reference points considered are more precautionary than the corresponding limit reference points and how they ensure with high probability that the spawning biomass of the Icefish stock does not fall below a specified minimum level and that fishing mortality does not exceed a specified maximum level.

2. The review provided should discuss how the target reference points used or proposed for use by AFMA for the Icefish fishery compare with those specified or applied by CCAMLR.

The score of 75 that has been assigned against this PI using the SGs of the current FAM, indicates that a Condition is still required.

As noted above, the current assessment team reached a different conclusion to the first assessment team about the nature of the 75% escapement rule used as a basis for setting catch limits. We regard this as a TRP and assessed that it is appropriate for Mackerel Icefish, can be measured and takes account of the ecological role of the stock. We therefore conclude that no condition is needed with regard to the TRP under this PI and consider that Condition 1.4 should not be carried forward to the current assessment.

Condition 1.3 relates to LRPs and the current assessment team concluded that additional work is needed to determine an explicit and appropriate LRP for Mackerel Icefish and incorporate it into the harvest control rule. The LRP specified in the AFMA Status Report (that the biomass should be maintained above 20% of unfished levels with a $P > 0.1$) is not appropriate for Mackerel Icefish, and the alternative LRP that has been developed by CCAMLR (that the probability of the biomass falling below 20% of unfished levels should not be increased by more than 0.05) is not calculated or used in the current assessment process.

In keeping with recent guidance on the setting of conditions (MSC 2010), the wording of Condition 1.3 has been revised to reflect that in the current SGs.

1.1.2 Trace References

AFMA (2009a), DAFF (2007), Sainsbury (2008)

Condition 1.1.2:

By the second annual surveillance audit determine an explicit LRP that is appropriate for mackerel Icefish, and demonstrate that it is set above the level at which there is an appreciable risk of impairing reproductive capacity.

1.1.3		
Where the stock is depleted, there is evidence of stock rebuilding.		
SG 60	SG 80	SG 100
Where stocks are depleted rebuilding strategies which have a <u>reasonable expectation</u> of success are in place. Monitoring is in place to determine whether they are effective in rebuilding the stock within a <u>specified timeframe</u> .	Where stocks are depleted rebuilding strategies are in place. There is <u>evidence</u> that they are rebuilding stocks, or it is highly likely based on simulation modeling or previous performance that they will be able to rebuild the stock within a <u>specified timeframe</u>	Where stocks are depleted, strategies are <u>demonstrated</u> to be rebuilding stocks continuously and there is strong evidence that rebuilding will be complete within the <u>shortest practicable timeframe</u> .

Score: N/A

FAM guidance for Performance Indicator 1.1.3 indicates that it shall only be scored when the Principle 1, Stock Status PI 1.1.1 reveals that a stock is depleted, meaning that it “is consistently below the target reference point, and which may be approaching the point at which recruitment is impaired” (MSC 2009). The assessment for PI 1.1.1 is that Mackerel Icefish are not below the target reference point and that it is highly likely that the stock is above the point where recruitment would be impaired. Therefore this PI is not scored.

Carry-over issues from the first MSC Assessment

This performance indicator covers issues related to the recovery of depleted stocks that were dealt with by the previous Assessment Tree under PI . 3.2.1.4 (The provision within the management system for rebuilding and recovery of depleted stocks). There was one Condition attached to this PI in the first assessment that was deemed to remain open at the Fourth Annual Surveillance Audit: Condition 3.1.

Condition 3.1: The management system must be improved to contain criteria for assessing when a stock within the fishery is overfished, the strategies to be adopted when the stock is classified as overfished, and the conditions under which an overfished (stock or) fishery is considered to have recovered. This is considered in more detail under Principle 1. To the extent possible, this condition should be informed by or be coincident with conditions in Principle 1.

Under the revised FAM, this PI is not scored and therefore no condition could be imposed. The existence of open conditions from the last audit, however, indicates the need to explicitly consider the basis for this condition and whether a (potentially revised) condition should be retained under a different PI.

Condition 3.1 was originally imposed because of a concern that there was no obviously explicit means of identifying when the Icefish stock is overfished and no published minimum stock size threshold below which a recovery plan would be put in place (essentially a problem with a limit reference point). The previously applied FAM also required a management system for depleted stocks, regardless of the current state of the stock.

The new system only requires the PI to be scored if a stock is ‘depleted’ and also provides a definition of this term (independent of any expressed in the management system). This issue is therefore no longer relevant under the revised FAM and no condition is warranted.

The issue of the lack of a specified minimum stock size was regarded by the assessment team to still be an issue, but was considered to be adequately addressed by PI 1.1.2 covering reference points. A condition was imposed under this PI that specifically addresses the lack of an appropriate limit reference point in the harvest control rule. No additional condition is considered necessary.

1.2.1		
There is a robust and precautionary harvest strategy in place.		
SG 60	SG 80	SG 100
The harvest strategy is <u>expected</u> to achieve stock management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy <u>work together</u> towards achieving management	The harvest strategy is responsive to the state of the stock and is <u>designed</u> to achieve stock management objectives reflected in the target and limit reference points.

<p>The harvest strategy is <u>likely</u> to work based on prior experience or plausible argument.</p> <p><u>Monitoring</u> is in place that is expected to determine whether the harvest strategy is working.</p>	<p>objectives reflected in the target and limit reference points.</p> <p>The harvest strategy may not have been fully tested but monitoring is in place and <u>evidence</u> exists that it is achieving its objectives.</p>	<p>The performance of the harvest strategy has been <u>fully evaluated</u> and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.</p> <p>The harvest strategy is <u>periodically reviewed and improved</u> as necessary.</p>
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Score: 85

1.2.1 Scoring Rationale

The harvest strategy that is used for the Mackerel Icefish Fishery is clearly responsive to the state of the stock as catch limits are determined based on the results of the annual fishery-independent survey of abundance. The management objectives that the harvest strategy is designed to achieve are articulated in the precautionary approach that was adopted by CCAMLR in the mid-1990s and includes the objective of maintaining a stock at a proportion of its pre-exploitation abundance such that:

1. escapement of the spawning stock must be sufficient to avoid the likelihood of declining recruitment, and
2. abundance under exploitation must maintain a sufficient resource for the needs of dependant species (usually predators).

The undertaking of annual biomass surveys as the basis for setting TACs each year, and the adoption of a relatively low exploitation rate with a high degree of certainty, indicate that the elements of this harvest strategy are designed to achieve these objectives. As such the first of the SGs required to achieve a score of 100 has been met. Note that the absence of an appropriate LRP has been previously noted and has been factored into the score for the previous PI; it was not considered again when scoring this PI.

The harvest strategy used for Mackerel Icefish has not been fully tested but there is evidence that it is achieving the first of the objectives from the regular detection of strong year classes in the annual surveys. Evidence that the second objective is being met is considered under Principle 2.

The harvest strategy has not been periodically reviewed or improved.

Taken together, the assessment team considered that a score of 85 reflects the partial meeting of the requirements for SG 100.

<p>1.2.2</p>		
<p>There are well defined and effective harvest control rules in place.</p>		
<p>SG 60</p>	<p>SG 80</p>	<p>SG 100</p>
<p><u>Generally understood</u> harvest control rules are in place that are consistent with the harvest strategy and which act to reduce the</p>	<p><u>Well defined</u> harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.</p>	<p><u>Well defined</u> harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.</p>

<p>exploitation rate as limit reference points are approached.</p> <p>There is <u>some evidence</u> that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.</p>	<p>The <u>selection</u> of the harvest control rules takes into account the <u>main</u> uncertainties.</p> <p><u>Available evidence indicates</u> that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.</p>	<p>The <u>design</u> of the harvest control rules take into account a <u>wide</u> range of uncertainties.</p> <p><u>Evidence clearly shows</u> that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.</p>
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Score: 70

1.2.2 Scoring Rationale

There are well defined harvest control rules in place for Mackerel Icefish that are consistent with the harvest strategy, but these rules do not ensure that the exploitation rate is reduced as a LRP is approached.

As discussed under PI 1.1.1., the harvest control rules consider some, but not all, the major uncertainties in the assessment. Some of those not considered would act to make the catch limit more precautionary, but others will not. There are three main uncertainties that are not taken into account in the harvest control rule: the potential for there to be an underestimate of natural mortality, the potential for there to be an overestimate of growth rates, and the potential for variability in the size at maturity. The first two would reduce the available biomass in the 12 months between when a survey is conducted and when the TAC based on that surveyed biomass is applied, potentially leading to the escapement that is less than the 75% specified. Changes to the size at first maturity may also affect the ability of the harvest strategy to achieve its stated objectives. These uncertainties were raised in the first assessment of Mackerel Icefish for MSC certification and were the subject of Conditions. They remain issues that prevent scoring reaching the 80 level under the revised SGs for this PI and it is therefore necessary that they are reflected in a Condition for this reassessment.

There is some evidence that the tools in use are appropriate and effective in achieving the desired exploitation levels from the regular detection of strong year classes in the annual surveys. This evidence could be strengthened, however, by the explicit comparison of the predicted abundance one year with the observed abundance the following year. A time series of such comparisons would assist in determining the accuracy of the predictions and in particular the extent of any biases in the assessment method and forecasting model used to determine catch limits. If discrepancies are found to occur regularly then revisions to the harvest strategy and control rules may be needed. These may include the introduction of agreed in-season management responses to indicators of unexpected changes in abundance, which may be derived from commercial fishing operations or survey results. If it can be shown, however, that there is good correspondence between the predicted and observed biomass, revised harvest control rules should not be necessary.

The assessment team therefore considered that the fishery partly meets the first element required for SG 80, meets most of second element and partly meets the third element. A score of 70 was therefore considered to be warranted and a Condition is attached to reflect the work needed on all three elements to achieve a score of 80.

Carry-over issues from the first MSC Assessment

This performance indicator covers issues that were dealt with by the previous Assessment Tree under PI 1.1.6.1 (Clear, well-tested, precautionary harvest control rules have been established and tested and shown to be

effective in meeting management objectives). There was one Condition attached to this PI in the first assessment and this was deemed to remain open at the Fourth Annual Surveillance Audit: Conditions 1.8.

Condition 1.8: Carry out appropriate simulation testing to consider the harvest strategy in relation to the characteristics of the Icefish stock to evaluate the robustness of the reference points and the fishery management model.

The SG 80 for the Assessment Tree that was used in the initial assessment required that “The harvest control rule has been simulation tested and shown to be effective with respect to the uncertainty concerning the biology of the stock and the uncertainties associated with stock assessment. Decisions about catch limits follow the agreed strategy.”

The requirements of the current PI do not include the need for simulation testing of the harvest control rules. To score 80 requires only that the available evidence indicates that the harvest control rules are meeting their objectives. Such evidence may come from simulation testing, but empirically derived evidence may also be sufficient. Fully testing a complete harvest strategy, however, is required to score 100 under PI 1.2.1.

Condition 1.2 (set for PI 1.1.2.8 in the first assessment and concerning knowledge of environmental influences on stock dynamics) contained suggested analyses to show how the assessments factor in uncertainty in some parameters, including growth and natural mortality. This key issue about environmental influences is more fully examined under the new PI 1.2.3, concerning information in support of the harvest strategy, but the related concerns about uncertainty in some parameters are also relevant to this PI.

Two other conditions have been discussed above (under PI 1.1.1) but are also relevant to this PI. Condition 1.6 (set for PI 1.1.5.1 in the first assessment) required an assessment of the probability that the current spawning biomass lies above a LRP and Condition 1.7 (set for PI 1.1.5.2 in the first assessment) required an assessment of the probability with which subsequent survey estimates of the biomass of the residual spawning stock exceeded the levels predicted over recent years. Both these are requiring additional evidence that the harvest control rules are achieving their stated objectives. These Conditions are consistent with the scoring given under the new PI which indicates the need for a Condition that reflects the need for additional evidence that the harvest control rules are effective in achieving the desired exploitation levels.

The assessment team therefore considered that, although the score against the current PI indicates the need for a Condition, the wording of the open Condition that previously existed (and for the other Conditions that were also relevant) is no longer the most appropriate. A new Condition has been drafted which better reflects the current PI and SGs.

Condition 1.2.2

By the third annual surveillance audit, incorporate the LRP developed under Condition 1.1.2 it into the harvest control rules so that the exploitation rate is reduced as this LRP is approached.

Provide evidence to show that the currently applied harvest control rules are robust to uncertainties about the level of natural mortality, growth rates and size at first maturity, or develop and apply amended harvest control rules that are.

Provide evidence that indicates that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.

1.2.3

Relevant information is collected to support the harvest strategy.

SG 60	SG 80	SG 100
<p><u>Some</u> relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.</p> <p>Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.</p>	<p><u>Sufficient</u> relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.</p> <p>Stock abundance and fishery removals are <u>regularly monitored at a level of accuracy and coverage consistent with the harvest control rule</u>, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.</p> <p>There is good information on all other fishery removals from the stock.</p>	<p>A <u>comprehensive range</u> of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly relevant to the current harvest strategy, is available.</p> <p><u>All information</u> required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of the inherent <u>uncertainties</u> in the information [data] and the robustness of assessment and management to this uncertainty.</p>

Score: 90

1.2.3 Scoring Rationale

Information provided to the both assessment teams in the form of published papers, reports from AFMA, AAD and CCAMLR, and the results of discussions with assessment experts, indicate that there is a comprehensive range of information available that is relevant to the harvest strategy, with the exception of information concerning the uncertainties noted in PI 1.1.1.

All the information required by the Harvest Control Rule is monitored annually and it is apparent that those involved in the scientific aspects of the assessment process have a good understanding of the inherent uncertainties in the data that are collected and used. There is excellent information available on all fishery removals from the stock, which are exclusively taken by the fleets seeking re-certification. IUU fishing, which has been a significant problem for some Antarctic high seas fisheries, is not regarded as an issue for Mackerel Icefish in the HIMI region (Phillips and Ansell 2009).

The assessment team considered that the fishery meets the first element and most of the second element of the SG 100 level, falling short only with regard to information on some of the uncertainties in the assessment that have been mentioned above. A score of 90 was therefore considered to be warranted on this PI.

Carry-over issues from the first MSC Assessment

This performance indicator covers some issues related to the information collected to support the harvest strategy that were dealt with by the previous Assessment Tree under PI .1.1.2.8 (concerning knowledge of environmental influences on stock dynamics). There was one Condition attached to this PI in the first assessment that was deemed to remain open at the Fourth Annual Surveillance Audit: Condition 1.2.

Condition 1.2: The client should provide evidence that the fishery assessments meet the first bullet point under the 80 scoring guidepost – “Impacts of inter-annual variability on stock abundance have been studied and are taken into account in the assessment”. For example, analyses could be provided that show how the fishery assessments factor in uncertainty in growth, mortality, size at first maturity and fecundity, and the influence of the environment on these variables.

The score of 90 that has been assigned against this PI using the SGs of the current FAM, suggests that there is no need for any conditions to be attached to the latest assessment. The existence of an open condition from the last audit, however, indicates the need to explicitly consider the basis for this condition and whether the score should be below 80 with a (potentially revised) condition retained.

The current SGs do not consider information on the environmental influences on stock dynamics separately to the other information that needs to be collected to support a harvest strategy. The assessment team did not consider that knowledge of such environmental influences was so important to the implementation of the harvest strategy, and that the current knowledge was so deficient, as to warrant a score of less than 80 against the current SGs. The 4th Surveillance Audit also noted that factors such as fecundity and environment are factored into the assessment as their influence is directly measured by the annual surveys, even if the causal links are not well understood.

Therefore, the condition that remained open after the Fourth Annual Surveillance Audit was not seen to be sufficient to warrant scoring the fishery for this PI below the SG80 level under the revised guidelines. There is, therefore, no need for any condition under this PI.

The other requirement contained within Condition 1.2 concerned analyses to show how the assessments factor in uncertainty in some key biological parameters. Under the revised FAM these issues are also covered under PI 1.2.2 and a condition has been imposed for this PI that reflects the continuing concern with these uncertainties.

1.2.3 Trace References

Phillips and Ansell (2009)

1.2.4		
There is an adequate assessment of the stock status.		
SG 60	SG 80	SG 100
<p>The assessment estimates stock status relative to reference points.</p> <p>The major sources of uncertainty are identified.</p>	<p>The assessment is appropriate for the stock and for the harvest control rule, and is evaluating stock status relative to reference points.</p> <p>The assessment takes uncertainty into account.</p> <p>The stock assessment is subject to peer review.</p>	<p>The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.</p> <p>The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.</p> <p>The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.</p> <p>The assessment has been internally and externally peer reviewed.</p>

Score: 90

1.2.4 Scoring Rationale

The assessment team considered that the assessment meets the first two elements of the SG 100 level; the assessment takes into account the major features relevant to the biology of the species, the nature of the fishery, uncertainty and is evaluating stock status relative to reference points in a probabilistic way.

The assessment team considered that the third element of the SG 100 level is not met, however, as the current assessment approach has not been rigorously tested and its performance compared against other hypotheses and approaches.

The assessment is regularly reviewed both by SARAG and by the scientific processes of CCAMLR, but the assessment team regards those as comprising an internal review only. In the absence of any external review, this fourth element of the SG 100 level is only partly met.

The assessment therefore meets two of the four elements of the SG 100 level, and part of a third, and a score of 90 was considered appropriate.

Carry-over issues from the first MSC Assessment

This performance indicator covers some issues related to the quality of the stock assessment that were dealt with by the previous Assessment Tree under PI .1.1.4.2 (Stock assessment methods are statistically rigorous, major uncertainties have been considered and assumptions have been evaluated). There was one Condition attached to this PI in the first assessment that was deemed to remain open at the Fourth Annual Surveillance Audit: Condition 1.5.

Condition 1.5: The approach that is used in determining the recommended TAC should be investigated relative to uncertainty in the estimate of natural mortality, the imprecision in the estimates of the parameters of the mixture of components of the length composition data and the uncertainty in the parameters of the growth curve, and alternative stock structures. There should be an explicit report demonstrating the precautionary nature of the approach and how additional information on these parameters is being incorporated.

The Condition was set to ensure the fishery met the relevant SG 80:

The assessment uses parameter estimation procedures that take account of observation and process uncertainty and are recognized to comply with accepted standards of statistical analysis.

The assessment takes into account major uncertainties in the data and functional relationships.

The robustness of the management advice to sensitivities in the assessment has been investigated

The score of 90 that has been assigned against this PI using the SGs of the current FAM, suggests that there is no need for any conditions to be attached to the latest assessment. The existence of an open condition from the last audit, however, indicates the need to explicitly consider the basis for this condition and whether the score should be below 80 with a (potentially revised) condition retained.

The difference in the scoring between the current and previous PIs reflects the difference in the requirements to meet the relevant SG 80 level. For the previous PI the SG 80 level focused on whether the assessment, and the subsequent management advice, took into account major uncertainties. In the current SG 80 level, whether or not uncertainty (in general) is taken into account is only one of the three elements. Some uncertainty is taken

into account through the use of a conservative estimate of biomass, so, although some of these concerns remain, they do not prevent scoring the fishery above the 80 level under the current SGs. Under the revised FAM the issue of uncertainty is also covered under PI 1.2.2 and a condition has been imposed for this PI that reflects the continuing concern with these uncertainties. No additional Condition is considered necessary under this PI.

11.2 MSC 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.

2.1.1		
The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species.		
SG 60	SG 80	SG 100
<p>Main retained species are <u>likely</u> to be within biologically based limits or if outside the limits there are <u>measures</u> in place that are <u>expected</u> to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.</p> <p>If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.</p>	<p>Main retained species are <u>highly likely</u> to be within biologically based limits, or if outside the limits there is a <u>partial strategy</u> of <u>demonstrably effective</u> management measures in place such that the fishery does not hinder recovery and rebuilding.</p>	<p>There is a <u>high degree of certainty</u> that retained species are within biologically based limits.</p> <p>Target reference points are defined and retained species are at or fluctuating around their target reference points.</p>

Score: 80

2.1.1 Scoring Rationale:

Management requirements for the fisheries in the Heard and McDonald Islands fishery, comprising the Icefish and the toothfish sectors, state that all species are retained to reduce interactions with marine mammals and seabirds. Most species are ground into meal, with only grey rockcod and unicorn Icefish retained whole. Fishmeal is discarded outside the fishing zone. Whole fish are sold upon return to port. The Icefish fishery only retains one main species, the unicorn Icefish, which comprises 3.7% of the total catch by weight (CCAMLR 2008). The limit of 150 t for this species is based on a generalized yield model (GYM) which included fishery independent survey data along with other parameters taken from similar species (Constable 1988). While the GYM analysis has not been updated since its initial development, there is an ongoing effort to collect data which will allow improvement the model. CCAMLR identified this as a high priority in 2007, and scientific observers were collecting data to this end in the 2008 - 2009 fishing season (Phillips and Ansell 2009). Given that the limits are set on a biological basis, the fishery operates well below these limits (37 t unicorn Icefish were taken in the 2008 – 2009 season, with an annual range between 1 and 37 over the last 10 years), the fishery ceases operating if the limits are exceeded in any one year, and there is a provision requiring vessels to move out of an area if there is more than 2 t in any one trawl net haul (AFMA 2009a), the fishery meets all of the components for the SG80 score. The fishery does not utilize target reference points for the nontarget species and there is no estimate of the stock relative to any reference points, thus it does not qualify at a higher level.

2.1.1 Trace References

AFMA (2009a), CCAMLR (2008), Constable, et al. (1998), Phillips and Ansell (2009)

2.1.2		
There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species.		
SG 60	SG 80	SG 100
<p>There are <u>measures</u> in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.</p> <p>The measures are considered <u>likely</u> to work, based on plausible argument (eg, general experience, theory or comparison with similar fisheries/species).</p>	<p>There is a <u>partial strategy</u> in place, if necessary that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.</p> <p>There is some <u>objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or species involved.</p> <p>There is <u>some evidence</u> that the partial strategy is being <u>implemented successfully</u>.</p>	<p>There is a <u>strategy</u> in place for managing retained species.</p> <p>The strategy is mainly based on information directly about the fishery and/or species involved, and <u>testing</u> supports <u>high confidence</u> that the strategy will work.</p> <p>There is <u>clear evidence</u> that the strategy is being <u>implemented successfully</u>, and intended changes are occurring.</p> <p>There is some evidence that the strategy is <u>achieving its overall objective</u>.</p>

Score: 90

2.1.2 Scoring Rationale:

There is a strategy for managing retained species as outlined under criteria 2.1.1. Limits are set at 150 t for unicorn Icefish and 80 t for grey rockcod based on GYM analysis (Constable et al. 1998, AFMA 2009b). Other species caught in the Icefish sector have catch limits set at 50 t, which is considered precautionary by CCAMLR (AFMA 2009a). Move on provisions and closure of the fishery when bycatch TACs are exceeded, ensure that there is a management response. This strategy is based on information about the species for the primary retained species. The fishery is supported by a fisheries independent survey each year, in addition to 100% observer coverage on the vessels with estimates of total biomass for all species taken in the fishery. No decline in catch rates has been noted in either the independent survey or in the observer data on the commercial hauls. Based on this there is high confidence that the strategy is operating. Observers do not report that there are any variations from the specified conditions, thus implementation appears to be successful and it is achieving its objective of avoiding a decline in the retained species. There are three concerns that prevent the fishery achieving SG100. First, there is a lack of testing of the strategy using management strategy evaluation or a similar evaluation mechanism. Second, as noted by the recent BRS fishery report, the GYM analysis is based on parameters taken from outside the populations affected by the fishery in some cases (Phillips and Ansell 2008). This is not ideal; it would be better to estimate the biological parameters required for the assessments of retained species using data from the actual populations affected. Third, although there are data from the fisheries independent survey, they are currently not analyzed to assess the effect of the fishery on

nontarget species. Thus while there is data available that could serve as evidence that the management strategy is successful, it is currently not being utilized.

2.1.2 Trace References

AFMA (2009a), AFMA (2009b), Constable, et al. (1998), Phillips and Ansell (2008)

2.1.3		
Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species.		
SG 60	SG 80	SG 100
<p><u>Qualitative information</u> is available on the amount of main retained species taken by the fishery.</p> <p>Information is <u>adequate</u> to <u>qualitatively</u> assess outcome status with respect to biologically based limits.</p> <p>Information is adequate to support <u>measures</u> to manage <u>main</u> retained species.</p>	<p><u>Qualitative information</u> and some quantitative information are available on the amount of main retained species taken by the fishery.</p> <p>Information is <u>sufficient</u> to estimate outcome status with respect to biologically based limits.</p> <p>Information is adequate to support a <u>partial strategy</u> to manage <u>main</u> retained species.</p> <p>Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).</p>	<p>Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.</p> <p>Information is <u>sufficient</u> to <u>quantitatively</u> estimate outcome status with a <u>high degree of certainty</u>.</p> <p>Information is adequate to support a <u>comprehensive strategy</u> to manage retained species, and evaluate with a <u>high degree of certainty</u> whether the strategy is achieving its objective.</p> <p>Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.</p>

Score: 100

2.1.3 Scoring Rationale:

All commercial effort in the fishery is monitored by observers, with two observers on every vessel (AFMA 2009a). All unloading is monitored in port by independent observers (AFMA 2009a). Vessels and observers maintain shot by shot logbooks. In addition there is a comprehensive and statistically robust fisheries independent survey conducted each year prior to commercial operations (AFMA 2009a).

2.1.3 Trace References

AFMA (2009a)

2.2.1		
The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups.		
SG 60	SG 80	SG 100

<p>Main bycatch species are <u>likely</u> to be within biologically based limits, or if outside such limits there are mitigation <u>measures</u> in place that are <u>expected</u> to ensure that the fishery does not hinder recovery and rebuilding.</p> <p>If the status is poorly known there are measures or practices in place that are expected result in the fishery not causing the bycatch species to be biologically based limits or hindering recovery.</p>	<p>Main bycatch species are <u>highly likely</u> to be within biologically based limits or if outside such limits there is a <u>partial strategy of demonstrably effective</u> mitigation measures in place such that the fishery does not hinder recovery and rebuilding.</p>	<p>There is a <u>high degree of certainty</u> that bycatch species are within biologically based limits.</p>
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Score: 80

2.2.1 Scoring Rationale:

There are 141 catch categories based on observer data from the fishery between 2002 and 2005 (AFMA 2009a). This section considers species which do not have commercial value, as per MSC guidelines (FAM v.2 2009). In the case of the Mackerel Icefish fishery, most nontarget catch falls into the retained species category covered above in 2.1.1 through 2.1.3 because these animals are required to be not released, so they are either retained whole and sold or ground into fishmeal. Fishmeal is discarded outside the fishing zone because it is deemed unsuitable for sale.

The fishery is managed on the basis of a 50 ton annual catch limit for all species that are not covered by other limits. This catch limit is expected to be conservative, based on advice from CCAMLR. The exception for bycatch species is the catch limit for skates (120 tons per year), which was based on a GYM analysis (Constable et al. 1998). Based on reported catch of nontarget species, all species are within their limits and have not exceeded them since 1998 (AFMA 2009a). These results are consistent with a simple quantitative assessment developed for bycatch species in the HIMI trawl sector as part of the ERA process (Zhou et al. 2009). Based on spatial overlap of fishing and species distributions, this assessment concluded that all bycatch species in the fishery had fishing mortalities below their values at maximum sustainable mortality. However, two skate species did have fishing mortalities that were above the lower boundary of sustainable mortality (Zhou et al. 2009).

There is a strategy for mitigating bycatch in the fishery. The seabird and marine mammal measures will be covered below in 2.2.3. For non-ETP bycatch species the provisions include requiring vessels to move at least 5 miles away from a site for at least 5 days if a vessel catches more than 2 t of unicorn Icefish, grey rockcod, or sleeper shark or 1 t of all other species together in one trawl (AFMA 2009a). There has been no observed decline in the catch of bycatch species in the commercial trawls (AFMA 2009a), thus these measures can be considered to be demonstrably effective. Similarly, no declines have been reported in the fisheries independent survey; however, there does not appear to be a policy of estimating population trends for nontarget species.

There are pending improvements in the management of nontarget stocks. In particular CCAMLR has plans to develop a new stock assessment for skates (AFMA 2009a). While there is no estimate of biomass for the bycatch species at present and its status relative to biological limits, the assessment may correct this for skates. Furthermore, if the fisheries independent survey is used to estimate biomass for the nontarget species there would at least be a population estimate that could be used in evaluating the sustainability of these catches based on the presence or absence of a trend in abundance. Future evaluations should consider these changes in revisiting the current score on this performance indicator.

The SG100 element is not met as the ecological risk assessment found some evidence that there was a threat to skates from the demersal fishery (although it is understood that this is largely due to the toothfish sector, the assessment was a combined one for the demersal sub-fishery), the existing GYM analysis used to set the catch limit for skates has been criticized as being out of date, and ERA flagged the issue that while the porbeagle shark is taken from a small portion of its range in this fishery, its status is unclear as other fisheries take it more extensively (AFMA 2009b, AFMA 2009c, AFMA 2009d, AFMA 2009e, Phillips and Ansell 2008). For the remaining nontarget species in this category there is also no estimate of status. Therefore there is not a high degree of certainty that all bycatch species are within biological limits.

2.2.1 Trace References

AFMA (2009a), AFMA (2009b), AFMA (2009c), AFMA (2009d), AFMA (2009e), Phillips and Ansell (2008), Zhou et al. (2009)

2.2.2		
There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations.		
SG 60	SG 80	SG 100
<p>There are <u>measures</u> in place, if necessary, which are expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.</p> <p>The measures are considered <u>likely to work</u>, based on plausible argument (e.g general experience, theory or comparison with similar fisheries/species).</p>	<p>There is a <u>partial strategy</u> in place, if necessary, for managing bycatch that is expected to maintain main bycatch species at levels which are highly likely to be within biologically based limits or to ensure that the fishery does not hinder their recovery.</p> <p>There is <u>some objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or the species involved.</p> <p>There is <u>some evidence</u> that the partial strategy is being implemented successfully.</p>	<p>There is a <u>strategy</u> in place for managing and minimising bycatch.</p> <p>The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports <u>high confidence</u> that the strategy will work.</p> <p>There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.</p>

Score: 90

2.2.2 Scoring Rational:

Please see scoring rationale for 2.2.1 for details on the strategy for managing bycatch to avoid harm to the bycatch populations. There is partial evidence that the strategy will work. Based on catches of bycatch species over the last 10 years of operation (AFMA 2009a) there does not appear to be a decline in bycatch populations. In addition, no declines have been noted by regulatory authorities or scientists analyzing the fisheries independent survey data, although there is no specific program of analysis for this criteria (AFMA 2009a). Implementation also appears to be successful, as there are no reported incidences of noncompliance by observers and all fishing effort is observed.

While there is a strategy which appears to be effective and there is evidence of its successful implementation, it has not been tested and is based on fishery and species-specific assessments for only a subset of the species (AFMA 2009a), Phillips and Ansell 2008). Thus, the fishery does not meet the SG100 guidelines.

2.2.2 Trace References

AFMA (2009a), Phillips and Ansell (2008)

2.2.3		
Information on the nature and amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch.		
SG 60	SG 80	SG 100
<p><u>Qualitative information</u> is available on the amount of main bycatch species affected by the fishery.</p> <p>Information is <u>adequate to broadly understand</u> outcome status with respect to biologically based limits.</p> <p>Information is adequate to support <u>measures</u> to manage bycatch.</p>	<p><u>Qualitative information and some quantitative information</u> are available on the amount of main bycatch species affected by the fishery.</p> <p>Information is sufficient to estimate outcome status with respect to biologically based limits.</p> <p>Information is adequate to support a <u>partial strategy</u> to manage main bycatch species.</p> <p>Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the strategy).</p>	<p><u>Accurate and verifiable information</u> is available on the amount of all bycatch and the consequences for the status of affected populations.</p> <p>Information is <u>sufficient</u> to quantitatively estimate outcome status with respect to biologically based limits with a <u>high degree of certainty</u>.</p> <p>Information is adequate to support a <u>comprehensive strategy</u> to manage bycatch, and evaluate with a high degree of certainty whether a strategy is achieving its objective.</p> <p>Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.</p>

Score: 100

2.2.3 Scoring Rationale:

The fishery has both 100% observer coverage of all commercial fishing and an extensive annual fisheries independent survey based on the commercial gear, thus there is there is adequate high quality information on bycatch (AFMA 2009a). The information is of sufficient quality to assess whether bycatch rates are changing, and the status relative to the various bycatch TACs. The information covers each commercial shot, and is adequate to support the implementation of both move on rules and TACs. And based on the information it is possible to estimate the number of individuals caught for each taxa in the fishery.

2.2.3 Trace References

AFMA (2009a). .

2.3.1

The fishery meets national and international requirements for protection of ETP species.

The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species.

SG 60	SG 80	SG 100
Known effects of the fishery are <u>likely</u> to be within limits of national and international requirements for protection of ETP species. Known direct effects are <u>unlikely</u> to create <u>unacceptable impacts</u> to ETP species.	The effects of the fishery are known and are <u>highly likely</u> to be within limits of national and international requirements for protection of ETP species. Direct effects are <u>highly unlikely</u> to create <u>unacceptable impacts</u> to ETP species. Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	There is a <u>high degree of certainty</u> that the effects of the fishery are within limits of national and international requirements for protection of ETP species. There is a <u>high degree of confidence</u> that there are <u>no significant detrimental effects (direct and indirect)</u> of the fishery on ETP species.

Score: 90

2.3.1 Scoring Rationale:

The HIMI fishery is a world leader in the quality of management measures for ETP species. After many innovations in the fishery, interaction rates with ETP species are very low. In the 7 fishing seasons between 2002 and 2009 a total of 16 seabirds were killed, including albatross and petrels (CCAMLR 2008). In the most recent fishing year reported by CCAMLR no seabirds were killed (CCAMLR 2008). There have been no marine mammal mortalities since 2005 (CCAMLR 2008). There is 100% observer coverage of the fishery, thus the effects of the fishery are known with high certainty. Based on these very low levels of impact in recent years, the fishery does meet the second element of the SG100 guidepost.

The fishery is compliant with domestic regulations, in particular species recovery plans for seabirds and marine mammals (AFMA 2009a). Moreover, the fishery complies with all management measures from CCAMLR with respect to ETP species (AFMA 2009a). Thus, in terms of operational practices, the fishery is fully compliant with requirements. However, there is no specific national or international standard for effects on the ETP species in this fishery. Seabird bycatch is regulated domestically for longline fisheries under a threat abatement plan; however, this plan does not cover trawl fisheries. As such, it is not possible to assess the effect of the fishery relative to domestic or international standards specifically for effects on ETP species.

The Ecological Risk Assessment for the fishery considered the impact to ETP species on a species-by-species basis. The risk assessment is based on an estimate of the proportion of the population exposed to fishing, and the impact of fishing interactions on the individuals and populations that are exposed. Based on the ecological risk assessment conducted for the midwater and demersal sectors of this fishery, neither is expected to have an adverse direct impact on ETP species (AFMA 2009b, AFMA 2009c). Indirect effects have been considered, and might be possible but are unlikely for marine mammals (AFMA 2009d, AFMA 2009e). The issue is currently being investigated further as part of an assessment of food web dynamics based on an ecosystem model under development.

2.3.1 Trace References

AFMA (2009a), AFMA (2009b), AFMA (2009c), AFMA (2009d)

2.3.2

The fishery has in place precautionary management strategies designed to:

- meet national and international requirements;
- ensure the fishery does not pose a risk of serious or irreversible harm to ETP species;
- ensure the fishery does not hinder recovery of ETP species; and
- minimize mortality of ETP species.

SG 60	SG 80	SG 100
<p>There are <u>measures</u> in place that minimize mortality, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.</p> <p>The measures are <u>considered likely</u> to work, based on <u>plausible argument</u> (eg. general experience, theory or comparison with similar fisheries/species).</p>	<p>There is a <u>strategy</u> in place for managing the fishery’s impact on ETP species, including measures to minimize mortality that is designed to be highly likely to achieve national and international requirements for the protection of ETP species.</p> <p>There is an <u>objective basis for confidence</u> that the strategy will work, based on <u>some information</u> directly about the fishery and/or the species involved.</p> <p>There is <u>evidence</u> that the strategy is being implemented successfully.</p>	<p>There is a <u>comprehensive strategy</u> in place for managing the fishery’s impact on ETP species, including measures to minimize mortality that is designed to achieve <u>above</u> national and international requirements for the protection of ETP species.</p> <p>The strategy is mainly based on information directly about the fishery and/or species involved, and a <u>quantitative analysis</u> supports <u>high confidence</u> that the strategy will work.</p> <p>There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is evidence that the strategy is achieving its objective.</p>

Score: 90

2.3.2 Scoring Rationale:

The fishery has extensive strategies in place to reduce the capture of seabirds, including controls on fishing practices, seasonal restrictions on gear use, temporal restrictions on gear use, and requirements for real time reporting of interactions along with development of management measures (AFMA 2009a, AFMA 2009b, AFMA 2009c, AFMA 2009d). There are also mitigation measures for marine mammals (DEWHA 2007). Interactions with marine mammals were not identified as an issue in the recent ecological risk analysis, and thus there was no explicit strategy for their mitigation in the risk management plans (AFMA 2009a, AFMA 2009b). However, the strategic assessment which is conducted to certify the fishery for export does provide some detail on a set of measures in place for reducing marine mammal impacts (DEWHA 2007). There is also a domestic Bycatch Action Plan, although it has not been reviewed in recent years. Finally, CCAMLR has developed conservation measures (Conservation Measure 25-03) for seabirds and marine mammals which provides guidance on mitigation measures for reducing interaction rates, along with a resolution (resolution 22/XXV) outlining its international standards in this respect for seabirds (for information on measures in force, see http://www.ccamlr.org/pu/e/e_pubs/cm/08-09/toc.htm). The HIMI Icefish fishery is required to comply with these measures by the management agency (AFMA) and there have been no reported issues with compliance (AFMA 2009e).

For seabirds, there is evidence that the mitigation measures are effective based on observer coverage, with low numbers of interactions (16 seabird deaths) over the last 7 years of operation (AFMA 2009e, AFMA 2009f, CCAMLR 2008). Marine mammal interactions are not considered to be a major issue in the fishery. In 2003 the Sub-Antarctic Fur Seal and Southern Elephant Seal Recovery Team concluded that fishing was not having a significant effect on the recovery of these species (DEWHA 2007).

The measures are being implemented successfully, and this can be verified based on complete coverage of commercial operations by observers (AFMA 2009e). There are specific procedures for observers to raise issues with compliance while at sea, along with ongoing reporting to the management agency. No issues of noncompliance were raised in the management agency’s annual report for 2009, which covers not only the current year but provides a limited history of the fishery (AFMA 2009e).

The fishery does not achieve the SG100 guidepost, as there is no assessment for seabirds or marine mammals caught in the fishery nor testing of the effectiveness of the strategies relative to management objectives. The fishery does meet the other two elements of the SG100 guidelines and thus merits a score of 90.

2.3. 2 Trace References

AFMA (2009a), AFMA (2009b), AFMA (2009c), AFMA (2009d), AFMA (2009e), AFMA (2009f), DEWHA (2007)

2.3.3		
Relevant information is collected to support the management of fishery impacts on ETP species, including: - information for the development of the management strategy; - information to assess the effectiveness of the management strategy; and - information to determine the outcome status of ETP species.		
SG 60	SG 80	SG 100
Information is <u>adequate to broadly understand</u> the impact of the fishery on ETP species. Information is adequate to support <u>measures</u> to manage the impacts on ETP species <u>Information</u> is sufficient to <u>qualitatively</u> estimate the fishery related mortality of ETP species.	Information is <u>sufficient</u> to determine whether the fishery may be a threat to protection and recovery of the ETP species, and if so, to measure trends and support a <u>full strategy</u> to manage impacts. <u>Sufficient data</u> are available to allow fishery related mortality and the impact of fishing to be <u>quantitatively</u> estimated for ETP species.	Information is <u>sufficient to quantitatively</u> estimate outcome status with a high degree of certainty. Information is adequate to support a <u>comprehensive strategy</u> to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives. <u>Accurate and verifiable information</u> is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.

Score: 90

2.3.3 Scoring Rationale:

There is high quality quantitative information on the impact of the fishery on ETP species, including effort, location, and gear configuration of all fishing effort. There is 100% observer coverage, and all ETP interactions (seabirds and mammals) are recorded and can be related to information on fishing available in logbooks. Thus gear configuration, timing, location and other factors that affect ETP interactions and outcomes of those

interactions are known (AFMA 2009a, AFMA 2009b). From this information it is possible to estimate the magnitude of the impact on the ETP species in a quantitative manner and to estimate the reduction in that impact due to the management strategy. Therefore all elements of the 80 scoring guidepost are met. However, the fishery only meets the first 2 elements of the SG 100. The first element refers to the quality of the information in terms of being able to estimate the outcome status and is focused on estimating the magnitude of the threat. Given that there is 100% observer coverage and all ETP interactions are recorded, it appears that this element is met. The second element refers to information to support the design and evaluation of the management strategy and there is adequate information for design and evaluation of the strategy. The third element requires “Accurate and verifiable information on ... the consequences for the status of ETP species”. It appears that the fishery does not meet this element because it is not possible to assess the consequences of ETP interactions for the status of the ETP species and populations as quantitative assessments of changes in population status due to fishing impacts are not publicly available at this time. The team is unaware of any analysis of the effects of the current bycatch levels on the status of the species. In essence this would require a species, and potentially population level, population model and interpretation of the effects of bycatch in the context of that model.

2.3. 3 Trace References

AFMA (2009a), AFMA (2009b)

2.4.1		
The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function.		
SG 60	SG 80	SG 100
The fishery is <u>unlikely</u> to reduce habitat structure and function to a point where there would be serious or irreversible harm.	The fishery is <u>highly unlikely</u> to reduce habitat structure and function to a point where there would be serious or irreversible harm.	There is <u>evidence</u> that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.

Score: 100

2.4.1 Scoring Rationale:

All vessels in the fishery carry a vessel monitoring system that reports all fishing locations in addition to comprehensive observer coverage (AFMA 2009a). The fishery operates in a region that has an extensive reserve system that was designed based on a bioregionalization with the explicit goal of protecting a comprehensive, adequate and representative collection of the existing Australian marine biota (AAD 2005). The fishery is excluded from these reserves, and thus while the demersal gear may affect the habitat on a bioregional basis there are significant areas (39% of the area that is less than 1,000 meters depth) that are protected from harm (AAD 2005). Moreover, effort in the fishery is concentrated in a relatively small portion of the region around the Heard and McDonald Islands, and thus at present impacts are expected to be limited in spatial extent even within the fished area. However, there is no binding limitation in this respect, and the distribution of effort in the fished area would be expected to shift with shifts in the distribution of target species.

2.4.1 Trace References

AAD (2005), AFMA (2009a)

2.4.2

There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types.

SG 60	SG 80	SG 100
<p>There are <u>measures</u> in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.</p> <p>The measures are considered <u>likely</u> to work, based on plausible argument (e.g general experience, theory or comparison with similar fisheries/habitats).</p>	<p>There is a <u>partial strategy</u> in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.</p> <p>There is some <u>objective basis for confidence</u> that the partial strategy will work, based on some information directly about the fishery and/or habitats involved.</p> <p>There is <u>some evidence</u> that the partial strategy is being implemented successfully.</p>	<p>There is a <u>strategy</u> in place for managing the impact of the fishery on habitat types.</p> <p>The strategy is mainly based on information directly about the fishery and/or habitats involved, and testing supports high confidence that the strategy will work.</p> <p>There is <u>clear evidence</u> that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.</p>

Score: 100

2.4.2 Scoring Rationale:

As discussed under 2.4.1 there is an extensive and well-designed reserve system that meets international standards for comprehensiveness, adequacy, and representativeness. These standards are anticipated to result in reserve systems that provide reliable protection for habitats and the biodiversity they support, and this anticipation has been explored extensively in the international scientific literature. The reserves were designed based on empirical data collected from the fishery and other sources (AAD 2005). Reductions in IUU fishing, compliance by operators with reserve boundaries, and complete observer and VMS coverage provide high confidence that the reserve system has been successfully implemented (AFMA 2009a, AFMA 2009b)

2.4.2 Trace References

AAD (2005), AFMA (2009a), AFMA (2009b),

2.4.3

Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types.

SG 60	SG 80	SG 100
<p>There is a basic understanding of the types and distribution of main habitats in the area of the fishery.</p> <p>Information is adequate to broadly understand</p>	<p>The nature, distribution and vulnerability of all main habitat types in the fishery area are known at a level of detail relevant to the scale and intensity of the fishery.</p> <p>Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent, timing and location of use of the fishing gear.</p>	<p>The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.</p> <p>Changes in habitat</p>

the main impacts of gear use on the main habitats, including spatial extent of interaction.	Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	distributions over time are measured. The physical impacts of the gear on the habitat types have been quantified fully.
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Score: 70

2.4.3 Scoring Rationale:

There is high quality data on the spatial extent, timing and location of the use of fishing gear based on ongoing observer and VMS coverage (AFMA 2009). This data is of sufficient quality to address the current extent and any changes in that extent through time.

The distribution of habitat types at the scale relevant to the fishery is known within the Australian region of the Kerguelen Plateau (AAD 2005).

Habitat impacts are the focus of an ongoing study, which is expected to improve the quality of knowledge of the impacts of the fishery (Constable 2006). However, at this time the study has not been completed and thus the precise nature of the impacts of the fishery on different types of habitats is not known. Once the impacts are known, for instance via the video systems that are being deployed on the gear at depth, then it will be possible to assess the damage that is caused to each category of habitat by overlaying the locations of that category of habitats with the locations of bottom trawling. However, unless one assumes a damage function (expressing the effect of gear contacting a particular type of habitat, e.g. sponge gardens) it is not possible to estimate the impact of the fishery on the habitat with the data available at the moment. Thus the fishery does not meet the first half of the second element under SG80 “Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified” at the moment.

Based on conversations with Industry representatives, it appears likely that there is information on the distribution of habitats and the impact of the gear on habitat that has been collected in the course of the icefish survey trawls. However, the review team was unable to identify this information in the public record, and as such it could not be considered in the assessment.

Upon completion of the study referenced above, as required under the MSC fishery certification methodology, this PI will be re-scored. It is noted, that this study will not only address the remaining SG80 criteria, but will also address one of the SG100 criteria, providing physical measures of the impact of the gear on the habitat.

2.4.3 Trace References

Constable (2006)

Condition 2.4.3:

By the first annual surveillance audit, the client shall provide some evidence that the nature of the impacts of the fishery on different types of habitats is known and that monitoring is ongoing to detect any increase in risk. This shall include the completion of the ongoing study on habitat impacts in the region.

2.5.1 The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function.
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SG 60	SG 80	SG 100
The fishery is <u>unlikely</u> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The fishery is <u>highly unlikely</u> to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is <u>evidence</u> that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.

Score: 75

2.5.1 Scoring Rationale:

Assessment against SGs

The effects of the fishery on key ecosystem components and processes are currently under study, with the research expected to be completed in 2011. Studies are underway by CCAMLR and AFMA/AAD investigating food web interactions in the fishery. A series of papers were presented at the 1st International Science Symposium on the Kerguelen Plateau in Concarneau, France, 14-16 April 2010 (Program Concarneau 2010). However, formal publications are not expected to be available before the end of the year.

At this time, based on CCAMLR advice, there is an escapement rule which is discussed above under the scoring rationale for 1.1.2. The escapement rule is designed to allow enough biomass to remain in the system to meet the food requirements of potential predators of Icefish, including seabirds and marine mammals (AFMA 2009b). This rule has been set at a level CCAMLR considers to be precautionary, and is in line with best practice for important prey species (Sainsbury 2008). In addition, the fishery has been operating for 10 years, with no major ongoing impacts documented on the system. Based on this management system and the operating evidence, it is unlikely that the fishery will cause serious or irreversible harm to the ecosystem; however, the assessment team felt that in the absence of a directed investigation it was not possible to achieve a higher level of certainty.

Carry-over issues from the first MSC Assessment

This performance indicator is related to PI 2.2.1.2 and 2.1.3.1 of the previous assessment. Indicator 2.1.3.1 was met at the SG80 guidelines by the final review; however, indicator 2.2.1.2 had a score of 75 and was not closed at the end of the assessment period. The condition on that PI (condition 2.5) was as follows. “The client should provide evidence that AAD research on the trophic role of Icefish in predator diets either has been or is being conducted. The AAD research should be properly peer reviewed and published. Once available, this information should be used in Condition 2.1.”

Condition 2.1 reads “The fishery must complete a comprehensive scientifically robust assessment of the ecological risks of the fishery (such as the one started by CSIRO), including potential impacts on benthic systems, key land-based marine predators, and sharks, skates and rays, that is already underway. The report should be sure to include the range of stakeholder views/inputs and meet peer review standards for scientific assessments.”

While the risk assessment was conducted, it did not include habitat impacts or trophic impacts, it focused instead on impacts that are a direct result of fisheries mortality. However, there are ongoing studies of habitat impacts and the trophic role of Icefish in the Kerguelen Plateau ecosystem. These requirements directly translate into the conditions here under 2.5.1 and 2.5.3. In summary, the conditions from the first assessment that required that the trophic role of Icefish is better understood to allow the evaluation of the 75% escapement rule remain in effect and translate directly into conditions for the ecosystem performance indicator under the

new FAM. Due to a restructuring in the habitat section of the FAM (section 2.4 above) the fishery now meets the SG80 guidelines. In the past these two aspects were treated in the same PI, but given the new FAM structure, only the ecosystem aspects of the past condition are carried forward to the second assessment. However, until the results of the ecological modeling are available, the assessment team recommends that regular reports on the status of, and trends in, populations of predators are obtained and examined for evidence of declines that might be exacerbated by fishing for mackerel icefish. Such information could then be taken into account as part of the assessment process, the setting of TACs and any future reviews of the current harvest strategy for Mackerel Icefish.

2.5.1 Trace References

AFMA (2009b), Sainsbury (200

Condition 2.5.1:

By the second annual surveillance audit, the client shall provide some evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. The client shall consider including the results of peer reviewed studies identifying the role of Icefish in the ecosystem, with particular attention to their role as prey items in the diets of higher level predators including marine mammals, fish, and seabirds and some evaluation of the risk associated with the current 75% escapement rule, and whether that is appropriate given the trophic structure of the system.

2.5.2

There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function.

SG 60	SG 80	SG 100
<p>There are <u>measures</u> in place, if necessary, that take into account potential impacts of the fishery on key elements of the ecosystem.</p> <p>The measures are considered likely to work, based on <u>plausible argument</u> (eg, general experience, theory or comparison with similar fisheries/ ecosystems).</p>	<p>There is a <u>partial strategy</u> in place, if necessary, that takes into account available information and is expected to restrain impacts of the fishery on the ecosystem so as to achieve the Ecosystem Outcome 80 level of performance.</p> <p>The partial strategy is considered likely to work, based on <u>plausible argument</u> (eg, general experience, theory or comparison with similar fisheries/ ecosystems).</p> <p>There is <u>some evidence</u> that the measures comprising the partial strategy are being implemented successfully</p>	<p>There is a <u>strategy</u> that consists of a <u>plan</u>, containing measures to address all main impacts of the fishery on the ecosystem, and at least some of these measures are in place. The plan and measures are based on well-understood functional relationships between the fishery and the Components and elements of the ecosystem.</p> <p>This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm.</p> <p>The measures are considered likely to work based on <u>prior experience</u>, <u>plausible argument</u> or <u>information</u> directly from the fishery/ecosystems involved.</p> <p>There is <u>evidence</u> that the measures are being implemented successfully.</p>

Score: 80

2.5.2 Scoring Rationale:

As discussed under 2.5.1 there is a strategy for meeting the ecosystem objectives in 2.5.1 as detailed under the 1.1.2 and 2.5.2 scoring rationales. The design of the strategy does not appear to be based specifically on studies of the Icefish fishery system. However, it is based on a plausible argument, uses fisheries independent data and detailed analysis, and thus would be expected to work in principle. Thus it meets the requirements of 80 score.

The main missing factor to ensure a higher score for this performance indicator is an evaluation of whether the 75% escapement is adequate to meet predator needs, particularly in a system where prey biomass fluctuates as widely as it does in the HIMI Icefish population. While fluctuations in the Icefish population have been suggested as evidence for the absence of obligate predators, their absence does not ensure the absence of an impact on predators in general. Reproduction in marine species is often episodic, dependent on resource availability. This is particularly true for long-lived vertebrate predators whose life history strategies favor periodic reproduction during times of high resource availability. There are also many examples of generalist predators shifting between prey species that fluctuate out of phase. Either of these cases would present a situation where a generalist predator, such as a piniped, might suffer reduced fecundity due to reductions in one of its food sources at a critical juncture.

A useful alternative approach for addressing the uncertainty around the appropriateness of the existing escapement level would be the inclusion of feedback from the ecosystem condition on the escapement level. For instance, escapement could be adjusted if pupping rates of marine mammals feeding on Icefish declined below some trigger level. This could take the form of either an adjustment to the existing target reference point or could be used as in the formulation of a limit reference point. In either event, the focus of the management strategy should be to not increase the risk to predators appreciably above that inherent in their utilization of a variable food resource like icefish.

Based on the fact that the fishery has not exceeded its catch limits, verified by at sea and unloading observer records, there is good evidence that the strategy is being successfully implemented.

2.5.3		
There is adequate knowledge of the impacts of the fishery on the ecosystem.		
SG 60	SG 80	SG 100
Information is adequate to <u>identify</u> the key elements of the ecosystem (e.g. trophic structure and function, community composition, productivity pattern and biodiversity). Main impacts of the fishery on these key	Information is adequate to <u>broadly understand the functions</u> of the key elements of the ecosystem. Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but <u>may not have been investigated in detail</u> . The main functions of the Components (i.e. target, Bycatch, Retained and ETP species and Habitats) in the ecosystem	Information is adequate to <u>broadly understand the key elements</u> of the ecosystem. Main <u>interactions</u> between the fishery and these ecosystem elements can be inferred from existing information, and <u>have been investigated</u> . The impacts of the fishery on target, Bycatch, Retained and ETP species and Habitats are identified and the main

<p>ecosystem elements can be inferred from existing information, but <u>have not been investigated in detail</u>.</p>	<p>are <u>known</u>.</p> <p>Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.</p> <p>Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).</p>	<p>functions of these Components in the ecosystem are <u>understood</u>.</p> <p>Sufficient information is available on the impacts of the fishery on the Components <u>and elements</u> to allow the main consequences for the ecosystem to be inferred.</p> <p>Information is sufficient to support the development of strategies to manage ecosystem impacts.</p>
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Score: 70

2.5.3 Scoring Rationale:

Understanding of the role of icefish in the diets of their predators and the role of icefish in driving the abundance of their prey is still developing. The diet of icefish is somewhat understood, with stomach content studies available in the literature (e.g. Kock et al. 1994). There has long been evidence that fish play a significant role in the diets of a wide range of top predators (Hureau 1994). There is information on the role of icefish in the diets of penguins at Heard Island (Klages et al. 1990), and Antarctic fur seals at Heard Island (Green et al. 1989, Green et al 1991). While these studies provide some information for putting icefish in context in terms of the impact of fishery removals on particular species in the ecosystem, there is no synthesis of the overall effects on the trophic structure, energy flows, standing biomass, species richness or other characteristics of ecosystem function. Given the recent suggestion that a decline in icefish abundance in other than the HIMI icefish fishery has led to a decline in penguin abundance it is important that these linkages are clarified as significant impacts are possible (Lescroël and Bost 2006). Thus the fishery does not meet the last element of the 80 SG but fully meets the first two elements.

2.5.3 Trace References

Green et al. (1980, 1991), Hureau, (1994), Klages et al. (1990), Kock et al. (1994), Lescroël and Bost (2006)

Condition 2.5.3

By the second annual surveillance audit, the client should provide evidence that the main impacts of the fishery on the key ecosystem elements are known. Evidence will need to be externally reviewed, and available in the public record.

11.3 MSC 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.

3.1.1

The management system exists within an appropriate and effective legal and/or customary framework which

ensures that it:

- Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2;
- Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and
- Incorporates an appropriate dispute resolution framework.

SG 60	SG 80	SG 100
<p>The management system is generally consistent with local, national or international laws or standards that are aimed at achieving sustainable fisheries in accordance with MSC Principles 1 and 2.</p> <p>The management system incorporates or is subject by law to a <u>mechanism</u> for the resolution of legal disputes arising within the system.</p> <p>Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.</p> <p>The management system has a mechanism to <u>generally respect</u> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>	<p>The management system incorporates or is subject by law to a <u>transparent mechanism</u> for the resolution of legal disputes which is <u>considered to be effective</u> in dealing with most issues and that is appropriate to the context of the fishery.</p> <p>The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges.</p> <p>The management system has a mechanism to <u>observe</u> the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>	<p>The management system incorporates or is subject by law to a <u>transparent mechanism</u> for the resolution of legal disputes that is appropriate to the context of the fishery and has been <u>tested and proven to be effective</u>.</p> <p>The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges.</p> <p>The management system has a mechanism to <u>formally commit</u> to the legal rights created explicitly or established by custom on people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.</p>

Score: 90

3.1.1 Scoring Rationale:

As a fishery within Australia’s EEZ and within the Convention Area of CCAMLR, the HIMI Mackerel Icefish Fishery is managed by AFMA in cooperation with the AAD and in accordance with CCAMLR’s conservation and management measures. The management system therefore comprises both the Australian domestic management regime and that of CCAMLR. Australia’s management of the fishery is consistent with CCAMLR requirements and exceeds these in some respects. The more rigorous arrangements implemented by AFMA include:

- The closure of the Fishery to midwater trawl operations between 1 February and 31 March each year
- Prohibition on midwater trawl operations in daylight hours
- A requirement to have both an observer and a data collection officer or two observers compared to CCAMLR’s requirement for a single observer
- The annual fishery independent random stratified trawl survey
- The retention of all offal

During the course of the first period of MSC certification of the Mackerel Icefish Fishery, AFMA's governance arrangements were changed. From 1 July 2008 AFMA operates as a commission rather than as a statutory authority. This change has not materially affected AFMA's responsibilities or day-to-day operations.

The main legislative instrument for management of the fishery is the *Heard Island and McDonald Islands Fishery Management Plan 2002* (the HIMI Management Plan which is available at: <http://www.comlaw.gov.au/comlaw/management.nsf/lookupindexpagesbyid/IP200508565?OpenDocument>). The Plan is a statutory instrument established under the *Fisheries Management Act 1991*. In addition the fishery is subject to assessment against the *Guidelines for the Ecologically Sustainable Management of Fisheries* under the *Environment Protection and Biodiversity Conservation Act 1999*. Both Acts require the application of the precautionary approach and the adoption of measures to ensure ecologically sustainable development.

The Australian management system has well established mechanisms for administrative and legal appeals of decisions taken in respect of the fishery. These mechanisms have been used and tested extensively but their use has not been required in the HIMI Mackerel Icefish Fishery.

CCAMLR has been a leader in developing and implementing the Ecosystem Approach to Fisheries and the Precautionary Approach. Two central concepts have evolved to guide CCAMLR in carrying out its management responsibilities, namely:

- (i) Management strives to follow a 'precautionary' approach. This means that CCAMLR collects the data it can, then weighs up the extent and effect of the uncertainties and gaps in such data before making a management decision. The approach aims to minimise the risk of long-term adverse effects rather than delaying decisions until all necessary data are available.
- (ii) Management also follows an 'ecosystem' approach. Ideally, this takes into account all the delicate and complex relationships between organisms (of all sizes) and physical processes (such as currents and sea temperature) that constitute the Antarctic marine ecosystem (CCAMLR, 2010)

Disputes within CCAMLR are dealt with through the consensus rule set up in Article XII of the Convention for matters of substance. The performance review of CCAMLR noted that consensus decision-making has worked for CCAMLR over a long period of time (CCAMLR Performance Review Panel, 2008). CCAMLR's dispute resolution procedures are established by Article XXV of the Convention. To date the dispute settlement mechanisms have not been utilized. The Performance Review recommended some improvements to these procedures, but CCAMLR has agreed to defer acting upon this recommendation.

The management system of the HIMI Mackerel Icefish Fishery is consistent with both national and international laws and standards and with the achievement of sustainable fisheries as required by MSC principles 1 and 2 and the system acts proactively to avoid legal disputes. Both components of the management system for the fishery have established and transparent mechanisms for the resolution of disputes. However, CCAMLR's dispute resolution mechanism is untested and some parts have been identified as requiring improvement. As a result not all elements of the first scoring element are met. Customary rights are not an issue in this fishery.

3.1.1 Trace References

CCAMLR (2010), CCAMLR Performance Review Panel (2008)

3.1.2

The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organizations and individuals who are involved in the management process are clear and understood by all relevant parties.

SG 60	SG 80	SG 100
<p>Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <u>generally understood</u>.</p> <p>The management system includes consultation processes that <u>obtain relevant information</u> from the main affected parties, including local knowledge, to inform the management system.</p>	<p>Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <u>explicitly defined and well understood for key areas of responsibility and interaction</u>.</p> <p>The management system includes consultation processes that <u>regularly seek and accept</u> relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.</p> <p>The consultation process <u>provides opportunity</u> for all interested and affected parties to be involved.</p>	<p>Organizations and individuals involved in the management process have been identified. Functions, roles and responsibilities are <u>explicitly defined and well understood for all areas of responsibility and interaction</u>.</p> <p>The management system includes consultation processes that <u>regularly seek and accept</u> relevant information, including local knowledge. The management system demonstrates consideration of the information and <u>explains how it is used or not used</u>.</p> <p>The consultation process <u>provides opportunity and encouragement</u> for all interested and affected parties to be involved, and <u>facilitates</u> their effective engagement.</p>

Score: 100

3.1.2 Scoring Rationale:

Organizations and bodies involved in the management system are:

- AFMA
- AAD
- An Interdepartmental Committee
- Sub-Antarctic Fisheries Management Advisory Committee (SouthMAC)
- Sub-Antarctic Fisheries Resource Assessment Group (SARAG)
- CCAMLR Consultative Forum
- HIMI Marine Reserve Stakeholder Group
- CCAMLR
- CCAMLR committees including the Scientific Committee, the Working Group on Fish Stock Assessment (WGFA), the Working Group on Ecosystem Monitoring and Management, the Working Group on Statistics, Assessment and Modelling (WGSAM) and the Standing Committee on Implementation and Compliance (SCIC)

The responsibilities for administration of legislation by AFMA and the AAD, are prescribed in Administrative Arrangements Orders made by Australia's Governor General. AAD leads Australia's participation in CCAMLR with Australia's position determined through consultation within the Interdepartmental Committee

(which includes AAD, AFMA, the Department of Agriculture, Fisheries and Forestry, and the Department of Foreign Affairs and the Attorney General's Department) and the CCAMLR Consultative Forum. Australia is well represented at CCAMLR in both the Commission and in its various subsidiary bodies. There is an industry representative on the Australian delegation. Another industry representative attends CCAMLR as a member of the coalition of legal toothfish Operators (COLTO) AFMA is responsible for implementation of measures agreed by CCAMLR and achieves this through the inclusion of CCAMLR Conservation Measures in the *Fisheries Management (Heard Island and McDonald Islands Fishery) Regulations 2002* or as conditions on the SFRs allocated to participants in the HIMI Toothfish Fishery.

SouthMAC is comprised of representatives from the fishing industry, the conservation community, the research sector, AFMA and AAD and representatives from industry, AAD, CSIRO and AFMA are on SARAG. The functions and roles of the MAC and RAG are defined in the *Fisheries Management Act 1991* and in AFMA policy documents (AFMA, 2005; AFMA, 2009e).

The Australian management system provides regular and extensive opportunities for all stakeholder groups to provide input to the management of the fishery. The CCAMLR Consultative Forum, including government agencies, industry and non-government conservation agencies meets three times each year. These meetings are formally recorded and records distributed to participants. However, some of the information discussed is considered confidential and the meeting records are not made more publicly available. Outcomes of the annual CCAMLR meeting are discussed with stakeholders and SouthMAC prior to development of advice to AFMA. In addition, ad hoc meetings between industry and AAD and AFMA are conducted as required and an annual workshop is held for scientists, managers, policy makers, scientific observers and industry participants, including skippers to provide a forum for informal exchange of information. A HIMI Marine Reserve Stakeholder Group provides input on the development of Marine Reserves and Conservation Zones around Heard Island and McDonald Islands.

The functions of the CCAMLR Scientific Committee are established by the CCAMLR Convention and CCAMLR has established clear terms of reference for the WGFS and SCIC. CCAMLR has transparent and consultative processes and is receptive to participation of observers at meetings of the Commission and the Scientific Committee and allows observers to provide documents to the Commission.

Decisions of the AFMA Commission are published regularly through the *AFMA Update* which is distributed to interested stakeholders and available on the AFMA web site. However minimal information is provided on the issues considered in reaching these decisions. CCAMLR publishes reports of the Commission and its subsidiary bodies and copies of its Conservation Measures on its web site. Some information on the web site is available only to CCAMLR members.

Overall the legislative, administrative and consultation process in place across the management system appear to work well. Functions, roles and responsibilities are well defined and well understood by the participants. There are extensive consultation processes in place in the Australian system and the CCAMLR system also facilitates engagement by stakeholders. The feedback processes in place are transparent.

3.1.2 Trace References

AFMA (2005), AFMA (2009e)

3.1.3

The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach.

SG 60	SG 80	SG 100
Long-term objectives to guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are <u>implicit</u> within management policy.	<u>Clear</u> long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are <u>explicit</u> within management policy.	<u>Clear</u> long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are <u>explicit</u> within <u>and required by</u> management policy

Score: 100

3.1.3 Scoring Rationale:

The HIMI Management Plan specifies the long term objectives for the fishery, consistent with those in the *Fisheries Management Act 1991*, as:

- (a) to manage the fishery efficiently and cost-effectively for the Commonwealth; and
- (b) to ensure that the exploitation of the resources of the fishery and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development and the exercise of the precautionary principle, and in particular, the need to have regard to the impact of fishing activities on non-target species and the long-term sustainability of the marine environment; and
- (c) to maximise economic efficiency in the exploitation of the resources of the fishery; and
- (d) to ensure AFMA’s accountability to the fishing industry and to the Australian community in management of the resources of the fishery; and
- (e) to reach Government targets for the recovery of the costs of AFMA in relation to the fishery; and
- (f) to ensure, through proper conservation and management, that the living resources of the Australian fishing Zone (AFZ) are not endangered by over-exploitation; and
- (g) to achieve the best use of the living resources of the AFZ; and
- (h) to ensure that conservation and management measures in the fishery implement Australia’s obligations under international agreements that deal with fish stocks, and other relevant international agreements.

Article II of the *Convention for the Conservation of Antarctic Marine Living Resources* specifies the objectives of the Convention as follows:

- “1. The objective of this Convention is the conservation of Antarctic marine living resources.
- 2. For the purposes of this Convention, the term ‘conservation’ includes rational use.
- 3. Any harvesting and associated activities in the area to which this Convention applies shall be conducted in accordance with the provisions of this Convention and with the following principles of conservation:
 - (a) prevention of decrease in the size of any harvested population to levels below those which ensure its stable recruitment. For this purpose its size should not be allowed to fall below a level close to that which ensures the greatest net annual increment;
 - (b) maintenance of the ecological relationships between harvested, dependent and related populations of Antarctic marine living resources and the restoration of depleted populations to the levels defined in sub-paragraph (a) above; and
 - (c) prevention of changes or minimisation of the risk of changes in the marine ecosystem which are not potentially reversible over two or three decades, taking into account the state of available knowledge of the direct and indirect impact of harvesting, the effect of the introduction of alien species, the effects of associated activities on the marine ecosystem and of the effects of environmental changes, with the aim of making possible the sustained conservation of Antarctic marine living resources.”

These principles encompass both ecosystem-based and precautionary management.

The long-term objectives of both elements of the management system for the fishery are clear and explicit within, and required by management policy. They are consistent with MSC principles and Criteria and the precautionary approach

3.1.3 Trace References

Fisheries Management Act 1991, *Convention for the Conservation of Antarctic Marine Living Resources*

3.1.4

The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing.

SG 60	SG 80	SG 100
The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that negative incentives do not arise.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and <u>explicitly considers</u> incentives in a <u>regular review</u> of management policy or procedures to ensure that they do not contribute to unsustainable fishing practices.

Score: 100

3.1.4 Scoring Rationale:

The CCAMLR system sets TACs for fisheries/sub-areas, including for the HIMI Mackerel Icefish Fishery in CCAMLR Statistical Division 58.5.2 but does not make national allocations. However, since the only Mackerel Icefish Fishery in that Statistical Division relates to the Australian EEZ, the CCAMLR TAC is a de facto national allocation in this case. Australian vessels in the Mackerel Icefish Fishery are subject to CCAMLR’s Conservation Measures for Mackerel Icefish, non-target species and ecosystem impacts.

Australia allocates SFRs, in the form of individual transferable quotas (ITQs) to two fishing companies under the HIMI Management Plan. SFRs provide security of access to fishers, promote stewardship of the resource and provide a platform for the maximisation of economic efficiency of fishing operations. ITQs are the Australian Government’s preferred fisheries management mechanism, a policy position that was reviewed and reiterated in 2003 (Department of Agriculture, Fisheries and Forestry- Australia, 2003). The HIMI Management Plan requires that AFMA and SouthMAC, at least once every five years, assess the effectiveness of the Plan including the measures taken to achieve the objectives of the Plan by reference to the performance criteria contained in the Plan. Each year SouthMAC conducts a review of progress against each of the performance measures, including economic efficiency, contained in the Management Plan and reports this to the AFMA Commission. .

The management arrangements are also reviewed periodically under the provisions of Section 10 of the EPBC Act This provides an assessment of the performance of the Plan and its implementation in relation to ecological sustainability. The HIMI Fishery has been met all the requirements of the EPBC Act. In addition, the Australian Bureau of Agricultural and Resource Economics (ABARE) reports on economic efficiency of the HIMI Fishery annually in the Fisheries Status Reports (see for example, Patterson *et al.*, 2010). The Report uses the level of latency of quotas as an economic indicator and found that this was relatively low in the HIMI Mackerel Icefish Fishery in 2007/08 at 9.5% but increased to 18.6% in 2008/09. Overall, the economic

performance of the HIMI Fishery, of which the Mackerel Icefish Fishery is one component, is considered to be positive. This annual review of ecological sustainability and economic efficiency constitutes an explicit review of incentives in the management policy.

Only three trawl vessels are allowed in the fishery at any time so capacity and effort are limited. The HIMI Management Plan is to be amended to allow up to five vessels in the fishery. However, during consideration of this amendment AFMA explicitly agreed that no more than three of the five vessels will be trawl vessels. As a consequence, the amendment provides only for additional longline vessels. Mackerel Icefish cannot be targeted by longlines.

The cap on the number of vessels together with the annual TAC and allocation of ITQs provide positive incentives for sustainable fishing of the target stock. As noted above, management of broader ecosystem impacts are applied through the HIMI Fishery Regulations and/or through conditions placed on SFRs.

Management costs are recovered from operators as required by the Australian Government's Cost Recovery Policy (Department of Finance and Deregulation, 2005). Costs are recovered in line with AFMA's Cost Recovery Impact Statement 2004 (CRIS) (AFMA, 2004) which specifies the attribution of costs of management, research and surveillance between the fishing industry and government. The CRIS was revised in 2010 and the revisions have seen an increased contribution to management costs by industry in the HIMI Fishery and a decline in the government contribution. Under the CRIS, industry now contributes 100% of the costs associated with:

- management of domestic commercial fisheries, including MACs;
- data collection and management (data management, logbooks, observers, compliance data collection); and
- licensing, registration and revenue collection.

Government contributes 100% of the costs associated with defining international treaty standards and developing regulation, policy support, domestic and foreign fisheries compliance enforcement, and for research commissioned by AFMA that results in significant benefits to the Australian community and to sectors outside the domestic Commonwealth commercial fishing industry.

Costs associated with research are shared between industry and government depending on the flow of benefits from particular research to the industry and the broader community. Industry pays 80% of the costs associated with RAGs and the Government contributes the remainder.

The Australian Government implemented a government funded structural adjustment program in 2005, however the HIMI Mackerel Icefish Fishery was not a beneficiary of the subsidies inherent in that program.

The incentives provided by the Management arrangements are consistent with the achievement of the outcomes of MSC Principles 1 and 2.

3.1.4 Trace References

AFMA (2004), DAFF(2003), Department of Finance and Deregulation (2005); Patterson, Wilson and Mazur (2010).

3.2.1

The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1

and 2.		
SG 60	SG 80	SG 100
<u>Objectives</u> , which are broadly consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are <u>implicit</u> within the fishery management system.	<u>Short and long term objectives</u> , which are consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are <u>explicit</u> within the fishery management system.	<u>Well defined and measurable short and long term objectives</u> , which are demonstrably consistent with achieving the outcomes expressed by MSC’s Principles 1 and 2, are <u>explicit</u> within the fishery management system.

Score: 90

3.2.1 Scoring Rationale:

The long-term objectives are specified in the HIMI Management Plan and by the CCAMLR Convention. These have been described in the discussion of Indicator 3.1.3 above. While short-term objectives for the fishery are not specified as explicitly as the long term objectives they are clearly identifiable for target, non-target and ETP species.

With respect to the target species, AFMA states that the assessment of the Mackerel Icefish stock is undertaken in accordance with CCAMLR’s approach to management which requires that stocks are maintained at a proportion of their pre-exploitation abundance such that:

- Escapement of the spawning stock is sufficient to avoid the likelihood of declining recruitment; and (the harvest strategy reference points specifies 75% escapement over a 2 year projection)
- Abundance under exploitation must maintain a sufficient resources for the needs of dependent species

These objectives are reflected in the decision rules for the fishery (see discussion under 1.2.1 and 1.2.2) and are well-defined and measureable.

There are TACs in place for a range of non-target species and species groups including Unicorn Icefish, Grey Rockcod, *Macrourus* spp., skates and rays and each other species. These TACs comprise short-term management objectives for these species in that they identify the upper level of the impact that the fishery is prepared to accept. A bycatch action plan was developed for the fishery in 2003. This plan has effectively been superseded by the development of the Ecological Risk Management Report (ERM)for the Fishery. Reporting on bycatch and interactions with protected species is included in the fishery’s annual status report to DEWHA. AFMA’s ERM reports for both demersal and midwater trawl gears (AFMA 2009c and 2009d respectively) state that with respect to all endangered, threatened or protected species the objective is to minimise interactions and fatalities. The ERM report for the demersal trawl section of the Mackerel Icefish Fishery (AFMA, 2009c) identifies three species of skates as priority species “on which AFMA will focus ERM efforts” but fails to specify any objectives or actions with respect to mitigating the impact of the fishery on these species. Neither of the ERM reports contains specific objectives with respect to minimising the benthic impact.

Overall, the objectives of the fishery can be regarded as being consistent with achieving the outcomes of MSC Principles 1 and 2. However the score for the Fishery against this indicator could be increased by a more explicit enunciation of its short-term objectives and how achievement of those objectives will be monitored over time, particularly in respect of Principle 2 issues and especially with respect to objectives for management of high-risk bycatch species and habitats.

3.2.1 Trace References

AFMA (2009c), AFMA (2009d)

3.2.2

The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives.

SG 60	SG 80	SG 100
<p>There are <u>informal</u> decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.</p> <p>Decision-making processes respond to <u>serious issues</u> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take <u>some</u> account of the wider implications of decisions.</p>	<p>There are <u>established</u> decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.</p> <p>Decision-making processes respond to <u>serious and other important issues</u> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.</p> <p>Decision-making processes use the precautionary approach and are based on best available information. <u>Explanations</u> are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.</p>	<p>Decision-making processes respond to <u>all issues</u> identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.</p> <p>Decision-making processes use the precautionary approach and are based on best available information.</p> <p><u>Formal reporting</u> to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.</p>

Score: 100

3.2.2 Scoring Rationale:

The AFMA Commission receives advice from SouthMAC and SARAG. The advice provided to the Commission and the Commission’s decisions must be in accord with AFMA’s legislative objectives, which are reflected in the HIMI Management Plan. SouthMAC and SARAG’s advice is formed taking into account the decisions of CCAMLR on issues such as TAC setting and other relevant Conservation Measures. There is an extensive consultation process in place to ensure transparency and feedback mechanisms for stakeholders (see discussion under indicator 3.1.2).

The AFMA advisory and decision making processes and the CCAMLR/AAD processes are well established and clearly linked to objectives and to the application of the precautionary approach, including the use of the best available information. Reports of CCAMLR and its subsidiary bodies are publicly available and the AFMA Commission’s decisions are made public on a timely basis.

The decision-making processes are well established in all components of the management system. Those processes require the application of the precautionary approach, including the use of the best available information. The decision-making framework responds to issues identified through research, monitoring and consultation and established reporting mechanisms for dissemination of decisions on management responses to these issues.

3.2.3		
Monitoring, control and surveillance mechanisms ensure the fishery’s management measures are enforced and complied with.		
SG 60	SG 80	SG 100
Monitoring, control and surveillance <u>mechanisms</u> exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance <u>system</u> has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A <u>comprehensive</u> monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, <u>are consistently applied</u> and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and <u>demonstrably</u> provide effective deterrence.
Fishers are <u>generally thought</u> to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	<u>Some evidence exists</u> to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery. There is no evidence of systematic non-compliance.	There is a <u>high degree of confidence</u> that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.

Score: 100

3.2.3 Scoring Rationale:

AFMA conducts an annual Compliance Risk Assessment for the HIMI Fishery as a whole, rather than specifically for the Mackerel Icefish Fishery. No compliance risks specific to the Mackerel Icefish Fishery have been identified but common fisheries compliance risks including non-reporting from the vessel monitoring system (VMS), non-compliance with size limits and misreporting on logbooks apply to the Fishery.

The monitoring control and surveillance system in place in the Mackerel Icefish Fishery comprises:

- an integrated Computerised VMS
 - both Australian companies operating in the fishery carry to 2 VMS so as to provide a backup in case of failure of one system;
- a requirement to carry two observers (at least one of which must be an AFMA observer and one may

be a data collection officer engaged by the industry) on board each vessel for the purposes of ensuring compliance with management arrangements such as closed areas, minimum size limits, bycatch limits and collection of data

- data collection officers do not have the official capacity of the AFMA observer, are not authorised to collect data on protected species interactions and are not subject to the same training and AAD induction/education processes as AFMA observers
- the assessment team was advised that the AFMA observer and the data collection officer work flexibly to ensure that the AFMA observer is on duty when interactions with protected species are most likely to occur
- the assessment team notes that the observer arrangements on mackerel icefish vessels exceed the CCAMLR requirements, i.e. a single observer, and provide for significantly enhanced monitoring activity;
- in port monitoring of unloads by an AFMA authorised officer to ensure compliance with catch limits;
- completion of shot-by-shot daily logbooks and submission of that data to AFMA and AAD.

IUU fishing continues to be a risk in the Southern Ocean around HIMI, however this risk applies predominantly to longlining and gillnetting for Toothfish. Australia maintains a permanent surveillance presence, in the form a full-time armed patrol, in the region to combat this threat and this provides additional surveillance protection for Mackerel Icefish. In addition, under treaty arrangements between Australia and France, cooperative surveillance activities in the adjacent EEZs surrounding HIMI and Îles Kerguelen are in place that provide for French vessels to undertake surveillance patrols in the HIMI EEZ.

The *Fisheries Management Act 1991* provides for penalties and sanctions in the event that fishers do not comply with the management measures in the fishery. There is no evidence of systematic non-compliance in the fishery. In 2008/09 only one offence was reported in the HIMI fishery and that was not in relation to the fishery for Mackerel Icefish (AFMA 2009g).

The industry has an excellent record of participation in the collection and submission of data and information relating to the Mackerel Icefish Fishery and the ecosystem in which it operates. The annual Fisheries Assessment Plan formalises the nature and extent of the industry’s participation in the annual trawl survey.

There is a comprehensive monitoring, control and surveillance system in place. Sanctions for non-compliance are available if required but there is no evidence of systematic non-compliance. Managers and industry are confident that there is good compliance with the management systems and the industry collaborates with researchers and managers to provide information required for effective management of the fishery.

3.2.3 Trace References

AFMA (2009g)

3.2.4		
The fishery has a research plan that addresses the information needs of management.		
SG 60	SG 80	SG 100
<u>Research</u> is undertaken, as required, to achieve the objectives consistent with MSC’s Principles 1 and 2.	A <u>research plan</u> provides the management system with a strategic approach to research and <u>reliable and timely information</u> sufficient to achieve the objectives consistent	A <u>comprehensive research plan</u> provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and <u>reliable and timely information</u> sufficient to achieve the objectives

Research results are <u>available</u> to interested parties.	with MSC’s Principles 1 and 2. Research results are <u>disseminated</u> to all interested parties in a <u>timely</u> fashion.	consistent with MSC’s Principles 1 and 2. Research <u>plan</u> and results are <u>disseminated</u> to all interested parties in a <u>timely</u> fashion and are <u>widely and publicly available</u> .
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Score: 100

3.2.4 Scoring Rationale:

The HIMI Management Plan requires that “cost-effective and high quality research is carried out in relation to the fishery in accordance with a 5-year strategic research plan, the results of which are:

- (i) included in the assessment process of the fishery; and
- (ii) published in the assessment reports of the fishery; and
- (iii) taken into consideration in determining the total allowable catch, and other management arrangements, in a fishing year;”

The current strategic research plan is the *Antarctic Fisheries Strategic Research Plan 2008-2013* developed and reviewed annually by SARAG (SARAG, 2008). The Plan reflects domestic fisheries priorities, CCAMLR requirements and recommendations made by the CCAMLR Scientific Committee. The Plan provides for research to underpin stock assessment, collection of fishery and biological data and to assess ecological and economic aspects of the fishery. The following projects relevant to the Mackerel Icefish Fishery are currently identified as being underway and funded under the Strategic Research Plan:

- CCAMLR stock assessment
- Acoustic monitoring (echo listener) juvenile Mackerel Icefish
- Random stratified trawl survey
- Provision of data for stock assessment of Mackerel Icefish
- Ecology of the HIMI marine ecosystem including assessment of the ecological impacts of trawl fishing for Mackerel Icefish
- Effects of trawling on benthic ecosystems
- Benthic habitats project
- Tagging programs for skates and rays

Research in the HIMI fishery is characterised by formal collaboration between industry and research providers. The details of this collaboration are specified in the annual Fisheries Assessment Plan required under the HIMI Management Plan. A copy of the Fisheries Assessment Plan was provided to SCS. The Fisheries Assessment Plan aims to ensure that an adequate program of monitoring takes place in the fishery in order to provide reliable stock estimates for target species and to monitor the direct impact on non-target species and the ecosystem. Each SFR holder’s contribution to research is allocated in proportion to the number of SFRs they hold at the beginning of each fishing season. In 2009/10 the Fisheries Assessment Plan requires industry to conduct 17 days of research and monitoring in the HIMI fishery. Of this, approximately four days relate to the random stratified trawl survey to the Mackerel Icefish Fishery, with the remainder of the time dedicated to the Toothfish Fishery. Industry’s contribution to research includes direct financial contributions, provision of vessel time and crew expertise and cooperation with the observer program.

Research results are provided to SARAG and SouthMAC and are available to stakeholders through the various consultative mechanisms described under Indicator 3.1.2. Results are published variously as papers to

CCAMLR, in peer reviewed journals and/or on the AFMA website. Not all research papers provided to CCAMLR are available to the public since they contain commercial in confidence information or contain information that could facilitate IUU fishing.

The HIMI Mackerel Icefish Fishery has a comprehensive research plan that is updated annually to reflect emerging priorities. This plan provides for research across the three MSC Principles and delivers reliable and timely information to achieve the objectives of Principles 1 and 2. The plan is readily available on AFMA’s website and research reports are available through the research providers and/or funders.

3.2.4 Trace References

SARAG (2008)

3.2.5		
There is a system for monitoring and evaluating the performance of the fishery-specific management system against its objectives. There is effective and timely review of the fishery-specific management system.		
SG 60	SG 80	SG 100
The fishery has in place mechanisms to evaluate <u>some</u> parts of the management system and is subject to <u>occasional internal</u> review.	The fishery has in place mechanisms to evaluate <u>key parts</u> of the management system and is subject to <u>regular internal</u> and <u>occasional external</u> review.	The fishery has in place mechanisms to evaluate <u>all</u> parts of the management system and is subject to <u>regular internal</u> and <u>external</u> review.

Score: 95

3.2.5 Scoring Rationale:

The HIMI Management Plan includes performance criteria against which the Fishery must be assessed and requires that:

- each year, SouthMAC assess the extent to which those performance criteria have been met in that year;
- AFMA include in its annual report for a financial year a statement of the extent to which those performance criteria were met in the year; and
- AFMA and SouthMAC, at least once every 5 years, assess the effectiveness of the Plan including the measures taken to achieve the objectives of this Management Plan by reference to those performance criteria.

In accordance with the requirements of the Management Plan, SouthMAC conducts an annual assessment of the performance of the Fishery against the performance criteria contained in the Plan (SouthMAC, 2009). This is provided to the AFMA Commission for consideration. AFMA relies on this assessment to meet the requirement of reporting in its Annual Report on the extent to which the performance criteria are met and the assessment is publicly available on the AFMA web site.

The performance of the fishery is subject to scrutiny by SouthMAC and SARAG, AFMA, AAD and other government agencies, the CCAMLR Scientific Committee and CCAMLR and a range of stakeholders. AFMA's performance in managing fisheries, including the Mackerel Icefish Fishery, is also reviewed through:

- annual reports by the Bureau of Rural Sciences (BRS) on the status of AFMA-managed fish stocks and an annual assessments of economic performance by ABARE;
- five-yearly (or more frequently if required) assessments of ecological sustainability by DEWHA;
- and
- periodic audits conducted by the Australian National Audit Office.

In addition, AFMA has conducted specific studies such as ecological risk assessments to identify high risk impacts of midwater and demersal trawl fisheries for Mackerel Icefish. ERAs will be repeated at regular intervals.

CCAMLR also monitors the effectiveness of the management measures implemented for Mackerel Icefish. The Mackerel Icefish stock assessment is subject to internal review through SARAG and external review through CCAMLR's WGSAM and WGFSA and through the periodic participation in these Working Groups of invited stock assessment experts.

The performance of CCAMLR was reviewed in 2008 by a Performance Review Panel and the report is publicly available (CCAMLR Performance Review Panel, 2008). The report has been considered by CCAMLR bodies including the Scientific Committee, the Standing Committee on Administration and Finance and the Standing Committee on Implementation and Compliance as well as the Commission. CCAMLR has begun implementation of some recommendations contained in the Report and considered progress against the recommendations of the Review at its 2010 meeting.

The HIMI Management Plan was implemented in 2002 and an assessment of its effectiveness would have been due by 2007 at the latest. A review of SouthMAC minutes and AFMA's annual reports since that time revealed no reference to such an assessment being conducted. Some amendments to the Management Plan are now being made but there is no indication that these reflect the findings of a full assessment. SouthMAC's annual assessment of performance states that the DEWHA strategic assessment of the fishery conducted in 2007 constituted the five year review of effectiveness required by the HIMI Management Plan. The assessment team is of the view that the DEWHA assessment, which is conducted against specific ESD guidelines, does not meet the review requirements of the HIMI Management Plan, since it does not address all of the objectives of the Management Plan or the performance criteria specified in the Plan. However, the assessment team considers that there is a wide range of review and monitoring mechanisms in place for this fishery and considers that, taken together, these constitute regular internal and external review of all parts of the management system.

3.2.5 Trace References

CCAMLR (2009a), CCAMLR Performance Review Panel (2008), SouthMAC (2009)

12. CERTIFICATION RECOMMENDATIONS AND PERFORMANCE SCORES

The fishery achieved a normalized score of 80 or above on each of the three MSC Principles independently (Principle 1 – 80.6, Principle 2 – 87.0, and Principle 3 – 96.6). Although the evaluation team found the fishery in overall compliance (a normalized score of 80 or above on each MSC Principle), it also found the fishery's performance on 5 indicators (1.1.2, 1.2.2, 2.4.3, 2.5.1, & 2.5.3) to be below the established compliance mark (an un-weighted score of 80 for a single indicator). In these specific cases, the MSC requires that the Certification Body set 'Conditions for Continued Certification' that when met bring the level of compliance for the select indicator up to the 80-level score. Table 3 below shows the overall results of the evaluation for Principle 1, 2 and 3.

Table 3. Performance Indicator & Principle Scores

Principle	Wt (L1)	Component	Wt (L2)	PI No.	Performance Indicator (PI)	Wt (L3)	Weight in Principle		Score	Contribution to Principle Score		
							Either	Or		Either	Or	
One	1	Outcome	0.5	1.1.1	Stock status	0.5	0.25	0.333	0.1667	80	20.00	13.33
				1.1.2	Reference points	0.5	0.25	0.333	0.1667	75	18.75	12.50
				1.1.3	Stock rebuilding			0.333	0.1667			0.00
		Management	0.5	1.2.1	Harvest strategy	0.25	0.125			85	10.63	10.63
				1.2.2	Harvest control rules & tools	0.25	0.125			70	9.38	9.38
				1.2.3	Information & monitoring	0.25	0.125			90	11.25	11.25
				1.2.4	Assessment of stock status	0.25	0.125			90	11.25	11.25
Two	1	Retained species	0.2	2.1.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.1.2	Management	0.333	0.0667			90	6.33	6.33
				2.1.3	Information	0.333	0.0667			100	6.67	6.67
		Bycatch species	0.2	2.2.1	Outcome	0.333	0.0667			80	5.33	5.33
				2.2.2	Management	0.333	0.0667			90	6.00	6.00
				2.2.3	Information	0.333	0.0667			100	6.67	6.67
		ETP species	0.2	2.3.1	Outcome	0.333	0.0667			90	5.33	5.33
				2.3.2	Management	0.333	0.0667			90	5.33	5.33
				2.3.3	Information	0.333	0.0667			90	6.33	6.33
		Habitats	0.2	2.4.1	Outcome	0.333	0.0667			100	6.67	6.67
				2.4.2	Management	0.333	0.0667			100	6.67	6.67
				2.4.3	Information	0.333	0.0667			70	5.33	5.33
		Ecosystem	0.2	2.5.1	Outcome	0.333	0.0667			75	5.00	5.00
				2.5.2	Management	0.333	0.0667			80	5.00	
				2.5.3	Information	0.333	0.0667			70	4.67	
Three	1	Governance and policy	0.5	3.1.1	Legal & customary framework	0.25	0.125			90	11.88	
				3.1.2	Consultation, roles & responsibilities	0.25	0.125			100	11.88	
				3.1.3	Long term objectives	0.25	0.125			100	11.88	
				3.1.4	Incentives for sustainable fishing	0.25	0.125			100	11.88	
		Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.2	0.1			90	9.00	
				3.2.2	Decision making processes	0.2	0.1			100	10.00	
				3.2.3	Compliance & enforcement	0.2	0.1			100	10.00	
				3.2.4	Research plan	0.2	0.1			100	9.50	
				3.2.5	Management performance	0.2	0.1			95	9.00	

Overall weighted Principle-level scores		Either	Or
Principle 1 - Target species	Stock rebuilding PI not scored	80.6	
	Stock rebuilding PI scored		
Principle 2 - Ecosystem		87.0	
Principle 3 - Management		96.6	

13. ACTION PLAN FOR MEETING CONDITIONS

The Client for this fishery assessment and certification has submitted an Action Plan for meeting all conditions and requirements under the MSC program.

ACTION PLAN FOR MEETING THE CONDITIONS FOR CONTINUED CERTIFICATION

AUSTRAL FISHERIES PTY LTD.

Action Plan 1.1.2			
Conditional Requirement	How Meet	By Whom	When Completed
By the second annual surveillance, determine an explicit LRP that is appropriate for Mackerel Icefish, and demonstrate that it is set above the level at which there is an appreciable risk of impairing reproductive capacity.	Presentation of explicit LRP from AAD at SARAG and then CCAMLR resulting in a peer reviewed assessment to demonstrate it is an appropriate LRP.	AAD	By second annual surveillance

Action Plan 1.2.2			
Conditional Requirement	How Meet	By Whom	When Completed
By the third annual surveillance incorporate the LRP developed under Condition 1.1.2 into the harvest control rules so that the exploitation rate is reduced as this LRP is approached. Provide evidence to show that the currently applied harvest control rules are robust to uncertainties about the level of natural mortality, growth rates and size at first maturity, or develop and apply amended harvest control rules that are. Provide evidence that indicates that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.	As above, apply the LRP agreed by SARAG, CCAMLR and Australia into management for the HIMI icefish fishery via appropriate regulatory mechanism.	AAD, AFMA	By third annual surveillance meeting

Action Plan 2.4.3			
Conditional Requirement	How Meet	By Whom	When Completed
By the first annual surveillance audit, the client should provide some evidence that the nature of the impacts of the fishery on different types of habitats is known and that monitoring is ongoing to detect any increase in risk. This should include the completion of the ongoing study on habitat impacts in the region.	Provide results of 5 year study on benthic impacts assessment being undertaken by industry, AFMA, FRDC and AAD to surveillance audit team. Observer reports provided to surveillance audit team to demonstrate ongoing monitoring	AAD, AFMA, FRDC, industry combined Observer reports provided by industry	First annual surveillance audit for benthic program final report provision Ongoing for observer monitoring

Action Plan 2.5.1			
Conditional Requirement	How Meet	By Whom	When Completed
By the first annual surveillance audit, the client should provide some evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm. This should include the results of peer reviewed studies identifying the role of Icefish in the ecosystem, with particular attention to their role as prey items in the diets of higher level predators including marine mammals, fish, and seabirds and some evaluation of the risk associated with the current 75% escapement rule, and whether that is appropriate given the trophic structure of the system.	<p>Review of CCAMLR decision rules to ensure "the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function." which is peer reviewed, as is the SARAG process prior to that.</p> <p>Publication of papers and studies from the International Scientific Symposium on the Kerguelen Plateau.</p> <p>Publication of papers from the Heard Island Predator Prey Integrated Ecosystem Study.</p>	<p>AAD, for comment and input from SARAG and CCAMLR before implementation of any necessary actions by CCAMLR/AFMA.</p> <p>AAD and others on ecosystem studies.</p>	By first annual surveillance audit and also ongoing, as additional papers from the two major programs of work identified for being completed within the next year are expected to occur over the coming 5 years, with new studies also likely to come on stream.

Action Plan 2.5.3			
Conditional Requirement	How Meet	By Whom	When Completed
By the second annual surveillance audit, the client should provide evidence on the main impacts of the fishery on the key ecosystem elements. This should include evidence that the studies on the trophic role of Icefish have been completed.	<p>This will flow from determination of appropriately revised harvest strategy rules (see condition 1.1.2 and 1.2.2 above) and ongoing monitoring and research in the HIMI region and broader CCAMLR studies.</p> <p>There will also be additional evidence following publication of studies from the Kerguelen Scientific Symposium and the HIPPIES work at 2.5.1 above.</p>	AAD, following input from SARAG and CCAMLR.	Second annual surveillance audit.

14. PEER REVIEW, PUBLIC COMMENT AND OBJECTIONS

A peer review has been conducted by two peer reviewers. Their comments and the response to the comments by the team can be found in Appendix II. As required, scientists nominated as peer reviewers for this report are posted on the MSC web site for stakeholder comment. Also, a public comment period will be held, as well as a posting period for objections as required by the MSC.

15. MSC LOGO LICENSING RESPONSIBILITIES

As the “applicant” for certification of the fishery, Austral Fisheries Pty Ltd. is the only entity that has the right to apply for a license to use the MSC logo. It is also the case that Austral Fisheries Pty Ltd. has the right to approve the use of the logo for other quota holders in the fishery at its discretion and by a means that is considered fair and equitable (based on MSC requirements). The MSC as the logo license owner has the sole right and responsibility to review and enforce its requirements with regard to the fair and equitable sharing of access to the fishery certificate. SCS as the certification body does not have any obligations to review, approve, or enforce the MSC requirements in this regard.

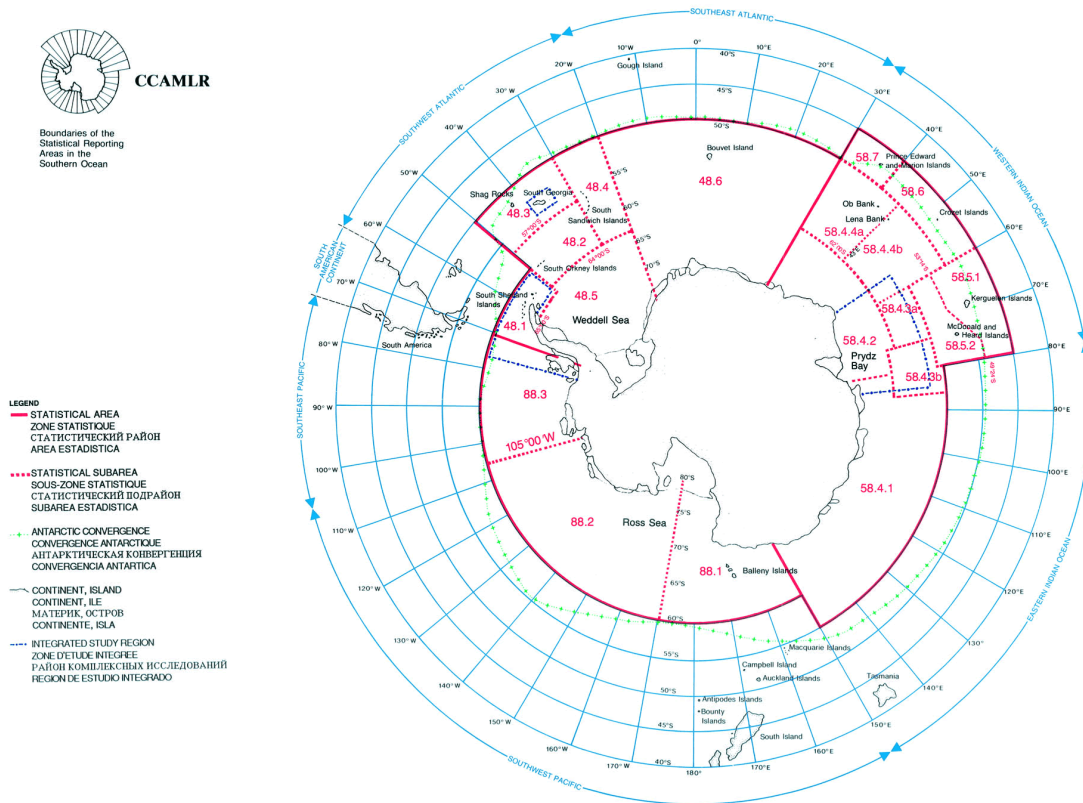
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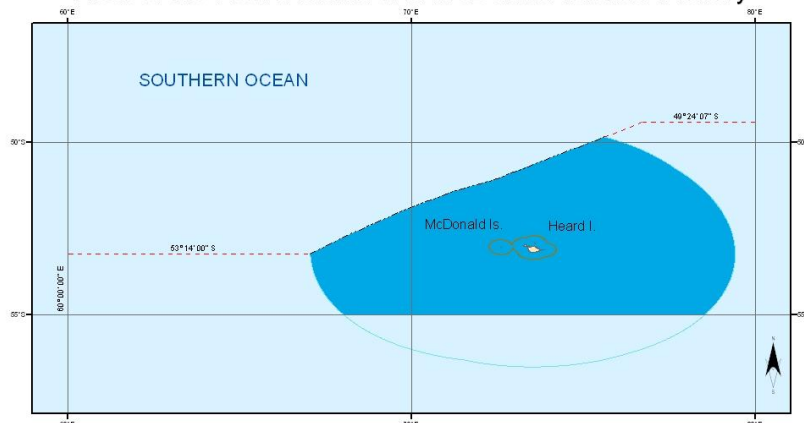
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APPENDIX I – GEOGRAPHIC LOCATION OF FISHERY



Area of the Heard Island and McDonald Islands Fishery



LEGEND

- Heard Island and McDonald Islands Fishery
- Land and coastline
- Limit of Territorial Sea (12nm)
- Limit of Exclusive Economic Zone (200nm)
- Treaty line
- Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) Boundary

Mercator Projection
Latitude of true scale: 53° S
Longitude of Central meridian: 71° E
Datum: GDA94

NOTES:

- The area of the Fishery is sourced from the Fisheries Management Regulations 1992 (February 2001).
- The maritime zone boundaries shown on this map are sourced from AMRIS 2001 (v1.1) (October 2001).

AFMA
Australian Fisheries Management Authority

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APPENDIX II – PEER REVIEW COMMENTS AND TEAM RESPONSES

Peer Reviewers Overall Opinion

Overall Opinion of the Report		
	Peer Reviewer 1	Peer Reviewer 2
Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	Yes	Yes
Peer Reviewer Justification	Although some discrepancies with the assessment team’s assessment of some PO’s have been identified (see PI review), none of these are likely to significantly change the overall weighted Principle-level scores of Principle 1, 2 and 3.	The assessment team’s assumptions, analyses of the fishery information provided and scoring appear to be appropriate for the fishery. The minimum performance standards for the three MSC principals have been met and I agree with their recommendations.
Team Response	No response required	

Overall Opinion of the Report		
	Peer Reviewer 1	Peer Reviewer 2
Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe?	Yes	Yes
Peer Reviewer Justification	Although some discrepancies with the assessment team’s assessment of some PO’s have been identified (see PI review), none of these are likely to significantly change the overall weighted Principle-level scores of Principle 1, 2 and 3.	If the carry over and newly worded conditions recommended by the assessment team are met by the client within the specified timeframe prior to the next annual surveillance audit, an SG80 score should be achieved for all performance indicators.
Team Response	No response required	

Peer Reviewers General Comments

Peer Reviewer General Comments (optional)	
Peer Reviewer 1	Peer Reviewer 2
<p>The reviewer's job would have been made easier with the addition of some exploitation and management history of the fishery. Summary tables of historic annual TAC's, catch levels, and annual biomass estimates of the spawning stock would provide the reviewer with important information to assist in evaluation some of the assessment teams evaluations. An example being the extent to which the 75% escapement clause is being met based on biomass estimates of the spawning stock, TAC's and catch and fishing mortality. A Table summarizing ETP species bycatch information (historic) would have also assisted in some of the evaluations. For some of the PI's, the assessment team's scoring rationale summary provided too little information to for the reviewer to adequately assess whether or not the various elements of the SG's were adequate to meet SG80 or other scores. Where conditions were applied, the information provided was too limited in places to assess whether the conditions would help achieve and SG80 level for the fishery.</p>	<p>The client's specific action plan for meeting each of the conditions for continued certification was not specifically provided in the assessment document (page 69). For the five performance indicators that had scores below the minimum acceptable SG80, the client's action plan appears to be dependent upon the completion of ecological modeling studies being undertaken by AFMA/AAD and CCAMLR and Management Strategy Evaluations that remain behind target. I would be more encouraged that the client will meet the existing conditions if detailed actions were specified.</p> <p>The assessment report was somewhat difficult to understand due mainly to the incorporation of the new version of the FAM used in this assessment and explanations of the differences in the score criteria from the previous version and conditions requirements. However, the scoring rationale was well laid out and explained by the assessment team and I generally agreed with all of their conclusions. I believe it would have been clearer to simply score the fishery under the new FAM and compare the overall score with the previous assessment.</p> <p>There were several inconsistencies on minor points between the description of the fishery and the actual scoring rationale descriptions. For example on page 16, Section 6.2.1 Retained Species, bycatch is reportedly ground to fish meal and discarded outside the fishing zone, whereas on page 38, 2.1.1 Scoring Rationale, it states both meal and whole fish bycatch are sold upon return to port. I would have also liked to see a table showing the range of recent allowable icefish TACs and actual harvests to judge the consistency of the stock production and/or stock assessment estimates and the performance of the fleet.</p> <p>I was somewhat confused by the statement that the assessment work occurs mid-season after up to 100 t of fish are harvested for vessel stability and yet the 2008/09 TAC for the entire fishery was apparently set</p>

at 102 t? Apparently, the entire TAC or most of the TAC can be caught before the annual stock assessment occurs. This greatly limits the ability of fishery managers to act quickly to reductions in stock size. There was no mention in the description of the fishery of in-season management plan with actions triggered by low commercial harvest CPUE or low abundance in the stock assessment survey, so I assume there is no in-season management of the stock. This is somewhat disconcerting given variability in recruitment and the unknowns of natural mortality and growth.

Team Response

A summary table of historic annual TAC's, catch levels, and annual biomass estimates of the spawning stock has been added to the report (new section 4.5).

Further explanation has been added about the circumstances under which some initial commercial catch is taken to use as ballast, highlighting the fact that both the fishery and the survey target Patagonian toothfish and mackerel icefish, that either may be used as ballast, and that survey catches are included in the TAC. An amendment has been made under 2.1.1. to clarify that fish meal and discarded outside the fishing zone.

The report already identifies the need for comparisons to be made of predicted abundance in one year with observed abundance the following year. Additional text has been added to suggest that if discrepancies are found to occur regularly then revisions to the harvest strategy and control rules may be needed. One option that could be explored would be the introduction of agreed in-season management responses to indicators of unexpected changes in abundance.

Peer Reviewers Comments Related to Scores and Rationales

Principle 1

Performance Indicator 1.1.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	As indicated in the assessment team's report, a score of 80 suggests no need to for Conditions	I agree with the assessment team's scoring of the performance indicator with one caveat

	<p>1.6, 1.7 and 1.10 to be attached to the latest assessment. Some of the outstanding issues in the some of these conditions are to be examined in other conditions under other PIs. Given the information provided, it is difficult to evaluate justification in their closure, other than the fact that the SG 80 level is deemed to be met.</p> <p>Clearly, meeting these conditions will improve the fishery's performance to the SG80 level, and will be essential if the fishery is to achieve a performance to the SG100 level.</p>	<p>concerning a lack of flexible inseason harvest controls to react to unexpected low stock abundance during the fishing year (see comments in PI 1.2.1 below). The TACs are based on fishery independent stock assessment survey conducted the previous year and although there are some uncertainties in the predictive capacity for the survey, the TACs appear to be set at such a conservative level as to produce a low probability of recruitment overfishing.</p>
Team Response	<p>Peer Reviewer 1 seems to be suggesting that previous conditions should remain regardless of whether they are required by the new FAM. We have agreed that this is not the case and I still agree with this position.</p>	

Performance Indicator 1.1.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	No	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	No	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	Yes	Yes
Peer Reviewer Justification	<p>Overall I rate the assessment of this performance indicator as highly subjective. TRP's set around the 75% escapement rule may well be appropriate and precautionary for Mackerel icefish, and the HIMI ecosystem. However, I cannot assess whether the assessment group's assumption that the 75% escapement clause is appropriate as a TRP (and takes into account the ecological role of the stock), is justified, supported by data or observation. No</p>	<p>I agree with the team's assessment that there is no explicit LRP that is currently appropriate for the Mackerel Icefish Fishery and the TRP of 75% escapement is actually also a LRP. The conservative nature of the TRP and the harvest control rules lead to a low risk of harvest removals impairing future escapement (with the caveat of the danger of a lack of inseason harvest rule adjustment—see comments on PI 1.2.1 below). I also agree the lack of a formal</p>

	<p>information is detailed in the assessment teams report regarding the ecological role of icefish on the the Kerguelen Plateau. All that is presented as supporting evidence (for a TRP equivalent to the 75% escape rule) is the assessment groups assumption that because “Icefish populations naturally reach very low levels, there can be no obligate predators that are reliant on the species.” Certainly some icefish predators are highly migratory and seasonal; as such icefish may be very important at specific times and places. For example Antarctic fur seal females predate heavily on icefish during the breeding season and its availability may critically limit reproductive success. Also, a very large population of itinerant male Antarctic fur seals move onto the plateau (HIMI area) to moult post-breeding season – during which time they predate significantly on icefish. Icefish availability may critically limit survival during this energetically important period in this fur seal population. I suggest the new Condition 1.1.2 is required to provide confidence in elements 1-3, and that a new condition be considered to address element 4. I disagree with the assessment team’s assessment that the fishery currently meets this element to SG80 standard. Trophodynamic and ecologically modelling is needed to address element 4. Given this the maximum score should not exceed 70 at this stage.</p>	<p>rule to reduce exploitation as the TRP is approached and a lack of investigation into the minimum biomass that must be maintained to support adequate recruitment is concerning.</p>
<p>Team Response</p>	<p>Peer Reviewer 1 has provided useful information on the predators of mackerel icefish which which has now been added the introductory sections of the report.</p> <p>This reviewer also suggests that conditions are needed to cover all the SG80 elements implying that none of them are met. This further implies a score of only 60 is appropriate</p>	

	<p>although a score of up to 70 is suggested. It is unclear therefore whether there are in fact SG80 elements that the reviewer considers are met, or whether the proposed score of 70 is based on a misunderstanding of the scoring system.</p> <p>The key concern seems to be for the fourth SG80 element, around the evidence needed to demonstrate that sufficient account has been taken of the ecological role of mackerel icefish in setting the target reference point. The suggested trophodynamic and ecological modeling is underway and Condition 2.5.1 already requires that this be used to examine the ability of the 75% escapement rule to meet the needs of broader ecosystem including predators. An additional but similar condition under this PI does not seem warranted.</p> <p>Even in the absence of such modeling or estimates, however, the assessment team still considers that the selected target reference point is appropriately conservative (both in the level at which it is set and way in which it is estimated) and takes sufficient account of the trophic status of mackerel icefish. The assessment team therefore considers that the assigned score is justified. The alternative, proposed by Peer Reviewer 1, would equate to a position that any catch level could be potentially critically limiting to the reproduction of some predators in some years. The assessment team considers this to be an unrealistically conservative view given the scale of the fishery.</p> <p>Nevertheless, in addition to Condition 2.5.1., and until the results of the ecological modeling are available, the assessment team recommends that regular reports on the status of, and trends in, populations of predators are obtained and examined for evidence of declines that might be exacerbated by fishing for mackerel icefish. Such information could then be taken into account as part of the assessment process, the setting TACs and any future reviews of the current harvest strategy for Mackerel Icefish.</p>
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Performance Indicator 1.1.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	NA
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	NA

Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	The new system only requires the PI to be scored if the stock is depleted – the assessment team considers the fished stock to be above the TRP and LRP and as such the PI is not relevant. In principal I support this assessment, however, given reference in section 1.1.2 and elsewhere in the report that 'icefish stocks both on the plateau and in other areas are considered overfished and have not recovered after many years with no fishing'; and that 'icefish populations naturally reach very low levels' I question the capacity for fishery scientists and managers to confidently discriminate between 'natural' and 'fishery induced' causes in stock declines (depletion).	NA
Team Response	I accept that in case of overfished stocks it would be difficult to determine the relative contribution of fishing and natural variability to the depletion. This issue is, however, not relevant to the stocks exploited by the fishery that is being assessed.	

Performance Indicator 1.2.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	No
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	No Conditions raised to improve the fishery's performance to the SG80 level.	I would have scored this performance indicator below 80 and recommended a condition to improve the score. While I agree with the assessment team that harvest

	<p>strategy is responsive to the state of stock as catch limits are based on annual fishery independent stock assessments, there appears to be no inseason management actions in place to react to unexpected declines in stock abundance over the year between the survey and the fishery. The fact that the fishery begins each year prior to the stock assessment survey (vessel stability given as a reason) indicates there is little opportunity to monitor actual stock abundance and compare with predicted abundance from the prior year survey. At the very least there would seem to be a need for monitoring of commercial harvest CPUE just prior to the survey and correlate that with historical CPUE/stock abundance relationships. Another approach might be real-time abundance estimations from the stock assessment survey to give an indication of actual versus predicted abundance. Inseason harvest controls would seem to be prudent given uncertainties in natural mortality, growth and ocean productivity.</p>
Team Response	<p>Further clarification has been added to the report to explain the timing of the survey, the subsequent assessment and the commercial fishing activity for the agreed TAC that results from this assessment. As mentioned above, in-season management measures may add value to the management arrangements if analyses indicate that the survey results in one year are not a good predictor of the biomass available in the following year. If it can be shown, however, that there is good correspondence between these quantities, revised harvest control rules should not be necessary.</p>

Performance Indicator 1.2.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the	Yes	Yes

fishery's performance to the SG80 level? (yes/no/NA)		
Peer Reviewer Justification	I concur that the new condition 1.2.2 will assist the fishery achieve performance to SG80 and above level.	I completely agree with the assessment team's scoring of this performance indicator at the SG70 level. Although the harvest control rules in place are consistent with the harvest strategy in the fishery management plan they do not insure the exploitation rate is reduced as the limit reference point is approached. The one year gap between the fishery independent survey assessment that results in setting the TAC and the fishery the following year, increases the potential or uncertainties in natural mortality, growth and ocean productivity to affect the resulting stock abundance being fished. Given these uncertainties that are not well understood, it is essential that the performance of the harvest control rules be assessed by a comprehensive comparison of predicted abundance in one year observed abundance the following year.
Team Response	No response required	

Performance Indicator 1.2.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	No	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Clearly there is some uncertainty whether condition 1.2 should be left open or closed. The report implies that if condition 1.2 were to stand,	There is no doubt that there is a comprehensive range of information available relevant to harvest strategies in the fishery. The 100%

	<p>then a score below SG80 would be appropriate; but closing the condition would enable a score at SG90 to be justified. The information provided in the assessment groups report is not sufficient for the reviewer to adequately evaluate the report's conclusion that there is now no need for any conditions to be left open under this PI. However, I do agree that there is excellent information available on the fisheries activities, and that due to this the fishery does meet the first element and most of the second element under SG100, and is therefore likely to meet the SG80 level. But given the unresolved issues over whether condition 1.2 should remain open or closed, I cannot evaluate the appropriateness of the assessment groups SG90 score under this PI, nor the justification to close the condition.</p>	<p>observer program, VMS, logbook program and inport offload monitoring provide excellent information on all fishery removals and effort. The fishery independent stock assessment survey provides annual estimates of stock status and collects relevant biological data. IUU fishing does not appear to be an issue in the fishery reducing uncertainty on target species removals. I understand and share with the assessment team's concern over a lack of information on uncertainties as they noted in performance indicator 1.1.1.</p>
<p>Team Response</p>	<p>Some of the requirements of the old Condition 1.2 remain as part of the new Condition 1.2.2. The elements of the old Condition 1.2 that are not part of this new condition (concerning environmental influences on stock dynamics) have been determined to have lesser influence on scores under the new FAM and are considered as part of the whole suite of information needed to support the harvest strategy. On balance, this suite of information has been assessed as being monitored sufficiently well to achieve a score of 90. A score at this level requires no further condition.</p> <p>One consequence of the decision to change to the new FAM is that the different SGs may have created the need for new conditions or, as in this case, made existing conditions redundant. Both actions would be appropriate but we have paid particular attention to the latter situation to ensure that significant risks have not been overlooked in the process.</p>	

Performance Indicator 1.2.4		
	Peer Reviewer 1	Peer Reviewer 2
<p>Has all the relevant information available been used to score this indicator? (yes/no)</p>	<p>Yes</p>	<p>Yes</p>
<p>Does the information and/or rationale used to score this indicator support the given</p>	<p>Yes</p>	<p>Yes</p>

score? (yes/no)		
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	The assessment report advocates that condition 1.5 no longer remain open, given changes to the PI's at the SG80 level. This seems reasonable, but is difficult to evaluate given the limited detail in the assessment report.	I agree with the assessment team's score of SG90 for this performance indicator. I am not sure I agree with the team's opinion that the CCAMLR review of the stock assessment doesn't comprise an external review, but I do agree that a completely independent review would be beneficial to the program. The assessment should be tested and its performance compared against other approaches. There have been a number of recent innovations in stock assessment including geostatistical stock assessment survey methodologies and analyses that may lend themselves to this fishery.
Team Response	Further details about the assessment have been added to the report to assist readers in evaluating the basis for the assigned score.	

Principle 2

Performance Indicator 2.1.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG80 for this PI. No Conditions raised to improve the fishery's performance to the SG80 level.	The fishery is management in a conservative, precautionary manner that is highly likely to avoid serious risk or irreversible harm to target or nontarget species. Conservative TACs are

		established for target and nontarget species and monitored by 100% observer coverage, complete retention and dock side monitoring of offoads to assure harvests to not exceed allowed limits. Inseason management actions occur to halt the fishery if target or nontarget TACs are exceeded and voluntary move-on harvest limits are in place to minimize impacts on nontarget species. The historical performance in the fishery presents evidence that the management strategies are working. The fishery would benefit by establishment of target reference points for nontarget species and development of stock assessments upon which bycatch in the fishery could be evaluated.
Team Response	No response required	

Performance Indicator 2.1.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG90 for this PI. No Conditions raised to improve the fishery's performance to the SG80 level.	There are adequate management strategies in place for monitoring and managing retained species both target species and bycatch. Move-on and closures of the fishery with TACs are met are both effective over harvest mitigation measures. Information in the fishery is supported by a 100% observer program, VMS and logbook program and an

		annual independent stock assessment survey provide fishery independent information on target species and some bycatch species. The lack of management strategy testing, the use of biological parameters from outside the fishery in GYM analysis and the lack of nontarget species impact assessments from the fisheries independent survey lessen the score for this performance indicator. It seems at least some of these deficiencies could be fairly easily remedied.
Team Response	No response required	

Performance Indicator 2.1.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG100 for this PI.	The 100% observer coverage and the lack of any IUU fishing in this fishery successfully meets the SG100 scoring value for this criteria.
Team Response	No response required	

Performance Indicator 2.2.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes

Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Good support provided to justify SG80 score of this PI. Clearly a lot of uncertainty remains in whether the catch rate non-target species is within biological limits.	I agree with the scoring of this performance indicator by the assessment team at SG80. There is a sufficient bycatch management strategy and monitoring program in place for the fishery and bycatch TACs and voluntary move-on rules allow assessment of the success of the bycatch strategy on an annual basis. One minor concern is the assumption that the trawl shots are catching 100% of the target and bycatch species in their path. That may not be the case based on my experience with bottom contact trawl gear. There may be some additional unmonitored bycatch mortality occurring due to contact with the gear that does not result in catch. The planned CCAMLR skate stock assessment work will allow the bycatch of these species in the Mackerel Icefish Fishery to be further evaluated at a population level.
Team Response	No response required	

Performance Indicator 2.2.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG90 for this PI.	I agree with the assessment team's conclusions that the performance indicator meets the SG 90

		score. The bycatch minimization and monitoring strategies in place in the fishery provide adequate information to assess the impact of the fishery on the bycatch species. The fact that it is based on only a subset of the bycatch species reduces the score somewhat, although catch monitoring appears to demonstrate that bycatch has remained reasonable low and consistent in recent years. The bycatch strategy appears to be effective.
Team Response	No response required	

Performance Indicator 2.2.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG100 for this PI.	The fishery has a 100% observer coverage and an annual independent stock assessment survey that provides adequate verifiable information on bycatch. The information is sufficient to compare actual bycatch with bycatch TACs to assess overall fishery impacts on bycatch species and direct the voluntary move-on rules in the fishery.
Team Response	No response required	

Performance Indicator 2.3.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available	No	Yes

been used to score this indicator? (yes/no)		
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	No	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	<p>The PI is about ensuring that current bycatch levels do not pose risk of serious or irreversible harm on ETP species and does not hinder their recovery. However, information provided in the assessment report is insufficient to justify a SG90 score under this PI. There appears an implicit assumption that because bycatch rates are low, impacts on species is sustainable and does not hinder recovery. Species information is needed here. i.e. what ETP species are caught, and what numbers. How do these numbers relate to current status of these species populations on the Kerguelen Plateau? Are bycatch levels likely to be sustainable and not hinder recovery given population status of these species and their population demography? Summaries of bycatch reduced to 'seabird' and 'marine mammal' categories are insufficient to judge if the PIs to SG80 level have been met for individual species.</p>	<p>I agree with assessment team's scoring of this performance indicator at SG90. Based on my knowledge of ETP impact mitigation measures in other trawl and longline fisheries, those employed in the Mackerel Icefish Fishery are appropriate and provide the maximum protection available with current technology. The actions taken in the fishery and the observer monitoring appear to be in compliance with both domestic Australian regulations and CCAMLR regulations on ETP species. The addition of indirect impacts on ETP species that may come from the completion of the food web studies would be helpful in making a full assessment of the fishery impacts on ETP species.</p>
Team Response	<p>The Ecological Risk Assessment for the fishery considered the impact to ETP species on a species-by-species basis. The risk assessment is based on an estimate of the proportion of the population exposed to fishing, and the impact of fishing interactions on the individuals and populations that are exposed. On this basis, none of the species which interact with the fishery were identified as being at risk.</p> <p>The reviewer raises the question of whether species by species data could be provided as part of the assessment to allow readers to evaluate the impact. However, assessors are limited to using data that is available in the public domain. There is currently no public domain data on</p>	

	<p>the catch rates of ETP species on a species level basis. As such, the assessors were limited to using the publicly available ERA and other documents which provided summaries of species level analysis, but did not provide data on the catch rates themselves.</p> <p>Wording was added to the justification for this performance indicator making it explicit that the risk analysis for the fishery did consider risks to ETP species on a species by species basis in the context of the biological limits of the species.</p>
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Performance Indicator 2.3.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG90 for this PI.	I agree with the score of SG90 for this performance indicator. The main ETP species group of concern is seabirds given the extremely low interaction and mortality rate of marine mammals in the fishery. The 100% observer data assures that ETP interactions and mortalities are accurately documented in the fishery and data shows the mitigation measures implemented have been successful in reducing ETP impacts. Based on my knowledge of ETP impact mitigation measures in other trawl and longline fisheries, those employed in the Mackerel Icefish Fishery are appropriate and provide the maximum protection available with current technology.
Team Response	No response required	

Performance Indicator 2.3.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	No	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	No	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	<p>Support is inadequate to justify SG90 score under this PI. Clearly, given 100% observer coverage, all ETP species interactions are being reported. But this PI is directed toward evaluating bycatch of individual species against their population status and vulnerabilities, and use such information support management strategies to manage impacts. I would suggest that there is sufficient information being collected to enable element one of SG80 to be achieved, and that there are data available to enable element two, SG80 to be met. The scoring rationale in the assessment report suggests it is not possible to assess the consequences of bycatch for seabird populations because there is no available data (presumably population data) on the affected species. I suggest this is an inaccurate summary for many bycaught seabird species, where there is some information on species distribution and abundance. No mention is made of marine mammals (I presume that only seals have been caught)? There certainly is enough information on the populations of both fur seals and elephant seals to achieve element one at SG80 level. As the assessment reports scoring rationale stands, I cannot support a score of SG90, or SG80 and suggest that based on the information present, an SG60 score is more appropriate.</p>	<p>The onboard 100% observer coverage assures complete and accurate coverage of fishing effort, ETP interactions and mortalities. There is sufficient information available from the fishery observer data to develop a management strategy to minimize ETP interactions, assess the effectiveness of the strategy but not to determine the outcome of the strategy in terms of the population status of the ETP species since information on their status is lacking. Management strategies implemented to date are consistent with those implemented in other similar fisheries for ETP protection.</p>

Team Response

The indicator is focused on information, and covers 3 elements: 1) information for development of the management strategy (e.g. what species are caught, where are they caught, what time of year); 2) information to assess the effectiveness of the management strategy (e.g. if weighted lines are used are less birds caught, if fishing is done later in the year are fewer birds caught, does vessel speed effect marine mammal contacts); and 3) information on the effect of the management strategy the “outcome status” of the ETP species. Thus, while this indicator does encompass information on the effect of the management strategy on species status, that is not the primary focus. In fact, the effect on the species status is only an explicit element for SG100.

We agree with the point of the reviewer that there is adequate information available to meet the SG80 guidelines for seabirds. There is certainly information on the number of birds killed (although this is not equivalent to mortality rate), how this is affected by the management strategies, and thus on the impact of fishing on the species. Quoting from the SG80 criteria, the emphasis in the second element which covers outcome status emphasizes that sufficient data are available and they are adequate to quantitatively estimate the impact of fishing on the species. Both of these are true, there is data on the impact (number of birds killed, etc.) and the data is of sufficient quality to make a quantitative estimate (e.g. CPUE, or in this case give 100% observer coverage, total birds killed per year). Equivalent information is available for marine mammals from the observer program, and thus they meet the SG80 criteria.

Turning to the SG100, the fishery meets the first two elements of the performance indicator. Element one refers to the quality of the information in terms of being able to estimate the outcome status. Comparing across scoring guideposts, at SG60 and 80 this first clause appears to focus on understanding whether the fishery is a threat to the species (e.g. can we estimate CPUE for a bycatch species). Assuming the intent is consistent across all three scoring guideposts this would lead to the interpretation that the first clause is focused on estimating the magnitude of the threat. Given that there is 100% observer coverage and all ETP interactions are recorded, it appears that this scoring guidepost clause is met. The second element under SG100 refers to information to support the design and evaluation of the management strategy. Again, as under SG80, there is adequate information for design and evaluation of the strategy. In reference to the reviewer’s comments on seabirds, element 3 of SG100 requires “Accurate and verifiable information on ... the consequences for the status of ETP species”. Given the requirement that this information – that is data on the consequences for the status of the species – be in the public domain it appears that the fishery does not meet this element. The team is unaware of any analysis of the effects of the current bycatch levels on the status of the

	<p>species. In essence this would require a species, and potentially population level, population model and interpretation of the effects of bycatch in the context of that model. A practical example would be a population viability analysis that gives indications of the IUCN status that would result from particular bycatch levels. To our knowledge there is no such information available.</p> <p>Based on this we felt the information available, which is the focus of this performance indicator, qualified for SG80, but did not quite reach SG100. In response to the reviewer's comments we modified the rationale of this indicator.</p> <p>Additional notes from Guidance document Page 44 section 7.1.8 under general guidance on section 2. There are 3 performance indicators for each component of principle 2, and the third one (in this case 2.3.3) is...“an Information PI that considers the nature, extent, quality and reliability of the monitoring and information that is relevant to (i) developing and implementing the management strategy and (ii) measuring the outcomes of the strategy.” Based on this the 3rd performance indicator (in this case 2.3.3) is focused on the information available to determine the outcomes of the management strategy (ie does it reduce impact) not the outcome for the species (e.g. what is its IUCN status as a result of the management strategy). The status of the species is the focus of first PI (2.3.1) under this component (.3) of principle 2.</p>
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Performance Indicator 2.4.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG100 for this PI.	I agree with the score of SG100 for this performance indicator. There are adequate reserves in the area and the bottom contact

		footprint of the fishery is small enough that no serious or irreversible is likely to occur from the fishery on a regional bioregional basis.
Team Response	No response required	

Performance Indicator 2.4.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG100 for this PI.	I agree with the score of SG100 for this performance indicator. The VMS and 100% observer program assures compliance with protection of regional habitat reserves and the fishery impacts only a small portion of the existing shelf habitat in the region.
Team Response	No response required	

Performance Indicator 2.4.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	Yes	Yes
Peer Reviewer Justification	Advice appears adequate to support SG70 for this PI. Condition 2.4.3 should help achieve an	I agree with the SG70 score and agree that if the studies on fishery impacts to habitats being

	SG80 level for this PI.	conducted are successfully completed, there should be sufficient information when combined with VMS and logbook data to assess the overall impact of the fishery on habitats. The impact study should be peer reviewed and the annual distribution of bottom contact fishing effort in the fishery relative to known marine habitats in the region included in stock assessment and risk analysis reports.
Team Response	No response required	

Performance Indicator 2.5.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	Yes	Yes
Peer Reviewer Justification	Advice appears adequate to support SG75 for this PI. Condition 2.5.1 should help achieve an SG80 level or higher for this PI. The issues of potential impacts on ecosystem structure and function are certainly challenging PI for this fishery. The assessment report indicates that research is progressing in this area. As indicated in my comments in PI 1.1.2 (above) there is significant issues that need to be addressed to satisfy this PI.	I agree with the SG75 score on this performance indicator. Condition 2.5.1 will be critical to meeting an SG80 score or higher. The ongoing studies should provide sufficient information to evaluate the risk of fishery impacts on habitats and trophic interactions.
Team Response	No response required	

Performance Indicator 2.5.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes, sort of?
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	The elements to satisfy SG80 under this PI are vague, and less able to be judged quantitatively. However, taking this into consideration, the advice appears adequate to support SG80 for this PI. I note that some of my concerns relating to 75% escapement clause and the ecological importance of icefish in the HIMI region (raised in PI 1.1.2) have been discussed here.	I had a little problem with the scoring on this performance indicator. I understand the assessment team's rationale that the 75% escapement goal provides a sufficient unharvested biomass to meet precautionary goals for icefish prey needs by higher predators, however, since there is little information available on the importance of icefish to these predators relative to changes in other prey abundance, it is difficult to be assured that 75% escapement meets these prey needs in every year. Its possible that ongoing ecosystem studies will shed more light on the importance of icefish in higher predators' diets, but I have some difficulty agreeing with the assessment team that just because the fishery has not exceed its catch limits that the strategy for protection ecosystem structure and function is successful. We simply don't have sufficient information on the role of icefish in the ecosystem to know this for sure. I suppose if Conditions 2.5.1 and 2.5.3 are met that information will be available to assess the appropriateness of the 75% escapement goal for ecosystem protection.
Team Response	In addition to Condition 2.5.1., and until the results of the ecological modeling are available, a	

recommendation has been made by the assessment team suggesting that regular reports on the status of, and trends in, populations of predators are obtained and examined for evidence of declines that might be exacerbated by fishing for mackerel icefish.

Performance Indicator 2.5.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	No	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	Yes	Yes
Peer Reviewer Justification	<p>There are some problems with some of the statements in the scoring rationale. In particular, the statement that "...there is no published information on the diet of icefish or the role of icefish in their predator's diets. Due to this lack of information, it is not possible to place the impacts of the fishery in context, in terms of their significance for the ecosystem" is false. Some information is available on the diet of icefish on the Kerguelen Plateau (see Duhamel and Hueau 1985). Also, there is information on the role of icefish in the diets of gentoo, macaroni and king penguins at Heard Island (Klages et al. 1990, Moore et al. 1998, Klages et al. 1989), and Antarctic fur seals at Heard Island (several papers by Ken Green and others, Finger 2003 and Goldsworthy et al. 2010). I am aware of additional data collected as part of a major AAD expedition to Heard Island in 2003/04; presumably some of these data sets are available to assist such an</p>	<p>Currently the impacts of the fishery on the ecosystem are estimated solely from harvests of target and bycatch species. Management assumes 100% of species in the path of the trawl net are captured by the gear, which may or may not be accurate. Unobserved additional target species and bycatch mortality could occur in the fishery due to contact with the gear not resulting in catch. Information on the role of icefish in the ecosystem both as a predator and prey and the impact of the trawl gear on the seabed is important in assessing the overall fishery impacts on the ecosystem. Current studies underway by CCAMLR and AFMA/AAD may answer some of these questions particularly on food web interactions. The precautionary measures on target and bycatch species harvest appear to be adequate to achieve the score of SG70 for this performance indicator. Completion of the ongoing studies, publication, peer review and incorporation of the results into</p>

	evaluation under this PI. Condition 2.5.3 should help increase the fisheries performance under SG80, but the wording of the condition is very vague in terms of what information the ‘impacts of the fishery on the key ecosystem elements’ actually constitutes. If this was more explicit, it would assist the external reviewer’s determine if the findings satisfy the condition.	the fishery management plan will be critical in achieving an SG80 score or higher.
Team Response	<p>Based on comments by the reviewer we revised the section to account for literature that exists but was not provided to the team at the onsite meeting. Given a report in the literature of potential effects of icefish fishing on penguin population dynamics in the region, the team felt that the information was still not adequate to understand the potential threat. We reworded the rationale of this PI and considered the additional references given.</p> <p>In reference to the data from the AAD expedition from 2003/4, the results from that expedition have not been released into the public domain at this time. Thus, while the studies have been undertaken and analysis appears to be ongoing, the information is not available for use in the assessment.</p>	

Principle 3

Performance Indicator 3.1.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery’s performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG90 for this PI.	I was somewhat surprised that the assessment team did not score this performance indicator at an SG95 or SG100 level. Australian fishery management has well established administrative and legal system that allows appeals of fishery management decisions, although apparently they

		have never been tested in the Mackerel Icefish Fishery. I am also familiar with CCAMLR's consensus decision-making approach to conflict resolution that to date has avoided implementation of dispute resolution procedures as outlined in Article XXV. I was not aware of the Performance Review recommendation to improve Article XXV procedures but the current system appears to be effective.
Team Response	The HIMI Mackerel Icefish Fishery meets second scoring element of SG100 fully. The third element of SG100 is not relevant to this fishery since there are no customary rights to be taken into account. The rationale for not scoring higher than 90 is based on the fact that CCAMLR's dispute resolution processes are untested and that improvements to these processes have been recommended, but not yet acted upon, therefore not all requirements of the first scoring element are met. Since there are only two relevant scoring elements and since partial scores of a scoring element is not permitted in these circumstances, the score cannot be higher than 90.	

Performance Indicator 3.1.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG100 for this PI.	Although complicated by a number of national and international organizations, the responsibilities and functions of each in the Mackerel Icefish Fishery management are clear and rational. The assessment team found that the administrative and consultation process in place seems to work well. I am familiar with the CCAMLR process for other Antarctic fisheries

		and I agree is functions well and allows for engagement of stakeholders in a variety of venues from policy to science and management.
Team Response	No response required	

Performance Indicator 3.1.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery’s performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG95 for this PI.	I agree with the assessment team that the HIMI Management Plan provides specific long-term objectives for the fishery that are consistent with MSC Principles of sustainability and ecosystem-based precautionary approach. CCAMLR has an outstanding record of assuring compliance with these principals in Antarctic fisheries.
Team Response	This indicator has been re-scored to 100. The score of 95 had taken into account that the CCAMLR Performance Review Panel recommended that measures on fishing gear impacting seabed habitat be further developed and refined, particularly with respect to linkages with research and monitoring, and that explicit consideration be given to management responses in the event of adverse environmental conditions. However, the scoring element for SG100 requires that there are “clear long-term objectives” that are “explicit within and required by management policy”. This is clearly the case for the HIMI Mackerel Icefish Fishery. Implementation of these objectives, which is what is considered by the Performance Review, is more properly, and has been, considered under P1 and P2 indicators.	

Performance Indicator 3.1.4		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG100 for this PI.	The vessel cap, annual TAC and allocation of ITQs provides adequate assurances of social and economic incentives to conduct the fishery in a sustainable manner. Bycatch limits and self-enforced inseason effort redistribution provides adequate incentives to minimize impacts of the fishery on non-target species.
Team Response	No response required	

Performance Indicator 3.2.1		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG90 for this PI.	I agree with the SG90 score from the assessment team. Although long-term objectives for the fishery are clear and specific in the HIMI Management Plan and the CCAMLR Convention, short-term objectives, while implicit by the overall goals of the fishery

		manage plan, are somewhat vague particularly in regards to minimization of bycatch and habitat protection. Perhaps the goals and actions to protect bycatch species in the Mackerel Icefish Fishery identified in the Ecological Risk Management Report could be strengthened and made clearer.
Team Response	No response required	

Performance Indicator 3.2.2		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG100 for this PI.	Advice on fishery management measures provided by South MAC and SARAG assures compliance with AFMA legislative objectives and considers CCAMLR recommendations. The decision making process appears to be transparent, available for stake-holder input and compliant with the precautionary approach.
Team Response	No response required	

Performance Indicator 3.2.3		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given	Yes	Yes

score? (yes/no)		
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG100 for this PI.	The annual Compliance Risk Assessment for fisheries in the HIMI, including the Mackerel Icefish Fishery, conducted by AFMA combined with the comprehensive fishery monitoring program of VMS, 100% observer coverage, logbook programs and inport monitoring of offloads assures compliance with management measures. Australian and French surveillance to prevent IUU fishing should be adequate to prevent unreported harvests.
Team Response	No response required	

Performance Indicator 3.2.4		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG100 for this PI.	The Antarctic Fisheries Strategic Research Plan 2008-2013 developed by SARAG appears to provide an adequate collection of fishery and biological data to assess the informational needs of the management team. Review of research needs and accomplishments of the research plan by the CCAMLR Scientific Committee assures that research needs for the Mackerel Icefish Fishery relative to the those for the region are met.
Team Response	No response required	

Performance Indicator 3.2.5		
	Peer Reviewer 1	Peer Reviewer 2
Has all the relevant information available been used to score this indicator? (yes/no)	Yes	Yes
Does the information and/or rationale used to score this indicator support the given score? (yes/no)	Yes	Yes
Will the condition(s) raised improve the fishery's performance to the SG80 level? (yes/no/NA)	NA	NA
Peer Reviewer Justification	Advice appears adequate to support SG95 for this PI.	The performance criteria in the HIMI Management Plan adequately assesses the performance of fishery management system against the objectives for the fishery. Reviews by SouthMAC, AFMA, SARAG, AAD and the CCAMLR provide more than sufficient outside overview of the fishery management system to warrant the SG90 score received.
Team Response	No response required	

Additional Comments from Peer Reviewers

Additional Comments	
Peer Reviewer 1	Peer Reviewer 2
None.	I agree with the assessment team's opinion that the fishery should be re-certified under MSC principals as evaluated in the latest FAM.
Certifying Body Response	
No response required	