Marine Stewardship Council (MSC) Expedited Assessment for extension of scope
Final Report

Fishery for toothfish (*Dissostichus eleginoides*) around Crozet Island

On behalf of SARPC

Prepared by ME Certification Ltd

NOVEMBER 2016

Authors: **Dr Jo Gascoigne**
Dr Sophie des Clers
Dr Jean-Claude Brêthes

ME Certification Ltd
56 High Street, Lymington
Hampshire SO41 9AH
United Kingdom
Tel: 01590 613007
Fax: 01590 671573
E-mail: info@me-cert.com
Website: www.me-cert.com

Contents

1. Glossary

Term/acronym	Definition
AAMP	Agence des Aires Marines Protégées (French MPA Agency)
ACAP	Agreement on the Conservation of Albatrosses and Petrels
C3P	Comité des bonnes pratiques de la pêche palangrière (TAAF Longline fishery Best Practice Committee)
CASAL	C++ algorithmic stock assessment laboratory
CBC	Code de Bonne Conduite (code of good conduct) for minimising bycatch
CC	Conseil Consultatif (TAFF)
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CEBC-CNRS	Centre d'Etudes Biologique de Chizé (research on birds and marine mammal fisheries interactions)
CEMR	Compagnie des Experts Maritimes de la Réunion (catch landing certificates)
CNRS	Centre National de la Recherche Scientifique
COPEC	Contrôleur de Pêche
CoC	Chain of Custody
CPUE	Catch Per Unit Effort
CROSS-RU	Centre régional de Surveillance et de Sauvetage de La Réunion (MEDDE)
DCPN	Direction de la Conservation du Patrimoine Naturel (TAAF)
DMSOI	Direction de la Mer - Sud de l'Océan Indien (MEDDE)
DPMA	Direction des Pêches Maritimes et de l'Aquaculture (MEDDE)
DPQM	Direction des Pêches et des Questions Maritimes (TAAF)
EEZ	Exclusive Economic Zone
ETP	Endangered Threatened Protected (species)
FAM	Fishery Assessment Methodology (MSC scheme document)
FCR	Fisheries Certification Requirements (MSC scheme document)
GRT	Gross Tonnage
GTPA	Groupe de Travail Pêche Austral
HCR	Harvest Control Rule
HIMI	Heard Island and MacDonald Islands (Australia)
IPEV	Institut Paul Emile Victor (French Polar Research Institute)
IRCS	International Radio Call Sign
IUU	Illegal, Unreported, Unregulated

LRP	Limit Reference Point
LTL	Low Trophic Level (species)
MCS	Monitoring Control and surveillance
MEC	ME Certification Ltd
MEDDE	Ministère de l'Ecologie, du Développement durable et de l'Energie
MEP	MacAlister Elliott and Partners Ltd
MNHN	Muséum National d'Histoire Naturelle (in Paris)
Nm	Nautical mile
MOM	Ministère d'Outre-Mer
MPA	Marine Protected Area (=AMP Aire Marine Protégée)
PCR	Public Certification Report
PI	Performance indicator (of the MSC Standard)
RFMO	Regional Fisheries Management Organisation
SARPC	Syndicats des Armements Réunionnais de Palangriers Congélateurs
SG	Scoring Guidepost
SSB	Spawning Stock Biomass
TAAF	Terres Australes et Antarctiques Françaises
TAC	Total Allowable Catch
TRP	Target Reference Point
UoA	Unit of Assessment
UoC	Unit of Certification
VME	Vulnerable marine ecosystems
VMS	Vessel Monitoring System
WG-FSA	CCAMLR Working Group on Fish Stock Assessment
WG-IMAF	CCAMLR Working Group on Incidental Mortality Associated with Fishing

2. Executive Summary

The expedited assessment was conducted by Dr Sophie des Clers, Dr Jo Gascoigne and Dr Jean-Claude Brethes.

The expedited assessment is for an extension of scope to the SARPC Toothfish fishery, fishing off Kerguelen Island by demersal longline (MEP-F-018), to include an additional UoA: the SARPC Crozet toothfish fishery in the French EEZ (CCAMLR Subarea 58.6).

To support MEC's proposal for an expedited audit of the SARPC Crozet toothfish fishery, a gap analysis was carried out, assessing the degree of overlap between the Kerguelen (CCAMLR Division 58.5.1) toothfish and Crozet toothfish fisheries. The analysis revealed that vessels and companies are exactly the same for both Units of Assessment (UoAs). The two fisheries use the same fishing gear and habitat types and ecosystem are extremely similar. Principle 3 is considered to be common to the two fisheries. The legal framework and local management are governed by the same process/organisations (TAAF and CCAMLR). The gap analysis and subsequent MSC response can be seen in Appendices 3 and 4 of this report.

From the gap analysis and condition stipulated as per variation request that was granted for the expedited audit to take place, the expedited assessment involves:

- A full assessment of Principle 1 Performance Indicators (PIs) for the Crozet UoA;
- For Principle 2 a detailed analysis and selection by the team of the main bycatch/retained species and ETP species on the basis of the data available in the Crozet fishery (not just assuming they will be the same);
- A review of up-to-date information for Principle 3 PIs.

The expedited assessment was conducted against the FAM version 2 assessment tree, because the original assessment (Kerguelen) was completed against this version.

A review of up to date information and data was conducted for all three principles. Where required for Principle 1 and 2, and as necessary for Principle 3, Performance Indicators have been rescored for the Crozet UoA.

The main strengths for this fishery are that the stock is in good condition. The fishery takes place inside the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR) area and is managed in accordance with the CCAMLR precautionary management strategy. Historical management problems from IUU fishing, protected birds bycatch and depredation from marine mammals are successfully addressed. The individual vessel observer programme provides confidence that all management measures are effective and implemented and that ample data are collected. Finally, the fishing companies grouped within the SARPC client group have already been pro-active to make the neighbouring Kerguelen toothfish longline fishery MSC certified and are highly motivated to contribute to the fishery's sustainable management. In particular, the client group has been funding research and fisheries surveillance campaigns, collects and submits voluntary information on fishing operations and has been very diligent to implement measures to reduce interactions with non-target species, ETP species and habitat.

The main weak points for the fishery are that there are no fishery-independent data on stocks of target and other retained and bycatch species, because unlike Kerguelen, research trawling is impossible at Crozet. This also presents a problem for mapping of vulnerable marine ecosystems. However, extensive areas around Crozet are closed to fishing, providing a significant measure of protection even in the absence of good data. Another issue is that the Harvest Control Rule (i.e. setting the TAC), and the decision-making process (e.g. around allocating individual quotas from the TAC) is not transparent or well-defined, although post-hoc analysis suggests that the TAC is precautionary. Finally, although a code of practice to limit bycatch is in place, there has not so far been any analysis to determine whether or not it is working.

Under the assessment, the aggregate scores for this fishery are as follows: Principle 1 – 81.3, Principle 2 – 83.0 , Principle 3 – 83.1 . No PI scored below 60. The assessment team has therefore concluded that the fishery should be certified as MSC subject to peer and stakeholder review.

Five performance indicators scored in the range 60-80 and are therefore subject to conditions. These take account of the four conditions set for the Kerguelen fishery (MEP, 2013) and the specificities of the fishery in Crozet. Where corrective action is shared between conditions, the conditions were combined, as summarised in the table below. Three recommendations were also put forward by the team, on implementation of the 'code of good practice' (CBC), sourcing of bait, and a review of quota allocation procedures in relation to unsustainable fishing practices.

Condition	PI	Score	Justification
Condition 1 and 5 – Harvest control rules and Decision-making processes	1.2.2	65	By the end of Year 3 (to coincide with Kerguelen re-certification), the fishery must have in place a set of Harvest Control Rules defined in the Management Plan, associated with established decision-making processes based on these HCRs and objectives which are clearly explained to fishery stakeholders.
	3.2.2	75	
Condition 2 and 3 – Strategy and information to manage the fishery's impacts on grenadiers and rays	2.1.1	60	By the end of Year 4, the data available on the bycatch of the fishery (main retained species – *Macrourus carinatus* and *Amblyraja taaf*) from Avistock and Avipeche should be analysed to evaluate whether the targets of the CBC (Code de Bonne Conduite - code of good conduct) in terms of bycatch reduction have been met. If the CBC has not been 'demonstrably effective' new or additional measures should be put in place or action otherwise taken such that the fishery is able to demonstrate that these species are within biologically-based limits or that the fishery is not hindering recovery.
	2.1.3	75	

Condition 4 – Habitats information / mapping	2.4.3	75	By the end of Year 2, the observer data on bycatch of VME indicator organisms should be archived, analysed and mapped on an ongoing, periodic basis, so as to build up over time an improving picture of the location of VMEs in the Crozet fishing zone. This may be done by the TAAF, the MNHN or any body with suitable expertise.

3. Authorship and Peer Reviewer

The authors of this report (MEC assessment team) are:

Dr Sophie Des Clers (Team Leader): Dr des Clers has a PhD in Biometrics from the Université Lyon I, France and an MSc in Public Policy from the University College London. She has over 20 years' experience working in the fisheries sector. Sophie's career has focused on management-based analysis of fisheries in the UK, Europe and around the world. In total, Sophie has over 5 years' relevant P3 experience in relation to the EU and ICES based management; acting as a P3 auditor for 10 separate assessments. In total, Sophie has completed around 14 separate MSC assessments and these include UK Fisheries Ltd/DFFYU/Doggerbank saithe and Comapêche and Euronor cod and haddock. She is a fully qualified MSC Team Leader and has been lead auditor in the ongoing MSC full assessment of the PFA, DPPO, KFO, SPSG & Compagnie des Peches St Malo Northeast Atlantic blue whiting pelagic trawl fishery. She therefore has an in-depth understanding of the MSC fisheries standard and MSC fisheries certification requirements. During her experience as an MSC auditor, Sophie has also gained a great deal of experience in interviewing and facilitation techniques. Sophie was also a member of the assessment team for the initial MSC full assessment of the SARPC Toothfish fishery in 2013 and subsequent first annual surveillance audit in 2014. Dr Sophie Des Clers has recently completed the required Fishery Team Leader MSC training modules for the new V2.0 Fisheries Certification Requirements. Sophie was responsible for Principle 3 in addition to her Team Leader duties.

Dr Joanna Gascoigne: Dr Gascoigne is a former research lecturer in marine biology at Bangor University, Wales and a shellfisheries expert, with over 20 years' experience working in the fisheries sector. Dr Gascoigne has a PhD from the Virginia Institute of Marine Science in the USA, which was completed on the Allee effects of the queen conch, *Strombus gigas*.

She is a fully qualified MSC Team Leader and has been involved as expert and lead auditor in over 15 MSC pre- and full assessments. She is currently involved in a number of ongoing full assessments including the FROM Nord North Sea and Eastern Channel pelagic trawl herring fishery and the Granville Bay Basse Normandie whelk fishery. Jo was responsible for Principle 2 on this assessment.

Prof. Jean-Claude Brêthes has a PhD in Oceanology from the University of Aix-Marseille-II (France). He has been a professor for over 35 years, firstly at the Oceanography Department at the Université du Québec à Rimouski (UQAR) and since 1999 at the Institute of Marine Science Rimouski (ISMER). Outside of his professorship, Jean-Claude was the Vice-Chairman for the Fisheries Resource Conservation Council (FRCC) Canadian Advisory Board for the Ministers of Fisheries and Oceans from 1995 to 2001, where he provided recommendations for Atlantic groundfish conservation on Total Allowable Catches. In addition to this, he has also been a member for the Canadian Scientific Advisory Council Department of Fisheries and Oceans, Canadian Atlantic Fisheries Advisory Council and Quebec Aquaculture and Fisheries Council. More recently, Jean-Claude has acted as a scientific expert for the assessment of Northern Gulf of St. Lawrence Snow Crab stocks. He has also chaired a number of workshops and regional advisory processes for the assessment of Canadian crustacean and demersal fish stocks. Internationally, he has worked in Mauritania, Madagascar, and Tunisia and on coastal fisheries in the Northern Mediterranean Sea. Jean-

Claude has also taken part in a number of MSC assessments including the Gulf of St. Lawrence Northern shrimp trawl fishery, Bay of Fundy, Scotian Shelf and Southern Gulf of St. Lawrence lobster trap fishery and Euronor saithe fishery. Jean-Claude was responsible for the Principle 1 components on this expedited assessment.

The peer reviewer for this assessment was **Indrani Lutchman**:

Indrani Lutchman is a marine biologist and fisheries scientist with 25 years' experience of designing, leading and delivering projects relating to marine and fisheries conservation in the Europe, Caribbean, Antarctica, and UK Overseas Territories including Bermuda, Falklands Islands and Gibraltar. She has a long track record of working with stakeholders and policy makers in high level negotiations of multi-lateral agreements at the UN, FAO and Regional Fisheries Management Organisations (RFMOs). She has a well-established reputation with international and national NGOs and fishers and has successfully led multi-national policy research projects and interdisciplinary teams. Her expertise covers diverse aspects of fisheries and maritime policies and includes both desk-based research as well as the provision of strategic and political advice.

4. Description of the Fishery

4.1 Unit of Assessment (UoA) and Scope of Certification Sought

4.1.1 UoA and Proposed Unit of Certification (UoC)

MEC confirms that the fishery under assessment is within the scope of the MSC Fisheries Standard (7.4 of the MSC Certification Requirements v2.0):

- The target species is not an amphibian, reptile, bird or mammal;
- The fishery does not use poisons or explosives;
- The fishery is not conducted under a controversial unilateral exemption to an international agreement;
- The client or client group does not include an entity that has been successfully prosecuted for a forced labour violation in the last 2 years;
- The fishery has in place a mechanism for resolving disputes, and disputes do not overwhelm the fishery;
- The fishery is not an enhanced fishery as per the MSC FCR 7.4.3; and
- The fishery is not an introduced species-based fishery as per the MSC FCR 7.4.4.

The UoC and UoA are the same in this assessment as there are no other eligible fishers. It was decided to expand the original scope of certification for this fishery (which includes the toothfish longline fishery in the Kerguelen French national waters only and is currently certified under MEC-F-018) to also inlcude the Crozet toothfish stock because of its major overlaps: the target species, fishing gear, management system and client group are all the same as in the currently certified SARPC toothfish UoA. The Crozet UoA under assessment here is merely looking at a different stock of toothfish, and expanding the scope of certification to the waters around Crozet Island, not just Kerguelen Island. The two toothfish stocks are considered to be distinct from one another with no geographical overlap or mixing, and because of this the Crozet toothfish stock was not previously assessed as P1 or P2 species in the Kerguelen assessment process. The final scope of certification will thus cover both the Kerguelen UoA and the Crozet UoA as shown in Table 1.

Table 1. Proposed new scope of certification Note: only the UoA in bold is being assessed as part of this expedited assessment.

Species	Toothfish (*Dissostichus eleginoides*)
Geographical range	UoA1: TAAF EEZ Kerguelen UoA2: TAAF EEZ Crozet
Method of capture	Bottom-set longline
Stock	UoA1: Kerguelen toothfish stock UoA2: Crozet toothfish stock
Management system	Commission on the Conservation of Antarctic Marine Living Resources (CCAMLR)

Client group	Syndicat des Armements Réunionnais de Palangriers Congélateurs (SARPC)
Other eligible fishers	None

4.1.2 Final UoC(s)

(PCR ONLY)

The PCR shall describe:

a. The UoC(s) at the time of certification.
b. A rationale for any changes to the proposed UoC(s) in section 3.1(c).
c. Description of final other eligible fishers at the time of certification.

(References: FCR 7.4.8-7.4.10)

4.1.3 Total Allowable Catch (TAC) and Catch Data

The Crozet UoA Total Allowable Catch (TAC) for the fishing season 2015-2016 is 1,000 tonnes (Table 2), compared to 5,300 tonnes for the Kerguelen fishery (TAAF, 2015e). It was increased from 850 tonnes for the season 2014-2015 following the development of a Crozet-specific stock assessment model (see section 5.2). Historically, the vessels have often not been able to catch the TAC in full around Crozet, mostly because of the smaller fishing grounds combined with difficult weather conditions and large distance from the Kerguelen fishing zone where the main fishery occurs (see Figure 1).

Table 2. TAC and Catch Data for the Crozet EEZ

TAC	2015-16	1000 tonnes
UoA share of TAC	2015-16	1000 tonnes
UoC share of total TAC	2015-16	1000 tonnes
Total green weight catch by UoC	2014-15	840 tonnes
	2013-14	712 tonnes

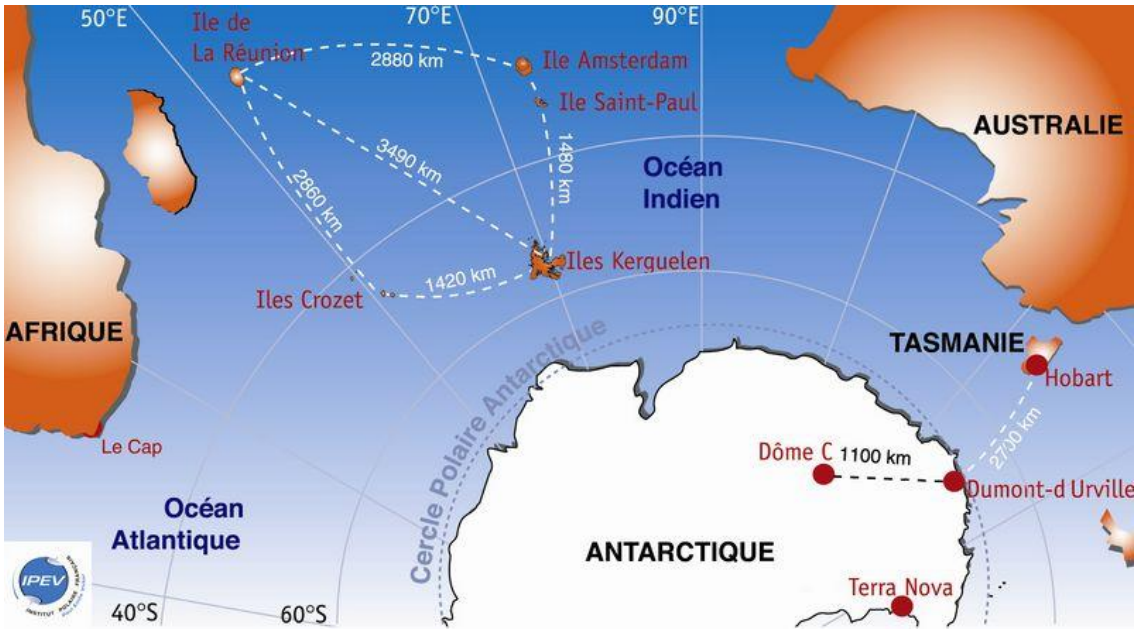


Figure 1. Map of Crozet and Kerguelen (source: IPEV).

4.2 Overview of the fishery

The TAC is set by the TAAF, a territorial administration covering both Crozet and Kerguelen, following scientific advice from the Museum National d'Histoire Naturelle (MNHN) and 'avis' (advice) from other parts of the French government.

The fishery operates by demersal longline. The annual TAC is divided into individual vessel quotas for the seven vessels in the fishery listed in Table 3, on the basis of historical rights and individual vessel environmental performance to reduce impacts on birds, Endangered Threatened and Protected (ETP) species and habitats.

Table 3. Licensed longliners in the SARPC toothfish fishery

Fishing company	Vessels	IRCS	GRT	Length (m)
SAPMER	Croix du Sud I	FNHQ	1,654	*54.30*
	Albius	FPXK	1,295	55.49
	Ile Bourbon	FOSP	1,295	55.49
	Mascareignes III	FOVB	1,295	55.49
Cap Bourbon*	Cap Horn I	FQBI	1,295	55.49
	Cap Kersaint	FISH	2,086	59,45
SNC COMATA	Ile de la Réunion	FQBU	1,295	55.49
Pêche Avenir	St. André	FNTD	1,282	56.40

* Planned vessel replacement

The expedited assessment is for an extension of scope to the SARPC Toothfish fishery, fishing off Kerguelen Island by demersal longline (MEP-F-018), to include an additional UoA: the SARPC Crozet toothfish fishery in the French EEZ (CCAMLR Subarea 58.6).

To support MEC's proposal for an expedited audit of the SARPC Crozet toothfish fishery, a gap analysis was carried out, assessing the degree of overlap between the Kerguelen (CCAMLR Division 58.5.1) toothfish and Crozet toothfish fisheries. The analysis revealed that vessels and companies are exactly the same for both UoAs. The two fisheries use the same fishing gear and the ecosystem and habitat types are extremely similar. Principle 3 is considered to be common to the two fisheries. The legal framework and local management are governed by the same process/organisations (TAAF and CCAMLR). The gap analysis and subsequent MSC response can be seen in Appendices 3 and 4 of this report.

From the gap analysis and condition stipulated as per the variation request that was granted for the expedited audit to take place, the expedited assessment involves:

- A full assessment of Principle 1 Performance Indicators (PIs) for the Crozet UoA;
- For Principle 2 a detailed analysis and selection by the team of the main bycatch/retained species and ETP species on the basis of the data available in the Crozet fishery (not just assuming they will be the same);
- A review of up to date information for Principle 3 PIs.

The expedited assessment is conducted against the FAM version 2; the original assessment having been completed against this version.

A review of up to date information and data is conducted for all three principles. Where required, for Principle 1 and 2, the appropriate PIs will be rescored for the Crozet UoA, and Principle 3 PIs will be updated.

5. Principle One: Target Species Background

5.1 Target species and population

The target species is Patagonian toothfish *Dissostichus eleginoides* (Figure 2). Patagonian toothfish (also sold as Chilean seabass) is a bentho-pelagic species which inhabits sub-Antarctic waters near the Antarctic Convergence in the Pacific, Atlantic and Indian Oceans. *D. eleginoides* is found at depths of between 200 and 2,500 m, with individuals migrating to increasingly deeper water as they grow larger (Rogers et al., 2006).

The species' geographic distribution ranges from 30ºs in the Pacific, to Cape Horn, along the coast of Argentina, off southern Patagonia, the Falkland Islands, South Georgia, Shag Rocks and the islands of the Scotia Arc, to shelves and seamounts of the Indian sector, Crozet, Kerguelen-Heard Ridge, Bouvet Islands and Macquarie Island (García de la Rosa et al., 1997).

Figure 2. Patagonian toothfish (Dissostichus eleginoides) (source: http://www.patagonian-fisheries.com).

The extent to which Patagonian toothfish populations are separated is not well understood (CCAMLR, 1995). Studies have, however, demonstrated marked genetic differentiation between populations of Patagonian toothfish located in different geographic regions, namely the Falklands, South Georgia, Prince Edward and Marion Islands, Crozet Islands, Kerguelen, Heard/McDonald Islands and Macquarie Islands. Within the Southern Indian Ocean area oceanic ridge systems and seamounts may act as oceanic ‘‘stepping stones”, promoting adult migration and/or larval dispersal and thus giving the region a homogenous genetic structure (Appleyard et al., 2004; Rogers et al., 2006). Tagging experiments at Heard Island (Division 58.5.2) show long-distance movements of sub-adult/adult fish between zones (Heard to

Kerguelen and also to Crozet), but the proportion of exchange between stocks is thought to be very small (WG-FSA- 07/48 Rev. 1 in CCAMLR, 2011; CCAMLR, 2014a).

5.2 Stock Status (Rebuilding Programmes) and Stock Assessment

5.2.1 Information sources for Principle 1

For the Crozet fishery, information comes essentially from fisheries-dependent data. There is no fisheries-independent information, as bottom morphology prevents trawl research surveys. The available information includes (also see Table 4) :

- Catches, provided by compulsory log-books, cross-checked with observer data (stemming from observer coverage of all vessels and 25% of all lines hauled) and 100% dock-side monitoring, and
- Biological data collection includes representative samples of length, weight, sex and maturity stage for toothfish and other species; a conversion factor between processed fish and live fish is calculated every day;
- Tagging begun in 2005 in the Crozet area. Fishery observers set two tags per fish with a ratio of one fish tagged and released per tonne of fish caught;
- Otoliths for age determination have been collected for the last three years; a preliminary growth curve for Kerguelen and Crozet areas combined was provided in 2015.

Table 4. Data available for the assessment of the Crozet toothfish fishery.

Information	Crozet
Basic biological information – length/weight, aging (scales), size at maturity, sex ratios,	No – Data (growth curve, natural mortality) from Heard and McDonald Islands are applied (Sinegre & Duhamel, 2014). A preliminary analysis of otoliths was provided in 2015.
Tagging data – migration, population structure	7206 toothfish tagged since 2005, with 396 recaptures. Some evidence for long-distance movements although most recaptures are local.
Genetic studies	Some– suggests a lack of genetic differentiation among West Indian Ocean sector although proportion of exchange between stocks is thought to be very small
Fishery-independent biomass estimates	No - Area not suitable for trawl surveys
Catch and effort data for this fishery	Yes – from logbooks and observers, cross-checked with dock-side monitoring
Catches for other fisheries, including IUU	Yes – present catch exclusively from French fishery. Rates of Illegal, Unreported, Unregulated (IUU) fishing estimated by CCAMLR. IUU considered nonexistent in Crozet EEZ at present
Standardised CPUE	No – longline CPUE standardised for month and year effects, was calculated until 2012. Longline CPUEs are considered as poor biomass index and are not used for assessment purposes.
Length-frequency in catch	Yes – observers and quayside inspections

Catch-at-age	Yes – Derived from the Australian growth function (Candy et al., 2007, Ziegler et al., 2014). A preliminary growth function for Kerguelen and Crozet was devised in 2015.

5.2.2 Catches

The SARPC vessels are the only fleet operating in the Crozet area. Data from commercial fisheries in the French EEZ have been available since 1977, but are only regularly collected since the beginning of the directed French fishery in 1994 (Figure 3). The highest reported catch, of 1,158 tonnes, was recorded in 2002. A TAC of 1000 tonnes was set in 2005, reduced to 700 tonnes in 2011 and raised to 840 tonnes since 2013-14. The TAC for the 2014-2015 season was increased to 850 tonnes.

Illegal, unreported and unregulated (IUU) fishing was first detected in Subarea 58.6 in 1996 and peaked the following year at an estimated 11,760 tonnes. Due to increased surveillance, IUU fishing has virtually been eliminated inside the French EEZ at Crozet Island. However, IUU fishing still persists outside the EEZ . There is one official report (2013) of IUU fishing inside the French EEZ since 2009 (CCAMLR, 2014a).

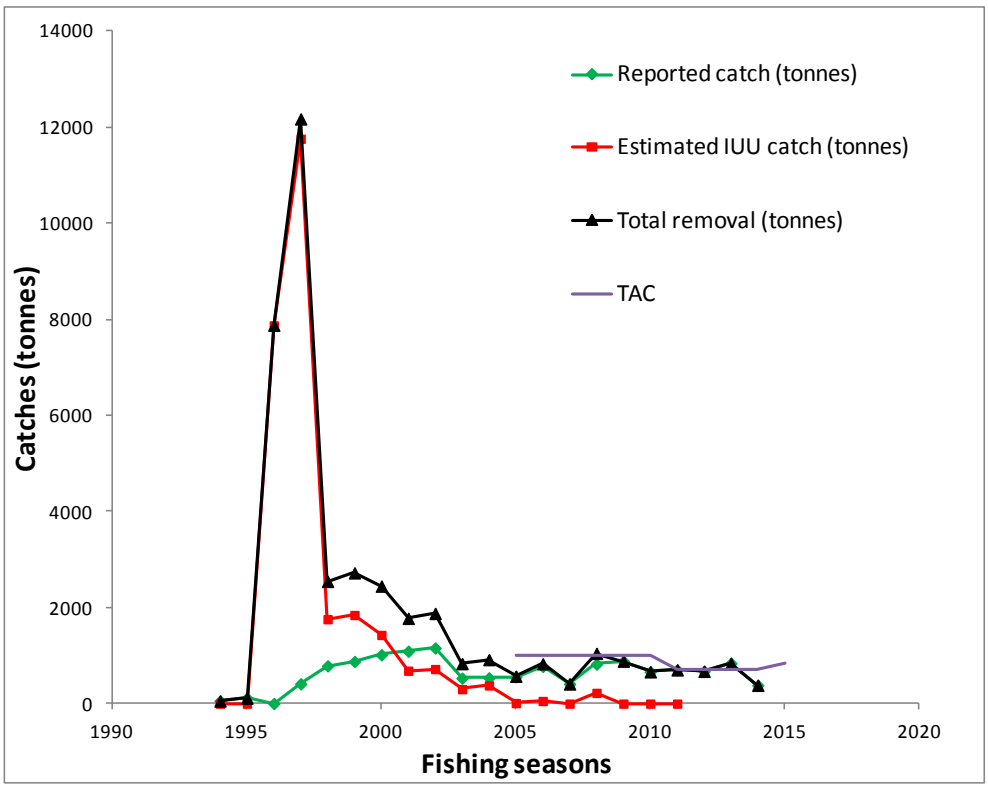


Figure 3 - Toothfish catches in the French EEZ in Crozet Island area (source: CCAMLR, 2014a).

5.2.3 Length frequency distribution

More than 10,000 individual fish are measured every year. Length at capture is shown for the Crozet fishery in Figure 4, from 2005 to 2014. The majority of *D. eleginoides* caught ranged from 50 to 120 cm in length, with a single mode for all seasons at approximately 60–80 cm. Although this modal length of catch has been stable over the years, an interannual variability

is observed which may be due to both changes in the structure of the fished population and also to changes in the gear used, the number of vessels in the fishery and the spatial and temporal distribution of fishing.

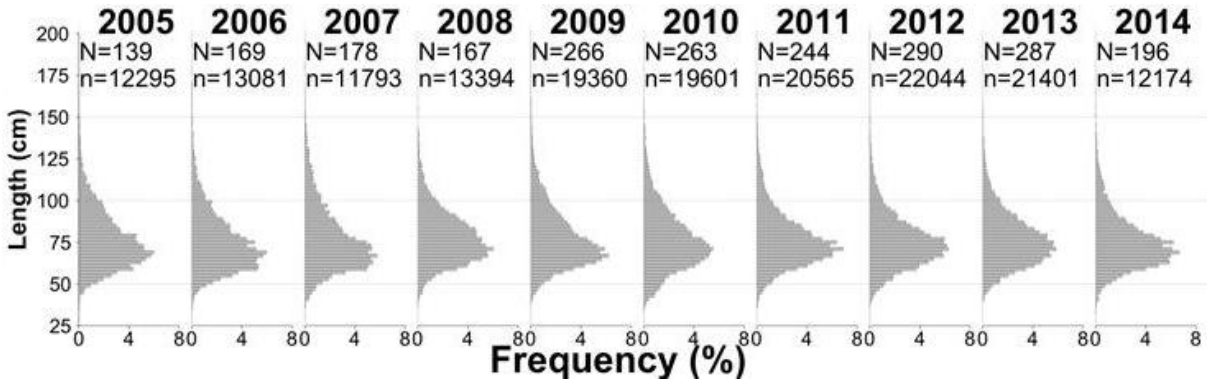


Figure 4. Annual length-frequency distributions of *Dissostichus eleginoides* caught in the French EEZ at Crozet Island, from 2005 to 2014. The number of hauls from which fish were measured (N) and the number of fish measured (n) in each year are provided (source: CCAMLR, 2014a).

5.2.4 Tagging programme

A tagging programme was launched in 2005 in the Crozet fishing area, in accordance with the CCAMLR Tagging Protocol[1]. Over 7,000 fish have been tagged since the beginning of the programme, of which 396 have been recovered (Table 5). From the 330 fishes recovered up to 2014, one fish from Crozet (area 58.6) was recovered in subarea 58.7 (westward), all others were recovered locally. No fish from Crozet Island have been recovered eastward on the Kerguelen Plateau while nine fish tagged in Kerguelen and 22 from Heard Island were recovered in the Crozet area (CCAMLR, 2014a). Analyses of tagging data suggest limited movements (Figure 5), as most of the recaptures are in a range of 5 and 15 nautical miles (Nm) (Gasco et al., 2014), which would mean that toothfish are relatively sedentary, while, occasionally, large movements may occur.

[1] http://www.ccamlr.org/en/science/ccamlr-tagging-programme
http://www.ccamlr.org/en/measure-41-01-2014

Table 5. The number of individuals of *Dissostichus eleginoides* tagged and recaptured each year in the Crozet fishing zone (source: Sinegre and Duhamel, 2015).

Release		Recapture										
Season	N	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Total
2006	1252	6	15	5	17	14	8	12	2	0	2	81
2007	433		1	9	8	3	3	1	0	3	0	28
2008	589			4	23	8	8	1	8	3	1	56
2009	622				5	22	11	6	10	7	3	64
2010	617					1	7	3	5	4	6	26
2011	697						2	14	7	3	3	29
2012	649							0	18	8	12	38
2013	704								3	25	15	43
2014	744									7	21	28
2015	899										3	3
Total	7206	6	16	18	53	48	39	37	53	60	66	396

5.2.5 Stock unit

CCAMLR fishing area 58.6 (Crozet area) is a management unit. Fishing rules and regulations apply to only that management unit, of which the limits do not coincide necessarily with population limits. This means, for instance, that conservation measures at the scale of the management unit may not prevent damages at the population scale.

The Crozet toothfish population is not completely defined because the proportion of exchange between stocks is still unknown (CCAMLR, 2014a). Scientific information provides conflicting views. Genetic studies suggest a lack of genetic differentiation among West Indian Ocean sector fishing locations (Appleyard et al., 2004). However, limited exchanges over some generations would be sufficient to smooth out genetic variations (Appleyard et al., 2004; Ashford, 2008; see also Slatkin, 1987).

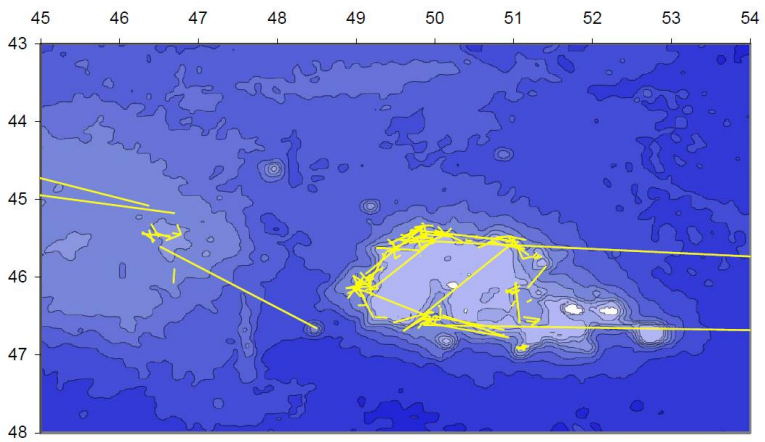


Figure 5. Movement of fish from the tagging experiment in Subarea 58.6 (source: CCAMLR, 2012).

The Crozet shelf is surrounded by a weak counter-clockwise circulation, associated with relatively high primary production (Pollard et al., 2007). Such features have been associated

with larval retention on seamounts and banks, as mentioned by Rogers et al. (2006). For the purpose of this assessment, and considering tagging data and hydrological conditions around Crozet plateau, it is possible to consider that the tootfish caught around Crozet plateau belong to a single management unit.

5.2.6 Marine mammals depredation

Depredation is defined as the removal of fish from lines or from nets by marine mammals (Guinet et al., 2015). Depredation may result in significant losses for fishers and fishing companies, as well as conservation implications for fish resources as losses due to depredation are generally not accounted for in fish stock assessments and quota allocation processes; although they are in this case (see below).

Orca (*Orcinus orca*) and sperm whale (*Physeter macrocephalus*) depredation occurs in a number of sub-Antarctic toothfish longline fisheries with economic and, potentially, conservation impacts (Figure 6). The issue is even more important in the Crozet fishing area, where depredation is one of the highest observed in all toothfish longline fisheries (Guinet et al., 2015). Both species of whale may remove most of the fish whole from the hooks, and a direct depredation rate estimate is therefore not possible. Instead, the rate of depredation is indirectly estimated using a statistical model that incorporates the observed rate of interaction between mammals and longlines, and an assessment of catch per line reduction in the presence of cetaceans, compared with lines without interactions, in 0.1° × 0.1° geographical cells. A first model was presented at CCAMLR in 2010 (Tixier et al., 2010) using the 2003-2008 time series. Over the period, the total depredation rate was estimated to be 17.7% (orcas alone 8.0%, and orcas and sperm whales 9.7%), i.e. 571 tonnes between 2003 and 2008 or an average loss of 114.2 tonnes per year. The study also showed interannual variations of the depredation rate (Figure 7).

A new estimate was presented in 2014 (Gasco et al., 2014) from two different models. The first one was a refinement of the previous, using hooks and not line sets as the primary unit of calculation. The second model estimated the number of depredated fish using by-catch rates, as depredation by mammals occurs selectively on toothfish and not on other species (mainly grenadier). The relative proportion of grenadier on the line in absence or presence of orcas and/or sperm whale was calculated and depredation was compared, with the prediction that grenadier occurrence relative to toothfish should increase on depredated longline sets. A total of 6,525 longline sets from 2003 to 2013 were used for the calculations. With the CPUE's method, the depredation rate was 28.2%, a loss of 2,568 ± 82 tonnes, over the 2003-2013 period (575 ± 35 tonnes from orcas alone, 739 ± 87 tonnes from sperm whale alone, and 1,679 ± 74 tonnes from orcas and sperm whales combined), i.e. an average loss of 259 tonnes per year. The two methods gave similar results in percentage terms, with depredation rates varying between 27.3% to 29.1% of the total capture (landed and depredated). The new estimates are higher than previously because (i) the new method of calculation avoids some of the biases of the previous one; (ii) a change in fishing strategy, and (iii) an increasing orca population around Crozet (Gasco et al., 2014).

Figure 6. Underwater view of orcas from Crozet Island interacting with a demersal longline during hauling. The video records showed orcas selectively retrieving *Dissostichus eleginoides* from the lines while leaving grenadier (or rattail fish) untouched (B. Loyer, St Thomas production; Guinet et al., 2015).

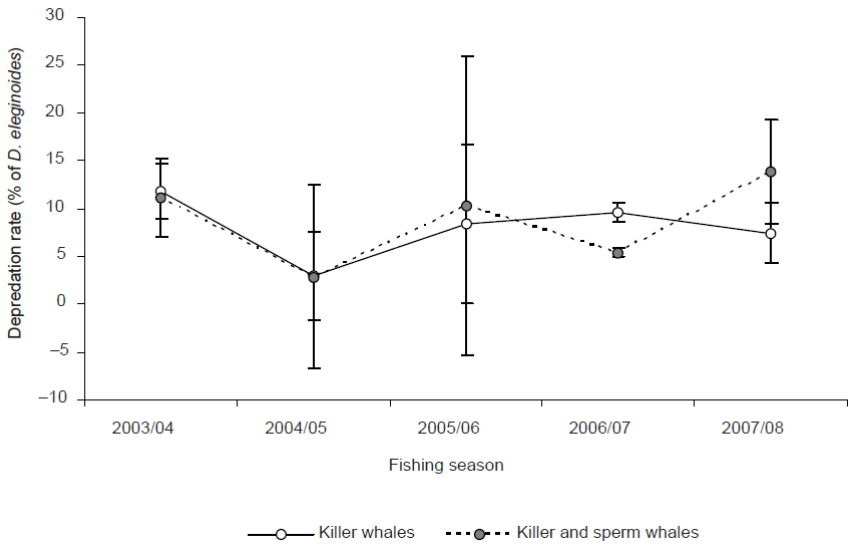


Figure 7. Depredation rates by orcas (killer whales) alone and both orcas and sperm whales between 2003 and 2008 around Crozet (source: Tixier et al., 2010).

The high depredation rate has important implications, as it creates uncertainty in the estimation of fishing mortality. Moreover, the two species of whales appear to eat preferentially larger fish, which may create a bias in the size-frequency distributions observed in the catch (Gasco et al., 2014). Several depredation reduction measures were proposed (Tixier et al., 2010), some of which have been implemented voluntarily (shorter lines) or recommended in the fishery regulations since (TAAF, 2014).

5.2.7 Stock assessment

As for the Kerguelen fishery, the stock assessment uses a CASAL probabilistic model (see Bull et al., 2012), agreed by the CCAMLR Scientific Committee and used to assess the stock of the Antarctic toothfish (*Dissostichus mawsoni*) in the Ross Sea (CCAMLR divisions 88.1 and 88.2), the stock of the Patagonian toothfish (*D. eleginoides*) in South Georgia (CCAMLR

division 48.3) and in Heard and McDonald Islands (CCAMLR division 58.5.2) (Sinegre and Duhamel, 2015).

The first model stock assessment was presented in 2013 (Sinegre and Duhamel, 2013) and took into account:

- Commercial catches (trawl fishery on shallow shelf area);
- Other fisheries, AM cruise and IUU;
- Longliners on western and northern rises, west;
- Longliners on shallow shelf, <1250m;
- Longliners on deep shelf, >1250m);
- Commercial catch-at-length;
- Tag-release and recapture data;
- Orca depredation;
- Estimated rates of IUU fishing.

The virgin biomass was estimated to be 68,323 tonnes. At that level, the potential yield that would satisfy the precautionary CCAMLR decision rules (to maintain the median spawning biomass at no less than 50% of the pre-exploitation spawning biomass) was estimated to be 2,500 tonnes.

CCAMLR recommendations were:

- Continuation of France's tagging programme in Subarea 58.6;
- Comparison of the results from the model with a calculation of biomass through CPUE by seabed area;
- Integration of sensitivity runs, including trawl length-frequency data, IUU;
- Catches and orca depredation.

A revised model was presented in 2014 (Sinegre and Duhamel, 2014). The model included estimated levels of depredation by orca (*Orcinus orca*) from GAM analyses of the fishery data. The virgin biomass was estimated as B_0 = 67,128 tonnes.

CCAMLR recommended that age frequencies be included once age data are available and that year-class strength be estimated as a sensitivity analysis. It was further recommended that alternative estimates of whale depredation, as estimated in WG-FSA-14/10, be investigated further.

An updated model was presented in 2015 (Sinegre and Duhamel, 2015). First age reading results allowed to test a new growth curve. A total of 733 otoliths from the Crozet commercial fishery was read, a regression of the growth curve based on the mixed Crozet and Kerguelen samples was provided (Figure 8). Growth parameters estimated for the Heard Island and MacDonald Islands (HIMI) and for Kerguelen-Crozet are presented in Table 6.

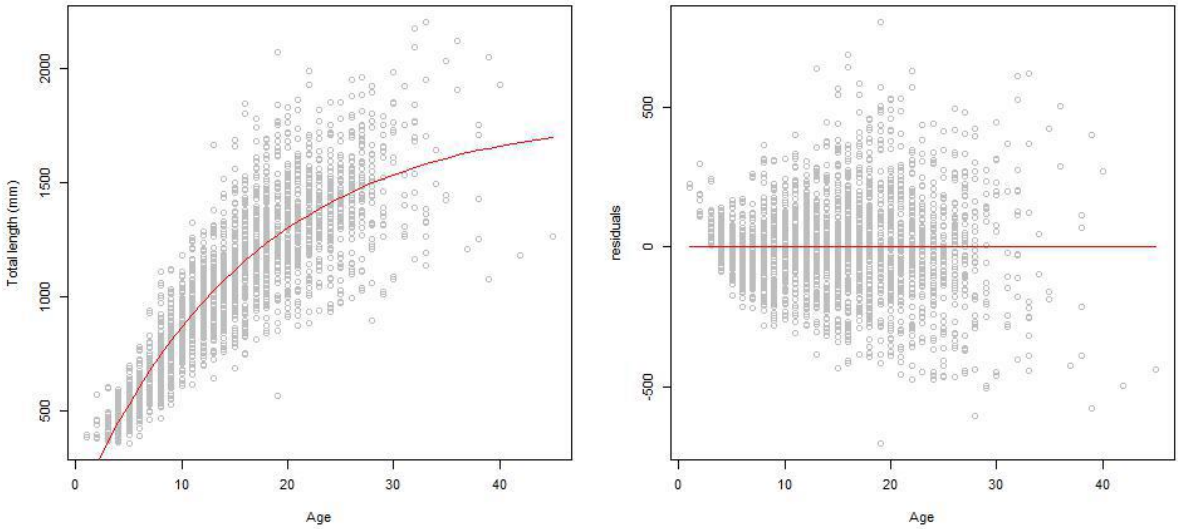


Figure 8. Growth curve regression and residuals based on recent age readings from Kerguelen and Crozet samplings (source: Sinegre and Duhamel, 2015).

Table 6. Parameters of the Von Bertalanffy growth curve used in the CASAL model (Sinegre and Duhamel, 2015).

Areas	K	L∞ (cm)	T0 (years)
HIMI (Candy et al., 2007)	0.03947	197.55	-2.30
Kerguelen-Crozet	0.06169	180.7	-0.617

The previously used (from Heard Island fishery) and new growth models were used, to obtain two estimates for the initial biomass and the 2015 biomass (see Table 7).

Table 7. Median estimates (and 95% credible intervals) of B0, B2015, and B2015 as %B0. R1 correspond to the Heard Island growth curve used in the 2014 model; R2 uses the new growth curve calculated for Kerguelen-Crozet areas. From Sinegre and Duhamel (2015).

Run	B0	B2015	B2015/B0 (%)
R1	50 410 (43 760 - 57 410)	34 700 (28 160 - 41 630)	68.9 (64.5 - 72.8)
R2	66 750 (57 650 - 77 210)	48 880 (39 850 - 59 070)	73.2 (69.1 - 76.7)

CASAL can be used to run stochastic projections of future biomass trajectories based on various scenarios. Projections were run to look at trends in spawning stock biomass (SSB) over 35 years, with a constant TAC of 1,000 tonnes, plus a depredation rate of 10% (total catch: 1,100 tonnes). At that catch level, the spawning stock biomass would stabilise around 60% above the virgin biomass (Figure 9).

Another projection was provided, using a catch of 1,780 tonnes (Figure 10). With that scenario, the biomass would decline and reach the reference point of 50 % B_0 at the end of the 35 year projection.

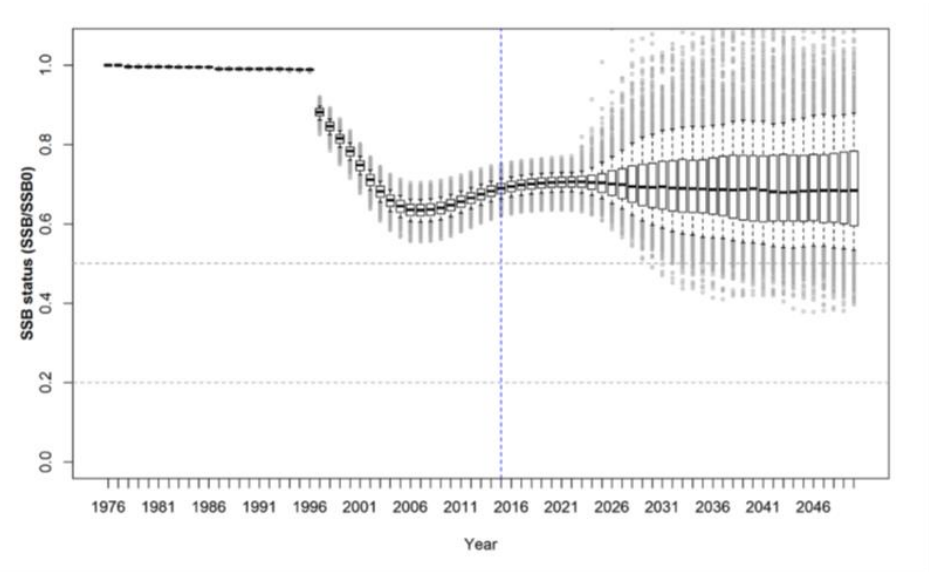


Figure 9 - Projected spawning stock biomass (SSB) in tonnes, with a future constant catch of 1,100 tonnes (including depredation). The black line represents the median MCMC run, the grey envelope the 95% confidence interval, dotted lines show the 50% and 20% status levels used in the CCAMLR decision rules (source: Sinegre and Duhamel, 2015).

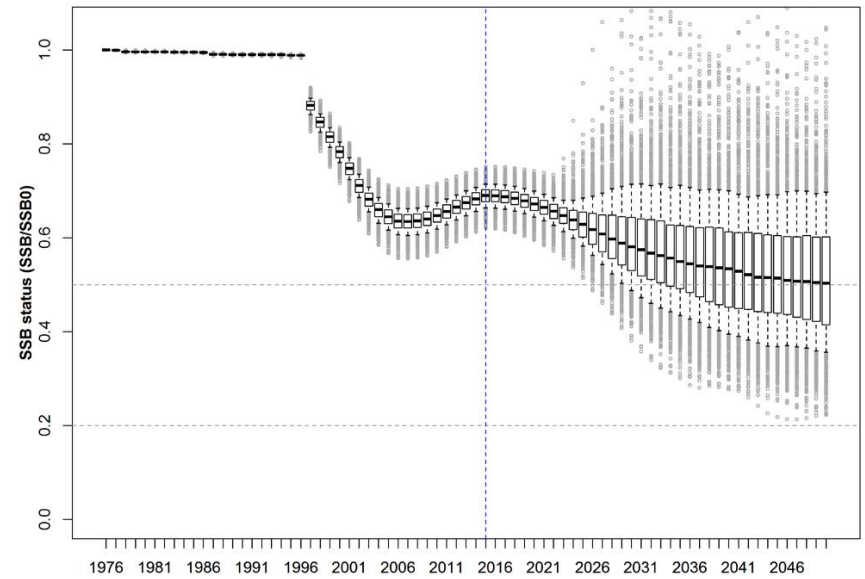


Figure 10 - Projected spawning stock biomass status with a future constant catch of 1,780t, using HIMI growth curve (R1). Dotted lines show the 50% and 20% status levels used in the CCAMLR decision rules (source: Sinegre and Duhamel, 2015).

5.2.8 Reference points

Two sets of reference points can be used for this fishery:

- The default MSC biomass reference points (Target Reference Point TRP=40% B_0 and Limit Reference Point LRP=20% B_0);
- CCAMLR's decision rules (considers the fractions of the population that can be taken by the fishery each year so that the target population remains old enough to spawn, the spawning biomass, SSB), according to a simulation model:
  1. Only drops below 20% of the pre-fishing median (B_0) on 1 in 10 of the 20-year period of fishing;
  2. After a 35-year period of fishing is 50% of the median before fishing started. The risk-based reference points for the toothfish are: TRP = 50% B_0 and LRP = 20% B_0.

It is noted that a value of 50% B_0 corresponds to B_{MSY} in the "classical" Shaefer surplus production model.

The CASAL stock assessment model, presented in 2013 and revised in 2014 (Sinegre & Duhamel, 2014) was further revised in 2015 (Sinegre & Duhamel, 2015), the latter using a growth curve calculated from otolith sampling in the Crozet and Kerguelen areas. In 2015, B_0 was estimated to be 50,410 (43,760 – 57,410) tonnes, using the previous growth curve (Run 1), and 66,750 (57,650 – 77,210) tonnes, with the new growth curve (Run 2); this correspond to a TRP = 25,205 (21,880 - 28,705) tonnes (Run 1) and a biomass that never fell below 60% of the virgin biomass (B_0) since the beginning of the fishery. The 2015 SSB is estimated by Run1 to be 34,700 t, between 64.5 - 72.8 % of the virgin biomass. Run2 provided B_{2015}=48 880 t, between 69.1 - 76.7% of the virgin biomass. A long-term projection at a constant catch of 1,100 tonnes, including 10% for depredation, indicates that the biomass would never reach the limit of 50% virgin biomass (Figure 9).

5.2.9 Harvest Strategy, Harvest Control Rules and Tools

A global strategy is defined in the order ("arrêté") n°2014-78 of August 19, 2014 (TAAF, 2014), which sets the rules of fishing activities in the French EEZ of Crozet and Kerguelen and defines the objective of [free translation] insuring long term conservation and optimal use of fishing resources in the EEZ, in order to achieve the maximum sustainable yield. The fishing operations should be conducted in a way that would preserve the ecosystem where those resources are living. In particular, the strategy includes:

- Limited entry in the fishery, only seven licensed vessels, using exclusively longlines, are allowed to fish in the Crozet area;
- TAC, consistent with CCAMLR decision rules, based on scientific advice and local socio-economic considerations;
- The TAC is divided among the vessels, each allocation is a function of the performance of the vessel with regards to the regulation (quota, by-catches, etc.);
- Stringent control of IUU fishing.

Technical measures are also imposed:

- Compulsory Vessel Monitoring System (VMS);
- Compulsory electronic log-books and dock-side monitoring;
- 100% observer (controller) coverage; each observer should verify at least 25% of each line hauled;
- The fishing area is divided in 160 sectors (1° longitude x 0.5° latitude; TAAF, 2009); a maximum of two vessels should be present on the same sector at the same time; a vessel cannot fish on more than two sectors; a vessel cannot fish on a sector more than ten days;
- Fishing at depths shallower than 500 m and in Crozet territorial waters is prohibited;
- Maximum number of hooks per line;
- If the proportion of undersized toothfish caught exceeds 10%, vessel should move on by at least 2.5 nautical miles.

Similar to the Kerguelen fishery, the TAC (and other regulations) is formally set by the administrator of the TAAF. TAAF must take into account the scientific advice of the Muséum National d'Histoire Naturelle (MNHN), as well as the 'avis' (formal opinion) of three ministries of the French government involved – responsible for i) overseas territories, ii) foreign affairs and iii) fisheries. Since 2013, advice from the MNHN is based on a quantitative stock assessment, using the CASAL statistical stock assessment tool generally used to assess CCAMLR toothfish fisheries. So far, the MNHN stock assessment has not attempted to make recommendations about the level of the TAC that should be applied, but has rather attempted to evaluate whether the current TAC level conforms to the CCAMLR reference points.

The MSC considers harvest control rules (HCRs) as actions that management takes in response to changes in the fishery and/or changes in status in relation to reference points. They are defined as the pre-agreed rules and management actions that will be taken in response to changes in indicators of stock status with respect to explicit or implicit reference points (MSC). In that sense, even if a strategy exists, there are no pre-defined harvest control rules that would justify a TAC.

The newly published Management Plan (TAAF, 2015c) is intented to be revised periodically, and should be based on MNHN advice and on the principles of CCAMLR . The next review is planned for 2018.

5.2.10 LTL Stock Status

The target species of this assessment is not a Low Trophic Level (LTL) species.

6. Principle Two: Ecosystem Background

6.1 Information sources for Principle 2

There are two key sources of information for the analysis of Principle 2:

- The systems 'avipeche' and 'avistock' track catch data by number and weight, by species, including discarded and retained catch – the latter including individuals retained for crew consumption ('godaille') as well as for sale. Data from the 2013-14 and 2014-15 seasons from 'avistock' have been analysed.
- Observer reports were provided for all the trips in the 2014-15 season (two trips by each vessel in total; only those parts of the reports which pertained to Crozet were reviewed). The observers cover 100% of the vessels and trips but observe 25% of all lines hauled, giving an overall coverage of 25%. The observer reports are very detailed, and provide, among other things:
    - Catch and discard data along the same lines as 'avistock', plus an evaluation of how carefully discards are being recorded in avipêche/avistock;
    - Details of operations of the vessel;
    - Length-frequency measurements;
    - Details of any tagged fish found, and any tagging carried out;
    - Details of any bird interactions and their outcome (dead, injured, unharmed) and how they came about; also what bird avoidance devices were in place and whether they were deployed correctly;
    - Interactions with marine mammals (depredation, entanglement);
    - Respect for the rules (bycatch code of conduct, VME catches and regulations, requirements to limit orca depredation, respect of the rules for occupying zones, treatment and discharging of rubbish and offal);
    - Various helpful comments on, for example, the attitude of the captain, controlleur de pêche and crew, the practicality of implementing regulations, the weather, problems in collecting data or filling out the forms and so on.

A summary list of P2 species and their designation under P2 Components Retained (2.1), Bycatch (2.2) or ETP (2.3) is provided in Table 8. Each of these species is further discussed in the following sections.

Table 8. Summary of retained, bycatch and ETP species

Component	Main/ not main	Species list	Source of information / reason
2.1 Retained species	Main	Grenadier (*Macrourus carinatus*), Taaf skate (*Amblyraja taaf*)	Avistock – catch exceeds 5% of total in some or all years; partly retained

	Not main	Lithoides crabs	Avistock – occasional catch usually retained for crew consumption
2.2 Bycatch species	Main	NW and NE Atlantic mackerel (*Scomber scombrus*)	Bait
	Not main	Blue antimora (*Antimora rostrata*), Eaton skate (*Bathyraja eatonii*). Grey skate (*Dipturus canutus*)	Catch never reaches 2% of total; always discarded
2.3 ETP species	N/A	Southern sleeper shark *(Somniosus antarcticus)*, Porbeagle shark (*Lamna nasus)*, white-chinned petrel (*Procellaria aequinoctialis*), sperm whale (*Physeter macrocephalus*), orca (*Orcinus orca*)	Identified from Avistock (sharks), TAAF bird data (birds) or observer reports (marine mammals). Protected under fisheries regulations (sharks and birds), French law (birds, marine mammals), ACAP (birds), CITES Appendix I (sperm whale)

6.2 Definitions

Bycatch species are divided into retained and discarded bycatch, and are considered 'retained' (i.e. evaluated under 2.1) even if only a part of the catch is typically retained; if they are completely discarded they are considered 'bycatch' (evaluated under 2.2). Bait is also considered under 'bycatch' (2.2). Bycatch species are 'main' if they typically make up >5% of the total catch; if they are likely to be vulnerable to overfishing, they have been defined as 'main' above 2%. (This 2% threshold is not designated in the FAM version 2.0, used here, which allows CABs to decide their own threshold for potentially vulnerable retained or bycatch species, but is specified in later versions of the Certification Requirements, hence it seemed appropriate to use it here.)

ETP (endangered, threated and protected) species are defined as those formally protected under national or international legislation or treaties, including fisheries regulations.

6.3 Retained and bycatch species

Table 9 and Table 10 give data from the 'Avistock' database of retained and discarded catch, for the 2013-14 and 2014-15 seasons.

Aside from toothfish, grenadiers (mainly or entirely *Macrourus carinatus*) are the only species to make up >5% of the total catch in both years – it is mainly retained and is therefore considered a 'main retained' species.

At Crozet, there are three species of rays: *Amblyraja taaf* (raie taaf/taaf skate), *Bathyraja eatonii* (raie eaton/eaton skate) and a newly-discovered species of *Bathyraja*, called 'raie grise' (grey skate - *Dipturus canutus*), which has so far only been found on the Delcano rise, west of Crozet. Taaf rays (*Amblyraja taaf*) may be partly retained (at least in 2014-15), and constituted 5.4% of the catch in the 2013-14 season; although the proportional catch of this

species was much lower in the 2014-15 season (~1% of the total), the species may be considered 'vulnerable' and is therefore also included as a 'main retained' species. Catches of the other ray species are too low for them to be considered 'main'.

Antimora are always discarded: in the Kerguelen assessment this species was considered a 'main bycatch' species but catches at Crozet are apparently too low (3.3% and 2.7% of the catch in each year) to be defined as 'main'. An Australian risk-based assessment ('SAFE level 3') of bycatch in the Macquarie Island toothfish fishery (Zhou and Fuller, 2011) evaluated the risk of the fishery to *Antimora rostrata* populations as low.

Two shark species are mentioned in the Avistock data: the 'requin dormeur' or southern sleeper shark *Somniosus antarcticus*, and the porbeagle *Lamna nasus*. Both are caught in very small quantities and are discarded alive as far as possible. A trivial quantity of *Lithoides* crabs (~5 kg; a small number of individuals) were caught in the 2013/14 season.

Table 9. Catch by species (kgs) from Avistock for the 2013-14 season, including the fate for each species. Cut-off = removed from the line and de-hooked before being brought on board; discarded = discarded after coming on board; retained includes those individuals retained for on-board consumption. For sharks, individuals are converted to biomass on the assumption that each individual = 50 kg.

Species	Cut-off	Discarded	Retained	Total	% Catch	% Retained
Antimora rostrata		18635		**18635**	3.3	0
Grenadier (*Macrourus* spp.)		11744	28503	**40248**	7.2	70.8
Eaton skate (*Bathyraja eatonii*)		248		**248**	0.04	0
Taaf skate (*Amblyraja taaf*)		30142		**30142**	5.4	0
Southern sleeper shark (*S. antarcticus*)	350	2.3		**352**	0.06	0
Toothfish (*D.eleginoides*)		370	469581	**469951**	84.0	99.9

Table 10. Catch by species (kgs) from Avistock for the 2014-15 season, including the fate for each species. Cut-off = removed from the line and de-hooked before being brought on board; discarded = discarded after coming on board; retained includes those individuals retained for on-board consumption. For sharks, individuals are converted to biomass on the assumption that each individual = 50 kg.

Species	Cut-off	Discarded	Retained	Total	% Catch composition	% Retained
Blue antimora (*Antimora rostrata*)		21321		**21321**	2.7	0
Grenadier (*Macrourus* spp.)		19825	59173	**78997**	10.1	74.9
Lithodes sp.			5.0	**5.0**	0.0006	100
Ray skate (new *Bathyraja* sp.)		439		**439**	0.06	0

Species	Cut-off	Discarded	Retained	Total	% Catch composition	% Retained
Taff skate (*Amblyraja taaf*)		1179	6479	**7657**	0.97	84.6
Southern sleeper shark (*Somniosus antarcticus*)	600		50	**650**	0.09	0
Porbeagle shark (*Lamna nasus*)	100			**100**	0.01	0
Toothfish (*D.eleginoides*)		1438	675652	**677090**	86.2	99.8

6.4 Bait species

Table 11 gives information on the source of bait purchased during the 2014/15 season. It is a little difficult to estimate the total quantity of bait used at Crozet specifically from these figures, since one vessel provided no data, and one provided only a total for Crozet plus Kerguelen. If, however, you assume that the Cap Horn used ~20% of the bait at Crozet (which is the average figure for the vessels providing individual figures), and further assume that the Saint André used the average of the other vessels, the estimated use of bait for 2014/15 is: 71 t NW Atlantic mackerel, 53 t NE Atlantic mackerel and 3.7 t NE Atlantic horse mackerel.

Based on the total catch (retained and discarded) in the 2014-15 season of 786 tonnes (from Table 10 above), the bait in total constitutes ~16% of the weight of catch, with NW Atlantic mackerel making up 7.8% of the total 'catch' in this season, NE Atlantic mackerel 5.8% and horse mackerel 0.4%. This means that both NW Atlantic and NE Atlantic mackerel would be considered 'main' bycatch species, but horse mackerel would not.

Table 11. Use of bait in tonnes (t) and source stocks (data provided by 6 of the 7 vessels, and one vessel totals with Kerguelen)– it has been assumed for the purposes of estimating total quantities that they use an average of the other vessels). Only ¾ trips.

Common name	*Scientific name*	FAO zone	Tonnes	No of vessels
Mackerel	*Scomber scombrus*	FAO 21	61	4
Mackerel	*Scomber scombrus*	FAO 27	108	2
Horse mackerel	*Trachurus trachurus*	FAO 27	16	1

6.5 Stock status, management and information for P2 species

6.5.1 Retained and bycatch species

There are no stock assessments for any of the species in the fishery other than toothfish and bait species (see below). A code of good conduct ('code de bonne conduite' CBC; Gasco and

Duhamel 2011) is in place which aims to minimise bycatch of grenadiers, rays and *Antimora*, which is binding on the fishery via the fisheries regulations (arrêté 2014-78, Annexe II, section 3). The code of good practice is described in detail in the Kerguelen report (MEP, 2013) and is not described again here; in summary it involves two strategies – the avoidance of zones of historically high bycatch, and a requirement to move on when bycatch reaches a certain threshold in kgs/1000 hooks (50/1000 hooks for grenadiers and 10/1000 hooks for rays and *Antimora*).

The observers report in detail whether the code of good practice has been followed, and in any cases where it has not, for what reason. A review of the observer reports suggests that for the most part it is followed, although perhaps more carefully for some vessels than others. The main reasons for not following the code of conduct are either i) that the area is known to be an area of high toothfish catch; or ii) that the vessel has had to move on to avoid orca or sperm whale depredation. Note that it is in any case illogical for vessels to avoid areas of high bycatch at the expense of fishing for toothfish more inefficiently – lower catches per line mean more lines are required to catch the quota and hence that overall bycatch is likely to be higher in any case. Depredation is likewise a very serious problem for the efficiency of the fishery, which is discussed further in Principle 1. The code fixes objectives for the reduction in bycatch over three years as follows:

- 50% reduction in catch of rays and *Antimora;*
- 20% reduction in catch of grenadiers.

It has been difficult to evaluate trends in stock size for bycatch species, directly or indirectly, because longline CPUE is not an appropriate means of measuring trends in stock size (because of the attractive properties of the bait) and because unlike Kerguelen, it is not possible to conduct a periodic trawl survey at Crozet (because the environment is recent and volcanic and the bottom is therefore too rough for trawling). In any case, the implementation of the code of conduct is now a confounding factor in the analysis of fisheries-dependent data for the species concerned.

Aside from the code of conduct, there is a separate requirement in the fisheries regulations for rays, which if alive must be discarded carefully, after having been dehooked; dead rays may be retained or discarded with the hook removed. These requirements follow CCAMLR best practice (e.g. see CM 33-03 of 2014 for new and exploratory fisheries). Again, observers report in detail on how these measures are implemented on board. For the most part they appear to be respected. A problem arises, however when lines are being hauled where there is a risk of depredation or if depredation is going on, because to limit depredation, lines have to hauled quickly, and stopping the line to check on the condition of rays obviously slows everything down. The observers also noted that the live discarding worked better for *A. taaf* than for *B. eatonii*, because the latter tended to float for a while and were attacked by birds.

6.5.2 NW Atlantic mackerel (bait)

Two units of Atlantic Mackerel are found in the North-West Atlantic, characterized by two main spawning areas. In Canadian waters, spawning occurs mainly in the southern Gulf of St. Lawrence during June and July. In American waters, spawning occurs during March and April between the coasts of Rhode Island and Virginia.

The Canadian Atlantic mackerel fisheries are prosecuted using gillnets, trapnets, handlines and purses seines and managed under an Integrated Fisheries Management Plan effective from 2007. Mackerel fisheries are input control (licencing, fishing season, gear characteristics) and output control (TAC) fisheries. The TAC is Atlantic-wide, and Canadian TAC reduced from 60,000 t in 2010, to 36,000 t in 2012 and further down to 10,000 t in 2014 and 8000 t in 2015. In 2014, 65 % of the TAC was caught (Table 12).

Table 12. Landings statistics for the NW Atlantic mackerel stock, Canadian component (DFO, 2014)

Year	TAC Canada	Landings Canadian vessels	Landings US-Commercial	Catches US-Recreational	Total (tonnes)
2005		54621	42187	1032	97840
2006		53649	56640	1511	111800
2007		53016	25547	584	79147
2008		29671	21734	783	52188
2009		42231	22635	603	65469
2010	60000	38753	9877	759	49389
2011	60000	11400	531	932	12863
2012	36000	6468	5336	683	12487
2013	36000	7341	4408	842	12591
2014	10000	6540			
2015	8000				

The latest stock assessment (DFO, 2014) estimated stock biomass through an egg production method, daily fecundity reduction method, and an analytical model (VPA), calibrated with the abundance index from egg surveys. The three methods indicate that the mackerel spawning biomass has been declining since the mid-2000s to reach in 2013 the historical minimum (Figure 12). This decline was mainly caused by fishing mortality levels several times higher than the historic sustainable levels. DFO scientists recommended in 2014 than annual catch for 2014 and 2015 should not exceed 800 t.

The main uncertainties refer to the catches from the commercial fishery and sold directly between fishermen and from the bait fishery for local fisheries such as crab and lobster which are not all recorded in the DFO statistics. Catches of the recreational fishery, which is very popular in summer, are not recorded either.

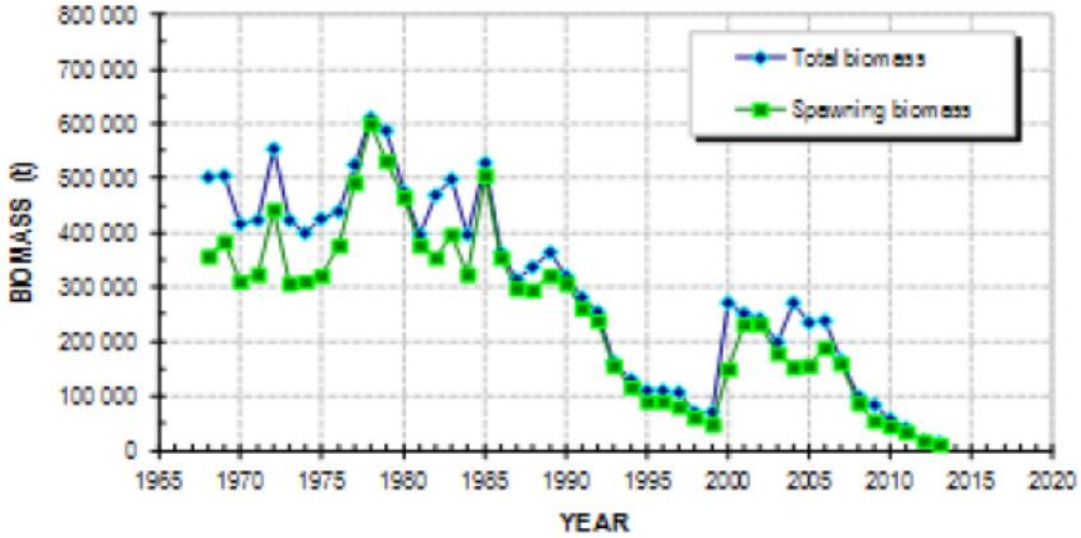


Figure 11. Total and spawning NW Atlantic mackerel biomasses (t) in NAFO subareas 3 and 4 (Canadian waters) for the 1968–2013 period (details in Canada DFO Science Advisory Report 2014/030).

The U.S. Atlantic mackerel fishery is mainly prosecuted by mid-water and bottom trawls. The Atlantic mackerel, well-managed and resilient species, is managed in federal waters by the Mid-Atlantic Fishery Management Council and the NOAA's National Marine Fisheries Service under a Fishery Management Plan established in 1978. The FMP includes a number of measures to ensure sustainable harvesting including input (limited access program) and output (quotas) controls, reference points, and protection of mackerel Essential Fish Habitats.

The stock status of the south spawning contingent is not known but the harvest level is considered to be at recommended level[2].

6.5.3 NE Atlantic mackerel (bait)

The most recent stock status advice for NE Atlantic mackerel at time of writing was from ICES in 2014 (ICES, 2014). The stock is evaluated to be above limit and precautionary biomass

[2] http://www.fishwatch.gov/profiles/atlantic-mackerel

reference points, and fishing mortality is estimated to be at or below F_{MSY} (

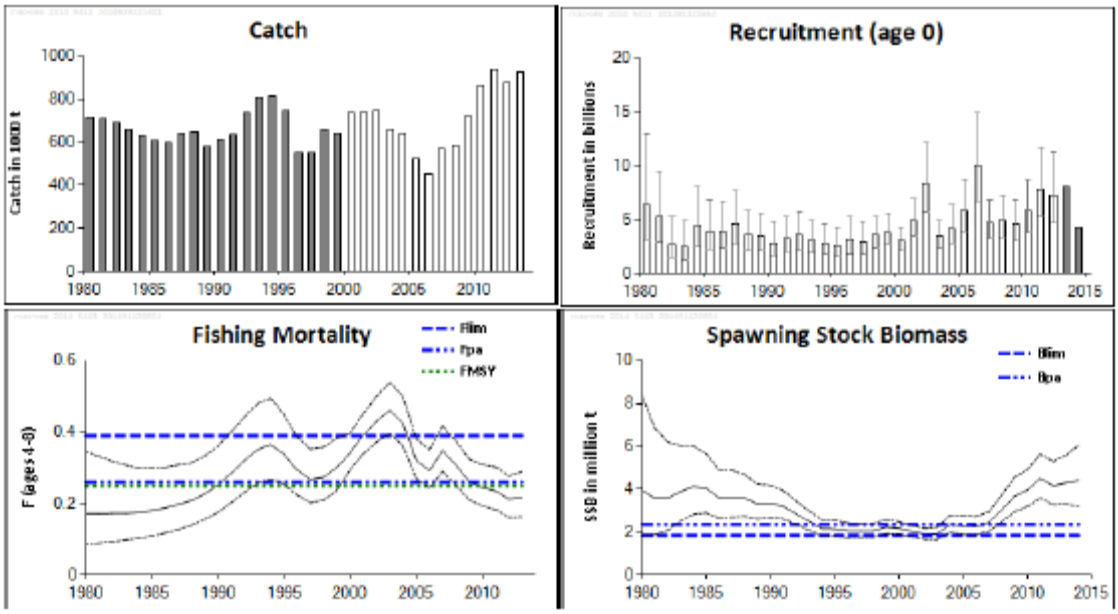


Figure 12). Total catch in 2013 was a bit over 900,000 t, so the ~30-60 t purchased for bait by this fishery for the 2014/15 season represents a very small proportion of the total. A management plan including a harvest control rule was agreed by Norway, the EU and the Faroes in 2008. Although all these countries accept the principle of setting a TAC based on the ICES stock assessment and the management plan, the implementation of the management plan has in recent years gone awry because of disagreements over the relative quota allocation between the three parties: from 2009-2013 inclusive there was no agreed TAC, but the dispute was resolved among the main states involved in the fishery (EU, Norway, Faroes) in 2014 (although not for states with smaller catches; Iceland, Russia and Greenland). Several years of catches above the recommended level do not appear to have impacted on the stock status.

Stock status

	Fishing pressure			
	2011	2012	2013	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably
Management plan (F_{MGT})	✗	✓	✓	At target
	Stock size			
	2012	2013	2014	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity
Management plan (SSB_{MGT})	✓	✓	✓	Above trigger

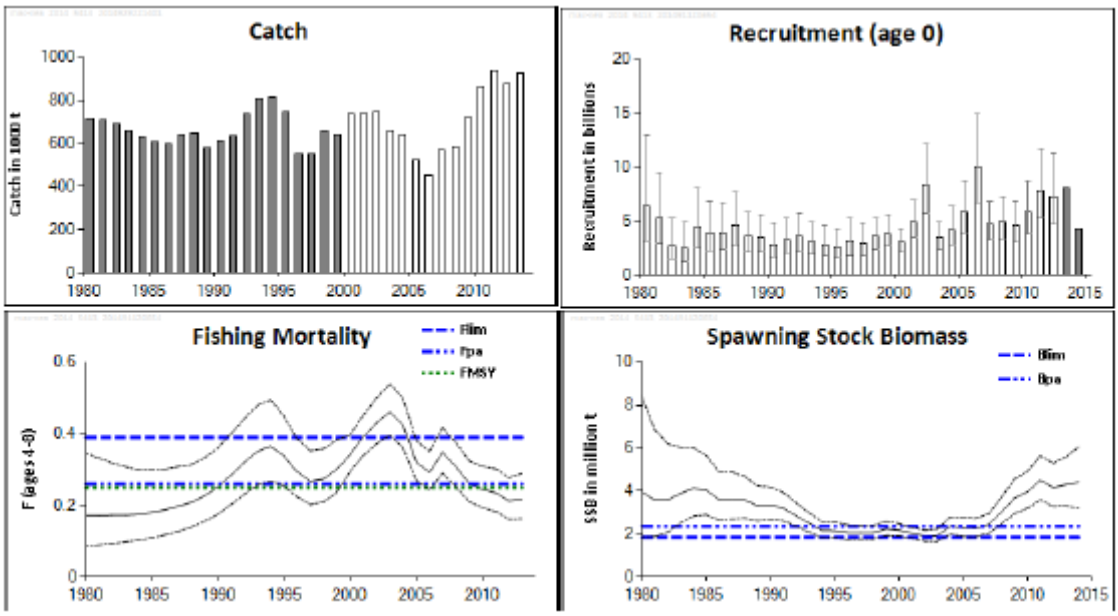


Figure 12. Top: ICES evaluation of stock status for NE Atlantic mackerel in relation to reference poins; Middle: Trends in catch and recruitment as estimated by ICES; Bottom: trends in fishing mortality and SSB as estimated by ICES, with 5% and 95% confidence intervals, reference points given as dotted or dashed lines (ICES 2014).

6.6 ETP species

Sharks are protected under the TAAF fisheries regulations (arrêté 2014-78, Annexe II, 1(g)). Birds are also protected in the fisheries regulations, as well as under French law[3] and under the Agreement on the Conservation of Albatrosses and Petrels (ACAP), a binding international agreement to which France has been a party since 2005[4]. Orcas are protected by the French authorities[5], as are sperm whales, which are also listed on CITES Appendix I.

The shark species interacting with the fishery have been identified using the Avistock data set out in Table 9 and Table 10. The bird species interacting with the fishery are evaluated by TAAF using observer reports as set out in Table 13. The vast majority of interactions are with white-chinned petrels (*Procellaria aequinoctialis*); only one case of mortality of another species, the giant petrel (*Macronectes giganteus*) and none for the grey petrel (*Procellaria cinerea*) has been recorded in the last 5 years. Many interactions with sperm whales and orcas are recorded in the observer reports; these are invariably cases of depredation which do not result in injury to the animals. A summary list is included in Table 8 above.

6.6.1 Sharks (ETP)

The main shark species taken as bycatch is the southern sleeper shark (*Somniosus antarcticus*), a species of dogfish about which little is known except that it is a predator and/or

[3] See http://www.taaf.fr/Liste-des-especes-protegees; also arrêté interministériel du 14 août 1998 fixant sur tout le territoire national des mesures de protection des oiseaux représentés dans les Terres australes et antarctiques françaises (modifié par l'arrêté du 29 juillet 2005, JORF 8 novembre 2005, et par l'arrêté du 24 juillet 2006, JORF 14 septembre 2006)
[4] http://www.acap.aq/en/resources/parties-to-acap
[5] See http://www.taaf.fr/Liste-des-especes-protegees; also arrêté interministériel du 1er juillet 2011 fixant la liste des mammifères marins protégés sur le territoire national et les modalités de leur protection

scavenger which is oviviviparous (like other dogfish but unlike most sharks) (Stevens, 2003; Prof. Guy Duhamel, MNHN, pers. comm.). Porbeagle (requin taupe; *Lamna nasus*) is also encountered but in very low numbers (one in the last two years according to Avistock).

6.6.2 Birds (ETP)

Bird mortality rates at Crozet are given in Table 13 and are in the range 10-20 per year over the last three seasons. All apart from one bird were white-chinned petrels. The observer reports also mention giant petrels, but mainly these are released unharmed. The vessels implement all the CCAMLR requirements for avoiding bird mortality as detailed in the Kerguelen report (MEP, 2013), and the observers report carefully as to whether these are being deployed properly. In one case, the observer reported that the captain had his own curtain device which was deployed sometimes with the Brickle curtain and sometimes instead, depending on whether there were birds around – the observer voiced doubt as to whether it was suitable to be used alone, but this was the only case where an issue was raised by observers in relation to birds. On the same voyage, the observer noted that other measures had been taken, including painting the system used to deploy the line black. Vessels may move on if too many birds are around; reportedly the situation is worse when there are no other vessels in the area. The bird mortality at Crozet is worse per unit catch of toothfish than at Kerguelen; this is most likely because at Kerguelen, where bird populations are much higher, a closed season is in place during the period of the highest bird bycatch. Given the distances involved and the limited window of 'summer' weather, the vessels cannot afford to spend this period at the quay in Réunion, so they are constrained to visit Crozet (MEP, 2013). TAAF report that adjustments to quota allocation are made partly on the basis of success in avoiding bird mortality – it is not clear, however, if there is any kind of formula for this.

Table 13. Mortality of birds via interaction with the fishery over the last 5 seasons (data for the 2014/15 season not provided by species).

Season	Crozet total	White-chinned petrels (*Procellaria aequinoctialis*)	Giant petrels (*Macronectes giganteus*)
2010/11	27	27	0
2011/12	8	7	1
2012/13	17	17	0
2013/14	13	13	0
2014/15	15	Unspecified by species	

IUCN (assessment carried out by Birdlife International; Birdlife, 2015) cite a recent estimated population estimate for white-chinned petrel of ~3 million individuals or 1.2 million breeding pairs, down from an estimated 1.43 million pairs in the 1980s. Of these, ~~75% of the global total breeds at South Georgia and most of the remainder at Kerguelen; the breeding population at Crozet is small by comparison (estimated ~23,500 pairs in 2004 or ~2% of the global total according to ACAP[6]). The IUCN assessment and the ACAP information page[7] give a list of

[6] http://acap.aq/en/acap-species/306-white-chinned-petrel/file
[7] as above

figures for incidental mortality in various fisheries – it is quite likely, however, that many of these figures are out-of-date since considerable progress has been made in recent years in bird bycatch mitigation in many of these fisheries (e.g. the South African hake fishery and this fishery); a reduction in IUU in the Southern Ocean has also, presumably, reduced bird mortality rates. So for example, both sources (ACAP and IUCN) cite Delord et al. (2005), who estimate a total mortality (Kerguelen plus Crozet) of more than 26,000 birds (>90% white-chinned petrels) in the two seasons 2001-02 and 2002-03 (i.e. ~13,000 / year) – while in the 2014-15 season, total bird mortality over both areas was 34. Clearly, if other fisheries have made similar progress, then an important source of additional mortality has been removed from the population; there do not, as yet, however, appear to be any assessments of the demographic consequences of this change either at Crozet or elsewhere.

6.6.3 Marine mammals (ETP)

It is clear (see discussion of depredation under Principle 1 above) that depredation of the catch by marine mammals is a big problem for this fishery. The observer reports note numerous instances where the catch was reduced or damaged by depredation by orcas or sperm whales (some interactions with sealions is also reported but only at Kerguelen). Depredation rates can often reach the point at which lines have to be sacrificed or the area abandoned. The observers, however, do not mention any instance of any individual mammal suffering any mortality or injury as consequence of interaction with the fishery[8]. The main concern is that their natural behaviour is changed by the presence of the fishery; toothfish is not a natural prey item for these species, and Roche et al. (2007) note that most depredation by orcas is carried out by a small number of particularly aggressive individuals who appear to have incorporated depredation into their foraging strategy. Reportedly, these individuals accounting for most of the depredation have higher fecundity and survival rates than those not interacting with the fishery (Guinet et al., 2014), suggesting that as a foraging strategy it is very successful. The fishery has in place regulations which aim to minimise depredation: these are the same for Crozet and for Kerguelen (although the problem is more serious at Crozet) and are set out in the Kerguelen report (MEP, 2013); the observer reports evaluate whether they are being adhered to.

6.7 Habitats

The regulations protecting habitats are the same at Crozet and at Kerguelen, the key one being that fishing is not permitted in depths <500m; there are also other closed areas (see below). Unlike at Kerguelen where the POKER surveys take place, there is no fishery-independent trawl survey because reportedly the bottom is too rough to permit trawling. There are, therefore, no full or partial habitat maps, as there are at Kerguelen.

A discussion of the available information on the impact of demersal longlines on vulnerable marine ecosystems (VMEs), including quantitative estimates of the footprint, is provided in the Kerguelen report (MEP, 2013) and is not repeated here. CCAMLR has various conservation measures in force to protect vulnerable habitats (‘VMEs’ in CCAMLR parlance), but none of them apply to this fishery: CM 22-06, 22-07 and 22-09 apply only to the zone south of 60°S

[8] which shows considerable restraint on the part of the crew

plus statistical area 58.4.1, while CM 22-08 applies only to exploratory fisheries. The fisheries regulations do, however, include a provision to protect VMEs requiring the following:

- For 25% of a line, all specimens of VMEs (as defined by CCAMLR in CM 22-06) must be brought on board, sorted, recorded and weighed;
- If >10 kg per 1000 hooks is brought up, the vessel must move on at least 2.5 nautical miles;
- The crew should signal any rare species to the controlleur de pêche.

According to the observer reports, the threshold to trigger a move on for VMEs was never passed during the 2014-15 season. Observers frequently reported the catch of very small quantities of VMEs – mainly hard and soft corals. As for the ray cut-off, the requirement to collect all VMEs for 25% of a line is sometimes sacrificed if a line has to be pulled in fast to limit orca depredation, or in one case because of very poor weather.

Crozet is part of the 'reserve naturelle des terres australes francaises', which includes both land and marine areas. The marine reserve area at Crozet is shown in Figure 13; no fishing is permitted in this area, nor in the green extension area, nor in any waters shallower than 500m. These requirements are part of the fisheries regulations.

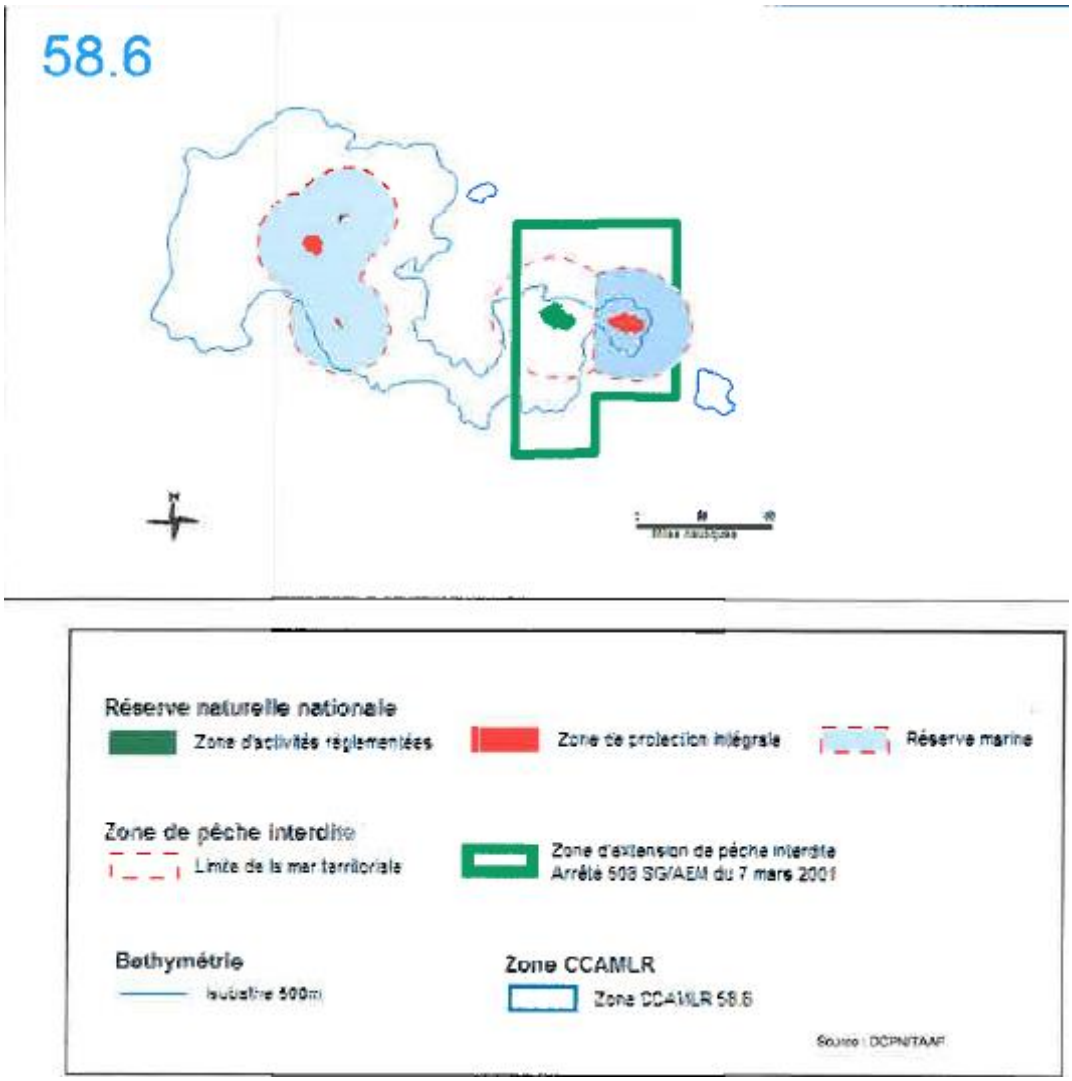


Figure 13. Areas protected from fishing at Crozet: area shaded blue inside the red dotted lines = marine reserve (no fishing); area inside the green rectangle = marine reserve extension zone (arrêté 508 of 7 March 2001) (no fishing); area inside the blue solid line = <500m (no fishing).

6.8 Ecosystem

The Kerguelen plateau lies more or less on the Antarctic Convergence (the front separating cold Southern Ocean waters from more temperate waters – in this case of the Indian Ocean); Crozet (more correctly, the Crozet archipelago) lies slightly to the north of the Convergence, but still in the zone of high productivity created by the mixing of water from different sources. This does not mean, however, that the weather is more temperate at Crozet than at Kerguelen; the average temperature is 3ºC (winter) and 8ºC (summer), it rains for ~300 days/year with wind speeds of >100 km/hr for ~100 days/year. The islands are geologically younger and more active than Kerguelen, being formed ~50 million years ago – the main difference this creates with Kerguelen from our perspective is that trawling is impossible and hence research cruises along the lines of the POKER cruises at Kerguelen are not possible at Crozet. In general, however, the VME components brought up, species composition and other detailed COPEC observation data suggest that the features of the ecosystem and the key species are similar in Crozet to those at Kerguelen. It is clear from an analysis of the spatial distribution of seabirds

and seals in the southern Indian Ocean (Delord et al., 2013), for example, that in most cases the species which occur at Crozet also occur at Kerguelen and vice versa (although Kerguelen is somewhat more species-rich, perhaps unsurprisingly – it is a lot bigger). A few species relevant to the fishery occur at only one place or the other (e.g. southern lantern shark and Kerguelen sandpaper skate only at Kerguelen, 'raie grise' only at Crozet).

7. Principle Three: Management System

The management system is common to the Crozet and Kerguelen fisheries, but some Performance Indicators are re-scored to reflect changes since the Kerguelen fishery certification audit in 2013 together with updates from the 1st and 2nd surveillance audits.

7.1 Background

The TAAF is a French administrative autonomous territory grouping several islands and Antarctic territories with no permanent civilian population. The administrative services are based in La Réunion and headed by a senior administrator or Préfet. The Préfet annually sets the Total Allowable Catch (TAC) and other fisheries management measures, from recommendations issued by its Nature Conservation and Fisheries teams (DCPN: Direction de la conservation du patrimoine naturel - Direction de la Réserve naturelle nationale; DPQM: Direction des pêches et des questions maritimes), taking into account the scientific advice of MNHN, the advice of CCAMLR as well as those of the three ministries of the French government responsible for Fisheries (part of the Ministry for Ecology, Sustainable Development and Energy), Overseas territories, and Foreign affairs (see MEP, 2013 for detail).

The MNHN based in Paris provides scientific advice to the TAAF for the fisheries in both Kerguelen and Crozet. The MNHN periodic trawling research cruises (POKER) do not extend to the Crozet fishing zone, which has no trawling grounds. The on-board “contrôleur de pêche” (COPEC – fishing controller employed by the TAAF) has a dual role to enforce the TAAF regulations and to collect scientific data. There is one COPEC on each vessel at all times, tasked to examine 25% of the longlines hauled in all fishing areas, including around Crozet for each of the seven SARPC vessels in the fleet.

The Commission on the Conservation of Antarctic Marine Living Resources (CCAMLR) is the regional fisheries management organisation (RFMO) for the Southern Ocean, including Kerguelen (58.5.1 French EEZ) and Crozet (Subarea 58.6 French EEZ). The same CCAMLR Scientific Committee Working Groups (WG-SAM for statistics and assessment methods, WG-FSA for fish stock assessment, and WG-IMAF for incidental mortality associated with fisheries) examine the data and validate models for both Kerguelen and Crozet.

The Centre régional opérationnel de surveillance et de sauvetage en mer – La Réunion (CROSS-RU - part of the DMSOI de la Réunion et des îles Eparses) is the organisation responsible for Monitoring Control and Surveillance (MCS). CROSS-RU has the use of a dedicated satellite surveillance system including radar (all vessels are equipped with a tamper-proof VMS system), and the use of French navy frigate patrol days as well as a dedicated surveillance vessel, the Osiris. The CROSS-RU organises fisheries surveillance patrols, shares intelligence with South Africa (Prince Edward and Marion Islands ZEE west of Crozet, Australia (for the Heard Island toothfish fishery on the Kerguelen Plateau) and New Zealand, and cooperates on Port State measures at regional level (MEDDE DMSOI, 2015). The TAAF has its own vessel register under which all vessels in the UoC are registered. As a result all fishing vessels have to land their catch in La Réunion (Le Port) to be inspected by CEMR, an accredited marine experts Company separate from the TAAF, in sealed containers that are systematically inspected by customs/ clearing agents upon landing.

7.2 Situation Update

The institutions involved in the fishery management system are the same as for the Kerguelen fishery apart from a minor name change for the TAAF Fisheries Department (Table 14).

Table 14. Institutions involved in the management of the fishery

Organisation	Function	Role / Responsibilities
Ministère de l'Ecologie, du Développement Durable et de l'Energie - MEDDE	DPMA - Direction des Pêches Maritimes et de l'Aquaculture	Consultees on the fishery: Sit on Consultative Committee and the Austral Fisheries WG – GTPA
	DMSOI - Direction de la Mer - Sud de l'Océan Indien	" and oversees CROSS-RU for MCS Consultees for fishery management
Ministère des Outre-Mer – MOM	Central Administration for Overseas territories	measures including the TAC "
Ministère des Affaires Etrangères – MAE	Foreign Affairs	" and represents France at CCAMLR.
TAAF - Territorial Administration for Crozet (and Kerguelen) EEZ	DCPN - Direction de la Conservation du Patrimoine Naturel	In charge of Nature conservation and management of nature reserves; also undertakes collaborative research project with IPEV and other institutes
	DPQM - Direction des Pêches et des Questions Maritimes	Manages fishery: set level of TAC and regulations; monitoring and surveillance, including COPEC observers
CROSS-RU Regional Maritime Surveillance and Rescue Centre	Operational Control of French Navy, Fisheries patrols	In charge of fisheries MCS for Crozet and Kerguelen and regional collaborations with Australia, South Africa and New Zealand
CCAMLR Scientific Committee	Provides annual oversight for the French fisheries, but no direct management advice	Review data on fishery and give an opinion, propose directions for future.
CCAMLR WG-FSA (fish stock assessment)	Review stock assessments and provide advice	Reviewed Kerguelen stock assessment in 2012, undertook additional simulations and proposed a workplan for the coming year.
CCAMLR WG-SAM (statistics and methods)	Reviews data analysis and stock assessment methods	Validates stock assessment models for Crozet (and Kerguelen) and MNHN advice
CCAMLR WG-IMAF (incidental mortality associated with fisheries)	Proposes and evaluates methods from reducing bird mortality, reviews mortality figures.	Report on implementation of French Action Plan presented to WG-IMAF (Marteau 2009), as well as annual bird data. NB: WG-IMAF will no longer meet regularly because the situation has improved.

Organisation	Function	Role / Responsibilities
MNHN	Research, stock assessment, scientific advice to TAAF	Provides scientific advice to TAAF; trains COPEC to collect fisheries data, maintains PECHEKER database, undertakes stock assessment and other research.
CEBC-CNRS, Chizé	French Research Centre specialised in Ecology and Population Biology	Dedicated research programmes on marine mammals and seabirds in the TAAF
SARPC Client Group	Producer organisation for the Crozet (and Kerguelen) toothfish fishery, includes all licenced vessels	Represents the interests of the fishery to TAAF and at CCAMLR. Provides funding for management and research projects including stock assessments

In response in part to the conditions of the MSC certification of the Kerguelen fishery (see MEP, 2013), the following elements of the TAAF toothfish fisheries (Kerguelen and Crozet) management system have changed:

1) The French ministry in charge of fisheries (MEDDE-DPMA) has supported the MNHN to recruit a mathematical modeller for the fisheries stock assessment. In 2014/15 the post has been made permanent through budget support. This was the key element of the Kerguelen fishery Condition 1 (PI 1.2.4, see section 8.2). It has also made it possible to develop a stock assessment model specifically for the Crozet fishery.

2) TAAF has adapted its fishery management measures (for Kerguelen and Crozet) to reduce the toothfish longline fisheries impacts on skates and rays, according to the Code of Conduct (Code de Bonne Conduite – CBC) put together by the MNHN in 2011, supplemented by CCAMLR guidelines to cut off rays that may survive (TAAF, 2014). A monitoring system is now in place and evidence of implementation of the CBC is provided by the observer reports (Condition 2, PI 2.1.2 and some of PI 2.1.3). Observer data suggest that mandatory cut off and move on rules from 2014/15 may have reduced ray catches substantially (from 3.9 to 2.9 /1000 hooks), but a detailed analysis has not yet been done by MNHN or TAAF.

3) Regarding the fishery's impact on ETPs, the SARPC and TAAF have tested and implemented numerous impact reduction measures, the most successful ones being integrated to the TAAF fisheries management measures published annually. Regarding birds and marine mammals, the COPEC observers monitor and report bird deaths and injuries and interactions for marine mammals by species to the DCPN. Impacts have been greatly reduced in both Crozet and Kerguelen fisheries since the Kerguelen fishery was certified (Condition 3, PI 2.3.1).

4) An early career scientist also joined the MNHN Team in 2015 to work on VMEs and is just beginning to analyse the information collected by COPEC on benthos brought up by longlines in Crozet and Kerguelen, and on samples collected by trawl research expeditions (POKER) around Kerguelen.

5) In August 2015, the TAAF published a Management Plan for the toothfish fishery in Kerguelen and in Crozet (TAAF, 2015c). The Management Plan brings together the fishery-specific management objectives (long-term and short-term sustainability, reduced ecostem impacts, zero IUU), describes the management system, all existing fisheries and ecosystem management measures, and the decision-making processes. The Management Plan does not define conventional short-term objectives for P1 in line of those used in the stock assessment or Harvest Control rules, and therefore Condition 4 (PI 1.2.2, 3.2.1 and 3.2.2) of the Kerguelen fishery applies to the Crozet UoA as well.

The details of fishing licences and toothfish quotas in the Kerguelen and the Crozet EEZs awarded to each company or vessel each year through a “Décision” (or bylaw) of the Préfet are published as bylaws (“arrêté”) in the TAAF Official Journal (TAAF, 2015e). Catches are similar between vessels, and about seven to eight times more in Kerguelen than in Crozet over the last three years (Table 15). During normal operations, a vessel exceeding its quota allocation incurs a heavy penalty consisting of a reduced allocation for the following year as well as a ‘surtaxe’ for the overfished amount (10 times the quota fee). A vessel quota undershoot also carries a penalty although the formula used to calculate penalties and rewards is not communicated by TAAF DPQM.

Table 15. Individual vessel catch in Kerguelen and Crozet (tonnes, from SARPC)

Fishing season	2011/12	2012/13	2013/14	2011/12	2012/13	2013/14
Vessels	Kerguelen	Kerguelen	Kerguelen	Crozet	Crozet	Crozet
1	730	726	732	83	80	83
2	832	849	834	127	126	125
3	688	702	697	102	96	98
4	705	734	736	78	78	80
5	755	810	828	95	98	105
6	722	709	716	102	99	101
7	600	632	608	42	121	120
Catch total	**5,032**	**5,162**	**5,151**	**629**	**697**	**712**

The team noted remaining confusion regarding the precise details of the vessel quota allocation criteria used by TAAF to reward contributions, and conversely penalise any contravention, to its fisheries and conservation policy. TAAF’s conservation measures, regarding birds and rays especially, have been embraced by SARPC vessels, but there is still no public document issued by the TAAF that gives clear details and justification of vessel quota changes from year to year. There is no annual progress report for the fleet and monitoring by vessel for each potential environmental impact, (P1: catch of juveniles; P2: catches of rays and grenadiers; interactions with birds and marine mammals; with VMEs and loss of lines and hooks; P3 penalties and incentives).

The TAAF holds a Comité de Pilotage des bonnes pratiques de pêche (C3P - Fisheries Best Practice Steering Committee) meeting annually with vessel captains and vessel owners (“armements”) to discuss vessel performance for the past fishing season and implications for

the next one. The TAAF toothfish fishery management plan notes that the C3P, which meets once a year, was set up in response to a request from CCAMLR WG-IMAF to share best practice in order to decrease incidental bird mortality, but has currently no publicly available agenda or meeting minutes. It would be beneficial for the C3P process to be transparent and more positive in showcasing the significant joint conservation achievements of TAAF and SARPC. Collaboration, between with the vessels and between TAAF and the fleet, is a key aspect to developing an effective management system under the condition 4, currently set for the Kerguelen fishery (see 2nd Surveillance audit report – MEC, 2015).

IUU activities are still seen as a threat, with occasional radar sightings on the High Seas at the edge of the Kerguelen or the Crozet EEZ and surveillance is reinforced outside the fishing season. There have been no IUU catches estimated in Crozet since 2008 (CCAMLR, 2014a). According to the CROSS-RU, SARPC vessels contribute actively to the MCS effort against IUU while steaming and when fishing in the Crozet or the Kerguelen zones, to supplement the crucial role played by the Fisheries Patrol vessel OSIRIS during 150 days per year. The OSIRIS replacement is currently being considered, and both CROSS_RU and the SARPC emphasise its importance given the high risk of IUU that remain in CCAMLR waters. None of the vessels in the fleet have been cautioned or prosecuted for reported non-compliance.

8. Evaluation Procedure

8.1 Harmonised Fishery Assessment

Apart from the SARPC longline fishery around the Kerguelen Islands, there are currently four longline Patagonian toothfish (*Dissostichus eleginoides)* fisheries that are MSC certified in the Southern Ocean (Heard Island and McDonald Islands, Macquarie Island, Falkland Islands, South Georgia[9]).

The Crozet fishery concerns the same vessels, gear and has the same management regime as the SARPC Kerguelen fishery. All five currently certified Patagonian toothfish fisheries, Kerguelen and Heard Island and MacDonald Islands (HIMI) included, concern different stocks and areas fished, and there was therefore no need for harmonisation of assessment outcomes for Principles 1 and 2.

However, the next section provides a summary of the SARPC Kerguelen fishery scores for all Principles, of the conditions and recommendation, to introduce some of the Crozet fishery specificities and the Team's evaluation results.

8.2 Previous assessments

The toothfish longline fishery around Kerguelen was certified in 2013 (MEP, 2013). The detailed scores by Performance Indicator (PI) are given Table 16. The Kerguelen fishery was certified subject to four conditions, relating to PIs in each of the three Principles (indicated in bold in the table).

The conditions are listed in Table 17. Progress against the conditions has been scrutinized in detail during the 2nd Annual Surveillance audit in September 2015 and can be found in the surveillance report (MEC, 2015). Condition 3, regarding grey petrels (*Procellaria cinerea*), which have not been caught in the Crozet fishery in the past five years (cf. section 6.6), is not applicable to the Crozet fishery.

Progress against the conditions and associated Action plan measures were found to be "on target", but none of the conditions have been closed. However, progress against the conditions is taken into account for the scoring of the Crozet fishery.

In addition, the Kerguelen fishery certification has eight recommendations, five initially, two added during the 1st Surveillance audit, and an additional one from the 2nd Surveillance audit conducted in 2015. The recommendations that currently apply are listed for reference in Table 18.

A summary of the main differences between the toothfish longline fishery around Kerguelen and the fishery around Crozet is given in the gap analyis undertaken to extend the scope of the existing certification (see Appendix 3).

[9] https://www.msc.org/track-a-fishery/fisheries-in-the-program/fisheries-by-species/fisheries-by-species#toothfish

Table 16. Scores for the fisheries in Kerguelen (MEP, 2013). PIs for which a condition has been raised are indicated in bold.

Principle	Component	PI nb.	Performance Indicator	Score Kerguelen
1	Outcome	1.1.1	Stock status	80
		1.1.2	Reference points	90
		1.1.3	Stock rebuilding	N/A
	Management	1.2.1	Harvest Strategy	80
		1.2.2	**Harvest control rules and tools**	**70**
		1.2.3	Information and monitoring	80
		1.2.4	**Assessment of stock status**	**70**
2	**Retained species**	**2.1.1**	**Outcome**	**60**
		2.1.2	**Management**	**70**
		2.1.3	**Information**	**70**
	Bycatch species	2.2.1	Outcome	90
		2.2.2	Management	85
		2.2.3	Information	85
	ETP species	**2.3.1**	**Outcome**	**75**
		2.3.2	Management	90
		2.3.3	Information	90
	Habitats	2.4.1	Outcome	85
		2.4.2	Management	80
		2.4.3	Information	80
	Ecosystem	2.5.1	Outcome	80
		2.5.2	Management	90
		2.5.3	Information	85
3	Governance and Policy	3.1.1	Legal and customary framework	90
		3.1.2	Consultation, roles and responsibilities	85
		3.1.3	Long term objectives	100
		3.1.4	Incentives for sustainability	80
	Fishery-specific management system	**3.2.1**	**Fishery specific objectives**	**75**
		3.2.2	**Decision making processes**	**70**
		3.2.3	Compliance and enforcement	90
		3.2.4	Research plan	80
		3.2.5	Management performance evaluation	90

Table 17. Summary of Conditions for the fishery in Kerguelen

Condition	PI	Original Score	Justification
1 – Sustainable stock assessment process	1.2.4	70	Assessment of stock status (Harvest Strategy) - stock assessment: By the end of the five-year certification period, the fishery must have in place a sustainable stock assessment process.
2 – Systematic monitoring of grenadiers, rays and bycatch code of conduct	2.1.1 2.1.2 2.1.3	60 70 70	Retained species outcome, management and information: A monitoring system needs to be put in place for grenadiers and rays, appropriate to the scale of the fishery, which will provide indication of possible risks to the stock. The assessment team needs to see evidence of the systematic implementation of the code of conduct. A process of review and revision of the code of conduct in the light of trends in the fishery is required. The fishery should provide data on catch of rays and grenadiers at each annual audit.
Condition 3 – Targets and best practice for grey petrels	2.3.1	75	ETP species outcome (grey petrels): Declines in bird mortality need to continue until all vessels are performing at the best possible level. In addition, a monitoring system is required to identify the level of risk posed by the fishery to the Kerguelen grey petrel population, including specific bycatch targets for grey petrels. Figures for estimated bird bycatch by species and by vessel should be provided at each annual audit
Condition 4 – Management plan	1.2.2 3.2.1 3.2.2	70 75 70	Harvest control rules, Fishery-specific objectives and Decision-making processes: Produce a management plan for this fishery, focusing on the management of the toothfish resource (i.e. P1).

Table 18. Recommendations from the SARPC Kerguelen toothfish fishery remaining after the 2nd annual surveillance audit (MEC, 2015)

Nb.	PI
2	PI 2.1.2: In addition to the condition, it is recommended that further information is sought, either from a desktop review or from field studies, on the survivorship of rays at Kerguelen after being cut off the line. On the basis of this information, the conservation strategy for rays could be reviewed.
3	PI 2.3.2: It would be useful to evaluate the effectiveness of the above measures, and of individual vessels, in relation to grey petrels specifically, and if necessary re-focus on those measures which reduce mortality of grey petrels in particular.
4	PI 2.4.2: It is recommended that research be continued into the mapping of benthic habitats and the identification of VMEs at Kerguelen.
5	PI 2.5.1 It is recommended that research into the Kerguelen ecosystem and the role of toothfish within it should continue.

6	PI 2.1.3: It is recommended that SARPC compiles a summary table per fishing season indicating the quantities of bait used, by species and FAO stocks/ areas of origin, per year (added during the Kerguelen Surv 1 audit).
7	PI 3.2.2 It is recommended that TAAF/SARPC compiles a summary table per fishing season indicating the total number of hooks and the length of leaded lines (per fishing trip/campaign) lost during fishing operations (added during the Kerguelen Surv 1 audit).
8	PI 3.2.2 Effective decision making processes: It is recommended that TAC changes should apply to the season following CCAMLR meetings at the earliest (added during the Kerguelen Surv 2 audit).

8.3 Assessment Methodologies

The Crozet UoA fishery was assessed in accordance with the MSC Fisheries Certification Requirements (FCR) version 2.0 for assessment procedure and the MSC Fishery Assessment Methodology (FAM) version 2.0 (2009) for scoring, in line with the requirements stipulated under FCR 7.22. Adjustments to the Default Assessment Tree were not required.

The MSC Full Assessment Reporting Template v2.0 was used to produce the report, with amendments to accommodate for the expedited assessment and for scoring against the FAM v2 (2009).

8.4 Evaluation Processes and Techniques

8.4.1 Site Visits

The site visit for the expedited assessment was held on 18 and 19 May 2015 in Paris, France, at the offices of the Union des Armateurs a la Pêche de France (UAPF), and the Muséum National d'Histoire Naturelle (MNHN) – both stakeholders in this assessment. The P1 and P3 experts attended the site visit, while the P2 expert was consulted remotely. The individuals consulted during the site visit are listed in Table 19. Those stakeholders who were based in Reunion at the time of the site visit were consulted by means of teleconference.

Table 19. Stakeholders consulted during the Paris site visit

Name	Organisation	Communication
Jean-Pierre Kinoo	Cap Bourbon and SARPC contact	Site visit
Justine Méhaut	SAPMER and SARPC contact	Site visit
Alain Laurec	SARPC	Site visit
Prof. Guy Duhamel	Museum National d'Histoire Naturelle (MNHN)	Site visit
Romain Sinègre	Museum National d'Histoire Naturelle (MNHN - models)	Site visit
Alexis Martin	Museum National d'Histoire Naturelle (MNHN - VME)	Site visit
Patrice Pruvost	Museum National d'Histoire Naturelle (MNHN - SIG)	Site visit
Thierry Clot	TAAF, Directeur, Direction des Pêches et des Questions Maritimes (DPQM)	Tel. conference
Cédric Marteau	TAAF, Directeur, Direction de Conservation du Patrimoine Naturel (DCPN) et Direction de la Réserve Naturelle nationale	Tel. conference
Vincent Kerzerho	TAAF, Questions maritimes	Tel. conference
Thibaut Thellier	TAAF, Réserve marine	Tel. conference
Anne-Isabelle Guyomard	TAAF, Affaires Internationales	Tel. conference
Laurent Virapoullé	Pêche-Avenir SA	Tel. conference

Eric Mostert	DMSOI CROSS Réunion	Tel. conference
Michel Quinquis	SAPMER	Tel. conference
Prof. Jean-Claude Brethes	Auditor, MEC	Site visit
Sophie des Clers	Auditor, MEC	Site visit

8.4.2 Consultations

The full list of stakeholders contacted during the assessment process is shown in Appendix 9. The following information was obtained:

- TAAF: anonymised vessel data and fleet totals for catch, bycatch, and interactions with birds and marine mammals; e-copies of COPEC observer reports (with data on VMEs, depredation, lines lost and compliance with the CBC, bird avoidance measures and other requirements);
- SARPC: individual vessel data by trip and summary compilation by trip and for the full seasons by captains (before % raised to reflect COPEC sampling strategy) for all the data listed above, and analyses of 1) bait used by stock of origin and 2) loss of lines and hooks;
- MNHN (directly or through TAAF): data analyses for stock assessment including draft papers to be submitted to CCAMLR; description of new and on-going research projects (GIS, VMEs)
- CCAMLR website: latest fishery, fish stock assessment and other scientific reports reports.

8.4.3 Evaluation Techniques

a) Media announcements

The fishery's expedited assessment was announced on the MSC website on the 16th April 2015. The MSC press release targeted a wide range of stakeholders within the sustainable seafood industry. As it is not a process requirement under the MSC FCR version 2.0, the fishery was not announced in another media post.

b) Methodology for information gathering

Information for the assessment was gathered from the participants during the site visit and through further correspondence with individual stakeholders (see above).

c) Scoring

Scoring was completed on Friday 21st August 2015 in the afternoon during a teleconference between the three members of the team. Each PI was reviewed collectively and a group consensus determined.

The scores were decided as follows:

How many scoring issues met?	SG60	SG80	SG100
All	60	80	100
Half	FAIL	70	90
Less than half, most not met	FAIL	65	85
More than half, many or most	FAIL	75	95

Note that where there is only one scoring issue in the Scoring Guidepost (SG), the issue can be partially scored – in this case the team used their judgement to determine what proportion of it was met, e.g. at the 100 level, a small part met = 85, about half met = 90, nearly all met = 95.

d) Decision rules for final outcome

A UoA cannot be certified if:

- the weighted average score for all PIs under each Principle is less than 80 for any of the three Principles
- any individual scoring issue is not met at the SG60 level, contributing to a score of less than 60 on any PI.

The aggregate score for each Principle is calculated by taking the average score for each Component (e.g. 1.1 – Principle 1 Outcome), followed by the average of all the Component scores (see Table 24).

Table 20. Scoring elements

Component	Scoring elements	Main/ not main	Data-deficient or not
1 - Target species	Toothfish	Target	No
2.1 - Retained species	Grenadier (*Macrourus carinatus*)	Main	No
	Taaf skate (*Amblyraja taaf*)	Main	No
	Lithoides crabs	Not Main	N/A
2.2 - Bycatch species	Bait - NW and NE Atlantic mackerel (*Scomber scombrus*)	Main	No
	Blue antimora (*Antimora rostrata*), Eaton skate (*Bathyraja eatonii*). Grey skate (*Dipturus canutus*)	Not Main	N/A
2.3 - ETP species	Southern sleeper shark (*Somniosus antarcticus*), Porbeagle (*Lamna nasus*), White-chinned petrel (*Procellaria aequinoctialis*), Sperm whale (*Physeter macrocephalus*), Orca (*Orcinus orca*)	N/A	No

9. Traceability

9.1 Eligibility Date

The eligibility date for this fishery shall be the date of certification.

9.2 Traceability within the Fishery

Toothfish are caught in the waters around Crozet Island using bottom-set longlines. The catch is processed and packed on board and landed frozen. Nearly all the product is landed as headed, gutted and tailed for export, with a small amount of fillet (~1% of the total) which is sold mainly on the local market. The processed catch is packed in boxes, except for very large specimens which may be packed in bags and repacked in boxes on shore.

Figure 14. Processing area inside one of the SARPC vessels.

There is a traceability system in place that allows the product to be tracked back to the place and date of capture. A record is kept of the weekly fishing volume in excel format. This is accompanied by the logbook, which is completed by the vessel captain. There is daily monitoring of fishing and the VMS. The observer, which accompanies all trips, records the schedule of the trip, with estimated location and time of the entry and exit of the fishing areas.

The “avistock” document is then completed. Made at sea, it contains the net weights of whole and processed product and the catch location. This is verified by both the captain and the observer. Upon landing, the unloading CEMR report is created, showing the position of products inside the respective cold stores. There is a unique lot number for one product and one fishing area. This allows different locations and types of product to be accounted for.

The product remains in the cold store until export. A *Dissostichus* Export Document is completed, accompanied by customs clearance, packing list, customer invoice, health certificate, Certificate of Origin and stuffing report of the export containers. The container number that the product is exported in, appears on the paperwork to the customer. The catch date of the fish is the main traceability element that allows backward tracing to the vessel and trip.

The physical boxed product is labelled with the date of production, name of the fishing vessel, the species, the fishing zone (58.6 for Crozet) and type of product (Figure 15).

Figure 15. Example of boxed toothfish from the SARPC Kerguelen toothfish fishery. The same types of information is included on the Crozet products.

The vessels involved in the Kerguelen and Crozet UoAs are exactly the same and are listed in Table 21.

Table 21. SAPRC vessels involved in the Kerguelen and Crozet toothfish longline fisheries.

Company	Vessels	GRT total
Sapmer	Albius, Croix du Sud I	1654
Cap Bourbon	Cap Horn I	975
Comata	Ile de la Réunion	935
Armements Réunionnais	Ile Bourbon	847
Armas Pêche	Mascareignes III	808
Pêche-Avenir	St. André	1387

It was decided during the Kerguelen toothfish assessment that the risk to traceability within the fishery was high and that separate MSC Chain of Custody would be required to mitigate this risk (see MEP, 2013). As the Crozet fishery involves the same fishing vessels the situation remains identical here with all vessels requiring MSC Chain of Custody (CoC). The individual risks to traceability have been considered by the assessment team. These are detailed in Table 22 below.

Table 22. Traceability Factors within the Fishery

Traceability Factor	Description of risk factor if present. Where applicable, a description of relevant mitigation measures or traceability systems (this can include the role of existing regulatory or fishery management controls)
Potential for non-certified gear to be used within the fishery	Vessels are only geared for bottom-set longline. The risk-of a non-certified gear to be used is therefore extremely low.
Potential for vessels from the UoC to fish outside the UoC or in different geographical areas (on the same trips or different trips)	There is a possibility of the vessels from the UoC fishing outside the UoC on the same trip. Trips last approximately three months and vessels will fish in both Kerguelen and Crozet. As fish come onboard, they are graded, processed, frozen and packaged into sealed boxes (see Figure 15) and placed into labelled boxes. The boxes are labelled onboard with species, catch area, weight and date of capture. The date and position of catch would link with the e-log to show where a vessel was fishing; this gives a high degree of security where vessels may fish different fishing zones in the same fishing trip. The separate labeled boxes provides physical separation of catch on their way to port. The holds are locked by the observer and remain so until reaching port, where they are unlocked by the observer.
Potential for vessels outside of the UoC or client group fishing the same stock	Vessels from outside the UoC are likely to fish for the same stock but will not be covered by this assessment. The area is strictly regulated by the TAAF and CAMLR.
Risks of mixing between certified and non-certified catch during storage, transport, or handling activities (including transport at sea and on land, points of landing, and sales at auction)	All toothfish in UoC will be certified. All product is processed and packaged onboard. Boxes are clearly labelled (see Figure 15 above), displaying catch area, product type, processor details, vessel name, date of capture. Most client members have their cold store for their products, all of which have CoC. Regardless, product remains packaged and clearly labelled as per previously described.
Risks of mixing between certified and non-certified catch during processing activities	Risks of mixing certified and non-certified catch is now not possible. SARPC vessels also fish in Kerguelen

(at-sea and/or before subsequent Chain of Custody)	waters, this is already MSC certified. Processing occurs as the catch is hauled. Fish products are packaged onboard (frozen products are boxed) and then sealed in the hold by an observer. There is a three-day voyage between fishing areas and the holds remain locked by the observer until the vessel returns to port to unload. Here the observer unlocks the holds for unloading to begin. Product is then stored in cold store in Le Port until ready for onward shipping.
Risks of mixing between certified and non-certified catch during transhipment	Transhipment does not occur in this fishery.
Any other risks of substitution between fish from the UoC (certified catch) and fish from outside this unit (non-certified catch) before subsequent Chain of Custody is required	None foreseen. All SARPC vessels have MSC Chain of Custody in addition to the product handling procedure, observer programme (100% coverage) and traceability paperwork in place in the fishery. These systems are the same for both the Kerguelen area as well as Crozet Island

All toothfish caught within the Crozet fishery is labelled separately from that caught in Kerguelen because of separate quotas and must be landed in Réunion. The vessels land at only one site: Le Port on the northwest corner of the island. On disembarkation, the catch is weighed by an authorised third party surveyor (independent of SARPC members and of TAAF). These data are provided to the fishing company and to the TAAF administration, and are checked against logbook records.

9.3 Eligibility to Enter Further Chains of Custody

As discussed previously, only vessels that have separate MSC CoC certification are able to land certified product for this fishery. Certified products are defined as toothfish (*Dissostichus eleginoides*) originating from Crozet Island in the TAAF EEZ, using bottom-set longline by members vessels of the Syndicat des Armements Réunionnais de Palangriers Congélateurs (SARPC). The vessels that are currently covered by this fishery assessment and have valid MSC CoC certification are presented in Table 23 (along with their MSC CoC Certificate numbers, issue and expiry dates). Chain of Custody is required from the first change of ownership. This is when product, processed and packaged by members of the client group, is sold out of Réunion to onward customers.

Table 23. Status of MSC CoC certification of SARPC vessels (note: these vessels were being audited for CoC recertification at the time of writing)

Company	Vessel(s)	MSC CoC Certificate Number	Issue Date	Expiry Date
Sapmer	Albius	MSC-C-53458	28th November 2013	27th November 2016
Sapmer	Croix du Sud I	MSC-C-53458	28th November 2013	27th November 2016

Cap Bourbon	Cap Horn I	MSC-C-53438	28th November 2013	27th November 2016
Comata Scapeche	Ile de la Réunion	MSC-C-53453	28th November 2013	27th November 2016
Armements Réunionnais	Ile Bourbon	MSC-C-53460	28th November 2013	27th November 2016
Armas Pêche	Mascareignes III	MSC-C-53459	28th November 2013	27th November 2016
Pêche-Avenir	Le St. André	MSC-C-53473	09th December 2013	08th December 2016

Only product landed by the above vessels with valid CoC Certification (or subsequent approved amendments to this vessel list with valid CoC Certification) is elligible to enter into further certified chains of custody for this fishery.

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

This fishery does not involve IPI stocks

10. Evaluation Results

10.1 Principle Level Scores

Final Principle Scores	
Principle	**Score**
Principle 1 – Target Species	81.3
Principle 2 – Ecosystem	83.0
Principle 3 – Management System	83.1

10.2 Summary of PI Level Scores

Table 24. Summary of PI level scores for Kerguelen and Crozet

Principle	Component	PI nb.	Performance Indicator	Score Kerguelen	Score Crozet
1	Outcome	1.1.1	Stock status	80	80
		1.1.2	Reference points	90	90
		1.1.3	Stock rebuilding	N/A	N/A
	Management	1.2.1	Harvest Strategy	80	80
		1.2.2	Harvest control rules and tools	70	65
		1.2.3	Information and monitoring	80	80
		1.2.4	Assessment of stock status	70	85
2	Retained species	2.1.1	Outcome	60	60
		2.1.2	Management	70	80
		2.1.3	Information	70	75
	Bycatch species	2.2.1	Outcome	90	85
		2.2.2	Management	85	80
		2.2.3	Information	85	85
	ETP species	2.3.1	Outcome	75	95
		2.3.2	Management	90	95

Prin ciple	Component	PI nb.	Performance Indicator	Score Kerguelen	Score Crozet
		2.3.3	Information	90	85
	Habitats	2.4.1	Outcome	85	90
		2.4.2	Management	80	85
		2.4.3	Information	80	75
	Ecosystem	2.5.1	Outcome	80	80
		2.5.2	Management	90	90
		2.5.3	Information	85	85
3	Governance and Policy	3.1.1	Legal and customary framework	90	80
		3.1.2	Consultation, roles and responsibilities	85	85
		3.1.3	Long term objectives	100	100
		3.1.4	Incentives for sustainability	80	80
	Fishery-specific management system	3.2.1	Fishery specific objectives	75	80
		3.2.2	Decision making processes	70	75
		3.2.3	Compliance and enforcement	90	85
		3.2.4	Research plan	80	80
		3.2.5	Management performance evaluation	80	80

10.3 Summary of Conditions

Table 25 gives a summary of Crozet-specific conditions, indicating how these relate to the conditions that are still open for the SARPC Kerguelen fishery. The conditions are fully documented in Appendix 2 of this report.

Table 25. Summary of Conditions for Crozet

Condition	PI	Score	Justification
Condition 1 and 5 – Harvest control rules and Decision-making processes	1.2.2	65	By the end of Year 3 (to coincide with Kerguelen re-certification), the fishery must have in place a set of Harvest Control Rules defined in the Management Plan, associated with established decision-making processes based on these HCRs and objectives which are clearly explained to fishery stakeholders.
	3.2.2	75	

Condition 2 and 3 – Strategy and information to manage the fishery's impacts on grenadiers and rays	2.1.1	60	The data available on the bycatch of the fishery (main retained species – *Macrourus carinatus* and *Amblyraja taaf*) from Avistock and Avipeche should be analysed to evaluate whether the targets of the CBC (Code de Bonne Conduite - code of good conduct) in terms of bycatch reduction have been met. If the CBC has not been 'demonstrably effective' new or additional measures should be put in place or action otherwise taken such that the fishery is able to demonstrate that these species are within biologically-based limits or that the fishery is not hindering recovery.
	2.1.3	75	
Condition 4 – Habitats information / mapping	2.4.3	75	The observer data on bycatch of VME indicator organisms should be archived, analysed and mapped on an ongoing, periodic basis, so as to build up over time an improving picture of the location of VMEs in the Crozet fishing zone. This may be done by the TAAF, the MNHN or any body with suitable expertise.

10.4 Recommendations

Table 26. Recommendations for Crozet

Nb.	Recommendations
1	In the observer reports there are one or two comments which suggest that the CBC is not being taken as seriously as it should be. Although it is clear that this is a minority of cases, the team recommends that SARPC members and TAAF review observer reports at the end of each year and provide feedback to the captain and fishing controller concerned, emphasising the importance of the CBC and ray cut-off rules.
2	PI 2.2.1: It is recommended that SARPC monitors the quantities of bait used, by species and FAO stocks/ areas of origin and sustainability status, per year (added during the Kerguelen Surv 1 audit), with a view to avoid the use of bait from stocks that are assessed to be at unsustainable levels.
3	PI 2.5.1: It is recommended that research be continued into the mapping of benthic habitats and the identification of VMEs at Crozet ecosystems should continue.
4	PI 2.5.2 and PI 3.2.2: The team recommends that TAAF/SARPC compiles a summary table per fishing season indicating the total number of hooks and the length of leaded lines (per fishing trip/campaign/ and per zone) lost during fishing operations (added during the Kerguelen Surv 1 audit), in the view to assess potential ecosystem impacts and devise voluntary best practice guidelines.
5	3.1.4 and PI 3.2.3 The procedures and criteria for allocating variable amounts of quota between different vessels annually should be reviewed and published, to ensure that they do

	not contribute to unsustainable fishing practices and to ensure that they are consistently applied to provide effective deterrence.
6	PI 3.2.2: It is recommended that TAC changes introduced by TAAF annual decrees should apply to the season following CCAMLR meetings at the earliest (added during the Kerguelen Surv 2 audit), to allow for prior peer review and validation by CCAMLR working groups.

10.5 Determination, Formal Conclusion and Agreement

Following consideration of all stakeholders' inputs and comments to the Public Comment Draft Report (PCDR), the fishery assessment team concludes that the fishery should be certified against the MSC standard. This determination remains a recommendation pending the completion of the formal objections process and the final certification decision by the MEC official decision making entity.

(REQUIRED FOR PCR)

1. The report shall include a formal statement as to the certification action taken by the CAB's official decision-makers in response to the Determination recommendation.

11. References

ACAP, 2013a. Review of bycatch data reporting by Parties. Fifth Meeting of the Seabird Bycatch Working Group, La Rochelle, France, 1-3 May 2013 SBWG5 Doc 16, Anton Wolfaardt et al., 21 p.

ACAP, 2013b. Assessment of the Action Plan aimed at reducing incidental catch of seabirds in the French EEZ included in the CCAMLR division 58.5.1 and subarea 58.6, SBWG5 Doc 54, Cédric Marteau C. and J. Ringelstein, 2013. Assessment of the Action Plan aimed at reducing incidental catch of seabirds in the French EEZ included in the CCAMLR division 58.5.1 and subarea 58.6, Fifth Meeting of the Seabird Bycatch Working Group, La Rochelle, France, 1-3 May 2013. 13p.

Agnew, D.J. 2000. The illegal and unregulated fishery for toothfish in the Southern Ocean, and the CCAMLR catch documentation scheme. Marine Policy 24: 361-374.

Appleyard S.A., Williams R. and Ward R.D. 2004. Population genetic structure of Patagonian toothfish in the West Indian Ocean sector of the Southern Ocean. CCAMLR Science 11, 21-32.

Ashford, J.R., Jones, C.M., Hofmann, E.E., Everson, I., Moreno, C.A., Duhamel, G., Williams, R. 2008. Otolith chemistry indicates population structuring by the Antarctic Circumpolar Current. Can. J. Fish. Aquat. Sci. 65: 135–146.

BirdLife International. 2015. Procellaria aequinoctialis. The IUCN Red List of Threatened Species 2015: e.T22698140A83475793. http://dx.doi.org/10.2305/IUCN.UK.2015-4.RLTS.T22698140A83475793.en.

Bull, B., Francis, R.I.C.C., Dunn, A., McKenzie, A., Gilbert, D.J., Smith, M.H., Bian, R., Fu, D. 2012. CASAL (C++ algorithmic stock assessment laboratory): CASAL User Manual v2.30-2012/03/21. NIWA Technical Report 135. 280 p.

Candy, S.G., Constable, A.J., Candy, S., Lamb, T., Williams, R. 2007. A von Bertalanffy growth model for toothfish at Heard Island fitted to length-at-age data and compared to observed growth from mark recapture studies. CCAMLR Science, 14: 43-66.

Candy S.G., Rélot A., Duhamel G., Welsford D.C., Constable A.J., Lamb T.D., Pruvost P. and Gasco N. 2011. A preliminary population status model for the Patagonian toothfish, Dissostichus eleginoides, on the Kerguelen plateau (Divisions 58.5.1 and 58.5.2) using CASAL. WG-SAM-11/20.

CCAMLR 1995. Report of the Workshop on Methods for the Assessment of Dissostichus eleginoides. October 1995, 388–413. CCAMLR, Hobart, Australia.

CCAMLR 2011. Report on the Working Group of Fish Stock Assessment. Appendix J – Fishery Report: Dissostichus eleginoides Kerguelen Islands (Division 58.5.1).

CCAMLR. 2012. Fishery Report: Dissostichus eleginoides (TOP) Crozet Island inside the French EEZ (Subarea 58.6), appendix L.

CCAMLR, 2013. 2013 Report on bottom fisheries and vulnerable marine ecosystems, 52p.

CCAMLR. 2014a. Fishery Report 2014a: *Dissostichus eleginoides* Crozet Island French EEZ (Subarea 58.6).

CCAMLR. 2014b. Statistical Bulletin, Vol. 26. www.ccamlr.org

CCAMLR FSA, 2013. Report of the Working Group on Fish Stock Assessment (Hobart, Australia, 7 - 18 October 2013), Annex 6, p 246.

CCAMLR FSA, 2014. Report of the Working Group on Fish Stock Assessment – Annex 7, 94p. (Hobart, Australia, du 6 - 17 October 2014) (also in French) http://www.ccamlr.org/en/system/files/e-sc-xxxiii-a7.pdf

CCAMLR SAM, 2014. Report of the Working group on Statistics, assessments and modelling (Punta Arenas, Chile 30 June to 4 July 2014), 38p.

CCAMLR, FSA prelim, 2015. WG FSA-15 Report – Preliminary version, 83p. from https://www.ccamlr.org/en/system/files/e-fsa-15-v1.pdf

CESR-Réunion, 1996. Persepective de Développement de la pêche maritime à la Réunion Conseil Economique et Social Régional (CESR), La Réunion, 54p., from http://www.ceser-reunion.fr/fileadmin/user_upload/tx_pubdb/archives/Peche.pdf

COLTO, 2015. COLTO Fisheries Science Partnership, 1st COLTO Science & Suppliers Workshop, help in Alesund, Norway 5-6 June 15. Summary of presentations and discussions, 12p. http://www.colto.org/toothfish-collaboration/norway-workshop/

Delord K., Gasco N., Weimerskirch H., Barbraud C. and Micol T. 2005. Seabird mortality in the Patagonian toothfish longline fishery around Crozet and Kerguelen islands, 2001-2003. CCAMLR Science 12, 53-80.

Delord, K., Barbraud, C., Bost, C.A., Cherel, Y., Guinet, C. and Weimerskirch, H. 2013. Atlas of top predators from French Southern Territroes in the Southern Indian Ocean. Centre d'Etudes Biologiques de Chizé, UPR 1934 du Centre National de la Recherche Scientifique, UMS 3462 – PELAGIS, 79360 Villiers-en-Bois, France.

DFO. 2014. Assessment of the Atlantic Mackerel stock for the Northwest Atlantic (Subareas 3 and 4) in 2013. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2014/030.

Duhamel, G. 1981. Caractéristiques biologiques des principales espèces de poissons du plateau continental des Iles Kerguelen. Cybium, 5 (1): 19-32.

Duhamel, G. and Hautecoeur, M. 2009. Biomass, abundance and distribution of fish in the Kerguelen Islands EEZ (CCAMLR Statistical Division 58.5.1). CCAMLR Science 16: 1-32.

France, 2009. Décret no 2009-1039 du 26 août 2009 relatif aux conditions d'exercice de la pêche maritime dans les Terres australes et antarctiques françaises et pris pour l'application de l'article 3 de la loi no 66-400 du 18 juin 1966 modifiée sur l'exercice de la pêche maritime et l'exploitation des produits de la mer dans les Terres australes et antarctiques françaises, http://www.taaf.fr/IMG/pdf/decret_2009-1039.pdf

García de la Rosa, S.B., Sánchez, F. and Figueroa, D. 1997. Comparative feeding ecology of Patagonian toothfish (Dissostichus eleginoides) in the southwestern Atlantic. CCAMLR Science 4: 105–124.

Gasco, N. and Duhamel, G. 2011. Pêcherie ciblant la Légine (Dissostichus eleginoides) dans les ZEE TAAF : Analyse descriptive des données de prises accessoires et proposition pour un code de bonne conduite visant à réduire l'impact de la pêcherie sur les populations de Raie (Amblyraja taaf, Bathyraja eatonii, Bathyraja irrasa), de Grenadier (Macrourus sp.) et d'Antimore (Antimora rostrata), 127p. (with maps, limited distribution).

Gasco, N., Tixier, P., Duhamel. G., Guinet, C. 2014. Comparison of two methods to assess fish losses due to depredation by killer whales and sperm whales on demersal longline. CCAMLR, WG-FSA-14/10.

Guinet, C., Cherel, Y., Ridoux, V. and Jouventin, P. 1996. Consumption of marine resources by seabirds and seals in Crozet and Kerguelen waters: changes in relation to consumer biomass, 1962-1985. Antarctic Science 8, 23-20.

Guinet C., P. Tixier, N. Gasco & G. Duhamel. 2015. Long-term studies of Crozet Island killer whales are fundamental to understanding the economic and demographic consequences

of their depredation behaviour on the Patagonian toothfish fishery. ICES Journal of Marine Science 72(5): 1587–1597.

Horn, P.L. 2002. Age and growth of Patagonian toothfish (Dissostichus eleginoides) and Antarctic toothfish (D. mawsoni) in waters from the New Zealand subantarctic to the Ross Sea, Antarctica. Fish. Res. 56:275–287.

ICES. 2014. Updated Advice for 2014. Mackerel in the Northeast Atlantic (combined Southern, Western and North Sea spawning components) 9.3.17a ICES Advice Book 9, 17p. http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/mac-nea_update_2014.pdf .

Kock, K.H. 2001. The direct influence of fishing and fishery-related activities on non-target species in the Southern Ocean with particular emphasis on longline fishing and its impact on albatrosses and petrels – a review. Reviews in Fish Biology and Fisheries 11: 31-56.

Lord, C., Duhamel, G., Pruvost, P. 2006. The Patagonian toothfish (Dissostichus eleginoides) fishery in the Kerguelen Islands (Indian Ocean Sector of the Southern Ocean). CCAMLR Science 13: 1-25.

Marteau, C. 2013. Assessment of incidental catches of seabirds in the French EEZ included in division 58.5.1 and subarea 58.6, CCAMLR XXXII WG-FSA-13/06

MEP, 2013. Fishery for toothfish (*Dissostichus elegionides*) by SARPC in Kerguelen. Gascoigne, J. Holt,T. and S. des Clers, 2013. MSC Public Certification Report, August 2013, 328p. Available at : https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/southern-ocean/sarpc_toothfish/assessment-downloads-1/20130829_PCR_TOO139.pdf.

MEP, 2014.. Surveillance visit report for SARPC Kerguelen toothfish fishery (Dissostichus eleginoides). des Clers, S. Sieben, C. and J. Gascoigne, Surveillance Year 1, 24p. https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/southern-ocean/sarpc_toothfish/assessment-downloads-1/20141103_SR_TOO139_REV.pdf

MEC, 2015. Surveillance visit report for SARPC Kerguelen toothfish fishery (Dissostechus eleginoides). K. Collinson, S. des Clers and J-C. Brêthes, Surveillance Year 2, 34p. https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/southern-ocean/sarpc_toothfish/assessment-downloads-1/20151215_SR_TOO139.pdf

MEDDE DMSOI, 2015. Bilan d'activités 2014 CROSS Réunion, 55p

NOAA, 2015. Summary of stock assessment prospectuses. Population dynamics Branch, Northeast Fisheries Center. Last Update July, 24, 2015. http://www.nefsc.noaa.gov/groundfish/operational-assessments-2015/docs/Stock%20Prospectus.pdf

North, A.W. 2002. Larval and juvenile distribution and growth of Patagonian toothfish around South Georgia. Antarctic Science, 14, pp 2531.

Palomares, M.L.D., Pruvost, P., Pitcher, T.J. and Pauly, D. (eds) 2005. Modelling Antarctic marine ecosystems. Fisheries Research Centre Reports 13(7), 98pp.

Pollard R.T., Venables, H.J., Read, J.F., Allen, J.T. 2007. Large-scale circulation around the Crozet Plateau controls an annual phytoplankton bloom in the Crozet Basin. Deep-Sea Research II 54:1915–1929.

Roche, C., Guinet, C., Gasco, N., and Duhamel, G. 2007. Marine mammals and demersal longline fishery interactions in Crozet and Kerguelen EEZs: an assessment of depredation levels. CCAMLR Science 14, 67-82.

Rogers, A.D., Morley, S., Fitzcharles, E., Jarvis, K., and Belchier, M. 2006. Genetic structure of Patagonian toothfish (Dissostichus eleginoides) populations on the Patagonian Shelf

and Atlantic and western Indian Ocean Sectors of the Southern Ocean. Marine Biology. 149: 915–924.

Sinegre, R., Duhamel, G. 2013. Preliminary stock assessment of Patagonian toothfish (Dissostichus eleginoides) in the vicinity of Crozet Islands (part of Subarea 58.6). CCAMLR, WG-FSA-13/05.

Sinegre, R., Duhamel, G. 2014. Updated and revised stock assessments of Patagonian toothfish (*Dissostichus eleginoides*) in the vicinity of Kerguelen Islands (Division 58.5.1) and Crozet Islands (Subarea 58.6). CCAMLR, WG-FSA-14/36 Rev. 1.

Sinegre, R., Duhamel, G. 2015. Updated assessment of Patagonian toothfish (*Dissostichus eleginoides*) in the vicinity of Crozet Islands (Subarea 58.6). CCAMLR, WG-FSA-15/69.

Slatkin, M. 1987. Gene flow and the geographic structure of natural populations. Science 236: 787-792.

Stevens, J. (SSG Australia & Oceania Regional Workshop, March 2003). 2003. Somniosus antarcticus. The IUCN Red List of Threatened Species 2003: e.T41857A10580843.http://dx.doi.org/10.2305/IUCN.UK.2003.RLTS.T41857A10580843.en. Downloaded on 29 January 2016

TAAF, 2001. Arrêté n° 2001-21 du 29 juin 2001 modifié (Arrêtés 2005-25 et 2006-46) Relatif à l'exercice des fonctions de contrôleur de pêche dans les zones économiques des Terres australes françaises

TAAF. 2009. Arrêté n° 2009-41 du 20 juillet 2009 définissant des secteurs statistiques autour des îles Crozet et des îles Kerguelen. Journal officiel des terres australes et antarctiques françaises n°42, pp. 17-18.

TAAF, 2010. Document synthétique ; Plan de gestion 2011 – 2015. Réserve naturelle des Terres australes françaises. Enjeux et perspectives - Objectifs et actions.

TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (*Dissostichus eleginoides*) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p. http://www.taaf.fr/IMG/pdf/jo_63_3eme_trim_2014.pdf

TAAF, 2015a. Arrêté n°2015-11 du 22 janvier 2015 Fixant le montant des droits de pêche assis sur les quantités de légines (*Dissostichus eleginoides*), de raies (*Bathyraja eatonii* et *B.irrasa*, *Raja taaf*) et de grenadiers (*Macrourus carinatus*) dans les zones économiques exclusives de Kerguelen et de Crozet pour la campagne de pêche 2014-2015, 1p. http://www.taaf.fr/IMG/pdf/a-2015-11_droit_de_peche_legine_2014_2015.pdf

TAAF, 2015b. Powerpoint presentations of the TAAF DPQM and DCPN to the C3P meeting of 25 August 2015, 22 slides (communicated by TAAF).

TAAF, 2015c. Plan de Gestion de la pêcherie de la légine australe *Dissostichus eleginoides* dans les zones exclusives des Iles Kerguelen et Crozet. Version VF-4 du 6 août 2015, 48p.

TAAF, 2015d. Réserve naturelle des Terres australes françaises : bilan des activités 2014.

TAAF, 2015e. Arrêté n°2015-100 du 31 août 2015 Portant repartition en quotas du total admissible de capture de légine australe (*Dissotichus eleginoides*) entre les armements autorisés à pêcher à la palangre dans les zones économiques exclusives de Kerguelen et de Crozet pendant la champagne 2015-2016, 2p.

TAAF, 2015f. Compte-rendu du 11ème Groupe de Travail de pêche australe, 8 avril 2015, MNHN (43 rue Cvuier – 75005 Paris), 10p.

Tixier P, N Gasco, G Duhamel, M Viviant, M Authier and C Guinet, 2010. Interactions of Patagonian Toothfish fisheries with Killer and Sperm Whales in the Crozet Islands EEZ: An

assessment of depredation levels and insights on possible mitigation strategies. CCAMLR Science, 17: 179-195.

Zhou, S. and Fuller, M. 2011. Sustainability assessment for fishing effect on fish bycatch species in the Macquarie Island Toothfish Longline Fishery: 2007- 2010. June 2011, Australian Fisheries Management Authority.

Ziegler, P., Welford, D.C. 2014. Data and approach for the revised stock assessment for the Heard Island and the McDonald Islands Patagonian toothfish (*Dissostichus eleginoides*) fishery. CCAMLR, Hobart WG- SAM-14/23.

Appendices

Appendix 1. Scoring and Rationales

Evaluation table 1 - PI 1.1.1

PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	It is likely that the stock is above the point where recruitment would be impaired.	It is highly likely that the stock is above the point where recruitment would be impaired.	There is a high degree of certainty that the stock is above the point where recruitment would be impaired.
	Met?	Y	Y	N
	Justification	CCAMLR's decision rules considers the fractions of the population that can be taken by the fishery each year so that the target population old enough to spawn (the spawning biomass, SSB), according to a simulation model: 1) only drops below 20% of the pre-fishing median (B0) on 1 in 10 of the 20-year period of fishing; 2) after a 35-year period of fishing is 50% (for toothfish) of the median before fishing started. According to those rules, the risk-based reference points for the toothfish are: TRP = 50% B0 and LRP = 20% B0. This practically means that the reproductive capacity is maintained if SSB is larger than TRP and that recruitment is not impaired as long as the SBB is above that TRP. The LRP corresponds to the Point of Recruitment Impairement (PRI). It can be noted that a value of 50% B0 corresponds to BMSY in the "classical" Shaefer surplus production model. The CASAL model presented in 2013 and revised in 2015, estimates the virgin biomass to be 50,410 (43,760 – 57,410) tonnes (lower estimates), which corresponds to a TRP of 25,205 t (21,880-27,705), and a LRP of 10,082 t (8752-11482). The 2015 SSB is estimated to be 34,700 t, between 64.5 - 72.8 % of the virgin biomass, and more than twice the LRP value. The model also shows that the biomass never fell below 60% of the virgin biomass since the beginning of the fishery. A long-term projection at a constant catch of 1100 tonnes (see figure below) indicates that the biomass would never reach the limit of 50% virgin biomass, at least over the next ten years. The CASAL model presented in 2013 and revised in 2015, shows that the biomass never fell below 60% of the virgin biomass since the beginning of the fishery. The 2015 SSB is estimated to be between 74.1 and 81.0 % of the virgin biomass. A long-term projection at a constant catch of 1100 tonnes (see figure below) indicates that the biomass would never reach the limit of 50% virgin biomass. The current TAC (850 tonnes for the 2014-2015 fishing season) is low compared to the estimated biomass (~2%).		

		According to the model, it is highly likely that the stock is above the point where recruitment would be impaired. Therefore, SG 60 and 80 are met. CASAL model presents several uncertainties: - there are no fisheries-independent data that would help to calibrate the model; - Biological data specific for Crozet area (growth curve) are now available, which corresponds to a previous recommendation of CCAMLR (2014a). But the incomplete sample and the short time series of age data don't allow the model to estimate the year class strength (Sinegre and Duhamel, 2015); - Depredation rate remains a concern; a 10% rate is used in the assessment, however scientific publications estimate this rate to be higher; - Depredation may also bias the catch-at-length distribution; - The definition of stock unit remains unclear; even if the tagging programme indicates the species to be almost sedentary, exchanges may exist between areas; - No information is available for catches outside French national jurisdiction. Therefore, it is not possible to say that there is a high degree of certainty that the stock is above the point where recruitment would be impaired, and SG 100 is not met.

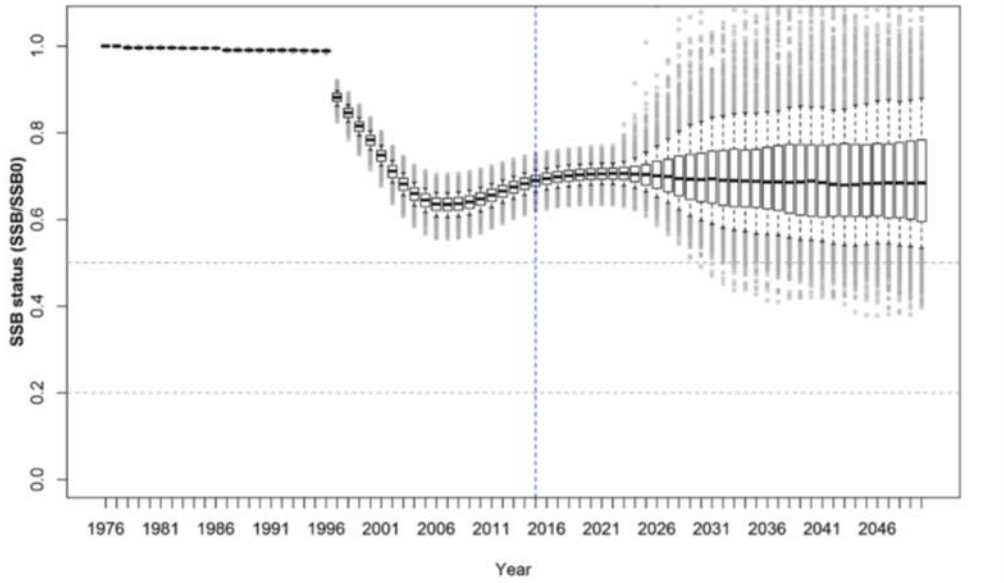


Figure: Projected spawning stock biomass (SSB) in tonnes; a: with a future constant catch of 1100 tonnes (including a 10 depredation rate), the black line represents the median MCMC run, the grey envelope the 95% confidence interval, dotted lines show the 50% and 20% status levels used in the CCAMLR decision rules (from Sinegre and Duhamel, 2015).

b	**Guidepost**		The stock is at or fluctuating around its target reference point.	There is a high degree of certainty that the stock has been fluctuating around its target reference point, or has been above its target reference point, over recent years.
	Met?		Y	N
	Justification	As mentioned above, the estimated SSB never fell below 60% of the virgin biomass since the beginning of the fishery (see figure in SIa). The stock is fluctuating above its target reference points, and SG 80 is met. Due to the uncertainties in the estimations, there is no high degree of certainty that the stock is fluctuating around, or above, its target reference points, and SG 100 is not met.		

References	CCAMLR FSA, 2013. Report of the Working Group on Fish Stock Assessment (Hobart, Australia, 7 to 18 October 2013), Annex 6, p 246. CCAMLR FSA, 2014. Report of the Working Group on Fish Stock Assessment (Hobart, Australia, 6-17 October 2014), Annex 7, 94p. CCAMLR. 2014a. Fishery Report 2014: Dissostichus eleginoides Crozet Island French EEZ (Subarea 58.6). Gasco N., P. Tixier., G. Duhamel. & C. Guinet. 2014. Comparison of two methods to assess fish losses due to depredation by killer whales and sperm whales on demersal longline. CCAMLR, WG-FSA-14/10. Sinegre, R. & G. Duhamel. 2014. Updated and revised stock assessments of Patagonian toothfish (Dissostichus eleginoides) in the vicinity of Kerguelen Islands (Division 58.5.1) and Crozet Islands (Subarea 58.6). CCAMLR, WG-FSA-14/36 Rev. 1. Sinegre, R. & G. Duhamel. 2015. Updated assessment of Patagonian toothfish (Dissostichus eleginoides) in the vicinity of Crozet Islands (Subarea 58.6). CCAMLR, WG-FSA-15/69. http://www.ccamlr.org/en/fisheries/setting-catch-limits

Stock Status relative to Reference Points

	Type of reference point	**Value of reference point**	**Current stock status relative to reference point**
	Biomass (SSB) > 50% virgin Biomass (B_0)	B_0 = 50 410 t (43 760 - 57 410) (minimal value using the model of 2014)	SSB(2015) = 34 700 t (28 160 - 41 630) SSB(2015)/B_0 (%) = 68.9 (64.5 - 72.8)

OVERALL PERFORMANCE INDICATOR SCORE:	**80**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation table 2 - PI 1.1.2

PI 1.1.2		Limit and target reference points are appropriate for the stock		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Generic limit and target reference points are based on justifiable and reasonable practice appropriate for the species category.	Reference points are appropriate for the stock and can be estimated.	
	Met?	Y	Y	
	Justification	Two sets of reference points can be applied to this fishery: i) the default MSC biomass reference points (TRP=40% B_0 and LRP=20% B_0); ii) the CCAMLR risk-based reference points for the toothfish (TRP = 50% B_0, LRP = 20% B_0). The stock assessment model, presented in 2013 and revised in 2015, provided a minimal estimate of B_0, and therefore the TRP (21 880-28 705 tonnes). According to CCAMLR, reference points are appropriate for the toothfish as it provides management advice on that basis, and some toothfish fisheries are MSC certified (South Georgia, HIMI, Kerguelen). The reference points are estimated with the CASAL assessment model. Both SG 60 and 80 are met.		
b	**Guidepost**		The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity.	The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity following consideration of precautionary issues.
	Met?		Y	Y
	Justification	Both the MSC default reference points (40% and 20% B_0) and the CCAMLR probabilistic reference points are met according to the most recent stock assessment: biomass is estimated at 64.5 % of B_0 in 2015, and the long-term stock biomass projections meet CCAMLRs requirements in terms of probabilities of maintaining biomass at >50% B_0. The limit reference point is set above the level at which there is an appreciable risk of impairing reproductive capacity and SG 80 is met. Precaution is built into the reference points and decision rule in three ways: i) the target of 50% of unfished levels is above the 40% level often used as a default estimate of B_{MSY} (e.g. by MSC); ii) the use of constant catch projections in both reference points will produce more conservative catches than projections that allow updating of catches to reflect any forecast changes in biomass over the projection period; iii) the choice of a long projection period is precautionary because the range of projections will progressively widen and this uncertainty in turn requires a lower constant catch to meet the reference points, since they are expressed in probabilistic terms. The team estimates that SG 100 is met.		

c	**Guidepost**		The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome.	The target reference point is such that the stock is maintained at a level consistent with B_{MSY} or some measure or surrogate with similar intent or outcome, or a higher level, and takes into account relevant precautionary issues such as the ecological role of the stock with a high degree of certainty.
	Met?		Y	N
	Justification	B_{MSY} is not calculated as such in the toothfish stock assessment models. It can be noted that a value of 50% B_0 corresponds to B_{MSY} in the "classical" Schaefer surplus production model. This level is above the 40% B_0 level often used as a default estimate of B_{MSY} (e.g. by MSC). The long-term projection with constant catches at 1100 tonnes indicates that the stock should be maintained above the most conservative reference level. The current TAC of 850 tonnes is below the yield of 2500 tonnes (including 10% killer whale depredation) that would satisfy the CCAMLR decision rules. The SG 80 level is met. SG100 requires for the TRP that it is set at a higher level than BMSY, taking into account ecological issues with a high degree of certainty. The 50% B0 reference point is probably a reasonable precautionary TRP given the life history of toothfish, but probably cannot be described with any certainty as a higher level than BMSY, particularly given that BMSY has not been formally evaluated for this stock. The ecological role of the toothfish is not considered neither in the assessment nor in the management advice. There is no "high degree of certainty" in the evaluation of the reference points. Therefore SG 100 is not met.		
d	**Guidepost**		For low trophic level stocks, the target reference point takes into account the ecological role of the stock.	
	Met?		N/A	
	Justification	Toothfish is not an LTL species		
References		CCAMLR FSA, 2013. Report of the Working Group on Fish Stock Assessment (Hobart, Australia, 7 to 18 October 2013), Annex 6, p 246. CCAMLR FSA, 2014. Report of the Working Group on Fish Stock Assessment (Hobart, Australia, 6-17 October 2014), Annex 7, 94p. Sinegre, R. & G. Duhamel. 2015. Updated assessment of Patagonian toothfish (Dissostichus eleginoides) in the vicinity of Crozet Islands (Subarea 58.6). CCAMLR, WG-FSA-15/69. http://www.ccamlr.org/en/fisheries/setting-catch-limits		

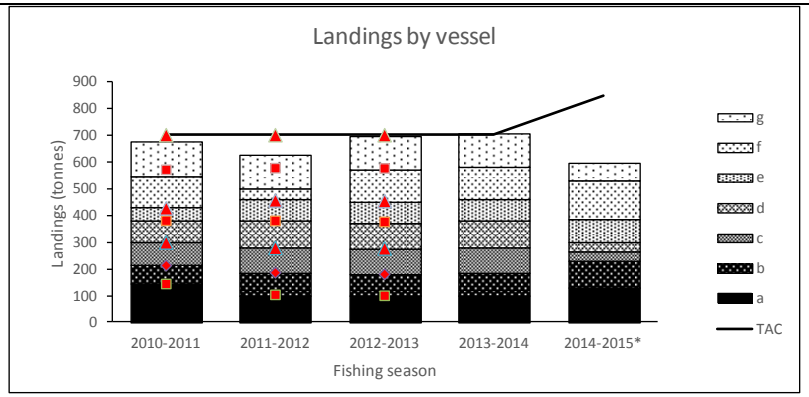
OVERALL PERFORMANCE INDICATOR SCORE:	**90**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation Table for PI 1.1.3 – not applicable, only scored if PI 1.1.1 60-80

Evaluation table 3 - PI 1.2.1

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The harvest strategy is expected to achieve stock management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy work together towards achieving management objectives reflected in the target and limit reference points.	The harvest strategy is responsive to the state of the stock and is designed to achieve stock management objectives reflected in the target and limit reference points.
	Met?	Y	Y	N
	Justification	A global strategy, defined in the order ("arrêté") n°2014-78 of August 19 2014, sets the rules of fishing activities in the French EEZ of Crozet and Kerguelen and defines the objective of [*free translation*] insuring long-term conservation and optimal use of fishing resources in the EEZ, in order to achieve the maximum sustainable yield. The fishing operations should be conducted in a way that would preserve the ecosystem where those resources are living. Practically, the strategy includes: - Limited entry in the fishery: only seven licensed vessels are allowed to fish in the Crozet area; - TAC, consistent with CCAMLR decision rules, based on scientific advice and economic considerations; - The TAC is divided among the vessels, each allocation is a function of the performance of the vessel with regard to the regulation (quota, by-catches, etc.); - Severe control of illegal fishing. The TAC is set according to scientific advice, taking economic considerations into account. The scientific advice is in agreement with CCAMLR decision rules. The toothfish assessment makes explicicit references to those rules (TRP, LRP). Even if France is not tied by conservation measures decided by the CCAMLR, management objectives follow CCAMLR's advice, and the new management plan should follow MNHN advice and CCAMLR principles. Therefore, the harvest strategy is not expected to change in the near future. Technical measures are also set: - Compulsory VMS system; - Compulsory log-books and dock-side monitoring; - 100% observer coverage; each observer should verify at least 25% of each line set; - The fishing area is divided in 160 sectors (1° longitude x 0.5° latitude); a maximum of two vessels should be present on the same sector at the same time; a vessel cannot fish on more than two sectors; a vessel cannot fish on a sector more than 10 days; - Fishing at depths shallower than 500 m and in Crozet territorial waters is prohibited; - Maximum number of hooks per line;		

		- If the proportion of undersized fish exceeds 10%, the vessel should move on at a minimal distance of 2.5 miles. All those elements intend to achieve the global strategy to conserve fisheries resources. Stock assessments indicate that the biomass never fell below 60 % of the virgin biomass, above the 50 % reference level adopted by the CCAMLR. Therefore, the team estimates that both SG 60 and 80 are met.		
b	**Guidepost**	The harvest strategy is likely to work based on prior experience or plausible argument.	The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives including being clearly able to maintain stocks at target levels.	The performance of the harvest strategy has been fully evaluated and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	Y	Y	N
	Justification	The various measures included in the strategy have shown to be able to keep the SSB above the reference point of 50% B_0, as the SSB(2015) is above 60% of B_0, according to the stock assessment. A long-term projection with a TAC of 1100 tonnes also indicates that, at that catch level, the SSB would not decline to the level of the reference point. Due to the prohibition of fishing in the shallow area, juvenile toothfish are protected, and the reproductive capacity of the stock is not impaired. The overall objective to ensure the conservation of the fishing resource would be achieved. The SG 60 and 80 are met. However, the performance of the harvest strategy has not been fully evaluated and it is not possible to affirm that evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels. SG 100 is not met.		
c	**Guidepost**	Monitoring is in place that is expected to determine whether the harvest strategy is working.	The harvest strategy may not have been fully tested but monitoring is in place and evidence exists that it is achieving its objectives.	The harvest strategy is periodically reviewed and improved as necessary.
	Met?	Y		
	Justification	Monitoring includes - Compulsory VMS system; - Compulsory log-books and dock-side monitoring; - 100% observer coverage; each observer should verify at least 25% of each line set. Scientific data include length-frequency in catch, and, recently, catch-at-age. At least 700 fishes are tagged every year. Data provided by the SARPC indicate that the TAC was never exceeded, at least since 2010 (see figure). Stock assessments show that the spawning biomass remains above the target reference points. The monitoring system is able to determine if the harvest strategy is working. SG 60 is met.		

c (cont'd)	**Justification**	 **Figure 16 - Individual quotas (dots) and catches of the seven vessels operating in Crozet area. Data from the 2014-2015 fishing season are partial. Names of vessels are omitted to respect confidentiality. Drawn from data provided by the SARPC.**		
d	**Guidepost**			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			N
	Justification	The harvest strategy has not been reviewed until now (a review is expected for 2018). The SG is not met.		
References		Sinegre, R. & G. Duhamel, 2015. Updated assessment of Patagonian toothfish (Dissostichus eleginoides) in the vicinity of Crozet Islands (Subarea 58.6). CCAMLR, WG-FSA-15/69. TAAF, 2009. Arrêté n° 2009-41 du 20 juillet 2009 définissant des secteurs statistiques autour des îles Crozet et des îles Kerguelen. Journal officiel des terres australes et antarctiques françaises n°42, pp. 17-18. TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et Kerguelen. http://www.taaf.fr/IMG/pdf/jo_63_3eme_trim_2014.pdf TAAF, 2015c. Plan de Gestion de la pêcherie de la légine australe Dissostichus eleginoides dans les zones exclusives des Iles Kerguelen et Crozet. Version VF-4 du 6 août 2015, 48p.		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**N/A**

Evaluation table 4 - PI 1.2.2

PI 1.2.2		There are well defined and effective harvest control rules in place		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Generally understood harvest rules are in place that are consistent with the harvest strategy and which act to reduce the exploitation rate as limit reference points are approached.	Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached.	
	Met?	Y	N	
	Justification	MSC considers harvest control rules (HCRs) as actions that management takes in response to changes in the fishery and/or changes in status in relation to reference points. They are defined as the pre-agreed rules and management actions that will be taken in response to changes in indicators of stock status with respect to explicit or implicit reference points. General harvest control rules exist, expressed in the numerous measures (limited access, effort control at sea, observer coverage, dock-side monitoring, VMS) to control and limit exploitation. TAAF has the entire power to take further actions if the global objective of the strategy is threatened. The rules are generally understood and complied with, and SG 60 is met. However, the team did not consider that the HCRs are 'well-defined', in the sense that the links between scientific advice, reference points and decisions on the TAC are not clear and transparent. Rather, the TAC is determined by the three French ministries concerned and the industry. That TAC is tested *a posteriori* by the MNHN with the CASAL model. So far, it has been the case that this post hoc testing has shown that the TAC is precautionary in relation to CCAMLR reference points, but the actions which would be taken in the event that this is not the case are not well-defined. SG80 is not met.		
b	**Guidepost**		The selection of the harvest control rules takes into account the main uncertainties.	The design of the harvest control rules takes into account a wide range of uncertainties.
	Met?		N	N
	Justification	Pre-agreed rules and management actions that will be taken in response to changes in indicators of stock status are not defined. Since, the harvest control rules are not selected in agreement with pre-agreed rules, It is not possible to say that those rules take uncertainty into account. SG 80 and 100 are not met.		
c	**Guidepost**	There is some evidence that tools used to implement harvest control rules are appropriate and effective in controlling exploitation.	Available evidence indicates that the tools in use are appropriate and effective in achieving the exploitation levels required under the harvest control rules.	Evidence clearly shows that the tools in use are effective in achieving the exploitation levels required under the harvest control rules.
	Met?	Y	Y	N

	Justification	Even if the rules are not designed, a set of tools exists to control exploitation. Current exploitation levels respect the CCAMLR's recommendation to keep biomass above 50 % of the virgin biomass, as the stock never fell below 60 % of the virgin biomass. There is evidence that the tools are appropriate and effective to achieve exploitation levels required by the general control rules. Both SG 60 and 80 are met.
References		Sinegre, R. & G. Duhamel. 2015. Updated assessment of Patagonian toothfish (*Dissostichus eleginoides*) in the vicinity of Crozet Islands (Subarea 58.6). CCAMLR, WG-FSA-15/69. TAAF. 2014. Arrêté n°2014-78 du 19 août 2014 prescrivant les règles encadrant l'exercice de la pêche à la légine australe (*Dissostichus eleginoides*) dans les zones économiques exclusives de Crozet et Kerguelen.
OVERALL PERFORMANCE INDICATOR SCORE:		**65**
CONDITION NUMBER (if relevant):		**1**

Evaluation table 5 - PI 1.2.3

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Some relevant information related to stock structure, stock productivity and fleet composition is available to support the harvest strategy.	Sufficient relevant information related to stock structure, stock productivity, fleet composition and other data is available to support the harvest strategy.	A comprehensive range of information (on stock structure, stock productivity, fleet composition, stock abundance, fishery removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	Y	Y	N
	Justification	The information includes: - Vessels number and characteristics due to the licensing system; - Catches and fishing effort (log-books, observers' reports, dock-side monitoring); - Catch-at-length (at sea sampling); - Catch-at-age (calculated in 2015); - Tagging-recaptures data. The available information is used in the stock assessment model and allows to support the harvest strategy. Both SG 60 and 80 are met. The range of information is not comprehensive: e.g. there is no environmental information; the ecological role of the stock is not taken into account. SG 100 is not met.		
b	**Guidepost**	Stock abundance and fishery removals are monitored and at least one indicator is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and fishery removals are regularly monitored at a level of accuracy and coverage consistent with the harvest control rule, and one or more indicators are available and monitored with sufficient frequency to support the harvest control rule.	All information required by the harvest control rule is monitored with high frequency and a high degree of certainty, and there is a good understanding of inherent uncertainties in the information [data] and the robustness of assessment and management to this uncertainty.
	Met?	Y	Y	N

	Justification	In the French EEZ, fishery removals are monitored very closely through log-books, observers and quay-side inspections. Annual Catch data from the Crozet area exist since 1977. Along with catches, indicators include catch-at-length and, since 2015, catch-at-age. Those data allow to estimate stock biomass, calculated every year since 2013. Those data support the harvest control rules and both SG 60 and 80 are met. All information is certainly not available, especially as there are no fishery-independent data. The uncertainty around available data is not known: the actual level of depredation remains an issue; IUU catches are unknown. Those uncertainties limit the robustness of the assessment. SG 100 is not met.		
c	**Guidepost**		There is good information on all other fishery removals from the stock.	
	Met?		Y	
	Justification	Other removals may come from: - IUU fisheries; - Catches in those parts of areas 58.6 and 58.7 that come under under South-African jurisdiction, considering that toothfish present in those areas may belong to the same biological unit as Crozet fishes. - Orca and sperm whale depredation. Under current surveillance programmes, IUU catches are estimated to be negligible inside national EEZs. The level of catches outside EEZs is not known and remains a concern. Two vessels are licensed by South-Africa to fish in areas 58.6 and 58.7. Catches are monitored and reached 22 tonnes in 58.6 and 122 tonnes in 58.7. Depredation is monitored and estimated for the purpose of stock assessment. The information is not comprehensive, due to IUU fishing, but it is possible that we have good information on total removal. SG 80 is met.		
References		CCAMLR. 2013. Fishery Report 2013: *Dissostichus eleginoides* Prince Edward Islands South African EEZ (Subareas 58.6 and 58.7 and part of Area 51) Sinegre, R. & G. Duhamel. 2015. Updated assessment of Patagonian toothfish (*Dissostichus eleginoides*) in the vicinity of Crozet Islands (Subarea 58.6). CCAMLR, WG-FSA-15/69. TAAF. 2014. Arrêté n°2014-78 du 19 août 2014 prescrivant les règles encadrant l'exercice de la pêche à la légine australe (*Dissostichus eleginoides*) dans les zones économiques exclusives de Crozet et Kerguelen.		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**N/A**

Evaluation table 6 - PI 1.2.4

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The assessment estimates stock status relative to reference points.	The assessment is appropriate for the stock and for the harvest control rule, and is evaluating stock status relative to reference points.	The assessment is appropriate for the stock and for the harvest control rule and takes into account the major features relevant to the biology of the species and the nature of the fishery.
	Met?		Y	N
	Justification	The stock assessment uses the CASAL probabilistic model, agreed by CCAMLR Scientific Committee and used to assess the stock of the Antarctic toothfish (*Dissostichus mawsoni*) in the Ross Sea (CCAMLR divisions 88.1 and 88.2), the stock of the Patagonian toothfish (*D. eleginoides*) in South Georgia (CCAMLR division 48.3) and in the Heard and McDonald Islands (CCAMLR division 58.5.2). The model provides an estimate of the virgin biomass (B_0) and the current level of spawning stock biomass (SSB) as well as a long-term (35-year) projection. The model allows to test various scenarios of catches with respect to the global strategy. CCAMLR defines the upper reference point as 50 % of the initial biomass. The assessment using the CASAL model allows to estimate the initial biomass and the current SSB, as well as a long-term projection in relation to that reference point.. The 2015 assessment indicates that the SSB never fell below 60 % of the initial biomass (64.5 % in 2015 under the worst-case scenario), and would not reach the 50 % level over 35 years considering a constant catch (including depredation) of 1100 tonnes. As the assessment is appropriate for the stock and for the harvest control rules, and estimates stock status relative to reference points, SG 80 is met		
b	**Guidepost**	The assessment identifies major sources of uncertainty.	The assessment takes uncertainty into account.	The assessment takes into account uncertainty and is evaluating stock status relative to reference points in a probabilistic way.
	Met?	Y	Y	N
	Justification	The CASAL model is a probabilistic model, using a Bayesian approach. Uncertainty is incorporated in the calculations. A “process error” (additional variance) is added in the model. Maximum likelihood curves for each parameter involved are provided. Results are shows as a median of the calculations and of the confidence interval. The assessment takes uncertainty into account and both SG 60 and 80 are met. However, all uncertainties are not taken into account (e.g. depredation rate; effect of depredation on catch-at-length distribution). The confidence interval provided by the model may not reflect the global uncertainty, and the probabilistic approach may be incomplete. SG 100 is not met.		

c	**Guidepost**			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			N
	Justification	No fishery-independent data exist for the Crozet fishing area. It is therefore impossible to test the robustness of the assessment. Despite CCAMLR's recommendation, the sensitivity to the depredation rate has not yet been evaluated. The definition of the unit of stock and exchanges between stocks remain issues. Alternative approaches have not been rigorously explored and SG 100 is not met.		
d	**Guidepost**		The assessment of stock status is subject to peer review.	The assessment has been internally and externally peer reviewed.
	Met?		Y	Y
	Justification	The toothfish stock assessment is presented every year to the Working Group on Fish Stock Assessment of the CCAMLR. In 2013, CCAMLR recommendations were : (i) continuation of France's tagging programme in Subarea 58.6; (ii) comparison of the results from the model with a calculation of biomass through CPUE by seabed area; (iii) integration of sensitivity runs, including trawl length-frequency data, IUU catches and orca depredation. Following those recommendations, a revised model was presented in 2014 (Sinegre and Duhamel, 2014). The model included estimated levels of depredation by orca (*Orcinus orca*) from GAM analyses of the fishery data. In 2014, CCAMLR recommended that age frequencies be included once age data are available and that year-class strength be estimated as a sensitivity analysis. It further recommended that alternative estimates of whale depredation, be investigated further. A revised model was presented in 2015, which included a new growth model for Kerguelen and Crozet areas combined, which allowed to test the effect of age composition on the estimate. The assessment is externally peer reviewed and SG 100 is met.		
References		CCAMLR. 2013. Report of the Working Group on Fish Stock Assessment (Hobart, Australia, 7 to 18 October 2013), Annex 6, p 246. CCAMLR. 2014. Fishery Report 2014: Dissostichus eleginoides Crozet Island French EEZ (Subarea 58.6). Gasco N., P. Tixier., G. Duhamel. & C. Guinet. 2014. Comparison of two methods to assess fish losses due to depredation by killer whales and sperm whales on demersal longline. CCAMLR, WG-FSA-14/10. Sinegre, R. & G. Duhamel. 2014. Updated and revised stock assessments of Patagonian toothfish (Dissostichus eleginoides) in the vicinity of Kerguelen Islands (Division 58.5.1) and Crozet Islands (Subarea 58.6). CCAMLR, WG-FSA-14/36 Rev. 1. Sinegre, R. & G. Duhamel. 2015. Updated assessment of Patagonian toothfish (Dissostichus eleginoides) in the vicinity of Crozet Islands (Subarea 58.6). CCAMLR, WG-FSA-15/69.		
OVERALL PERFORMANCE INDICATOR SCORE:				**85**

CONDITION NUMBER (if relevant):	N/A

Evaluation table 7 - PI 2.1.1

PI 2.1.1		The fishery does not pose a risk of serious or irreversible harm to the retained species and does not hinder recovery of depleted retained species		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Main retained species are likely to be within biologically based limits or if outside the limits there are measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding of the depleted species.	Main retained species are highly likely to be within biologically based limits or if outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.	There is a high degree of certainty that retained species are within biologically based limits.
	Met?	Y	N	N
	Justification	Main retained species are grenadier (*Macrourus carinatus*) and taaf ray (*Amblyraja taaf*); non-main retained species are lithoides crabs (Tables 9 and 10). The population size or status of these species is not known; however, a code of good conduct (code de bonne conduite – CBC) has been defined by MNHN and is binding on the vessels since it is incorporated into the fisheries regulations. The CBC sets objectives and measures for reducing bycatch of grenadiers and rays (objectives given in main report, full detail of CBC provided in the Kerguelen report). The observers evaluate and report on whether the CBC is being respected and report that it generally is (with some caveats as described in the main report associated mainly with the need to avoid orca depredation). In addition to this, the fishery has introduced new cut-off requirements for rays, based on CCAMLR CM 33-03, which requires them to be dehooked and discarded carefully if they are alive. Again, observers report on the implementation of these requirements and note that they are generally respected except (again) in cases where rapid hauling is required to minimise depredation. The TAAF reportedly take total catch of rays into account in adjusting quota allocations. On this basis, the team considered that SG60 is met, as at Kerguelen. In relation to SG80, the team considered that the CBC and other measures certainly constitute a 'partial strategy'. The team was not, however, provided with evidence that it is 'demonstrably effective' – i.e. there has not yet been any analysis as to whether the objectives of the CBC in terms of bycatch reductions are being met, even though the 3-year period foreseen to achieve them has more or less passed. A comparison of Avistock data from 2013-14 and 2014-15 (Table 9 vs. Table 10) suggests a possible reduction in ray bycatch rates, but no particular evidence of any change for grenadiers – this does not, however, cover the full period before / after implementation, so potentially no change would be expected. On this basis, the team considered that SG80 is not met in full.		
b	**Guidepost**			Target reference points are defined and retained species are at or fluctuating around their target reference points.
	Met?			N
	Justification	None of the retained species have defined target reference points.		

c	**Guidepost**	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the retained species to be outside biologically based limits or hindering recovery.		
	Met?	Y		
	Justification	The status of all retained species is poorly known; measures and practices are in place as described above.		
References		Gasco, N. and Duhamel, G. 2011. Pêcherie ciblant la Légine (Dissostichus eleginoides) dans les ZEE TAAF : Analyse descriptive des données de prises accessoires et proposition pour un code de bonne conduite visant à réduire l'impact de la pêcherie sur les populations de Raie (Amblyraja taaf, Bathyraja eatonii, Bathyraja irrasa), de Grenadier (Macrourus sp.) et d'Antimore (Antimora rostrata), 127p. (with maps, limited distribution). TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p. MEP, 2013. Fishery for toothfish (Dissostichus elegionides) by SARPC in Kerguelen. Gascoigne, J. Holt,T. and S. des Clers, 2013. MSC Public Certification Report, August 2013, 328p. Available at : https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/southern-ocean/sarpc_toothfish/assessment-downloads-1/20130829_PCR_TOO139.pdf. TAAF, 2015c. Plan de Gestion de la pêcherie de la légine australe Dissostichus eleginoides dans les zones exclusives des Iles Kerguelen et Crozet. Version VF-4 du 6 août 2015, 48p. CCAMLR 2015. Conservation Measure 33-03.Limitation of by-catch in new and exploratory fisheries in the 2015/16 season.		
OVERALL PERFORMANCE INDICATOR SCORE:				**60**
CONDITION NUMBER (if relevant):				**2**

Evaluation table 8 - PI 2.1.2

PI 2.1.2		There is a strategy in place for managing retained species that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to retained species		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that are expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a partial strategy in place, if necessary, that is expected to maintain the main retained species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery and rebuilding.	There is a strategy in place for managing retained species.
	Met?	Y	Y	N
	Justification	Main retained spp. = *Macrourus carinatus*, *Amblyraja taaf*; minor = lithoides crabs There is a strategy in place for the main retained species (CBC, based on detailed spatial analysis by MNHN – see Gasco and Duhamel 2011). In addition, for rays there are cut-off rules as described above. The lithoides crabs (minor retained species) are, however, not included, so SG100 cannot be met (even though these crabs are most likely very numerous and catches of them are small). The (partial) strategy includes quantitative objectives for reduction in bycatch of grenadiers and rays (see main report), and includes move on limits, which are set at levels which constrain the fishery in some cases, according to observer reports. The area <500m depth is also closed to fishing providing a protected area for part of the populations. The strategy is therefore expected to constrain bycatch of grenadiers and rays such that the fishery is not expected to have a significant impact on the population, particularly not given the level of catches (maximum in the two seasons evaluated was 80 tonnes for grenadiers and 30 tonnes for rays over an EEZ of 400,000 km^2). On this basis, the team considered that SG80 is met.		
b	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports high confidence that the strategy will work.
	Met?	Y	Y	N
	Justification	The CBC presents an extensive spatial analysis of bycatch rates which provides the basis for the code and certainly constitutes an 'objective basis for confidence' that the strategy will work – details are given in the Kerguelen report. Likewise the cut-off requirements for rays are based directly on CCAMLR requirements for new or exploratory fisheries (CM 33-03), which again provides an objectives basis for thinking that they will work. In relation to SG100, the team noted that there has not yet been an evaluation of the success of the CBC in achieving its stated goals. More generally, it is difficult to have 'high confidence' that any strategy will work in terms of its impact on the populations themselves, because the populations are extremely difficult to evaluate. Using longline CPUE as a proxy for population size is problematic; in addition the implementation of the CBC is a confounding factor since it changes fishing practices and hence catchability; it also is not		

		possible to conduct trawl surveys at Crozet as is done at Kerguelen. Overall, the team concluded that SG100 is not and probably could not be met.		
c	**Guidepost**		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully and intended changes are occurring.
	Met?		Y	N
	Justification	Unlike when the Kerguelen fishery was assessed, there is now some evidence that the strategy is being implemented successfully, since its implementation is evaluated and recorded by the observers. The general impression from the observer reports is that the CBC and cut-off rules are respected. The main exception to both is in the situation where there is a risk of depredation by orcas, or depredation is actually going on (depredation by sperm whales tends to happen at depth and is therefore not so visible to the crew). The team considered this situation and found that the approach of the captain and fishing controller under these circumstances is reasonable and is compatible with the objective of minimising bycatch – this is because if extensive depredation occurs (aside from the impacts on management of the toothfish stock; considered in P1) then more effort will be required to catch the toothfish quota, and therefore overall bycatch will be higher if depredation is not avoided. On this basis, the team considered that SG80 is met. Since there is not a 'strategy' in the sense that minor retained species are not included (see scoring issue a) then SG100 cannot be met. Recommendation 1: In the observer reports there are one or two comments which suggest that the CBC is not being taken as seriously as it should be. Although it is clear that this is a minority of cases, the team recommends that the companies, SARPC or TAAF review observer reports at the end of each year and provide feedback to the captain and fishing controller concerned, emphasising the importance of the CBC and ray cut-off rules.		
d	**Guidepost**			There is some evidence that the strategy is achieving its overall objective.
	Met?			N
	Justification	The CBC has not yet been evaluated in relation to its objectives.		
References		Gasco, N. and Duhamel, G. 2011. Pêcherie ciblant la Légine (Dissostichus eleginoides) dans les ZEE TAAF : Analyse descriptive des données de prises accessoires et proposition pour un code de bonne conduite visant à réduire l'impact de la pêcherie sur les populations de Raie (Amblyraja taaf, Bathyraja eatonii, Bathyraja irrasa), de Grenadier (Macrourus sp.) et d'Antimore (Antimora rostrata), 127p. (with maps, limited distribution). CCAMLR 2015. Conservation Measure 33-03.Limitation of by-catch in new and exploratory fisheries in the 2015/16 season TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p. MEP, 2013. Fishery for toothfish (Dissostichus elegionides) by SARPC in Kerguelen. Gascoigne, J. Holt,T. and S. des Clers, 2013. MSC Public Certification Report, August 2013, 328p. Available at : https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/southern-ocean/sarpc_toothfish/assessment-downloads-1/20130829_PCR_TOO139.pdf. Observer reports		

OVERALL PERFORMANCE INDICATOR SCORE:	**80**
CONDITION NUMBER (if relevant):	**N/A**

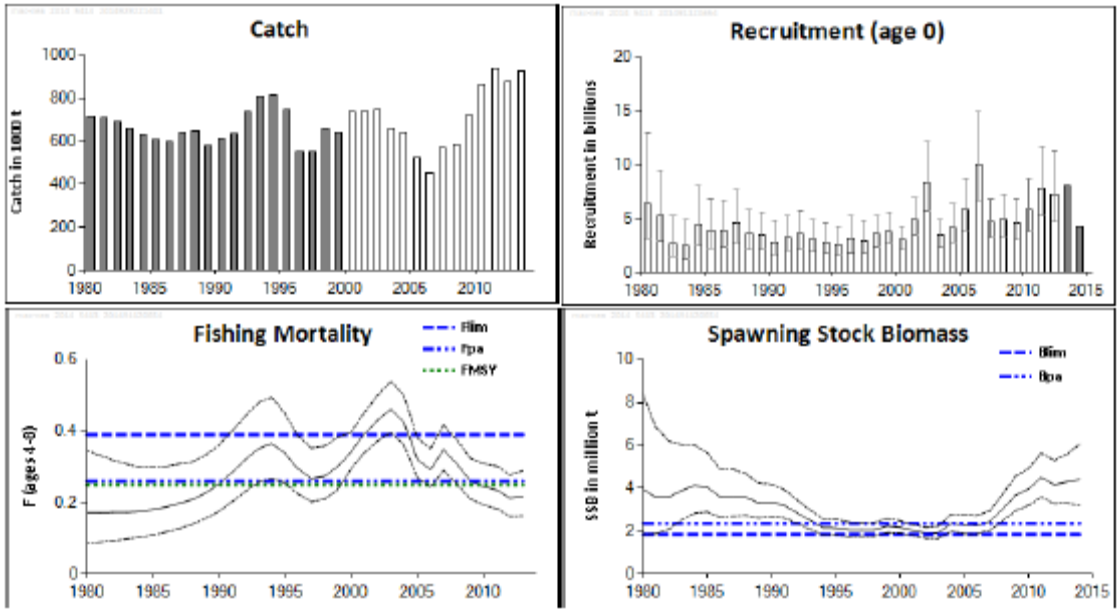
Evaluation table 9 - PI 2.1.3

PI 2.1.3		**Information on the nature and extent of retained species is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage retained species**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Qualitative information is available on the amount of main retained species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main retained species taken by the fishery.	Accurate and verifiable information is available on the catch of all retained species and the consequences for the status of affected populations.
	Met?	Y	Y	N
	Justification	Main retained spp. = *Macrourus carinatus*, *Amblyraja taaf*; minor = lithoides crabs Avipeche/avistock provide data by species on the catch of all species, whether retained or discarded (including those eaten by the crew) – these data were provided for 2013-14 and 2014-15 in Table 9 and Table 10 of the main report. Observers evaluate how carefully discarded catch is being recorded. SG80 is met. SG100 is not met because population-level information is not available for any of the retained species.		
b	**Guidepost**	Information is adequate to qualitatively assess outcome status with respect to biologically based limits.	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with a high degree of certainty.
	Met?	Y	N	N
	Justification	Qualitatively speaking, it is reasonable to argue that given the strategy in place for main retained species, the low catches over a large area and the closed area <500m, it is not at all likely that the fishery is having an impact on the population which would affect its status in relation to biologically-based limits. The available data could also provide a basis for a semi-quantitative analysis (e.g. based on CPUE statistically adjusted for changes resulting from implementation of the CBC, or based on length-frequency – observers carry out length-frequency measurements, or following the Australian risk-assessment methodology). On this basis, the team considered that SG60 is met. It is not, however, currently possible to estimate outcome status in relation to biologically-based limits in any quantitative way, because the available data have not been analysed in this way, so SG80 is not met.		
c	**Guidepost**	Information is adequate to support measures to manage main retained species.	Information is adequate to support a partial strategy to manage main retained species.	Information is adequate to support a comprehensive strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	Y	Y	N

	Justification	A strategy is in place for main retained species, based on a coherent scientific analysis, as described above; so SG80 is met. The strategy does not included minor retained species (lithoides crabs) nor has the outcome of the strategy been evaluated 'with a high degree of certainty', so SG100 is not met.		
d	**Guidepost**		Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator score or the operation of the fishery or the effectiveness of the strategy)	Monitoring of retained species is conducted in sufficient detail to assess ongoing mortalities to all retained species.
	Met?		Y	N
	Justification	Extensive and high-quality data are collected on the fishery, which should be sufficient to evaluate ongoing risk – i.e. avistock/avipeche and observer reports. SG80 is met. SG100 is not met because since population level data are not available, ongoing mortalities cannot be estimated.		
References		TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p. Zhou, S. and Fuller, M. 2011. Sustainability assessment for fishing effect on fish bycatch species in the Macquarie Island Toothfish Longline Fishery: 2007- 2010. June 2011, Australian Fisheries Management Authority Observer reports		
OVERALL PERFORMANCE INDICATOR SCORE:				**75**
CONDITION NUMBER (if relevant):				**3**

Evaluation table 10 - PI 2.2.1

PI 2.2.1		The fishery does not pose a risk of serious or irreversible harm to the bycatch species or species groups and does not hinder recovery of depleted bycatch species or species groups		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Main bycatch species are likely to be within biologically based limits or if outside such limits there are mitigation measures in place that are expected to ensure that the fishery does not hinder recovery and rebuilding.	Main bycatch species are highly likely to be within biologically based limits or if outside such limits there is a partial strategy of demonstrably effective mitigation measures in place such that the fishery does not hinder recovery and rebuilding.	There is a high degree of certainty that bycatch species are within biologically based limits.
	Met?	mackerel 27 – Y mackerel 21 – Y Minor – Y by default	mackerel 27 – Y mackerel 21 – Y Minor – Y by default	mackerel 27 – Y mackerel 21 – N Minor – N

	Justification	Main bycatch species are mackerel in FAO 21 (NW Atlantic) and FAO 27 (NE Atlantic) which are used by the fishery as bait. Minor discarded are *Antimora rostrata*, *Bathyraja eatonii.* The mackerel stock in FAO 27 (NE EU/Norway/Faroes shared stock) is within biologically-based limits (see  Figure 12 of the main report). The biomass is estimated by ICES to be >Bpa with >95% probability. SG100 is met for this stock. The mackerel stock in FAO 21 (NW Atlantic US/Canada shared stock) is not within biologically-based limits. Total landings on the stock were estimated in 2013 at 12,700 t (US and Canada combined); the total purchase by the UoC of ~100 tonnes (0.8% of total landings) is therefore not at all likely to hinder recovery and rebuilding. US estimates of recreational landings are >8X higher than the quantity of mackerel purchased by this fishery from the stock – Canadian recreational landings as well as bait for local fisheries are not estimated but are also most likely higher in their impact than this fishery. SG 60 and 80 are met for this stock. The status of minor bycatch species in relation to biologically-based limits is not known; SG100 is not met – SG80 is met by default. The team issued a recommendation (Recommendation 2): It would be preferable to source bait from the NE Atlantic stock rather than the NW Atlantic stock, which is depleted.		
b	**Guidepost**	If the status is poorly known there are measures or practices in place that are expected to result in the fishery not causing the bycatch species to be outside biologically based limits or hindering recovery.		
	Met?	N/A		

	Justification	Not the case of any of the 'main' bycatch species
References		DFO. 2014. Assessment of the Atlantic Mackerel stock for the Northwest Atlantic (Subareas 3 and 4) in 2013. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2014/030. ICES. 2014. Updated Advice for 2014. Mackerel in the Northeast Atlantic (combined Southern, Western and North Sea spawning components) 9.3.17a ICES Advice Book 9, 17p. http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/mac-nea_update_2014.pdf .

Score mackerel 27	**100**
Score mackerel 21	**80**
Minor species	**80**
OVERALL PERFORMANCE INDICATOR SCORE:	**85**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation table 11 - PI 2.2.2

PI 2.2.2		There is a strategy in place for managing bycatch that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to bycatch populations		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that are expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery.	There is a partial strategy in place, if necessary, that is expected to maintain the main bycatch species at levels which are highly likely to be within biologically based limits, or to ensure the fishery does not hinder their recovery.	There is a strategy in place for managing and minimizing bycatch.
	Met?	mackerel 27 – Y mackerel 21 – Y Minor – Y by default	mackerel 27 – Y mackerel 21 – Y Minor – Y by default	mackerel 27 – N mackerel 21 – N Minor – Y
	Justification	For NE (27) Atlantic mackerel, the stock status is good and management is in place; the purchase of mackerel by this fishery is trivial compared to overall landings. For NW Atlantic (21) mackerel, the stock status is not good and the TAC in recent years (up to 2014) has exceeded scientific advice, although it has been drastically lowered since 2010. Nevertheless, the team concluded that since the purchase of mackerel from this stock is also a trivial part of the overall landings (<1%; an order of magnitude lower than recreational landings), the team considered that a partial strategy for this fishery specifically was not required. SG80 is met for both the 'main' bycatch species. For minor bycatch species (*Antimora*, *B. eatonii*), there is a strategy in place (CBC) and SG100 is met, but for the main there is not.		
b	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	There is some objective basis for confidence that the partial strategy will work, based on some information directly about the fishery and/or species involved.	The strategy is mainly based on information directly about the fishery and/or species involved, and testing supports high confidence that the strategy will work.
	Met?	Y	Y	N
	Justification	For both mackerel species there is a stock assessment, landings are quantified and it is clear that purchases by this fishery are not significant. Hence there is an objective basis for confidence that the fishery is not having an impact on the stocks. SG80 is met. For the minor bycatch species, as noted above there is a strategy but as set out in the rationales for 2.1, it has not yet been evaluated, hence SG100 is not met for main or minor species.		
c	**Guidepost**		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring.
	Met?		Y	N

	Justification	For both mackerel species the 'partial strategy' consists of only purchasing small quantities relative to total landings – this is implemented. For the minor species, the strategy is being implemented most of the time (see observer reports) but since the major species do not have a 'strategy' in relation to this fishery, SG100 is not met.		
d	**Guidepost**			There is some evidence that the strategy is achieving its objective.
	Met?			N
	Justification	No strategy, so not met.		
References		DFO. 2014. Assessment of the Atlantic Mackerel stock for the Northwest Atlantic (Subareas 3 and 4) in 2013. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2014/030. ICES. 2014. Updated Advice for 2014. Mackerel in the Northeast Atlantic (combined Southern, Western and North Sea spawning components) 9.3.17a ICES Advice Book 9, 17p. http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/mac-nea_update_2014.pdf .		

Score mackerel 27	**80**
Score mackerel 21	**80**
Minor species	**85**
OVERALL PERFORMANCE INDICATOR SCORE:	**80**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation table 12 - PI 2.2.3

PI 2.2.3		Information on the nature and the amount of bycatch is adequate to determine the risk posed by the fishery and the effectiveness of the strategy to manage bycatch		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Qualitative information is available on the amount of main bycatch species taken by the fishery.	Qualitative information and some quantitative information are available on the amount of main bycatch species taken by the fishery.	Accurate and verifiable information is available on the catch of all bycatch species and the consequences for the status of affected populations.
	Met?	mackerel 27 – Y mackerel 21 – Y Minor – Y by default	mackerel 27 – Y mackerel 21 – Y Minor – Y by default	mackerel 27 – Y mackerel 21 – Y Minor – N
	Justification	Mackerel 27 and 21: There is a quantitative stock assessment for both stocks of mackerel and the quantity purchased by the fishery is known, so SG80 and SG100 are met. For the minor bycatch species, there is good data on catch (including fate) but not on the populations, so SG100 is not met.		
b	**Guidepost**	Information is adequate to broadly understand outcome status with respect to biologically based limits	Information is sufficient to estimate outcome status with respect to biologically based limits.	Information is sufficient to quantitatively estimate outcome status with respect to biologically based limits with a high degree of certainty.
	Met?	mackerel 27 – Y mackerel 21 – Y Minor – Y by default	mackerel 27 – Y mackerel 21 – Y Minor – Y by default	mackerel 27 – Y mackerel 21 – Y Minor – N
	Justification	For the main bycatch species, there is a quantitative stock assessment, so SG80 and SG100 is met. For the minor bycatch species, outcome status is not known, so SG100 is not met.		
c	**Guidepost**	Information is adequate to support measures to manage bycatch.	Information is adequate to support a partial strategy to manage main bycatch species.	Information is adequate to support a comprehensive strategy to manage retained species, and evaluate with a high degree of certainty whether the strategy is achieving its objective.
	Met?	mackerel 27 – Y mackerel 21 – Y Minor – Y by default	mackerel 27 – Y mackerel 21 – Y Minor – Y by default	mackerel 27 – N mackerel 21 – N Minor – N
	Justification	For the main bycatch species, the 'partial strategy' is to take a negligible quantity of total landings – SG80 is met; in the absence of a comprehensive strategy, SG100 is not met. For the minor bycatch species, there is a strategy but it has not yet been evaluated, so SG100 is not met.		

d	**Guidepost**		Sufficient data continue to be collected to detect any increase in risk to main bycatch species (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectively of the strategy).	Monitoring of bycatch data is conducted in sufficient detail to assess ongoing mortalities to all bycatch species.
	Met?		mackerel 27 – Y mackerel 21 – Y Minor – Y by default	mackerel 27 – N mackerel 21 – N Minor – N
	Justification	For the main bycatch species, there is an annual stock assessment. SG80 and SG100 are met. Data are collected on bycatch quantity for the minor bycatch species, but ongoing mortalities cannot be assessed because of a lack of population-level data, so SG100 is not fully met.		
References		DFO. 2014. Assessment of the Atlantic Mackerel stock for the Northwest Atlantic (Subareas 3 and 4) in 2013. DFO Can. Sci. Advis. Sec. Sci. Advis. Rep. 2014/030. ICES. 2014. Updated Advice for 2014. Mackerel in the Northeast Atlantic (combined Southern, Western and North Sea spawning components) 9.3.17a ICES Advice Book 9, 17p. http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2014/2014/mac-nea_update_2014.pdf . Avistock data		

Score mackerel 27	**90**
Score mackerel 21	**90**
Minor species	**80**
OVERALL PERFORMANCE INDICATOR SCORE:	**85**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation table 13 - PI 2.3.1

PI 2.3.1		The fishery meets national and international requirements for the protection of ETP species The fishery does not pose a risk of serious or irreversible harm to ETP species and does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Known effects of the fishery are likely to be within limits of national and international requirements for protection of ETP species.	The effects of the fishery are known and are highly likely to be within limits of national and international requirements for protection of ETP species.	There is a high degree of certainty that the effects of the fishery are within limits of national and international requirements for protection of ETP species.
	Met?	sharks: Y petrels: Y mammals: Y	sharks: Y petrels: Y mammals: Y	sharks: Y petrels: N mammals: Y
	Justification	ETP species: Southern sleeper shark (*Somniosus antarcticus*), Porbeagle shark (*Lamna nasus*), white-chinned petrel (*Procellaria aequinoctialis*), sperm whale (*Physeter macrocephalus*), orca (*Orcinus orca*). Data: The effects of the fishery are known: interactions with sharks, birds and marine mammals and their outcomes are evaluated and reported in detail by the observers. All shark bycatch is additionally reported in the avipeche/avistock system. Sharks: According to Avistock, the fishery caught 12 sharks in 2013-14 and 13 in 2014-15, all but three of which were *S. antarcticus*, the others *L. nasus*, these were nearly all cut off the line alive although survival rates are not known. Although nothing is known about *S. antarcticus* populations, the species appears to be quite widespread, and it does not seem at all likely that this level of annual bycatch would have any impact on the population. SG100 is met for sharks. Birds: Bird mortality from this fishery at Crozet was the following: • 2010-11: 27 • 2011-12: 8 • 2012-13: 17 • 2013-14: 13 • 2014-15: 15 Bycatch was not specified to species-level in 2014-15 (presumably the analysis is not yet completed), but for the other years, all but one were white-chinned petrels. It is clear that mortality on this species from this and other fisheries in the past has been very high (e.g. 26,000 over two years at Crozet and Kerguelen, 2001-03; 30,000/year in the Benguela current ecosystem). Along with this fishery, it is likely that most of these other fisheries have considerably reduced their seabird bycatch in recent years; this plus a reduction in IUU has most likely had a significant demographic impact, but no recent studies could be found to evaluate this. Overall, the team considered		

		that a mortality rate at this level (or even in the range 26-56 for the fishery as a whole, including Kerguelen, over the last 3 years) is within the range national or international requirements for protection. Although the other CCAMLR toothfish longline fisheries manage a lower rate of bird mortality, there does not appear to be any significant difference in the protection measures in place and how they are implemented, so presumably Kerguelen and Crozet are higher risk areas for seabird bycatch. Some other fisheries (e.g. South Georgia) are able to avoid bycatch via a limited season, but the range of species at Kerguelen and Crozet, including the grey petrel which has a much smaller population, precludes this approach for this fishery (see Kerguelen report for details). SG80 is met for white-chinned petrels at Crozet, as at Kerguelen, but the team decided that given the uncertainties over the population (estimates are old, and other threats exist, including introduced rats and cats, ingestion of plastic etc.), SG100 is not met. Mammals: Mammals interact with the fishery via depredation. Observers do not report any injury or mortality to the animals. Orcas who use depredation as a regular foraging strategy appear to have higher fecundity and lower mortality than those who don't, suggesting that overall it is of benefit to the animals (although it is not a good thing at all for the fishery). SG100 is met for orcas and sperm whales.		
b	**Guidepost**	Known direct effects are unlikely to create unacceptable impacts to ETP species.	Direct effects are highly unlikely to create unacceptable impacts to ETP species.	There is a high degree of confidence that there are no significant detrimental effects (direct and indirect) of the fishery on ETP species.
	Met?	Y	Y	Y
	Justification	Sharks: As noted above, the catch of ~~20 sharks per year, with the requirement to dehook and discard them without bringing them on board if possible, is not likely to have any kind of population-level impact. SG100 is met for sharks. White-chinned petrel: Bycatch rates (given in 2.3.1 above) are low enough relative to the population at Crozet (estimated ~23,500 pairs; mortality 0.03% per year) that there is a high degree of confidence that direct impacts (mortality and injury) will not create unacceptable impacts. Birds released injured are also reported by the observers, but there were none at Crozet in the 2014-15 season. (The small amount of additional mortality imposed by the fishery on white-chinned petrels may conceivably be negated by improved survival and fecundity resulting from the foraging opportunities provided by the fishery, as for the orcas; however, there has never been any study on this aspect for petrels.) SG100 is met. Mammals: There is no evidence of any detrimental effects, and in fact some evidence of beneficial effects on the population, although not in a way that should be regarded as a good thing overall. The only indirect effect that the team could think of was the change in foraging behaviour resulting from the fishery, which applies to the birds but particularly to the mammals (depredation). The regulations require that the vessels make extensive efforts to minimise depredation, but it remains a big problem. However, from the mammals' point of view, it is clear that there are no significant detrimental impacts – in fact, there is evidence of a positive impact on the orcas, as noted above. Extensive research has been carried out on the question of depredation at Crozet, hence SG100 is met.		

c	**Guidepost**		Indirect effects have been considered and are thought to be unlikely to create unacceptable impacts.	
	Met?		Y	
	Justification	As above, this scoring issue is met. Harmonisation note: This PI scores better at Crozet than Kerguelen because there has been no catch of grey petrels at Crozet over the last 5 years.		
References		MEP, 2013. Fishery for toothfish (Dissostichus elegionides) by SARPC in Kerguelen. Gascoigne, J. Holt,T. and S. des Clers, 2013. MSC Public Certification Report, August 2013, 328p. Available at : https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/southern-ocean/sarpc_toothfish/assessment-downloads-1/20130829_PCR_TOO139.pdf. BirdLife International. 2015. Procellaria aequinoctialis. The IUCN Red List of Threatened Species 2015: e.T22698140A83475793. http://dx.doi.org/10.2305/IUCN.UK.2015-4.RLTS.T22698140A83475793.en. Guinet C., P. Tixier, N. Gasco & G. Duhamel. 2015. Long-term studies of Crozet Island killer whales are fundamental to understanding the economic and demographic consequences of their depredation behaviour on the Patagonian toothfish fishery. ICES Journal of Marine Science 72(5): 1587–1597 TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p. http://acap.aq/en/acap-species/306-white-chinned-petrel/file IUCN Shark Specialist Workshop Report 2003 – download at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.232.452&rep=rep1&type=pdf		
Score sharks				**100**
Score petrels				**90**
Score mammals				**100**
OVERALL PERFORMANCE INDICATOR SCORE:				**95**
CONDITION NUMBER (if relevant):				**N/A**

Evaluation table 14 - PI 2.3.2

PI 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 harm to ETP species;** • **Ensure the fishery does not hinder recovery of ETP species; and** • **Minimise mortality of ETP species.**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place that minimise mortality of ETP species, and are expected to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to be highly likely to achieve national and international requirements for the protection of ETP species.	There is a comprehensive strategy in place for managing the fishery's impact on ETP species, including measures to minimise mortality, which is designed to achieve above national and international requirements for the protection of ETP species.
	Met?	Y	Y	Y
	Justification	Sharks: Sharks may not be targeted. Live sharks must be returned to the water carefully. Dead sharks may be retained for crew consumption. The total catch of sharks at Crozet, according to Avistock, was 12 in 2013-14 and 13 in 2014-15 (Tables 9 and 10). Birds: For birds, the fishery implements all the CCAMLR requirements for bird protection: • Setting and hauling only at night; • Weighted lines; • Streamer lines and Brickle curtain. Observers report on whether and how well the regulations are implemented, as well as on bird mortalities, injuries and cases where they are released unharmed, distinguishing between the 25% of lines they observe and additional incidents reported by the crew. Some of the observer reports note additional measures that the vessels have taken – e.g. desisting from fishing during bright moonlit nights, enforcing 'blackout' during fishing operations, applying black paint, replacing lights with fluorescent strips and moving away if there are too many birds around the vessel. Unlike some other measures, the bird measures are never reported to be sacrificed to avoid depredation. It is clear that a significant factor in avoiding bird mortality is the skill of the captain and crew in terms of managing and adjusting boat speed and direction, line setting or hauling speed and the various bird devices in relation to the presence of birds, the weather and so on. TAAF report that bird bycatch is a factor in quota allocation to the vessels the following year (although how this works in practice is unclear), and there is no doubt that as the vessels have been sensitised to this issue over the last decade and a half, their increased skill in managing it has been a big factor in the massive reduction of bird mortality seen at both Kerguelen and Crozet. Mammals: There is a strategy in place to limit depredation by orcas as far as possible, which again is part of the fisheries regulations – in this case, it is 'recommended' rather than required, but it is clear from observer reports that avoiding depredation is an ongoing preoccupation when fishing at Crozet. The strategy is as follows:		

		• At Kerguelen, where orcas have not learned the behaviour to the same extent as at Crozet, it is forbidden to haul in the presence of orcas; • At Crozet, vessels use shorter lines and faster hauling speed to try and limit depredation; • At Crozet, where depredation has been a problem vessels move on at least 60 miles. Depredation by sperm whales, which tends to happen at depth, usually goes unseen, so there is not much that vessels can do to avoid it. The fishery has also experimented with using pots instead of longline (project ORCASAV) – this is described in the Kerguelen report, but was not successful in terms of catch quantity or quality. Overall, there is no evidence that any significant population-level impact is likely on any of the ETP species; mortalities are trivial relative to the population. The team considered that there is a comprehensive strategy in place for ETP species, set out in the fisheries regulations which come largely from CCAMLR best practice. The team could not find any specific 'national or international requirements' in terms of mortality thresholds. Clearly, the ideal is zero mortality, but the team considered that the fishery is operating within the margin of error, and hence concluded that SG100 is met.		
b	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/species).	There is an objective basis for confidence that the strategy will work, based on information directly about the fishery and/or the species involved.	The strategy is mainly based on information directly about the fishery and/or species involved, and a quantitative analysis supports high confidence that the strategy will work.
	Met?	Y	Y	N
	Justification	Sharks: According to avistock, most of the sharks are cut off (i.e. dehooked and released without being brought on board); only one was retained over the last two years (Table 9 and Table 10 of the main report). This suggests that most are alive on capture. Although post-discard survival rates are not known, it is clear that the overall impact on sharks is trivial. Birds: TAAF follow the CCAMLR requirements for avoiding bird mortality; this is based on several years of trials and research, as detailed in the Kerguelen report. It is clear that the strategy has worked, since mortality has declined from ~13,000 to ~30 per year (Kerguelen and Crozet together). Mammals: There are no negative impacts on mammal mortality from the fishery. Overall, the team concluded on this basis that there is an objective basis for confidence that the strategy will work, for all three groups. The strategy is based on detailed information from the fishery (and other fisheries, in the case of birds). SG80 is met. In relation to SG100, while the team had high confidence that it is working, a recent quantitative analysis of population trends for white-chinned petrels at Crozet is lacking, which the team considered would be required for total confidence, so overall SG100 is not fully met.		
c	**Guidepost**		There is evidence that the strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully and intended changes are occurring. There is evidence that the strategy is achieving its objective.

	Met?		Y	Y
	Justification	The observer reports provide detailed information bycatch and its fate, also bird mortality and injury, also interactions with mammals and depredation. They also report on the respect of the regulations, including bird and depredation avoidance (as well as the CBC). Unlike the CBC, there are no cases in the observer reports of vessels reducing their care to avoid birds in order to minimise depredation. Some vessels have taken additional measures as reported above, although it is not clear that their bird catch is significantly different to the others. Mortality rates on ETP species are trivial to zero. This provides evidence that the strategy is achieving its objective.		
References		TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p. COPEC Observer reports (pers. com.) MEP, 2013. Fishery for toothfish (Dissostichus elegionides) by SARPC in Kerguelen. Gascoigne, J. Holt,T. and S. des Clers, 2013. MSC Public Certification Report, August 2013, 328p. Available at : https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/southern-ocean/sarpc_toothfish/assessment-downloads-1/20130829_PCR_TOO139.pdf.		
OVERALL PERFORMANCE INDICATOR SCORE:				**95**
CONDITION NUMBER (if relevant):				**N/A**

Evaluation table 15 - PI 2.3.3

PI 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.		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Information is adequate to broadly understand the impact of the fishery on ETP species.	Information is sufficient to determine whether the fishery may be a threat to protection and recovery of the ETP species, and if so, to measure trends and support a full strategy to manage impacts.	Information is sufficient to quantitatively estimate outcome status of ETP species with a high degree of certainty.
	Met?	Y	Y	N
	Justification	Data from avipêche / avistock and from observers (25% coverage by line) allows all fishery-related mortality, injury and interactions (e.g. discarded cut-off, depredation) to be quantified. SG80 is met. The impact on outcome status, however, cannot be estimated except for orcas (Guinet et al., 2015), because recent demographic information is not available – this is mainly a concern for white-chinned petrels. SG100 is therefore not fully met.		
b	**Guidepost**	Information is adequate to broadly understand the impact of the fishery on ETP species.	Sufficient data are available to allow fishery related mortality and the impact of fishing to be quantitatively estimated for ETP species.	Accurate and verifiable information is available on the magnitude of all impacts, mortalities and injuries and the consequences for the status of ETP species.
	Met?	Y	Y	N
	Justification	The avistock data and observer reports together provide accurate and verifiable information on the magnitude of all impacts, mortality and injuries to ETP species, so in terms of data from the fishery, SG60, SG80 and the first part of SG100 is met. It is not, however, possible to determine the consequences for the status of ETP populations (except possibly in the case of orcas) because of a lack of recent population-level data. Overall, SG100 is not fully met (although the team notes that the data are far better than for most fisheries).		
c	**Guidepost**	Information is adequate to support measures to manage the impacts on ETP species.		Information is adequate to support a comprehensive strategy to manage impacts, minimize mortality and injury of ETP species, and evaluate with a high degree of certainty whether a strategy is achieving its objectives.
	Met?	Y		Y

	Justification	There is a comprehensive strategy is place to manage impacts on ETP species, as set out above. Trends in mortalities, injuries and interactions can be measured from avistock (sharks) and observer reports (birds, mammals). SG80 is met. The objectives of the strategy are not set out quantitatively, but are presumably to reduce the impact of the fishery on these species (or its interactions with these species in the case of mammals) to the minimum possible level; it is possible to evaluate whether this is being achieved with a high degree of certainty from the data available; notably the observer reports which are very detailed. SG100 is met.
References		Guinet C., P. Tixier, N. Gasco & G. Duhamel. 2015. Long-term studies of Crozet Island killer whales are fundamental to understanding the economic and demographic consequences of their depredation behaviour on the Patagonian toothfish fishery. ICES Journal of Marine Science 72(5): 1587–1597 COPEC Observer reports, pers. com.
OVERALL PERFORMANCE INDICATOR SCORE:		**85**
CONDITION NUMBER (if relevant):		**N/A**

Evaluation table 16 - PI 2.4.1

PI 2.4.1		The fishery does not cause serious or irreversible harm to habitat structure, considered on a regional or bioregional basis, and function		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery is unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	The fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.	There is evidence that the fishery is highly unlikely to reduce habitat structure and function to a point where there would be serious or irreversible harm.
	Met?	Y	Y	P
	Justification	The Kerguelen report includes a detailed analysis of the footprint of demersal longlines on VMEs, which is not repeated here; it concludes that the impact is not zero, but it is low. The team considered that the impact of demersal longlining on non-vulnerable habitats (sand, mud) is likely to be trivial, so in this and the two following PIs we have concentrated our scoring on vulnerable habitats (VMEs) – i.e. corals, sponges, bryozoans etc. The observer reports evaluate catches of 'VME taxa' (hard and soft corals, anemones, bryozoans, crinoids and brachiopods are mentioned). All the reports for the 2014-15 season note that catch rates are low, and the 'move-on' trigger level of 10kg / 1000 hooks was never reached. It is not known whether this is because there is not much down there or because the lines are not likely to bring it up, but either way, it provides a line of evidence suggesting that the fishery is highly unlikely to reduce habitat structure and function to the point of serious or irreversible harm. Note also that fishing is not permitted at <500m, and there is also a marine reserve covering some areas >500m which is also closed to fishing (see Figure 13 of the main report). Gear loss is another factor which may cause damage to VMEs. The fishing companies report that gear loss is rare. One of the observer reports for the 2014-15 season noted that the vessel spent two days (at Kerguelen) looking for gear lost on a previous trip, so obviously it does happen. It appears, however, to be rare and clearly the vessels try hard to retrieve it. Overall, the team concluded that there is some evidence, as required for SG100, but because there are no habitat maps for Crozet, and no fishery-independent monitoring, the team concluded that SG100 is not fully met. On the basis of highly detailed observer data, a partial score of 90 is given.		
References		MEP, 2013. Fishery for toothfish (Dissostichus elegionides) by SARPC in Kerguelen. Gascoigne, J. Holt,T. and S. des Clers, 2013. MSC Public Certification Report, August 2013, 328p. Available at : https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/southern-ocean/sarpc_toothfish/assessment-downloads-1/20130829_PCR_TOO139.pdf COPEC Observer reports TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p.		
OVERALL PERFORMANCE INDICATOR SCORE:				**90**
CONDITION NUMBER (if relevant):				**N/A**

Evaluation table 17 - PI 2.4.2

PI 2.4.2		There is a strategy in place that is designed to ensure the fishery does not pose a risk of serious or irreversible harm to habitat types		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that are expected to achieve the Habitat Outcome 80 level of performance.	There is a partial strategy in place, if necessary, that is expected to achieve the Habitat Outcome 80 level of performance or above.	There is a strategy in place for managing the impact of the fishery on habitat types.
	Met?	Y	Y	Y
	Justification	The team considered that the measures in place to avoid VME impacts (data collection protocol and move-on rule as set out in Section 6.7 of the main report, plus an extensive closed area) constitute a 'strategy'. All these requirements are included in the fisheries regulations and are therefore binding on the fishery. SG100 is met.		
b	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g. general experience, theory or comparison with similar fisheries/habitats).	There is some objective basis for confidence that the partial strategy will work, based on information directly about the fishery and/or habitats involved.	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.
	Met?	Y	Y	N
	Justification	The observer reports provide an objective basis for confidence that the strategy will work; it is clear that VME catches are being monitored as foreseen in the strategy, although the move-on rule was not triggered in the 2014-15 season. It is clear that habitats are protected in the closed areas, particularly since IUU has been ~eliminated (see PI 3.2.3). SG80 is met. There is, however, a lack of information about the habitats themselves, except for what comes up on the lines, and the team concluded on this basis that SG100 is not fully met.		
c	**Guidepost**		There is some evidence that the partial strategy is being implemented successfully.	There is clear evidence that the strategy is being implemented successfully, and intended changes are occurring. There is some evidence that the strategy is achieving its objective.
	Met?		Y	N
	Justification	Observer reports provide details on compliance with the regulations, including on VMEs. The position of the vessels is also monitored by VMS (at TAAF – see PI 3.2.3). No issues are reported in either case. This provides for the most part clear evidence that the strategy is being implemented successfully; however, the VME monitoring is sometimes suspended (e.g. in presence of orcas where fast hauling is required; also during bad weather), and in the absence of habitat maps or other fishery-independent information about the habitats at Crozet the team felt that SG100 should not be met.		
References		TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p. COPEC Observer reports		

OVERALL PERFORMANCE INDICATOR SCORE:	**85**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation table 18 - PI 2.4.3

PI 2.4.3		Information is adequate to determine the risk posed to habitat types by the fishery and the effectiveness of the strategy to manage impacts on habitat types		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There is basic understanding of the types and distribution of main habitats in the area of the fishery.	The nature, distribution and vulnerability of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.	The distribution of habitat types is known over their range, with particular attention to the occurrence of vulnerable habitat types.
	Met?	Y	N	N
	Justification	As noted above, there are no habitats maps from Crozet, and little work has been done on demersal habitats. Unlike at Kerguelen, the POKER research cruises do not (cannot) operate at Crozet, so an important source of fishery-independent data is missing. Nevertheless, habitats are monitored to the extent that VME species coming up on the lines are identified and quantified. This provides a basic understanding of the type and distribution of these vulnerable habitats, sufficient to meet SG60. In relation to SG80, the team noted that given that the footprint and impact of this fishing method on the benthos (even taking gear loss into account) is small, and given that significant areas of the Crozet EEZ are protected from fishing (see Figure 13 of the main report), the level of detail required to be 'relevant to the scale and intensity of the fishery' is relatively low. Nevertheless, the team noted that there has so far not been any mapping of the VME observer data in the way that has been done for bycatch: this could be used to identify VME hotspots which could then be avoided. The team considered that this lack of analysis of the existing habitat data (which is understandable since the VME rules are quite recent) precludes SG80 being met.		
b	**Guidepost**	Information is adequate to broadly understand the nature of the main impacts of gear use on the main habitats, including spatial overlap of habitat with fishing gear.	Sufficient data are available to allow the nature of the impacts of the fishery on habitat types to be identified and there is reliable information on the spatial extent of interaction, and the timing and location of use of the fishing gear.	The physical impacts of the gear on the habitat types have been quantified fully.
	Met?	Y	Y	N
	Justification	An analysis of the impacts of demersal longlines on VMEs is provided in the Kerguelen report and is not repeated here. The spatial distribution of the fishery is monitored by VMS, and the overlap of the fishery and VMEs is evaluated by observers as noted above. SG60 is met. The information from other fisheries on demersal longline impacts (see Kerguelen report) and the observer data on VMEs is sufficient, the team concluded, to allow an evaluation of the nature and (qualitative) magnitude of habitat impacts (as per PI 2.4.1), so the first part of SG80 is met. VMS provides reliable information on the timing and location of fishing gear. SG80 is therefore met. It is not, however, true to say that the physical impacts of the gear on habitat at Crozet have been quantified. SG100 is not met.		

c	**Guidepost**		Sufficient data continue to be collected to detect any increase in risk to habitat (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Changes in habitat distributions over time are measured.
	Met?		Y	N
	Justification	The observer data provide sufficient information to detect changes in risk (e.g. if new areas where opened up, or if catch rates of VMEs changed over time). SG80 is met. There is, however, no direct information on habitat distributions so SG100 is not met.		
References		COPEC Observer reports MEP, 2013. Fishery for toothfish (Dissostichus elegionides) by SARPC in Kerguelen. Gascoigne, J. Holt,T. and S. des Clers, 2013. MSC Public Certification Report, August 2013, 328p. Available at : https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/southern-ocean/sarpc_toothfish/assessment-downloads-1/20130829_PCR_TOO139.pdf TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p.		
OVERALL PERFORMANCE INDICATOR SCORE:				**75**
CONDITION NUMBER (if relevant):				**4**

Evaluation table 19 - PI 2.5.1

PI 2.5.1		The fishery does not cause serious or irreversible harm to the key elements of ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery is unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	The fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.	There is evidence that the fishery is highly unlikely to disrupt the key elements underlying ecosystem structure and function to a point where there would be a serious or irreversible harm.
	Met?	Y	Y	N
	Justification	The team considered that the key changes to the ecosystem theoretically likely to arise from the fishery were the following: • Removal of toothfish and bycatch (grenadier, ray) biomass from the system; • Changes in foraging behaviour of some predators, which might, in the long run alter some predator-prey relationships; • Addition of plastics or hooks (lost gear, rubbish) to the ecosystem. In terms of the first (which is most likely the most significant from the ecosystem point of view, the fishery removed in total 786 tonnes of fish biomass from Crozet during the 2014-15 season (see Table 10). This contrasts with an estimate by Guinet et al. (1996) of the consumption of prey by the top predators in the system (penguins and seals) of ~2 million tonnes / year in the waters around Crozet in 1985 – 55% crustaceans, 30% fish and 15% squid. In other words, the removal of fish from the ecosystem by the fishery is ~three orders of magnitude lower than the removal of fish by top predators (these estimates are a bit old but the order or magnitude argument still applies). The team concluded on this basis that ecosystem impacts from the fishery on this basis were not likely. Changes in foraging behaviour of birds and mammals are associated with many fisheries, particularly those that generate discards or use bait. They are particularly troublesome in this fishery from the point of view of depredation, but from the animals' point of view the fishery provides a food subsidy which at least for orcas has been shown to improve survival and fecundity and hence, presumably, acts to increase the population. For birds, this supplement is balanced by the small amount of extra mortality imposed by the fishery (the net result for the population being unknown). In any case, it does not appear that any of these species are the dominant top predators in the system: there are, for example, ~3 million pairs of penguins at Crozet according to the International Penguin Conservation Work Group, which dwarfs the most recent estimate of white-chinned petrels (23,500 pairs). In relation to plastics, the fishery is forbidden to discharge any plastic or hooks, and the observers check on this. Gear appears to be lost only occasionally, with reasonable efforts made to retrieve it. Reports of gear entanglement come from fishing gear abandoned by IUU fishermen, or old gear (nets) which are no longer used. The team considered that the fishery is certainly highly unlikely to disrupt ecosystem structure and function in any way, so SG80 is met. Following the example of Kerguelen, since the 'evidence' is circumstantial, SG100 is not met.		
References		Guinet et al., 1996 http://www.penguins.cl/crozet.htm		

	TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p. COPEC Observer reports
OVERALL PERFORMANCE INDICATOR SCORE:	**80**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation table 20 - PI 2.5.2

PI 2.5.2		There are measures in place to ensure the fishery does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are measures in place, if necessary, that take into account potential impacts of the fishery on key elements of the ecosystem.	There is a partial strategy 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.	There is a strategy that consists of a plan, in place, 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.
	Met?	Y	Y	N
	Justification	There are multiple measures in place which address the fishery impact on different parts of the ecosystem: • Control over catches via a TAC divided into individual quotas, verified via a stock assessment; • Actions to minimise fish bycatch (the CBC) and bird bycatch (CCAMLR requirements); • Actions to reduce mortality of unwanted bycatch (cut-off of live sharks and rays); • Actions to reduce impacts on VMEs (monitoring and move-on requirement, closed areas); • Actions to avoid other impacts (no discarding of rubbish and hooks, requirement to retrieve lost gear if possible). These are set out in the fisheries regulations. The team considered that taken together, these constitute a strategy to minimise ecosystem impacts. SG80 is met. Much of the area is designated as a marine reserve which is part of the 'reserve naturelle de la terre australe francaise' (see Figure 13 of the main report); this has a management plan (2011-2015) which includes objectives for conservation actions at sea. For the most part, however, these focus on preserving bird mortality: most of the plan focuses on the terrestrial part of the reserve. On this basis, the team did not conclude that this is sufficient to be considered 'a strategy which consists of a plan' in this context. Parts of SG100 are certainly met, but since there is no formal 'plan', it is not fully met.		
b	**Guidepost**			This plan provides for development of a full strategy that restrains impacts on the ecosystem to ensure the fishery does not cause serious or irreversible harm.
	Met?			N
	Justification	As above, in the absence of a plan, SG100 is not met.		

c	**Guidepost**	The measures are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The partial strategy is considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar fisheries/ecosystems).	The measures are considered likely to work based on prior experience, plausible argument or information directly from the fishery/ecosystems involved.
	Met?	Y	Y	Y
	Justification	The argument is set out above as to why ecosystem impacts of the fishery are likely to be minimal. The bird measures have been spectacularly successful at reducing impacts; impacts on the target species are evaluated via a stock assessment, impacts on retained and bycatch species, mammals and sharks have been evaluated to be negligible. On this basis, it is certainly plausible to argue that the strategy is likely to work, but this argument is based on information directly about the fishery and ecosystem (i.e. fisheries data plus some population estimates e.g. for birds, as given above). SG100 is met.		
d	**Guidepost**		There is some evidence that the measures comprising the partial strategy are being implemented successfully.	There is evidence that the measures are being implemented successfully.
	Met?		Y	Y
	Justification	The observers report on the respect of all the regulations, and there is no evidence that they are not being implemented, except in cases where they conflict with each other (e.g. requirement to stop the line to deal with rays and VMEs vs. requirement to haul fast to avoid depredation).		
References		TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p. TAAF, 2010. Document synthétique ; Plan de gestion 2011 – 2015. Réserve naturelle des Terres australes françaises. Enjeux et perspectives - Objectifs et actions.COPEC Observer reports		

OVERALL PERFORMANCE INDICATOR SCORE:	**90**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation table 21 - PI 2.5.3

PI 2.5.3		There is adequate knowledge of the impacts of the fishery on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Information is adequate to identify the key elements of the ecosystem (e.g., trophic structure and function, community composition, productivity pattern and biodiversity).	Information is adequate to broadly understand the key elements of the ecosystem.	
	Met?	Y	Y	
	Justification	Although there is no ecosystem model for Crozet, there is information on the various components of the ecosystem separately, including i) fishery-dependent data on fish, mammals and VMEs; and ii) population estimates for birds and marine mammals, including some demographic analysis (although some are old). It is possible to evaluate the role of these various elements in the ecosystem, as has been done for penguins and seals as described above. Some other sub-Antarctic ecosystems are better understood, and research conclusions can be to some extent extrapolated to Crozet. Overall, the team considered that this information is sufficient to broadly understand they key elements of the ecosystem.		
b	**Guidepost**	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but have not been investigated in detail.	Main impacts of the fishery on these key ecosystem elements can be inferred from existing information, but may not have been investigated in detail.	Main interactions between the fishery and these ecosystem elements can be inferred from existing information, and have been investigated.
	Met?	Y	Y	N
	Justification	The main impacts of the fishery can be inferred from the above information; notably from the fishery-dependent data. Some issues have been investigated in detail (e.g. the impact on toothfish via a stock assessment, ecology and demographics of marine mammals) but some have not (e.g. impact on VMEs). Overall, information is sufficient to conclude that the fishery is not at all likely to be having a significant impact on any of the ecosystem elements (trophic structure and function etc.), but this question has not been investigated in detail for all aspects of the ecosystem. SG80 is met but SG100 is not met.		
c	**Guidepost**		The main functions of the Components (i.e., target, Bycatch, Retained and ETP species and Habitats) in the ecosystem are known.	The impacts of the fishery on target, Bycatch, Retained and ETP species are identified and the main functions of these Components in the ecosystem are understood.
	Met?		Y	N
	Justification	The ecology of toothfish is relatively well known (details and references given in Kerguelen report), and continues to be investigated, e.g. via the POKER research cruises at Kerguelen and via tagging. The ecology of the retained species is less well known but the POKER cruises have done research, for example on aging (otoliths), stomach contents, size-frequency by zone and depth etc. Likewise, the ecology of the birds and mammals is understood, and in the case of mammals has been studied in detail at Crozet; the shark ETP species are perhaps less well understood, but in any case, the impact		

		of the fishery on these species is trivial. The VME species are for the most part filter feeders (corals, crinoids, bryozoans, brachiopods); some may be a food source for other demersal species but most likely their key ecosystem role is to provide structure. (Bycatch species are not relevant since they are fished from a different ecosystem.) Overall, therefore, the main functions of the components in the ecosystem are known or can be inferred with reasonable confidence – SG80 is met. Only some components have, however, been studied in detail. The team concluded that SG100 is not met.		
d	**Guidepost**		Sufficient information is available on the impacts of the fishery on these Components to allow some of the main consequences for the ecosystem to be inferred.	Sufficient information is available on the impacts of the fishery on the Components and elements to allow the main consequences for the ecosystem to be inferred.
	Met?		Y	N
	Justification	As noted above, the ecosystem consequences of the fishery can be fairly confidently inferred to be very low to negligible. Good information is available on the components (target species, bycatch etc.) but not so much on the elements (trophic structure and function etc.) although parts of it have been studied (e.g. in diet studies done by the MNHN from the POKER cruises at Kerguelen; details and references given in the Kerguelen report). SG80 is met but SG100 is not met.		
e	**Guidepost**		Sufficient data continue to be collected to detect any increase in risk level (e.g. due to changes in the outcome indicator scores or the operation of the fishery or the effectiveness of the measures).	Information is sufficient to support the development of strategies to manage ecosystem impacts.
	Met?		Y	Y
	Justification	As noted above, fishery-dependent data in this fishery are detailed and precise for all the various components. Significant changes in the impacts of the fishery on these components could easily be evaluated from these data. The team considered that the various measures in place for the various components, overall constitute a 'strategy' to manage ecosystem impacts (albeit not one that consists of a plan) as argued in PI2.5.2. Therefore SG100 is met.		
References		Guinet, C., Cherel, Y., Ridoux, V. and Jouventin, P. 1996. Consumption of marine resources by seabirds and seals in Crozet and Kerguelen waters: changes in relation to consumer biomass, 1962-1985. Antarctic Science 8, 23-20. Guinet C., P. Tixier, N. Gasco & G. Duhamel. 2015. Long-term studies of Crozet Island killer whales are fundamental to understanding the economic and demographic consequences of their depredation behaviour on the Patagonian toothfish fishery. ICES Journal of Marine Science 72(5): 1587–1597. BirdLife International. 2015. Procellaria aequinoctialis. The IUCN Red List of Threatened Species 2015: e.T22698140A83475793. http://dx.doi.org/10.2305/IUCN.UK.2015-4.RLTS.T22698140A83475793.en. http://www.acap.aq/en/resources/parties-to-acap MEP, 2013. Fishery for toothfish (Dissostichus elegionides) by SARPC in Kerguelen. Gascoigne, J. Holt,T. and S. des Clers, 2013. MSC Public Certification Report, August 2013, 328p. Available at : https://www.msc.org/track-a-fishery/fisheries-in-the-program/certified/southern-ocean/sarpc_toothfish/assessment-downloads-1/20130829_PCR_TOO139.pdf COPEC observer reports		

	Sinegre, R., Duhamel, G. 2015. Updated assessment of Patagonian toothfish (Dissostichus eleginoides) in the vicinity of Crozet Islands (Subarea 58.6). CCAMLR, WG-FSA-15/69. Palomares, M.L.D., Pruvost, P., Pitcher, T.J. and Pauly, D. (eds) 2005. Modelling Antarctic marine ecosystems. Fisheries Research Centre Reports 13(7), 98pp. TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p.
OVERALL PERFORMANCE INDICATOR SCORE:	**85**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation table 22 - PI 3.1.1

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: • Is capable of delivering sustainable fisheries in accordance with MSC Principles 1 and 2; and • Observes the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood; and • Incorporates an appropriate dispute resolution framework.		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	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.		
	Met?	Y		
	Justification	1. Summary background of management system: The fishery is in the CCAMLR Convention area and France is a member of CCAMLR. Even though the fishery is not under the direct jurisdiction of CCAMLR, because of the French 'opt out' prerogative, all relevant CCAMLR conservation measures or equivalent exist in the French legal system. The fishery is managed by the French state through the local government office of the TAAF ('terres australes et antarctiques françaises' – French southern and Antarctic lands). The system for management of TAAF fisheries is set out in décret n° 2009-1039 of 26 August 2009. The decree implements the French mainland system of fisheries management (France, 2010 Code Rural relatif à la pêche maritime et à l'aquaculture marine), which also prevails locally in La Réunion, and gives the TAAF administrator (the Préfet) the ultimate decision-making role in the fishery, including: setting the level of the TAC and dividing it into quotas by whatever means seems appropriate (zone, season, vessel etc.); giving authorisations to fish; determining the rules and regulations for fishing activities in French EEZ waters under TAAF jurisdiction. These decisions are made following scientific advice and recommendation from the MNHN. The three Ministries in charge of Fisheries (), Foreign Affairs and Overseas Territories, the vessel owners and a Consultative Council advising the préfet are also invited to offer an opinion before decisions are taken. Licences to fish and shares of the TACs are awarded to a limited number of fishing companies and specific fishing vessels on an annual basis and are non-transferrable. They can be suspended or removed in case of infraction, and are not automatically transferrable if a vessel is upgraded or replaced. 2. Consistency with CCAMLR management system: It is clear from the evaluation of Principles 1 and 2 that the management system is consistent with that set out by CCAMLR. Regarding Principle 1, the stock assessment follows the CCAMLR process, and evaluates the harvest strategy in relation to CCAMLR precautionary reference points. In relation to Principle 2, CCAMLR measures for minimising incidental mortality of seabirds are fully implemented, and measures are also in place in relation to bycatch and Vulnerable Marine Ecosystems (VMEs). Therefore the team concluded that the fishery was consistent with both national and therefore local (French) and international (CCAMLR) standards in relation to issues concerning Principles 1 and 2.		
b	**Guidepost**	The management system incorporates or is subject by law to a mechanism for the resolution of legal disputes arising within the system.	The management system incorporates or is subject by law to a transparent mechanism for the resolution of legal disputes which is considered to be effective in dealing with most issues and that is appropriate to the context of the fishery.	The management system incorporates or subject by law to a transparent mechanism for the resolution of legal disputes that is appropriate to the context of the fishery and has been tested and proven to be effective.

	Met?	Y	Y	N
	Justification	Disputes relating to management of the fishery, including fishing rights for instance to challenge a suspension following an infringement, would be taken up through the French legal system, which prevails and has a specific "administrative" legal system to resolve disputes that individuals or companies may have with government decisions. The French system is considered effective where it has been tested. However, there is no precedent in fisheries disputes that have involved the TAAF, and therefore no proof of its effectiveness. Only SG80 is met.		
c	**Guidepost**	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with binding judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements binding judicial decisions arising from legal challenges.
	Met?	Y	Y	N
	Justification	There has been disrespect or defiance of the law or regulation necessary for the sustainability of the fishery (CROSS-RU, pers. com. and annual reports). If a legal challenge was brought up, there is no reason for the team to assume that the TAAF would not comply in a timely fashion. There hasn't' been any court challenge of the TAAF authority or fisheries management system in recent times. This most likely reflects the number of competent ministries and regular coordination meetings that take place between administrations, and regular information meetings with the SARPC. The management system is still very top down and a long way from co-management, therefore its does not act proactively to avoid legal disputes, only SG80 is met.		
d	**Guidepost**	The management system has a mechanism to generally respect the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to observe the legal rights created explicitly or established by custom of people dependent on fishing for food or livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.	The management system has a mechanism to formally commit to the legal rights created explicitly or established by custom of people dependent on fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	Y	Y	N
	Justification	There are no indigenous people at Crozet. The rights of SARPC members are assured by the limited licensing system, on the basis of clearly defined criteria and conditions (France, 2009. Chapitre 1er, décret n° 2009-1039 and TAAF 2015c). Licences cannot be removed without just cause and without due process, but annual variations in individual vessel quotas decided by the TAAF do not formally commit to the legal rights established by custom.		
References		France, 2009. décret n° 2009-1039 of 26 August 2009 http://www.taaf.fr/IMG/pdf/decret_2009-1039.pdf ; http://www.taaf.fr/Cadre-juridique-des-activites-de-peche-dans-les-TAAF France, 2010. Ordonnance n° 2010-462 du 6 mai 2010 créant un livre IX du code rural relatif à la pêche maritime et à l'aquaculture marine http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000022176680 TAAF, 2015c. Plan de Gestion de la pêcherie de la légine australe Dissostichus eleginoides dans les zones exclusives des Iles Kerguelen et Crozet. Version VF-4 du 6 août 2015, 48p.		

OVERALL PERFORMANCE INDICATOR SCORE:	**80**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation table 23 - PI 3.1.2

PI 3.1.2		The management system has effective consultation processes that are open to interested and affected parties. The roles and responsibilities of organisations and individuals who are involved in the management process are clear and understood by all relevant parties		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are generally understood.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for key areas of responsibility and interaction.	Organisations and individuals involved in the management process have been identified. Functions, roles and responsibilities are explicitly defined and well understood for all areas of responsibility and interaction.
	Met?	Y	Y	Y
	Justification	As described on the TAAF website, seven vessels take part in the fishery. The vessel owners are locally organized into the "Syndicat des armateurs réunionnais de la pêche congélateur" (SARPC), the client group for this assessment. They coordinate their contributions and collaborate to the information collection for research, fishing activities monitoring and surveillance, and fisheries management. Inputs of information into the management system are the following: • MNHN: Stock assessment • Vessels: VMS, e-Logbooks and monitoring and research data collection • Certified controllers: quayside catch weight data • COPEC: Observer reports and scientific data • MNHN: scientific advice • CCAMLR: Conservation Measures and annual reports (Working Groups, Scientific Committee and Plenary Report) • CROSS-RU: Monitoring, Control and Surveillance of fishing and potential IUU activities The fishery is managed by the territorial administration of the TAAF from the small island territory of La Réunion in the Indian Ocean, and therefore the main actors know each other well. Should a person, a group of individuals or special interest group be concerned, there are opportunities to be heard through the current participants in the management systems, the offices of the local and sub-national (regional) governments, the members of French parliament elected representatives, and directly through the TAAF services that are in charge of fisheries management, environmental conservation and foreign affairs for Kerguelen and Crozet. The organisations involved in management and their roles and responsibilities, are given in an updated list (see Table 14 of this report). They are common to the Crozet and Kerguelen fisheries. Their roles and responsibilities are clear, defined in the Management Plan (TAAF, 2015c) and other legislation, and are fully understood by all participants for all areas of responsibility and interaction, SG100 is met.		
b	**Guidepost**	The management system includes consultation processes that obtain relevant information from the main affected parties, including local knowledge, to inform the management system.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information obtained.	The management system includes consultation processes that regularly seek and accept relevant information, including local knowledge. The management system demonstrates consideration of the information and explains how it is used or not used.

	Met?		Y	N
	Justification	The final decision on the level of the TAC, as well as other regulations, is the responsibility of the administrative head of the TAAF (the "préfet"), taking into account the scientific advice of MNHN, as well as the views of the ministries of fisheries, overseas countries and territories, and of foreign affairs. The préfet's decision is also informed by a Consultative Council that brings together scientists and other persons nominated by the various ministries (also advising on Nature Conservation and the management of the Nature Reserve) that meets twice a year. Local knowledge from the vessel skippers and fishing companies is taken into account, regarding activities of suspected IUU vessels, which are successfully kept out of the fishery through close industry-government (CROSS-RU) collaboration. Information from SARPC is taken into account (e-logbooks, observer reports etc.) as part of the scientific assessment process, and the companies are also represented on the French delegation to CCAMLR every year. The certification process was initiated by the vessel owner association SARPC in 2009, for both Kerguelen and Crozet. The SARPC has also part-funded the Kerguelen POKER research cruises, the observer programmes, and the provision of stock assessment expertise until 2013 in order to meet CCAMLR standards. Current participants are therefore fully informed and involved in discussing the scientific basis of the management measures. However, the TAAF and MNHN have not clearly explained how some of the information was used in setting the TAC in the past. The decision-making process that leads to TAC changes is not always clear either, although it relates to scientific advice, and is eventually validated by the CCAMLR after the fact. There is extensive scientific cooperation between Australia, France and New Zealand for the development of stock assessment models, and between all coastal states in the region regarding Port State measures. The management system includes consultation processes, including through the Austral Fisheries Working Group (TAAF, 2015f), and the C3P that presents how some of the information regarding individual vessels environmental impacts is used to compute changes in annual vessel quotas, although it does not explain exactly how it is used or not used. Only SG80 is met.		
c	**Guidepost**		The consultation process provides opportunity for all interested and affected parties to be involved.	The consultation process provides opportunity and encouragement for all interested and affected parties to be involved, and facilitates their effective engagement.
	Met?		Y	N
	Justification	There are relatively few stakeholders in the combined Kerguelen and Crozet toothfish longline fishery, because of its small size and remote locations. Most are involved in the management system in some way, as set out above. The engagement of NGOs is facilitated via participation in CCAMLR (with observer status), and for example, were mobilised by the Australian and French industry associations (see COLTO, 2015) and others in the region, to fight against IUU activities and the marketing of illegally caught toothfish. There are several forms of consultation, through the C3P, Work groups and Consultative committee meetings, which provide opportunities and for all interested and affected parties to be involved, and at least to be informed and voice concern. The consultation process with the vessel owners is rather limited, and mostly only shares limited information, usually after decisions have been made, it does not facilitate their effective engagement. Therefore, only SG80 is met.		
References		France, 2009. décret n° 2009-1039 of 26 August 2009 http://www.taaf.fr/IMG/pdf/decret_2009-1039.pdf TAAF, 2015c. Plan de Gestion de la pêcherie de la légine australe Dissostichus eleginoides dans les zones exclusives des Iles Kerguelen et Crozet. Version VF-4 du 6 août 2015, 48p. TAAF, 2015f. Compte-rendu 11ème Groupe de Travail Pêche Australe, 8 avril 2015, 10p. TAAF per. Comm. Elements of presentation to the C3P, August 2014 and 2015 COLTO, 2015		

OVERALL PERFORMANCE INDICATOR SCORE:	**85**
CONDITION NUMBER (if relevant):	**N/A**

Evaluation table 24 - PI 3.1.3

PI 3.1.3		The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Principles and Criteria, and incorporates the precautionary approach		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Long-term objectives to guide decision-making, consistent with the MSC Principles and Criteria and the precautionary approach, are implicit within management policy	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach are explicit within management policy.	Clear long-term objectives that guide decision-making, consistent with MSC Principles and Criteria and the precautionary approach, are explicit within and required by management policy.
	Met?	Y	Y	Y
	Justification	There are three sources of long-term objectives for management policy: CCAMLR and France/TAAF. 1. CCAMLR CCAMLR has long-term objectives for harvesting of marine resources in the Convention area, as set out in Article II paragraph 3 of the CCAMLR (1980) Convention: 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. Although France participates in CCAMLR on its own terms, it has effectively signed up to CCAMLR's key long-term conservation objectives; including the precautionary reference points (implementation of paragraph a), and the ecosystem approach to fisheries management and the bird mortality action plan (implementation of paragraphs b and c), as set out in the rationales for Principle 2. This is manifested in various ways: compliance with CCAMLR reference points, implementation of actions to reduce bird bycatch, cooperation in research on VMEs and other aspects of the ecosystem. It is clear that there are French measures are in place equivalent to CCAMLR Conservation Measures in each case. 2. France / TAAF The EU Marine Strategy Framework Directive has been transposed into the French Environment Code (articles L. 219-9 à L. 219-18 et R. 219-2 à R. 219-17) that set out two priorities, an integrated management of the sea and coastal areas, and the protection and conservation of marine environment. France published its national integrated maritime policy at the end of 2009, the Blue Book - A national strategy for the sea and oceans (France, 2009). The French strategy is built around four priorities, i) Invest in the future – research, education, awareness; ii) Develop a sustainable economy of the sea – sustainable resource use, fisheries, shipbuilding, shipping, ports, marine recreation; iii) Promote the maritime dimension of the overseas territories –		

		local authorities and stakeholders, assets and responsibilities, marine resources and economic development; and iv) Assert France's place on the international scene – international governance, contribution to EU integrated maritime policy, responsibilities, defence and security. The Strategy applies to all French overseas territories including (explicitly) the TAAF (also art. L219-2 of the Code de l'Environnement). Therefore, overarching objectives of the European directive apply, even though the TAAF are not part of the EU but only associated as an overseas territory. A key objective with regards to the TAAF territories is to maintain French sovereignty. In this context, France recognises the need to be seen as a responsible custodian of the area. France regards itself as the guarantor to the international community of the preservation of the sub-Antarctic ecosystem in the TAAF area. In this context, France has worked to establish its largest national protected area, a well-managed fishery in the Kerguelen EEZ and to eliminate IUU fishing. The objective for the management of fisheries in the TAAF zone is set out in the French décret 2009-1039 from the Ministry of Agriculture and Fisheries on conditions on fishing activities in the TAAF (France, 2009). Article 1 of the décret says: (own translation) [The objective of this decree is to guarantee the long-term conservation and optimal exploitation of the fisheries resources in the TAAF zone under French sovereignty or jurisdiction situated around the coasts of St. Paul and Amsterdam, the Crozet archipelago, the Kerguelen archipelago and the Tromelin, Glorieuses, Juan de Nova, Bassas da Indian and Europa islands. Fishing activity by all vessels whether French or foreign flagged will be operated with respect for the preservation of the marine ecosystems of which the resource is a part.] The team concludes that clear, long-term objectives to guide decision-making, are explicit in the management system. These long-term objectives are 'required by' the management system and SG100 is met in full.
References		CCAMLR, 1980. Convention: http://www.ccamlr.org/en/organisation/camlr-convention-text France, 2009. décret n° 2009-1039 of 26 August 2009 http://www.taaf.fr/IMG/pdf/decret_2009-1039.pdf; http://www.outre-mer.gouv.fr/?les-taaf.html and http://www.outre-mer.gouv.fr/?les-relations-internationales-et-la-cooperation-regionale.html
OVERALL PERFORMANCE INDICATOR SCORE:		**100**
CONDITION NUMBER (if relevant):		**N/A**

Evaluation table 25 - PI 3.1.4

PI 3.1.4		The management system provides economic and social incentives for sustainable fishing and does not operate with subsidies that contribute to unsustainable fishing		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and seeks to ensure that perverse incentives do not arise.	The management system provides for incentives that are consistent with achieving the outcomes expressed by MSC Principles 1 and 2, and explicitly considers incentives in a regular review of management policy or procedures to ensure they do not contribute to unsustainable fishing practices.
	Met?	Y	Y	N
	Justification	There were some capital subsidies in the fishery in relation to conversion of trawlers to longliners in early 2000, which were according to CCAMLR's recommendations that toothfish fishing should be carried out by longline in deeper waters only. There has been fiscal encouragements for fishing companies to operate in French Overseas Territories (CESR-Réunion, 1996), but overall, the team could not find evidence of subsidies leading to unsustainable practices. Instead, the team noted that the fishing companies in SARPC have invested significant financial resources to support the sustainable management of the resource, including to support the process of MSC certification: for example, in co-funding scientific projects including the development of stock assessments models. The non-observance of licence conditions carries penalties (e.g. month-long suspension of fishing activities if caught fishing in waters shallower than 500m), but most importantly, infractions can jeopardize annual licence renewal. The attribution of annual fishing licences based on historical records provides fishing companies with some measure of certainty that as long as they observe licence conditions and catch their fishing quotas, they will continue to have access to the resource. Taken together, these conditions give SARPC members a positive incentive for good stewardship of the resource. However, the environmental performance and other criteria used to calculate vessel quotas are not published in detail, see TAAF 2015b, which makes it difficult for vessel owners 1) to understand clearly how to improve, and 2) to collaborate and share best practice with other vessels placed in a competition situation. There is no evidence of a regular review of incentives that explicitly considers incentives, only SG 80 is met. The team issues a recommendation (Recommendation 5): The procedures and criteria for allocating variable amounts of quota between different vessels annually should be reviewed and published, to ensure that they do not contribute to unsustainable fishing practices and to ensure that they are consistently applied to provide effective deterrence.		
References		France, 2009. décret n° 2009-1039 of 26 August 2009 http://www.taaf.fr/IMG/pdf/decret_2009-1039.pdf CESR-Réunion (1996). Persepective de Développement de la pêche maritime à la Réunion TAAF per. Comm. Elements of presentation to the C3P, August 2014 and 2015		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**N/A**

Evaluation table 26 - PI 3.2.1

PI 3.2.1		The fishery has clear, specific objectives designed to achieve the outcomes expressed by MSC's Principles 1 and 2		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Objectives, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are implicit within the fishery's management system	Short and long-term objectives, which are consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.	Well defined and measurable short and long-term objectives, which are demonstrably consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are explicit within the fishery's management system.
	Met?	Y	Y	N
	Justification	Long-term objectives specific to the Crozet toothfish fishery are set out in the French national legislation for the TAAF management of its fisheries already mentioned (France, 2009). These are to ensure the resource conservation and its optimal exploitation (Principle 1) and specifically for fishing activities to preserve marine ecosystems where the resources are found (Principle 2). Other objectives are to support long-term involvement of vessel owners and their contribution to data collection and research are indicated by the annual licence renewal criteria (art. 8 and 9). CCAMLR sets its long-term (35-year) objective for the fishery that the standing stock biomass stays above 50% of the estimated initial stock biomass (CCAMLR, 2014c). The annual regulation (TAAF, 2014) sets the same long-term objectives, which since 2015 are also included in the Management Plan for the Fishery published by TAAF in 2015(c). Since the publication of the Management Plan (TAAF, 2015c), the short and long-term objectives are now explicit (section 1-4) and concern the conservation, optimal sustainable resource use, and minimization the fisheries' impacts on the ecosystems. : namely to avoid any risk of over-exploitation of the stocks (Crozet and Kerguelen), but these are not yet well defined or measurable. For example, short-term objectives in relation to Principle 1 will be reformulated as the stock assessment becomes more reliable as a source of information about stock status. In relation to Principle 2, objectives are more well-defined, and are set out in the management plan for birds and the code of good conduct for bycatch and interactions with orca (depredation). Principle 2 short-term objectives also focus on gathering more information. Not all P2 objectives are, however, quantitatively measurable (this is often difficult). SG80 is met, because short- and long-term objectives are explicit for Principles 1 and 2. SG100 is not met, because short-term objectives for Principle 1 (how the TAC will be set over the next few seasons) remain poorly defined for the moment; objectives for Princple 2 are measurable in some cases (e.g. in the CBC but not others (e.g. in relation to VMEs). The overall score is 80.		
References		CCAMLR FSA, 2014. Report of the Working Group on Fish Stock Assessment France, 2009. Décret no 2009-1039 du 26 août 2009 relatif aux conditions d'exercice de la pêche maritime dans les Terres australes et antarctiques françaises et pris pour l'application de l'article 3 de la loi no 66-400 du 18 juin 1966 modifiée sur l'exercice de la pêche maritime et l'exploitation des produits de la mer dans les Terres australes et antarctiques françaises, http://www.taaf.fr/IMG/pdf/decret_2009-1039.pdf MNHN, per comm. http://www.actualites-news-environnement.com/24386-POKER-II-retour.html TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p. http://www.taaf.fr/IMG/pdf/jo_63_3eme_trim_2014.pdf		

	TAAF, 2015c. Plan de Gestion de la pêcherie de la légine australe Dissostichus eleginoides dans les zones exclusives des Iles Kerguelen et Crozet. Version VF-4 du 6 août 2015, 48p.
OVERALL PERFORMANCE INDICATOR SCORE:	**80**
CONDITION NUMBER	**N/A**

Evaluation table 27 - PI 3.2.2

PI 3.2.2		The fishery-specific management system includes effective decision-making processes that result in measures and strategies to achieve the objectives, and has an appropriate approach to actual disputes in the fishery under assessment.		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	There are informal decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	There are established decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	Y	Y	
	Justification	There are clearly established decision-making processes in this fishery, as can be seen by the example of the TAC: the MNHN provides advice including stock assessment. The three ministries (ministries in charge of fisheries, foreign affairs and overseas territories) and vessel owners provide opinions for the préfet of the TAAF to decide. In her /his decisions, the préfet is supported by a Consultative Council that meets twice a year and the Austral Fisheries Working Group, that are able to discuss and make recommendations. Likewise for Principle 2 issues, there is a process for taking and implementing decisions – for example in relation to the recent code of good conduct for bycatch, advice is provided by MNHN, based on their own research and on CCAMLR good practice, following which TAAF takes the decision to incorporate the code into the regulations. These and other decisions have resulted in measures and strategies to achieve the objectives defined in particular through the 1st version of a Fishery Management Plan (TAAF, 2015c) – even if some of the objectives are somewhat vague, SG80 is met.		
b	**Guidepost**	Decision-making processes respond to serious issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take some account of the wider implications of decisions.	Decision-making processes respond to serious and other important issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.	Decision-making processes respond to all issues identified in relevant research, monitoring, evaluation and consultation, in a transparent, timely and adaptive manner and take account of the wider implications of decisions.
	Met?	Y	Y	N
	Justification	Decisions have been made in response to serious issues identified in research and annually within CCAMLR working groups – stock management, bird mortality, bycatch, VMEs etc. While the fishery (Crozet as Kerguelen) has not always been at the forefront of decision-making within CCAMLR (e.g. in relation to birds) it has to be noted that despite limited human and financial resources, collaborations within CCAMLR and in the region ensure wider issues as taken into account. Decision-making has not always been transparent, but this has certainly improved greatly over the last few years – for example in relation to the peer review of the stock assessment by CCAMLR WG-FSA since 2011. SG80 is met.		
c	**Guidepost**		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		Y	

	Justification	SG80 requires that decisions are precautionary and are based on the best available information. While the TAC is said to be precautionary, the basis and decision-making process by which the TAC was increased from 850t in 2014/15 to 1000t for 2014:15 is unclear, although that has been an a posteriori confirmation by CCAMLR FSA that the new TAC satisfied CCAMLR decision rules (CCAMLR FSA prelim, 2015) and is therefore precautionary. SG80 is met.		
d	**Guidepost**		Explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.
	Met?		N	N
	Justification	The MNHN scientific advice is not publicly available until it has been presented and is published on CCAMLR website around December time. Therefore, annual TAC decisions made by the TAAF in August are so far based on information and scientific advice that is not publicly explained. Likewise there is no requirement for TAAF to explain the basis and decision-making process used to vary individual vessel quotas each year. Although some explanations are provided to vessel owners on an individual basis, they are informal and not clearly linked to monitoring results, and there is no review of management actions. SG80 is not met.		
References		TAAF, 2015c. Plan de Gestion de la pêcherie de la légine australe Dissostichus eleginoides dans les zones exclusives des Iles Kerguelen et Crozet. Version VF-4 du 6 août 2015, 48p. CCAMLR, FSA prelim, 2015. WG FSA-15 Report – Preliminary version, 83p. from https://www.ccamlr.org/en/system/files/e-fsa-15-v1.pdf		
OVERALL PERFORMANCE INDICATOR SCORE:				**75**
CONDITION NUMBER				**5**

Evaluation table 28 - PI 3.2.3

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the fishery's management measures are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	Guidepost	Monitoring, control and surveillance mechanisms exist, are implemented in the fishery under assessment and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated an ability to enforce relevant management measures, strategies and/or rules.	A comprehensive monitoring, control and surveillance system has been implemented in the fishery under assessment and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	Y	Y	Y
	Justification	The fishery has seven vessels operating over a very large area of remote waters. They are equipped with VMS and submit e-logbooks. As part of its fishing licence obligations, each fishing vessel has on board at all times a 'contrôleur de pêche' (fisheries controller COPEC) in charge of enforcement of the TAAF regulations as well as the collection of scientific data (TAAF, 2014). Regarding enforcement, controllers report on the vessels' respect for fisheries regulatory obligations, international, national and territorial (Title I art. 3 TAAF, 2001), although they do not hold enforcement powers. They also report on any suspected IUU activities from vessels seen in the zone (art. 5), as do the vessel's captain and crew on permanent watch. COPECs submit a weekly report and a final report and data files at the end of each trip to TAAF for onward communication to the MNHN. Position information is also used in real-time to move away from interactions with species caught incidentally (rays), undersized toothfish, birds, orcas, whales and VMEs. VMS and reports of fishing information are also submitted to CCAMLR. The team found no evidence of contraventions other than minor. The catch is frozen, weighed and labelled on board, and weighed by an independent third-party surveyor on disembarkation. The data are provided to TAAF and MNHN and cross-checked against the fishing logbooks. Any potential IUU activities from the fleet or from non-authorised vessels are policed by the national fisheries surveillance (and sea rescue) organisation, with a regional office in La Réunion, the CROSS-RU. The CROSS-RU relies on satellite and radar surveillance of the Crozet EEZ, patrols by the French navy and the fisheries surveillance vessel Osiris. They report no infringement from the fleet and an active and crucial cooperation to monitor and keep away foreign vessels that may try to fish illegally. They also have a regional MCS collaboration with joint surveillance activities with Australia and South Africa. France submits an annual report to CCAMLR and has reported no IUU fishing within the TAAF EEZs for some years, although IUU fishing still takes place to a small extent at the edge of the zones (MEDDE-DMSOI, 2015 and CROSS-RU pers. comm.). The system is comprehensive, SG100 is met.		
b	Guidepost	Sanctions to deal with non-compliance exist and there is some evidence that they are applied.	Sanctions to deal with non-compliance exist, are consistently applied and thought to provide effective deterrence.	Sanctions to deal with non-compliance exist, are consistently applied and demonstrably provide effective deterrence.
	Met?	Y	Y	N

	Justification	There are two systems for all TAAF fisheries, the national French system, which rules all international and national rules and regulations. It relies on a mix of penal and administrative sanctions linked to a point system. For the fishery, the TAAF issues additional fishery-specific regulations that are enforced through administrative sanctions, the most important one being a variation of the tonnage allocated annually as individual vessel quotas. However, the criteria and calculations behind TAAF's discretionary quota variations are not published and the vessels report that it is becoming increasingly difficult to understand what deterrence effect these are supposed to have - only SG80 is met and the team issues a recommendation (Recommendation 5).		
c	**Guidepost**	Fishers are generally thought to comply with the management system for the fishery under assessment, including, when required, providing information of importance to the effective management of the fishery.	Some evidence exists to demonstrate fishers comply with the management system under assessment, including, when required, providing information of importance to the effective management of the fishery.	There is a high degree of confidence that fishers comply with the management system under assessment, including, providing information of importance to the effective management of the fishery.
	Met?	Y	Y	N
	Justification	The CROSS-RU have a high degree of confidence that fishers comply and collaborate closely with the fisheries MCS. Variations in compliance with TAAF regulations exist and lead to penalties (and bonuses) in the vessels' annual quota allocations, but the details are not published (see Recommendation #5), despite full information from the vessel captains. Until the detail of infringement to TAAF regulations are published it is not possible to conclude about compliance with TAAF regulations with a 'high degree of confidence'. The assessment team therefore concludes that SG100 is not met.		
d	**Guidepost**		There is no evidence of systematic non-compliance.	
	Met?		Y	
	Justification	Both CROSS-RU and TAAF confirm that there is no evidence of systematic non-compliance whatsoever, SG80 is met.		
References		TAAF, 2014. Arrêté n°2014-78 du 19 août 2014 Prescrivant les règles encadrant l'exercice de la pêche à la légine australe (Dissostichus eleginoides) dans les zones économiques exclusives de Crozet et de Kerguelen, 25p. MEDDE DMSOI, 2015. Bilan d'activités 2014 CROSS Réunion, 55p. CROSS RU, and TAAF DPQM pers. comm. interview during site visit.		
OVERALL PERFORMANCE INDICATOR SCORE:				**85**
CONDITION NUMBER (if relevant):				**N/A**

Evaluation table 29 - PI 3.2.4

PI 3.2.4		The fishery has a research plan that addresses the information needs of management		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	Research is undertaken, as required, to achieve the objectives consistent with MSC's Principles 1 and 2.	A research plan provides the management system with a strategic approach to research and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.	A comprehensive research plan provides the management system with a coherent and strategic approach to research across P1, P2 and P3, and reliable and timely information sufficient to achieve the objectives consistent with MSC's Principles 1 and 2.
	Met?	Y	Y	N
	Justification	A number of research plans relate to the fishery and inform management, although there is no formal fishery-specific research plan. The MNHN has research plans in place for Kerguelen and Crozet, regarding toothfish growth or VMEs, for example, which are informed by the needs of the fishery and associated ecosystems (for example, the bycatch code of conduct now included in the annual fisheries regulation came out of the research conducted in Kerguelen POKER II, one of the objectives of which was to evaluate key habitat areas for bycatch species). Several research institutes conduct research at Crozet under the auspices of the Chizé Research Centre (CEBC-CNRS) and the Institut Polaire Français Paul Emile Victor (IPEV) also in a coordinating role. Research programmes relating to the fishery include oceanography, benthic mapping, climate change monitoring and behaviour and ecology of seabirds and marine mammals. There is also a management structure for scientific research in the Antarctic – the Scientific Committee on Antarctic Research (SCAR), which has three standing scientific groups and four scientific research programmes. The life sciences group coordinates research into Antarctic biodiversity, ecosystem structure and function and ecosystem change (among other things). Coordination between the various groups is ensured through the TAAF (especially the DCPN for protected areas and ETPs) that provides all logistic authorisation and support and its consultative council that vets all research applications, programmes and provides some funding. At international level, the first Symposium on the Kerguelen Plateau organised by MNHN in 2010 also discussed Crozet, and was well attended by scientists from Australia, New Zealand and South-Africa. Coordination is effected through the scientific research channels, direct contacts between scientists and CCAMLR in particular. For example, much of the research carried out by MNHN and under the various IPEV programmes is published in the Journal CCAMLR Science. French scientists are active participants of CCAMLR Working Groups (WG on Ecosystem Monitoring and Management, on Incidental Mortality Associated with Fishing, on Fish Stock Assessment). On this basis, the team concluded that there is a strategic approach to research at Crozet (and Kerguelen), covering research sufficient to inform management as is required for SG80. However, since the plan is piecemeal from various sources rather than one single overarching plan, it can probably not be called 'comprehensive', as is required for SG100.		
b	**Guidepost**	Research results are available to interested parties.	Research results are disseminated to all interested parties in a timely fashion.	Research plan and results are disseminated to all interested parties in a timely fashion and are widely and publicly available.
	Met?	Y	Y	N

	Justification	Results are disseminated to interested parties (e.g. to SARPC, TAAF and in CCAMLR Science) but are not always 'widely and publicly available', as required for SG100 – for example, most of the TAAF and MNHN presentations communicated through the CC, C3P or Austral Fisheries WG are not circulated and are only (if at all) available on request.
References		CEBC-CNRS see http://www.valdeboutonne.fr/images/stories/communes/chize/cnrs-chize.pdf IPEV, research plan: http://www.institut-polaire.fr/ipev/programmes_de_recherche/en_cours/%28region%29/2 SCAR/ http://www.scar.org/researchgroups/lifescience/
OVERALL PERFORMANCE INDICATOR SCORE:		**80**
CONDITION NUMBER (if relevant):		**N/A**

Evaluation table 30 - PI 3.2.5

PI 3.2.5		**There is a system of monitoring and evaluating the performance of the fishery-specific management system against its objectives There is effective and timely review of the fishery-specific management system**		
Scoring Issue		SG 60	SG 80	SG 100
a	**Guidepost**	The fishery has in place mechanisms to evaluate some parts of the management system and is subject to occasional internal review.	The fishery has in place mechanisms to evaluate key parts of the management system and is subject to regular internal and occasional external review.	The fishery has in place mechanisms to evaluate all parts of the management system and is subject to regular internal and external review.
	Met?	Y	Y	N
	Justification	Performance of fishing arrangements and regulatory obligations of the management system are revised and augmented each year as part of the vessel fishing licences and statistical information collected by TAAF. During the fishing season, activities may also be modified on the basis of advice or instructions from the COPEC fishery controller. The TAC may be reviewed on the basis of the MNNH advice as the stock assessment models are developed, which are also reviewed by CCAMLR. However, there are currently no mechanisms in place to evaluate all parts of the management system, for example annual changes in individual vessel quota allocation key are not reviewed. The fishery performance and its management are presented and discussed every year with the Consultative Committee. Information on catches, and any impact of the fishery on ecosystem components are presented and discussed as part of the French report to CCAMLR, including Principle 1 (stock status) and key aspects of Principle 2 (e.g. bycatch, birds, marine mammals). For the first time in 2012, CCAMLR WG on Fishery Stock Assessment peer reviewed and made recommendations for the stock assessment model and agreed that the current TAC of 5100 tonnes was in line with the CCAMLR precautionary approach (CCAMLR WG-FSA, 2014 and 2015). In addition regarding stock assessment, there has been a level of mutual oversight with Australia and New Zealand initiated with the Kerguelen plateau conference in 2010. Overall, the team concluded that key parts of the management system have been subject to regular internal review and periodic external review. The score is therefore 80.		
References		CCAMLR WG-FSA, 2014 CCAMLR WG-FSA, 2015		
OVERALL PERFORMANCE INDICATOR SCORE:				**80**
CONDITION NUMBER (if relevant):				**N/A**

Appendix 2. Conditions

Five performance indicators scored below 80 and the corresponding conditions are shown in the tables below. Please note that in some circumstances corrective action is shared between conditions – where this was the case, the conditions were combined.

Table 27. Condition 1 and 5: Harvest control rules and Decision-making processes

	PI number	Scoring issue/ scoring guidepost	Score
Performance Indicator & Score	**1.2.2 – Harvest control rules**	a. Well defined harvest control rules are in place that are consistent with the harvest strategy and ensure that the exploitation rate is reduced as limit reference points are approached b. The selection of the harvest control rules takes into account the main uncertainties.	**65**
	3.2.2 Decision-making processes	d. Information on fishery performance and management action is available on request, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	**75**
Condition	General harvest control rules exist, expressed in the numerous measures (limited access, effort control at sea, observer coverage, dock-side monitoring, VMS) to control and limit exploitation. TAAF has the entire power to take further actions if the global objective of the strategy is threatened. However, the team did not consider that the HCRs are 'well-defined', in the sense that the links between scientific advice, reference points and decisions on the TAC are not clear and transparent. Rather, the TAC is determined by the TAAF and three French ministries concerned. That TAC is tested *a posteriori* by the MNHN with the CASAL model. The MNHN scientific advice is not publicly available until it has been presented and is published on CCAMLR website around December time. Therefore annual TAC decisions made by the TAAF in August are so far based on information and scientific advice that is not publicly explained. Likewise there is no requirement for TAAF to explain the basis and decision-making process used to vary individual vessel quotas each year. Although some explanations are provided to vessel owners on an individual basis, they are informal and not clearly linked to monitoring results, and there is no review of management actions, By the end of Year 3 (to coincide with Kerguelen re-certification), the fishery must have in place a set of Harvest Control Rules defined in the Management Plan, associated with established decision-making processes based on these HCRs and objectives which are clearly explained to fishery stakeholders.		

Milestones	Year 1: Stakeholders discuss and agree a set of explicit objectives for Principle 1 (management of the toothfish stock) at Crozet, which can form the basis of the HCRs, and which are compatible with the CCAMLR reference points or otherwise compatible with the requirements of MSC Principle 1 (1.1.2) Criteria for allocation of the TAC between vessels published by TAAF. Score 1.2.2: 65; Score 3.2.2: 75 Year 2: Preliminary harvest control rules developed which show how the TAC (and/or other management measures) are adapted in response to the status of the stock. HCRs reviewed with relevant stakeholders. Score 1.2.2: 65; Score 3.2.2: 75 Year 3: Revised management plan presented for Crozet: explicit Principle 1 objectives in the form of agreed management reference points; explicit, well-defined HCRs based on those objectives; and a transparent decision-making process for the setting of the TAC and allocation of individual quotas according to the pre-agreed rules. Score 1.2.2: 80; Score 3.2.2: 80
Client action plan	1. Définir des règles de contrôle du niveau des captures annuelles par stock (HCR), les objectifs de la gestion et les processus de prise de décisions. Des règles claires et simples de contrôle du niveau des captures seront intégrées au plan de gestion dès que le nouveau modèle d'évaluation de la productivité du stock sera validé par la CCAMLR, qui fourniront une base solide pour les prises de décision concernant le niveau du TAC annuel. D'ici la fin de l'année 2 de certification Crozet. 1. Define rules to control the level of annual catches per stock (HCR), the objectives of the management and decision-making processes. Clear rules and simple catch level control will be integrated in the management plan once the new productivity evaluation model of the stock will be validated by CCAMLR, which will provide a solid basis for decision making regarding the level of annual TACs. By the end of Crozet certification of year 2. 2. – Evaluer la mise en œuvre du Plan de Gestion de la pêcherie une fois qu'il est établi par les TAAF et approuvé par les parties prenantes. D'ici la fin de l'année 2 de certification Crozet. Assess the implementation of the fishery management plan once it is established by the TAAF and approved by stakeholders. By the end of Crozet certification of year 2. 3. Revoir et améliorer le Plan de Gestion avec les règles de contrôle des captures et un processus pour la prise des décisions inclus. D'ici la fin de l'année 3 de certification Crozet. Review and improve the Management Plan, inlcuding the HCRs. By the end of Crozet certification of year 3.
Consultation	TAAF in collaboration with the MNHN et le SARPC. Emails demonstrating support of the relevant parties to the action plan were provided to the CAB.

Table 28. Condition 2 and 3: Strategy and information to manage the fishery's impacts on grenadiers and rays

	PI numbers	Scoring issue/ scoring guidepost	Score
Performance Indicators & Scores	**2.1.1**	a. Main retained species are highly likely to be within biologically based limits or if outside the limits there is a partial strategy of demonstrably effective management measures in place such that the fishery does not hinder recovery and rebuilding.	60
	2.1.3	b. Information is sufficient to estimate outcome status [of main retained species] with respect to biologically based limits.	75
Condition	The team considered that the CBC and other measures certainly constitute a 'partial strategy'. The team was not, however, provided with evidence that it is 'demonstrably effective' – i.e. there has not yet been any analysis as to whether the objectives of the CBC in terms of bycatch reductions are being met, even though the 3-year period foreseen to achieve them has more or less passed. Qualitatively speaking, it is reasonable to argue that given the strategy in place for main retained species, the low catches over a large area and the closed area <500m, it is not at all likely that the fishery is having an impact on the population which would affect its status in relation to biologically-based limits. The available data could also provide a basis for a semi-quantitative analysis (e.g. based on CPUE statistically adjusted for changes resulting from implementation of the CBC, or based on length-frequency – observers carry out length-frequency measurements, or following the Australian risk-assessment methodology). It is not, however, currently possible to estimate outcome status in relation to biologically-based limits in any quantitative way, because the available data have not been analysed in this way. The data available on the bycatch of the fishery (main retained species – *Macrourus carinatus* and *Amblyraja taaf*) from Avistock and Avipeche should be analysed to evaluate whether the targets of the CBC in terms of bycatch reduction have been met. If the CBC has not been 'demonstrably effective' new or additional measures should be put in place or action otherwise taken such that the fishery is able to demonstrate that these species are within biologically-based limits or that the fishery is not hindering recovery.		
Milestones	Year 1: Analyse data and evaluate if CBC targets are being achieved Score 2.1.1: 60; Score 2.1.3: 75 Year 2: Start to put in place a mechanism for periodic evaluation of fishery-dependent data on *M. carinatus* and *A. taaf* to provide some (proxy) evaluation of stock status. If CBC targets not achieved, evaluate whether a new approach or additional measures are required to ensure the sustainability of these stocks. Score 2.1.1: 60; Score 2.1.3: 75 Year 3: Finalise the methodology for periodic evaluation of stock status for *M. carinatus* and *A. taaf.* Finalise and agree new management measures, if required. Score 2.1.1: 60; Score 2.1.3: 75 Year 4: Implement new management measures, if required. Score 2.1.1: 80; Score 2.1.3: 80		

Client action plan	1. Evaluation du Guide de Bonnes Pratiques en terme de réduction des taux de prises accessoires : TAAF et MNHN doivent analyser les informations disponibles en termes de réduction des taux de prises accessoires, afin d'évaluer l'efficacité des pratiques existantes, avant tout révision du Guide de 2011 (de N. Gasco et G. Duhamel). Evaluation of Good Practice Guide in terms of reduction in catch rates non-target species. TAAF and MNHN should analyze available information in terms of reducing catch rates non-target species to assess the effectiveness of existing practices, before any revision of the Guide 2011 (N. Gasco and G. Duhamel). 2. Révision du Guide de Bonnes Pratiques et établissement de mesures conservatoires si nécessaire - MNHN, TAAF, DPMA, SARPC D'ici août 2017 (audit de surveillance Kerguelen et fin de l'année 2 de Certification Crozet) Revision of the Good Practice Guide and establishing protective measures if necessary – MNHN, TAAF DPMA, SARPC By August, 2017 (Kerguelen surveillance audit and end year 2 Certification Crozet)
Consultation	TAAF in collaboration with the MNHN et le SARPC. Emails demonstrating support of the relevant parties to the action plan were provided to the CAB.

Table 29. Condition 4: Habitats information / mapping

	Insert relevant PI number	Scoring issue/ scoring guidepost	Score
Performance Indicator & Score	2.4.3	The nature, distribution and vulnerability of all main habitat types in the fishery are known at a level of detail relevant to the scale and intensity of the fishery.	75
Condition	There are no habitats maps from Crozet, and little work has been done on demersal habitats. Unlike at Kerguelen, the POKER research cruises do not (cannot) operate at Crozet, so an important source of fishery-independent data is missing. Nevertheless, habitats are monitored to the extent that VME species coming up on the lines are identified and quantified. This provides a basic understanding of the type and distribution of these vulnerable habitats. The footprint and impact of this fishing method on the benthos (even taking gear loss into account) is small, and given that significant areas of the Crozet EEZ are protected from fishing (see Figure 13 of the main report), the level of detail required to be 'relevant to the scale and intensity of the fishery' is relatively low. Nevertheless, the team noted that there has so far not been any mapping of the VME observer data in the way that has been done for bycatch: this could be used to identify VME hotspots which could then be avoided. The team considered that this lack of analysis of the existing habitat data (which is understandable since the VME rules are quite recent) precludes SG80 being met. The observer data on bycatch of VME indicator organisms should be archived, analysed and mapped on an ongoing, periodic basis, so as to build up over time an improving picture of the location of VMEs in the Crozet fishing zone. This may be done by the TAAF, the MNHN or any body with suitable expertise.		
Milestones	Year 1: Develop a system for inputing data in a form which can be analysed (e.g. a database, GIS software programme or other suitable form), if not already in such a form. Enter historic data if necessary. Score 2.4.3: 75 Year 2: Show that observer data are being entered in the system on an ongoing or periodic basis. Analyse existing data and prepare initial maps. Provide a plan as to how often and by whom these maps will be updated. Score 2.4.3: 80		
Client action plan	1. Cartographie et analyse des données d'observateurs sur les écosystèmes marins vulnérables, de la même manière que cela est fait pour les prises accessoires. D'ici l'année 2 de certification Crozet Mapping and analysis of observer data on vulnerable marine ecosystems in the same way that this is done to catch of non-target species. By Crozet certification of year 2		
Consultation	TAAF / MNHN / or other expert (not yet defined). Emails demonstrating support of the relevant parties (TAAF, MNHN) to the action plan were provided to the CAB.		

Appendix 3. Gap Analysis

Intent to Undertake an Expedited Assessment

MEC would like to announce the intent to conduct the expedited audit for an extension of scope to the SARPC Toothfish fishery, fishing off Kerguelen Island by demersal longline (MEP-F-018), to include an additional UoA; the SARPC Crozet toothfish fishery.

To support MEC's proposal for an expedited audit of the SARPC Crozet toothfish fishery, a gap analysis was carried out (see appendix 1), assessing the degree of overlap between the Kerguelen toothfish and Crozet toothfish fisheries. Note that the vessels and companies are exactly the same for both UoAs. The gap analysis revealed that the expedited assessment would involve a full assessment of Principle 1 Performance Indicators (PIs) for the Crozet UoA. Considerable overlap is expected for Principle 2 and Principle 3 PIs, so a review of up to date information and data will be conducted for both principles. Where required, the appropriate PIs will be rescored for the Crozet UoA.

The two fisheries use the same fishing gear. In addition, the habitat types and ecosystem system are anticipated to be extremely similar. It is also likely that the retained and discarded and ETP species will be very similar. Principle 3 is considered to be in common with the two fisheries. The legal framework and local management are governed by the same process/organisations (TAAF and CCAMLR).

The expedited assessment will be conducted against the v1.3 assessment tree, as per FCR 7.22.3, as the original assessment was completed against this version. According to the outcome of the gap analysis, a full assessment of Principle 1 Performance Indicators will need to be completed. Principle 2 and 3 will be reviewed and updated as appropriate. The only implications anticipated, relate to the condition that was stipulated as per variation request that was granted for the expedited audit to take place (see appendix 2). This requires that the team selects the main bycatch/retained species and ETP species on the basis of the data available in the Crozet fishery (not just assuming they will be the same as the Kerguelen toothfish fishery).

2150N03A

Appendix 1: Full Gap Analysis

Gap Analysis for the New Proposed Unit of Assessment for SARPC Toothfish

To support MEC's proposal for an expedited audit of the SARPC Crozet toothfish fishery, a gap analysis was carried out, assessing the degree of overlap between the Kerguelen toothfish and Crozet toothfish fisheries. Note that the vessels and companies are exactly the same for both UoAs. The gap analysis revealed that the expedited assessment would involve a full assessment of Principle 1 performance indicators for the Crozet UoA. Considerable overlap is expected for Principle 2 PIs and up to date information and data will therefore be reviewed. Where required, the appropriate PIs will be rescored for the Crozet UoA. For Principle 3, most of its elements will be held in common between both UoAs and this will therefore only require a review/update of the available information.

Component	**UoA Fishery 1** - Toothfish, Kerguelen	**UoA Fishery 2** – Toothfish Crozet
P1 Outcome	Toothfish, Kerguelen (CCAMLR area 58.5.1)	Toothfish, Crozet (CCAMLR area 58.6) These are different stocks and a full evaluation of the P1 outcome component will be carried out.
P1 Harvest strategy	Management by TAAF under CCAMLR framework	Management by TAAF under CCAMLR framework There will be considerable overlap between the harvest strategies and harvest control rules for both UoAs. The harvest strategy PI (1.2.1) will therefore only need a review/update. The other PIs under this component will require a full evaluation.
P2 Retained species	Main retained species identified were grenadiers (*Macrourus carinatus* mainly) and rays (*Bathyraja irrasa, B. eatonii*)	It is likely that main retained species and associated management and information will be the same. This component will therefore involve a review of up to date logbook and observer data.
P2 Bycatch species	Main bycatch species identified was *Antimora rostrata*	It is likely that main bycatch species and associated management and information will be the same. This component will therefore involve a review of up to date logbook and observer data.
P2 ETP species	Fishery interacts with grey petrels, white-chinned petrels and orcas	It is likely that interactions with ETP species and associated management and information will be the same. This component will therefore involve a review of up to date observer data.
P2 Habitat	Gear – demersal longlines and a few experimental pots; habitats various Antarctic hard- and soft-bottom substrates	The gear and habitat types will be the same. This component will therefore involve a review of the available information on habitats. This component will therefore involve a review of up to date information on habitats.
P2 Ecosystem	Broader ecosystem – Southern	Ecosystem in which the fishery

2150N03A

	Indian Ocean / Southern Ocean	operates is the same. This component will therefore involve a review of up to date information on the ecosystem.
P3 Governance and policy	Legal framework by TAAF/CCAMLR.	Principle 3 is considered to be in common between Crozet and Kerguelen and therefore does not need additional review, although the PIs for P3 will be reviewed in relation to Crozet to address minor differences (an example might be in the frequency of marine patrols in relation to 3.2.3, and the extent to which cooperation with other fisheries (such as the HIMI Australian fishery) is applicable. The review will ensure that conclusions are up to date.

Appendix 4. MSC Response to the Request for Variation from the MSC Certification Requirement 7.22.1.1

www.msc.org Marine Stewardship Council

Marine House
1 Snow Hill
London
EC1A 2DH
United Kingdom
Tel: +44 (0)207 246 9800
Fax: +44 (0)207 246 9801

Vicki Gravestock
ME Certification Ltd
56 High Street
Lymington, Hampshire
SO41 9AH

Sent by email

Date: 9 April 2015

Subject: Request for variation to the MSC Certification Requirement FCR 7.22.1.1 for SARPC Toothfish

Dear Vicki,

I write with reference to your submission on 8 April 2015 of a request for variation to the MSC Fisheries Certification Requirement (FCR) to allow for a scope extension audit to take place for the addition of the Crozet toothfish stock to the existing SARPC toothfish certificate, despite this stock not previously having been assessed as under Principle 1 or 2 in the initial assessment process.

As you are aware, the CR procedures relating to scope extensions are integral to ensuring all MSC accredited Conformity Assessment Bodies operate in a consistent and transparent manner. The MSC intends that these requirements be met across all fisheries and CoC certificate holders, except in exceptional, well-justified circumstances, as part of the MSC programme.

MSC notes the factors presented in your letter supporting your request, including:

- The two toothfish stocks are considered distinct from one another with no geographical overlap or mixing, but that there will be considerable overlap for Principles 2 and 3.
- Considering the overlap in both Principle 2 and Principle 3 for both Kerguelen and Crozet UoAs, the integrity of the MSCs principles and criteria will be maintained.
- A full gap analysis has been undertaken and will be posted as part of the statement to the MSC announcing its intent to undertake an expedited audit for scope extension.

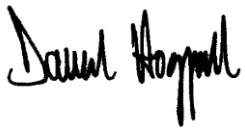
- During this gap analysis, it was identified that a full reassessment of Principle 1 performance indicators for Crozet UoA is needed, alongside a review of up to date information and data for both Principle 2 and Principle 3. Any appropriate PIs be rescored for the additional Crozet UoA.

Given the rationale provided, the MSC is willing to grant a variation to the CR in this case subject to the following conditions:

- *That the team selects the main bycatch/retained species and ETP species on the basis of the data available in the Crozet fishery (not just assuming they will be the same).*

If you have any questions regarding this response, please do not hesitate to contact Stephanie Good, the Fisheries Assessment Manager for this fishery either by email stephanie.good@msc.org or phone +44(0)20 7246 8926.

Best regards,



Dan Hoggarth
Fishery Oversight Director

Marine Stewardship Council
cc: ASI, lead auditor

Appendix 5. Peer Review

Summary of Peer Reviewer Opinion

Has the assessment team arrived at an appropriate conclusion based on the evidence presented in the assessment report?	**Yes/No**	**CAB Response**
Justification: I agree with the overall conclusion of the assessment team on this expedited assessment that this fishery should be certified. Generally all evidence in support for all PIs have been provided and references. There are some scoring issues. where justifications have been brief and references are incomplete and the latter should be address for consistency. This is an expedited assessment to extend the scope of the SARPC toothfish fishery and the evidence referenced in the Kerguelen assessment strengthens the justifications for PIs and specific scoring guideposts, while at the same time, the assessors highlighted the specificities of the Crozet fishery and the particular deficiencies. There is two instances where the score also needs to be re-checked (1.2.1) and (1.2.4).		*See response to specific comments below.*

Do you think the condition(s) raised are appropriately written to achieve the SG80 outcome within the specified timeframe? [Reference: FCR 7.11.1 and sub-clauses]	**Yes/No**	**CAB Response**
Justification: The five conditions identified are appropriate. The rationale and the justifications are also consistent with similar conditions established for the Kerguelen fishery and the comparative table on conditions and harmonization of timelines and objectives make sense. This fisheries depended data on this fishery has only been made available recently to CCAMLR for assessment and peer-review and this is an important development in meeting SG80. The conditions as written are likely to achieve the SG 80 outcome but the timelines may be ambitious and will require commitment of all stakeholders. This is specifically true for Condition 1 and 5 (national and international collaboration) and 2 and 3. The assessment team has recognized the complexity of the VME mapping and the condition as written lays out realistic targets within the timeframe.		*The relevant stakeholders have expressed their agreement with the Client Action Plan and associated timelines in writing to the CAB.*

If included:

Do you think the client action plan is sufficient to close the conditions raised? [Reference FCR 7.11.2-7.11.3 and sub-clauses]	**Yes/No**	**CAB Response**
Justification: For most of the conditions, the client action plans is sufficient to close the conditions raised. One concern is Condition 5, where the Client Plan is not specific enough on the actions that will be taken to ensure that 3.2.2. meets SG80 by year 3. This should be addressed by the final report.		*The action plan for conditions 1 and 5 has been reviewed and approved by the stakeholders*

Performance Indicator Review

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.1.1	Yes	Yes	NA	The references to the work done by CCAMLR's WG-FSA on the stock assessmsnt of this stock are adequate to support the score. In addtition the caveats relation to the lack of fisheries-independent data has been taken into account	No response required
1.1.2	Yes	Yes	NA	The scores for the individual guideposts are suffiently justified with the references provided and the detailed justification relevant to toothfish. The aggregated score is therefore justified.	No response required
1.2.1	Yes	No	NA	The scores for the first two guideposts are given and justified. The justification for scoring issue C is incomplete with a score of 60 given. Based on the evidence provided, only 2 of the 3 scoring issues are met at 80, and therefore the overall score of 80 for the PI has not met.	Agree. Justification for the SG 80 was added.

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
1.2.2	Yes	Yes	Yes		
1.2.3	Yes	Yes	NA		
1.2.4	Yes	Yes	NA	Please recheck the overall score.	The assessment team reviewed the scoring and does not see reasons to revise it. All scoring issues are met at the 80 level and one out of 4 at the 100 level, resulting in an overall score of 85, which is maintained.
2.1.1	Yes	Yes	Yes	Whilst the evidence presented supports the score, the references are incomplete.	All the references were cited and available in the reference table as far as we could tell, but they have been pasted in in full.
2.1.2		Yes	NA	Incomplete references	See above.
2.1.3	Yes	Yes	Yes	Incomplete reference	See above

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.2.1	Yes	Yes	NA		
2.2.2	Yes	Yes	NA		
2.2.3	Yes	Yes	NA		
2.3.1	Yes	Yes*	NA		See above
2.3.2	Yes	Yes*	NA		See above
2.3.3	Yes	Yes	NA	Incomplete references	See above
2.4.1	Yes	YEs	NA	Incomplete references	See above
2.4.2	Yes	Yes	NA	Incomplete references	See above
2.4.3	Yes	Yes*	Yes	Incomplete references	See above
2.5.1	Yes	Yes	NA	Incomplete references	See above
2.5.2	Yes	Yes	NA	Incomplete references	See above

Performance Indicator	Has all available relevant information been used to score this Indicator? (Yes/No)	Does the information and/or rationale used to score this Indicator support the given score? (Yes/No)	Will the condition(s) raised improve the fishery's performance to the SG80 level? (Yes/No/NA)	Justification Please support your answers by referring to specific scoring issues and any relevant documentation where possible. Please attach additional pages if necessary. Note: Justification to support your answers is only required where answers given are 'No'.	CAB Response
2.5.3	Yes	Yes	NA	Incomplete references	See above
3.1.1	Yes	Yes	NA		
3.1.2	Yes	Yes	NA		
3.1.3	Yes	Yes	NA		
3.2.1	Yes	Yes	NA		
3.2.2	Yes	Yes	Yes		
3.2.3	Yes	Yes	NA	Incomplete references	Added
3.2.4	Yes	Yes	NA		
3.2.5	Yes	Yes*	NA	Incomplete references	Added

Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary) can be added below and on additional pages

The draft report provides a good background for the expedited assessment with reference to the Kerguelen report, certification, conditions which are relevant to this expedited report. The reference to the other toothfish fisheries which have been certified in the Southern Oceans is also of relevance in terms of assessing the fisheries in general terms, while also highlighting the specificities of this fishery which are important. In the background, the relationship between the national management of the fishery and it's relationship with CCAMLR has been highlighted as important and necessary. The report also noted that the long time series of fisheries-dependent data from fishery has not been made public till 2013, when the data was presented to CCAMLR WG-FSA and then subject to peer reviewed stock assessment. This was a positive development as this management of this fishery is now in line with similar fisheries considered by WG FSA although the specific measures such as TAC remain under national jurisdiction. In addition to the collaboration at the scientific level is mirrored by increased collaboration on monitoring, control and surveillance and this is critical as the IUU fishing although suspected to be low in this fishery is still unknown. However, there reservations on a number of CCAMLR conservations measures taken by the French Delegation at CCAMLR, exempting the applicability of these measures for the Crozet Islands. None of these have been mentioned in the background information. It would be useful if this aspect was reviewed and included in the assessment report, if relevant to the conditions for P2 for example.

Team response: As far as the team is aware, all the significant CMs with French reservations are nevertheless incorporated into the relevant French legislation for Kerguelen and Crozet – there are no significant CCAMLR conservation measures which in practice do not apply to this fishery. The Kerguelen report goes into more detail about specifically which CCAMLR CMs apply and do not apply to this fishery, and the extent to which they are replaced by French legislation – the situation for Crozet is not different.

Appendix 6. Stakeholder submissions

Prior to publication of the PCDR no stakeholder comments were received, other than those for the general purpose of providing information for the assessment; these comments have been incorporated into the report and have been referenced as appropriate.

The only submission received after publication of the PCDR was the MSC's Technical Oversight, as shown below.

www.msc.org

Marine House
1 Snow Hill
London EC1A 2DH
United Kingdom
Tel: +44 (0)20 7246 8900
Fax: +44 (0)20 7246 8901

Date: 01/11/2016

SUBJECT: MSC Review and Report on Compliance with the scheme requirements

Dear Sophie des Clers

Please find below the results of our partial review of compliance with scheme requirements.

CAB	ME Certification Limited (MEC)
Lead Auditor	Sophie des Clers
Fishery Name	SARPC Toothfish
Document Reviewed	Public Comment Draft Report

Ref	Type	Page	Requirement	Reference	Details	PI
24736	Guidance	64	FCR-7.10.6.1 v.2.0	A rationale shall be presented to support the team's conclusion.	PI 1.1.1. scoring issue a: The team presents information in PI 1.1.2. scoring issue b that relates to the LRP. However, it is not clear how the stock status is currently in relation to this LRP nor how this LRP relates to recruitment impairment.	1.1.1

Team response: clarification has been added to the scoring rationale.

24738	Minor	67	FCR-7.10.6.1 v.2.0	A rationale shall be presented to support the team's conclusion.	PI 1.2.1: scoring issue a: The team states that as part of the harvest strategy, there is a "TAC, consistent with CCAMLR decision rules, based on scientific advice and economic considerations." However, in a CCAMLR document titled "STATEMENT BY THE CHAIRMAN OF THE CONFERENCE ON THE CONSERVATION OF ANTARCTIC MARINE LIVING RESOURCES" it is outlined that "it would be open to France either to agree that the waters in question should be included in the area of application of any specific conservation measure under consideration or to indicate that they should be excluded." It is not clear in the rationale if the the team has considered this document and any implications for the strategy's responsiveness to the state of the stock.	1.2.1

Team response: Its is true that the French authorities are not legally tied to CCAMLR decisions regarding conservation measures. Until now, conservation measures implemented inside the French EEZ are very similar to CCAMLR recommendations. Stock assessments are reviewed by the Conference which provides management advice that are, so far, followed by France. The newly published Management Plan, intented to be revised periodically, should be based on MNHN advice and on the principles of CCAMLR . The team estimates that there is no reason to think that the situation would change in the near future, and that the strategy would be modified. A sentence was added to clarify that point.

24744	Minor	52, 53	FCR-7.12.1 v.2.0	The CAB shall determine if the systems of tracking and tracing in the UoA are sufficient to ensure all fish and fish products identified and sold as certified by the UoA originate from the appropriate Unit of Certification (UoC). 7.12.1.1 Systems shall allow the UoA to trace any fish or fish products sold as MSC-certified back to the UoC. 7.12.1.2 Approriate records shall be maintained that demonstrate the traceability of certified fish or fish products back to UoC. 7.12.1.3 The CAB shall document the risk factors outlined the in the "MSC Full Assessment Reporting Template", identifying anya reas of risk for the integrity of certified products and how they are managed or mitigated. 7.12.1.4 For each risk factor, there shall be a description of the risk present and details of the mitigation or management of risk. 7.12.1.5 The CAB shal identify and document: a. The UoC, b. The point of inteded change of ownership of product, and c. The point from which subsequent Chain of Cusotdy is required. 7.12.1.6 Where there are IPI stocks within the scope of certification, teams shall follow Annex PA and report on the verification of the of the traceability systems including: 7.12.1.6a An evaluation of the species, stock, proportion and weight of the catch of IPI stock(s) and their eligibility to enter further certified chains of custody, as per Annex PA.	The report is clear that the vessels in the Crozet UoA require (and already have) CoC in line with the Kerguelen UoA. Nonetheless, the report does not include a statement on whether the systems in place are sufficient. Although MSC is understands the client intends to maintain CoC certification for their vessels for now, this is important in the event that the fishery decides not to in the future, so that any risks (or the lack thereof) are clearly documented in the assessment report. Even with CoC on vessel, the report must still address 7.12.1 of the requirements. We support the decision taken by MEC to require CoC on-board vessel, nonetheless, we feel it is important to follow 7.12.1.3 and document the risks of mixing using the reporting template, so it is clear where and how any risks within the fishery are assessed and addressed. This can be done through simple statements that reiterate any risks are addressed through CoC certification of the vessels.	

Team response: additional descriptions have been added.

Appendix 7. Surveillance Frequency

1. The report shall include a rationale for any reduction from the default surveillance level following FCR 7.23.4 in Table 4.1.
2. The report shall include a rationale for any deviations from carrying out the surveillance audit before or after the anniversary date of certification in Table 4.2
3. The report shall include a completed fishery surveillance program in Table 4.3.

Appendix Table 4.1 : Surveillance level rationale

Year	Surveillance activity	Number of auditors	Rationale
e.g.3	*e.g.On-site audit*	*e.g. 1 auditor on-site with remote support from 1 auditor*	*e.g. From client action plan it can be deduced that information needed to verify progress towards conditions 1.2.1, 2.2.3 and 3.2.3 can be provided remotely in year 3. Considering that milestones indicate that most conditions will be closed out in year 3, the CAB proposes to have an on-site audit with 1 auditor on-site with remote support – this is to ensure that all information is collected and because the information can be provided remotely.*

Table 4.2: Timing of surveillance audit

Year	Anniversary date of certificate	Proposed date of surveillance audit	Rationale
e.g. 1	e.g. May 2014	e.g. July 2014	e.g. Scientific advice to be released in June 2014, proposal to postpone audit to include findings of scientific advice

Table 4.3: Fishery Surveillance Program

Surveillance Level	Year 1	Year 2	Year 3	Year 4
e.g. Level 5	e.g. On-site surveillance audit	e.g. On-site surveillance audit	e.g. On-site surveillance audit	e.g. On-site surveillance audit & re-certification site visit

Appendix 8. Objections Process

(REQUIRED FOR THE PCR IN ASSESSMENTS WHERE AN OBJECTION WAS RAISED AND ACCEPTED BY AN INDEPENDENT ADJUDICATOR)

The report shall include all written decisions arising from an objection.

Appendix 9. Stakeholders

Stakeholder	Organisation
CCAMLR secretariat	CCAMLR secretariat
Arnaud Martrenchar	Ministere d'Outre-Mer
Bob Zuur	WWF Antarctic and Southern Ocean Initiative Manager
Cedric Marteau	TAAF
Chris Jones	CCAMLR Working Group Fish Stock Assessment
Christiane Laurent-Monpetit	Ministere charge de l'Outre-mer
Christophe Roturier	WWF France - Charge de programme peche
Claire Christian	ASOC
Delphine Leguerrier	Ministere d'Agriculture et Peche
Denis Ody	WWF France - Marine Manager
Elisabeth Buffiere	Ministere des Affaires Etrangeres
Emmanuel Buovolo	Greenpeace France
Emmanuel Reuillard	TAAF -Service des affaires juridiques, de la peche et de l'environnement
Euan Dunn	Head of Marine Policy - Birdlife International
Francois Chartier	Greenpeace France
George Watters	CCAMLR Working Group Ecosystem Monitoring and Management

Guy Duhamel	MNHN - Directeur du departement Milieux et Peuplement Aquatiques (DMPA)
Henri Weimerskirch	Centre national de la recherche scientifique (CNRS)
Jacky Bonnemain	Robin des bois
James Barnes	Executive Director - Antarctic and Southern Ocean Coalition
Jean-Marc Philippeau	Directorate for Sea Fisheries and Aquaculture (DPMA)
Jerome SAUTIER	Ministere des Affaires Etrangeres
Ludovic Frere	Fondation Nicolas Hulot
Ludovic Schultz	Ministere d'Agriculture et Peche
Peter Hardstaff	WWF New Zealand
Peter Trott	WWF Australia - Policy Manager - Fisheries Markets
Pierre Tribon	Ministere d'Agriculture et Peche
Romaine Sinegre	CCAMLR
Serge SEGURA	Ministere des Affaires Etrangeres
Sian Prior	WWF Antarctic and Southern Ocean Initiative (UK)
Thierry Clot	TAAF - Gestion des pecheries
Warren Papworth	ACAP - Agreement on the Conservation of Albatrosses and Petrels

Appendix 10. Client Action Plan

Condition	PI	Score	Justification	Plan d'action	Pilote de l'action
Conditions 1 et 5 – Règles de contrôle du niveau des captures (HCR) et processus de prise décision	1.2.2 3.2.2	65 75	D'ici la fin de l'année 3 (pour coïncider avec la re-certification de Kerguelen), la pêcherie doit avoir mis en place des règles de contrôle du niveau des captures à définir dans le plan de gestion, et associées à des processus établis de prise décision basés sur ces règles de contrôle du niveau des captures (HCR) et sur des objectifs de gestion de la pêcherie clairement expliqués aux parties prenantes.	1. Définir des règles de contrôle du niveau des captures annuelles par stock (HCR), les objectifs de la gestion et les processus de prise de décisions. Des règles claires et simples de contrôle du niveau des captures seront intégrées au plan de gestion dès que le nouveau modèle d'évaluation de la productivité du stock sera validé par la CCAMLR, qui fourniront une base solide pour les prises de décision concernant le niveau du TAC annuel. D'ici la fin de l'année 2 de certification Crozet. 2. – Evaluer la mise en œuvre du Plan de Gestion de la pêcherie une fois qu'il est établi par les TAAF et approuvé par les parties prenantes. D'ici la fin de l'année 2 de certification Crozet. 3. Revoir et améliorer le Plan de Gestion avec les règles de contrôle des captures et un processus pour la prise des décisions inclus. D'ici la fin de l'année 3 de certification Crozet.	TAAF avec le MNHN et le SARPC
Conditions 2 et 3 – Stratégie et information pour gérer les impacts de la pêcherie sur les	2.1.1	60	Les données disponibles sur les prises accessoires de la pêcherie (principales prises conservées à bord – *Macrourus carinatus* et *Amblyraja taaf*) selon les rapports Avistock et Avipeche devraient être analysées pour évaluer si les objectifs du Code de Bonne Pratiques	1. Evaluation du Guide de Bonnes Pratiques en terme de réduction des taux de prises accessoires : TAAF et MNHN doivent analyser les informations disponibles en termes de réduction des taux de prises accessoires, afin d'évaluer l'efficacité des pratiques existantes,	TAAF / MNHN

Condition	PI	Score	Justification	Plan d'action	Pilote de l'action
grenadiers et les raies	2.1.3	75	(CBP) ont été atteints en termes de réduction des prises accessoires. Si les effets du CBP ne sont pas démontrés, des mesures nouvelles ou supplémentaires devront être mises en place ou des actions devront être menées afin que la pêcherie démontre que les captures de ces espèces sont dans des limites biologiques fixées ou que la pêcherie ne porte pas préjudice à la réhabilitation de leurs stocks.	avant tout révision du Guide de 2011 (de N. Gasco et G. Duhamel). 2. Révision du Guide de Bonnes Pratiques et établissement de mesures conservatoires si nécessaire - MNHN, TAAF, DPMA, SARPC D'ici août 2017 (audit de surveillance Kerguelen et fin de l'année 2 de Certification Crozet)	TAAF / MNHN/ SARPC
Condition 4 – information sur les Habitats / cartographie	2.4.3	75	Les données des observateurs sur les prises d'organismes indicateurs des écosystèmes marins vulnérables/VME doivent être archivées, analysées et cartographiées de manière continue et régulière, afin d'obtenir progressivement une représentation plus précise de la localisation des VME dans la zone de pêche de Crozet. Ceci pourra être entrepris par les TAAF, le MNHN ou tout autre organisation dotée de l'expertise requise.	1. Cartographie et analyse des données d'observateurs sur les écosystèmes marins vulnérables, de la même manière que cela est fait pour les prises accessoires. D'ici l'année 2 de certification Crozet	TAAF / MNHN / ou autre expert

N°	Recommandations	Plan d'action	Pitote de l'action
1	Dans les rapports d'observateurs, un ou deux commentaires suggèrent que les règles du Code de Bonne Pratiques ne sont pas prises avec le sérieux nécessaire. Bien qu'il soit clair qu'ils s'agisse de cas minoritaires, l'équipe d'audit recommande que les membres du SARPC et les TAAF passent en revue les rapports à la fin de chaque campagne et fournissent un compte-rendu au capitaine et contrôleur concernés, en soulignant l'importance du CBP et des règles de cut-off des raies.	Sujet à couvrir pendant les Réunions C3P et dans les comptes rendus de ce C3P établis par les TAAF et accessibles à tous les capitaines. (d'ici fin de l'année 1 de certification) Topic to be covered during the C3P meetings and in the minutes of the C3P established by the TAAF and	TAAF / MHNH

		accessible to all captains. (By the end of Year 1 of certification)	
3	PI 2.5.1: Il est recommandé de poursuivre les recherches de cartographie des habitats benthiques et de continuer l'identification des VMEs dans les écosystèmes de Crozet	Poursuite des travaux de cartographie des habitats benthiques et identifications des écosystèmes marins vulnérables Continuation of benthic habitat mapping and identification of vulnerable marine ecosystems	MNHN / TAAF
5	PI 3.1.4 et PI 3.2.3 : Les procédures et critères pour l'allocation annuelle de quotas variables entre les différents navires devraient être évaluées et rendues publiques, afin de garantir qu'ils ne contribuent pas à des pratiques de pêche non soutenables, et de garantir qu'ils soient systématiquement mis en œuvre pour créer une dissuasion efficace.	Intégration dans le plan de gestion de la pêcherie révisé (d'ici l'année 3 de certification) Integration into the revised fishery management plan (by year 3 certification)	TAAF
6	PI 3.2.2: il est recommandé que les changements de TAC établis par décret annuels des TAAF ne s'appliquent, au plus tôt, qu'à partir de la saison suivant la réunion de la CCAMLR. (ajouté pendant l'audit de surveillance de Kerguelen n°2), afin de permettre un examen par les pairs et une validation par les groupes de travail de la CCAMLR.	D'ici août 2016 (fin de l'année 1 de certification) By August, 2016 (end of year 1 certification)	TAAF