Marine Stewardship Council (MSC) Reduced Reassessment Report

Tristan da Cunha Rock Lobster

On Behalf of

Ovenstone Agencies

Prepared by

Control Union (UK) Limited.

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Author: **Hugh Jones**

Johan Groeneveld

Control Union (UK) Limited.
56 High Street, Lymington,
Hampshire, SO41 9AH,
United Kingdom
Tel: 01590 613007
Email: infofishuk@controlunion.com
Website: http://uk.controlunion.com

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Glossary

Acronym	Definition
B_{MSY}	Biomass at which the equilibrium yield is equal to MSY
BSP	Estimated current spawning biomass
CL	Carapace Length
CPUE	Catch Per Unit of Effort
CU UK	Control Union (UK) Ltd
ETP	Endangered, Threatened or Protected
FAO	Food and Agriculture Organisation (United Nations)
FCR	Fisheries Certification Requirements and Guidance
FMP	Fisheries management plan
GLM	General Linear Model
HCR	Harvest control rule
I_{tar}	Target level of standardised CPUE
I_{lim}	Limit reference points
IUU	Illegal, unreported or unregulated fishing
K	Growth coefficient
MARAM	Marine Resource Assessment and Management Group, in the Dept. of Mathematics and Applied Mathematics, UCT
MCM	Marine and Coastal Management (South African Government)
MCMC	Monte Carlo Markov Chain
MLS	Minimum Legal Size
MSY	Maximum sustainable yield
L_{∞}	Asymptotic Length
OMP	Operational Management Procedure
PCDR	Public Comment Draft Report
PCR	Public Certification Report
RC	Reference Case
TAC	Total allowable catch
TdC	Tristan da Cunha
T/FD	Tristan Fisheries Department
TO	Technical oversight
UCT	University of Cape Town
UoA	Unit of Assessment
UoC	Unit of Certification
RBF	Risk-Based Framework
VBGF	von Bertalanffy Growth Function

Acronym	Definition
VME	Vulnerable Marine Environment
VMS	Vessel monitoring system (satellite monitoring)
WRS	Whole Raw Sashimi

QA

ACDR

Role	Signature	date
Originator:	H. Jones	15th August 2021
Reviewer:	E. Vella	8th September 2021
Approver	T. Tsuzaki	13th September 2021

CPRDR

Role	Signature	date
Originator:	H. Jones	15th October 2021
Reviewer:	M. Deleau	12th November 2021
Approver	T. Tsuzaki	12th November 2021

PCDR

Role	Signature	date
Originator:	H. Jones	31st January 2022
Reviewer:	M. Deleau	1st February 2022
Approver	T. Tsuzaki	2nd February 2022

FDR

Role	Signature	date
Originator:	H. Jones	11th March 2022
Reviewer:	T. Tsuzaki	13th March 2022
Approver	T. Tsuzaki	13th March 2022

1 Executive summary

Certified since the 20th June 2011, this is the second reassessment for the Tristan da Cunha lobster fishery. The initial assessment resulted in three conditions on PIs 1.2.2, 2.3.3 and 3.2.4 which were closed by the time of the reassessment in 2016. At reassessment in 2016 a further condition was raised on PI 1.2.2 which was partially related to the previous condition on the fishery. This single condition was closed at the year 1 audit (2018) and no other conditions have been raised since, allowing the fishery to enter this reassessment as a reduced reassessment fishery.

For Principle 1, the updated 2020 assessments for Tristan indicated increases in exploitable and spawning biomass over the 2015+ period. Bsp/K is estimated to be 0.75, indicating a healthy resource. The 2020 Tristan OMP review led to the selection of a conservative candidate OMP for the 2020-2023 period which is expected to maintain the TAC around 120 t per year, and it included a 5% up / down restriction, a floor TAC of 120 t, and a metarule that allows for year-on-year reductions of up to 20% when I_{lim} is reached.

At Nightingale, adult and juvenile mortalities caused by the OLIVA incident appeared to be far less severe than anticipated, and this was also reflected in the updated 2020 assessment. The current spawner biomass at Nightingale (Bsp/K) was estimated to be 0.75-0.85, signifying a healthy stock status. In the OMP review, a TAC ceiling of 95 MT was retained and metarule confirmed whereby the 5% TAC decrease constraint is increased by up to 20% if the standardized CPUE index drops below I_{lim}.

The updated 2021 assessment of the Inaccessible lobster resource estimated current spawning biomass (Bsp) to be 85% of the pristine level (Bsp/K = 0.85) indicating a very healthy state, and similar to the previous (2018) assessment. The 2021 assessment of the Gough lobster resource estimated current spawning biomass (Bsp) to be 86% of the pristine level (Bsp/K = 0.86) indicating a very healthy state, and similar to the previous (2018) assessment (0.85). At Inaccessible and Gough, the OMPs continue to perform as foreseen and routine monitoring (GLM-standardized CPUE) does not suggest any cause for concern or reason to invoke exceptional circumstances.

On this basis, there have been no significant changes to the outcome and management PIs of Principle 1, that would justify any rescoring or raising of conditions.

For Principle 2, updated records of bycatch and ETP interactions were provided to the assessment team along with details of the established Marine Protected Zone at Tristan. Observer records were also provided and analysed by the team. There were no primary main species identified but secondary species required that the octopus bycatch be considered under the Risk Based Framework. The team found the information, management and outcome of scoring of the Performance Indicators of the fishery for ETP species to be similar to previous assessments. For habitats new studies in the archipelago suggest that although fishery impact is low there is a need for further information on the spatial extent of main habitats in the 40 m-160 m depth range which requires a condition.

For Principle 3, an updated fishery management plan (FMP) for the fishery has been produced with the most recent information on data describing the fishery and its governance, newly collected data, updated assessments and OMP reviews. No non-compliance issues were reported during the 2019/2020 fishing season as reported by the Fisheries Department. On the basis of the FMP there has been minor score increases on some Performance Indicators of the fishery at this reassessment.

At this stage of the assessment, the assessment teams draft determination is that the fishery be recertified against the MSC standard with a single condition on habitat information and two recommendations.

2 Changes since Previous Assessment

There are no significant changes since the previous assessment which prevail into this new reassessment process. The one important change during the second assessment period was recorded in the year 3 surveillance audit with the loss of the FV *Geo Searcher* and the reinstalment of FV *Edinburgh* as the principal fishing vessel and supply vessel to Tristan. As the FV *Edinburgh* was the principal fishing vessel at the last reassessment audit effectively the status quo has been returned for this reassessment.

Although no significant changes in fishing practice are evident, the following description of the fishery is provided for reference as it underpins the fishery operations and contextualises the assessment.

The fishery operates across four islands (individual UoAs) within the Tristan group. The main Island of Tristan da Cunha is fished differently to the outer islands (Inaccessible, Nightingale and Gough) as it is fished by the Tristanians as well as by the FV *Edinburgh*. Fishing at Tristan (UoA 1) is partly carried out by the Tristanians in powerboats, using a mixture of box traps and hoop nets (Figure 1). The Tristan Island fleet comprises of twelve 8 m powerboats, each crewed by two fishers. The catch is landed to a processing factory in Edinburgh of the Seven Seas the island capital, which is operated by Ovenstone as part of the concession for the fishery. Fishing effort around Tristan is limited by a cap on the amount of gear deployed (box traps and hoop nets limited per boat) as well as the number of boats permitted. Further, the fishery is severely limited by rough seas and inclement weather, particularly in the winter months. The harbour is accessible for approximately only 90 days per year, and fishing generally takes place for 30-40 days per year around Tristan by these vessels.

Figure 1. Powerboat trap used by Tristan Islanders around Tristan and by powerboats launched from the FV *Edinburgh*. Source: Ovenstone.

At the three outer islands and at Tristan, fishing operations are carried out from the FV *Edinburgh*. The vessel conducts 2-4 fishing trips per season of approximately 60-100 days' duration across all UoAs. Fishing from the FV *Edinburgh* may be directly from the vessel itself, with "monster traps" deployed on longlines which the FV *Edinburgh* can deploy up to 18 strings of 20 traps each (Figure 2 and Figure 3). The vessel also carries four powerboats on board, which are deployed over the side of the vessel with fish traps, in a similar way to the fishing around Tristan Island by the islanders

(Figure 1). These vessels deploy around 60-70 traps per boat per day (around 15-20 traps are carried at a time per boat). The catch from the FV *Edinburgh* is processed on board, rather than being landed to the factory on Tristan.

Figure 2. Monster traps as used aboard the FV *Edinburgh*. Source: Ovenstone.

Figure 3. Monster trap retrieval and dimensions. Source: Ovenstone.

3 Report details

3.1 Authorship and peer review details

Dr Hugh Jones has completed the required Fishery Team Leader MSC training modules for the V2.2 Fisheries Certification Process Requirements including ISO9001 lead auditor training.

Dr Hugh Jones will act as team leader and Principle 2 expert for this reassessment and will be responsible for bringing together the work of the team's principal experts. Hugh will also have primary responsibility for ensuring that the certification requirements and process are being met at each stage of the process. His responsibility will also include Principle 2 where his qualifying work experience comes from bycatch and food web studies, development of management and monitoring programmes and environmental impacts studies on a range of fisheries. He has worked as a MSC Principle 2 assessor for > 3 years. Table PC3.3 Competencies and Qualification requirements for Principle 2 are met

Dr Johan Groeneveld is a fisheries scientist with over 25 years' experience working in marine fisheries and their impacts on target and bycatch species, and on marine environments. He completed a PhD on the biology and ecology of the deep-water lobsters *Palinurus gilchristi* and *Palinurus delagoae* in relation to their fisheries in 2001 and has worked in fisheries research and management for two governments, South Africa (1995-2006) and Oman (2007-2008). He is presently a senior scientist at the Oceanographic Research Institute and an Honorary Professor at the University of KwaZulu Natal in Durban, South Africa. He has a strong publication record in the peer-reviewed literature and is on the editorial board of the journals 'Fisheries Research', and 'Western Indian Ocean Journal of Marine Science'. Dr Groeneveld is a member of the MSC Peer-Review College, and has been involved in assessments, pre-assessments, audits and peer-reviews against the MSC Standard over the past 10 years. For lobster, he participated in full MSC assessments of the Bahamas (2018), Saint Paul and Amsterdam (2019) and Tristan da Cunha (2010) fisheries, peer reviews for the Normandy and Jersey lobster fishery, Western Australian lobster fishery, and pre-assessment of two South African lobster fisheries. Dr Groeneveld's experience and capacity mean Table PC3.1-4 Competencies and Qualification requirements for Principle 1 and 3 are met. He has completed the required Fishery Team member MSC training modules for the new V2.01 Fisheries Certification Requirements.

Peer Reviewers

One of the two following peer reviewers provided comment on this report:

Julian Addison

Dr Julian Addison is an independent fisheries consultant with 30 years' experience of stock assessment and provision of management advice on shellfish fisheries, and a background of scientific research on shellfish biology and population dynamics and inshore fisheries. Until December 2010 he worked at the Centre for Environment, Fisheries and Aquaculture Science (Cefas) in Lowestoft, England where he was Senior Shellfish Advisor to Government policy makers, which involved working closely with marine managers, legislators and stakeholders, Government Statutory Nature Conservation Organisations and environmental NGOs. He has also worked as a visiting scientist at DFO in Halifax, Nova Scotia and at NMFS in Woods Hole, Massachusetts where he experienced shellfish management approaches in North America. For four years he was a member of the Scientific Committee and the UK delegation to the International Whaling Commission providing scientific advice to the UK Commissioner. He has worked extensively with ICES and most recently was Chair of the Working Group on the Biology and Life History of Crabs, a member of the Working Group on Crangon Fisheries and Life History and a member of the Steering Group on Ecosystems Function. He has extensive experience of the MSC certification process primarily as a P1 team member but also as a P2 team member and team leader, undertaking MSC full assessments for the Newfoundland and Labrador snow crab fishery, the Ireland and Northern Ireland bottom grown mussel fisheries, both the Estonia and Faroe Islands Barents Sea cold

water prawn fisheries, the Nephrops fishery in the Skagerrak and Kattegat, separate assessments for the Swedish, Danish and Norwegian Skagerrak and Norwegian Deep cold water prawn fishery, the Eastern Canada offshore lobster fishery and the Limfjord mussel and cockle fisheries. He has also undertaken MSC pre-assessments, numerous annual surveillance audits and has carried out peer reviews of MSC assessments in both Europe and North America of lobster, cold water prawn, razorfish, cockle and scallop fisheries. Other recent work includes a review of the stock assessment model for blue crabs in Chesapeake Bay, USA, and an assessment of three Alaskan crab fisheries under the FAO-based Responsible Fisheries Management scheme.

Peter Trott

Peter is Director of FishListic, an independent sustainable seafood consultancy. Peter has 20 years' experience in fisheries management, resource sharing, ecosystem principles, project management, seafood markets, supply chains and traceability. During the eight years at WWF-Australia, Peter lead on international and domestic seafood markets. Peter was the architect of key strategic seafood market partnerships with retailers, brand owners and aquaculture companies. He has been involved in the Marine Stewardship Council (MSC) and with fishery certifications across the globe, including as co-client. He is a certified MSC Chain of Custody auditor, fishery team-member, fishery team-leader, certified SA8000 social auditor and ISO19011-2018 accredited. Peter is a member of the MSC Stakeholder Advisory Council. Peter was a fisheries manager with two fisheries agencies for eight years, and holds a Bachelor of Science (Fisheries Management and Aquaculture) with an honours degree in Aquatic Sciences from Deakin University.

3.2 Version details

Table 1. Fisheries program documents versions

Document	Version number
MSC Fisheries Certification Process	**Version 2.2**
MSC Fisheries Standard	**Version 2.01**
MSC General Certification Requirements	**Version 2.4.1**
MSC Reduced Reassessment Reporting Template	**Version 2.2**

4 Unit(s) of Assessment and Certification and results overview

CU UK confirms that the fishery under audit remains within in the scope of the MSC Fisheries Standard (7.4 of the MSC Fisheries Certification Process v2.2):

- 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 or child labour violation in the last 2 years and submitted a completed forced and child labour policy statement;
- The client or client group does not include an entity that has been convicted for shark finning violations within 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 FCP v.2.2 7.4.6; and
- The fishery is not an introduced species-based fishery as per the MSC FCP v2.2 7.4.7.

CU UK confirms that the client group has submitted the completed 'Certificate Holder Forced and Child Labour Policies, Practices and Measures Template' prior to the start of this assessment.

4.1 The current Unit of Assessments (UoA) is given in Unit(s) of Assessment and Unit(s) of Certification

4.1.1 Unit(s) of Assessment

Table 2. Unit(s) of Assessment (UoA)

Species	Rock lobster (*Jasus tristani*)
Stock	From the islands of the Tristan da Cunha group
Geographical range of the fishery	The islands of the Tristan da Cunha group. UoA 1: Tristan UoA 2: Inaccessible UoA 3: Gough UoA 4: Nightingale
Method of capture	Baited traps and hoop nets
Client group	Ovenstone Agencies Management under jurisdiction of the Tristan da Cunha Fisheries Department, Island Council and Administrator.
Other eligible fishers	None

4.1.2 Unit(s) of Certification

As per Table 2. Pending outcome of Assessment.

4.2 Assessment results overview

4.2.1 Determination, formal conclusion and agreement

Following consideration of the peer reviewers comments, all stakeholders' inputs and comments to the Public Comment Draft Report (PCDR) the draft determination of this Final Draft Report (FDR) is that the fishery assessment team recommends that the UoAs in this report should be certified against the MSC standard. The CU UK Certification Decision Making entity has been informed of the recommendation to certify the fishery pending the MSC dispute process being completed. The final certification decision will be made after the MSC Disputes Process is complete.

4.2.2 Principle level scores

Table 3. Summary of Performance Indicator level scores

Principle of the Fisheries Standard	UoA 1	UoA 2	UoA 3	UoA 4
Principle 1 – Stock status	97.5	97.5	97.5	97.5
Principle 2 – Minimising environmental impacts	85.0	85.0	85.0	85.0

Principle of the Fisheries Standard	UoA 1	UoA 2	UoA 3	UoA 4
Principle 3 – Effective management	98.8	98.8	98.8	98.8

4.2.3 Summary of conditions

Table 4. Summary of conditions

Condition Number	Condition	Performance Indicator (PI)	Related to previous condition?
1	By the Year 4 surveillance audit the client should provide evidence that further information on the distribution and vulnerability of the commonly-encountered habitat below 40 m is adequate to: a. Know the spatial extent of the interaction in relation to the fishery b. Enable the detection of increased risk from the fishery	PI 2.4.3	No

4.2.4 Recommendations

1. Identification of the octopus species in catches of the *MFV Edinburgh* and the Tristan Islanders should be confirmed by the client in order to assess what proportion of the catch each species contributes. It is also recommended that as per the CEFAS octopus report further biological information is collected on these species.
2. Even though SG100 is met for PI 3.2.3, it is recommended that a record of compliance issues be included in the Fisheries Management Plan.

5 Traceability and Eligibility

5.1 Eligibility date

The fishery is already certified (MSC-F-31282) under the current certificate. CU UK nominate that the date of recertification of the fishery will be the eligibility date under this recertification.

6 Traceability within the fishery

For the Tristan-based vessels, each vessel in the fishery has the same number of gears on board (16 traps, 32 hoop nets (introduced in the 2019/2020 season, with permission from the fishery department). The MFV *Edinburgh* only has traps on-board. Fishing is only completed during the day, in good weather. Traps are not kept out at sea overnight, as the fishers may lose them. If the weather is good, traps and hoop nets are set all around the island. If the conditions are less than optimum, gear is only set in the lee of the island for shelter. The fishers first set the hoop nets and thereafter the traps, so that the hoop nets can fish during the time taken to set the traps. The first hoop net haul follows directly after the traps have been set, followed by one to four cycles of using the hoop nets to collect lobster.

Lobsters are hauled up live and removed from the gear. Lobsters are placed in crates marked with the individual boat number and taken back to the only port on the island at Edinburgh of the Seven Seas. The morning catch is weighed at the harbour, as fishers are paid by weight of catch. Following landing on Tristan da Cunha, lobsters go into the factory, where they are held in tanks for processing. At the end of the fishing day, the remainder of the catch is brought back to shore and weighed and placed in tanks in the factory. Lobsters may be held in tanks for several days without food, to ensure a clean gut for processing.

Only lobsters caught around Tristan are processed in the factory. Lobsters caught on the other islands (Inaccessible, Gough and Nightingale) are processed on-board the MFV *Edinburgh*. Both the factory and the MFV *Edinburgh* produce

whole cooked lobster and lobster tails and “Curled” Tail” Whole Raw Sashimi (WRS) for Japan (product packed in plastic pouch). Only the factory produces “Straight Tail” WRS for Europe (plastic wrapper). All product is frozen and exported.

The fishery’s product is packaged at Tristan (either on-board the MFV *Edinburgh* or in the factory) under oversight from the Tristan Department of Fisheries (Edinburgh observer or factory management). Documentation (packing list, export documentation) is provided by the Tristan Department of Fisheries.

The product enters South Africa under bond in tamper-proof packaging (i.e., it does not pass through South African customs) and is stored in a cold store in Cape Town before being exported in containers.

The following documentation is attached to exported product:

- Invoice;
- Health certificate;
- Catch certificate (for EU);
- EUR1 (tax document).

This documentation includes production codes which traces the product back to a given fishing day and also shows whether it comes from the Tristan factory or from the Edinburgh e.g. the production unit (codes: for factory TDC-Julian day; for Edinburgh SE-Julian day). Since the fishing activity is logged in logbooks, this allows product to be traced to an individual island and at Tristan to a group of fishermen who submitted product to the factory on that day, as well as to their fishing locations. These codes are stamped on the boxes when they are packed at Tristan and remain until arrival at the buyer.

The above-mentioned system allows each sale to be traced back through the documentation exactly to the fishing boat, area and date and is authenticated by the Tristan Department of Fisheries. Additionally, all lobster in the UoC is certified. No non-MSC lobster ever enters the factory or vessels. The assessment team therefore deems this a robust management of the traceability within the fishery.

Table 5. Traceability within the fishery

Factor	Description
Will the fishery use gears that are not part of the Unit of Certification (UoC)? If Yes, please describe: If this may occur on the same trip, on the same vessels, or during the same season; How any risks are mitigated.	No risk. Gear is standardised and the same gear has been used without change throughout the certification period. Any change in gear would require the approval of the Tristan Department of Fisheries. The Edinburgh has close to 100% observer coverage and the illicit use of non-standard gear would be impossible (and pointless).
Will vessels in the UoC also fish outside the UoC geographic area? If Yes, please describe: If this may occur on the same trip; How any risks are mitigated.	No risk. The Tristan archipelago is remote and isolated. The Edinburgh does not fish elsewhere and does not participate in other fisheries. The Edinburgh is tracked by VMS, logbooks and has an observer on board. During trips from Tristan to Cape Town, there are generally Tristan Islanders on board.
Do the fishery client members ever handle certified and non-certified products during any of the activities covered	No risk. There will be no-uncertified product landed by the vessels or stored on the islands.

Factor	Description
by the fishery certificate? This refers to both at-sea activities and on-land activities. Transport Storage Processing Landing Auction If Yes, please describe how any risks are mitigated.	
Does transhipment occur within the fishery? If Yes, please describe: If transhipment takes place at-sea, in port, or both; If the transhipment vessel may handle product from outside the UoC; How any risks are mitigated.	Transhipment from M.V. Edinburgh to another Ovenstone vessel does occur for carriage to Cape Town in containers, SFO monitors the transhipment. There is no risk of non-UOC product entering the system.
Are there any other risks of mixing or substitution between certified and non-certified fish? If Yes, please describe how any risks are mitigated.	No risk. There is only one lobster species present at Tristan. Product is sealed at point of export from Tristan, the product passes through South Africa under bond in tamper-proof packaging and is opened only at arrival with the customer.

6.1 Eligibility to enter further chains of custody

Fishery products as identified in the UoAs shown in Table 2 will be eligible to enter into further certified chains of custody and are therefore eligible to be sold as MSC certified and carry the MSC ecolabel.

To be completed at Public Certification Report stage

Reference(s): FCP v2.2 Section 7.9

6.2 Eligibility of Inseparable or Practicably Inseparable (IPI) stock(s) to enter further chains of custody

There is no IPI associated with this fishery

7 Scoring

7.1 Summary of Performance Indicator level scores

Princi-ple	Component	Wt	Performance Indicator (PI)		Wt	Score
One	Outcome	0.33	1.1.1	Stock status	0.5	100
			1.1.2	Stock rebuilding	0.5	n/a
	Management	0.67	1.2.1	Harvest strategy	0.25	95
			1.2.2	Harvest control rules & tools	0.25	100

Princi-ple	Component	Wt	Performance Indicator (PI)		Wt	Score
			1.2.3	Information & monitoring	0.25	90
			1.2.4	Assessment of stock status	0.25	95
Two	Primary species	0.2	2.1.1	Outcome	0.33	100
			2.1.2	Management strategy	0.33	95
			2.1.3	Information/Monitoring	0.33	85
	Secondary species	0.2	2.2.1	Outcome	0.33	80
			2.2.2	Management strategy	0.33	80
			2.2.3	Information/Monitoring	0.33	80
	ETP species	0.2	2.3.1	Outcome	0.33	90
			2.3.2	Management strategy	0.33	100
			2.3.3	Information strategy	0.33	90
	Habitats	0.2	2.4.1	Outcome	0.33	80
			2.4.2	Management strategy	0.33	85
			2.4.3	Information	0.33	60
	Eco-system	0.2	2.5.1	Outcome	0.33	80
			2.5.2	Management	0.33	80
			2.5.3	Information	0.33	90
Three	Governance and policy	0.5	3.1.1	Legal &/or customary framework	0.33	100
			3.1.2	Consultation, roles & responsibilities	0.33	100
			3.1.3	Long term objectives	0.33	100
	Fishery specific management system	0.5	3.2.1	Fishery specific objectives	0.25	100
			3.2.2	Decision making processes	0.25	100
			3.2.3	Compliance & enforcement	0.25	100
			3.2.4	Monitoring & management performance evaluation	0.25	90

7.2 Principle 1

7.2.1 Target species

The Tristan rock lobster (*Jasus tristani*) forms the target of the fishery. In the South Atlantic, it is known only from the Tristan da Cunha archipelago (Tristan, Gough, Nightingale and Inaccessible Islands) in commercial quantities, with smaller numbers reported from Vema Seamount on the Walvis Ridge . The populations at the different islands belong to a single genetic stock – i.e., larval exchange and gene flow takes place among islands (von der(Heyden et al., 2007). At a much larger geographical scale, there is also a lack of genetic differentiation (based on mitochondrial DNA) between *J. tristani* in the South Atlantic and *Jasus paulensis* at St Paul and Amsterdam Islands in the southern Indian Ocean, some 6000 km to the east, suggesting larval dispersal and gene flow between ocean basins (Groeneveld et al.

2012). Silva et al. (2021) confirmed low level larval connectivity between the two island groups based on high resolution genomic markers, but not enough larval exchange takes place to affect recruitment at either island group. The two species have been synonymised as *J. paulensis* (Heller, 1862), the older name, (http://www.marinespecies.org/aphia.php?p=taxdetails&id=246525), nevertheless the use of the junior synonym *Jasus tristani* persists and was therefore used in this report.

Jasus tristani is a temperate water species occurring on rocky and gravel substrates and in the kelp zone at depths of 0-200 m around islands, with the greatest densities at 20-40 m depth (Holthuis 1991). It is an opportunistic omnivore with a diet typical of species living on impoverished reef habitats (Blamey et al. 2019). Kelp (*Macrocystis spp.*), sponges, bivalves and hydroids were the most common food items but gut contents also included nematodes, whelks, barnacles, polychaetes and cannibalism on other lobsters. The diet was influenced by lobster size, location and depth of capture.

Jasus tristani is slow-growing and long-lived (Booth, 2006). Lobster age is difficult to determine because all hard shell parts with growth marks are shed during each moult. Females reach sexual maturity at carapace length (CL) of 56-60 mm CL, about 5-7 years after settling on the seafloor as pueruli (Booth, 2006). After reaching sexual maturity, female growth rates (increment per moult) decline relative to males. Growth rates differ between islands, being faster at Gough and Tristan and slower at Inaccessible (Pollock & Goosen, 1991; Glass, 2015). Males reach a maximum CL of about 175 mm and females ~115 mm (Holthuis, 1991). Largest lobsters are found at Gough and smallest ones at Inaccessible. Females bear a single yearly batch of external eggs during winter and spring (June to October) over a period of 4 to 6 months and have high fecundity of 24,000 to 137,000 eggs per batch (Pollock & Goosen, 1991; Booth 2006; Glass, 2015). Fecundity is directly related to the size of females – i.e., larger females carry more eggs. The difference in male and female size composition is clearly visible in the data (Glass 2015) with males making up the bulk of catches larger than the minimum legal size (MLS).

7.2.2 Stock status

7.2.2.1 Tristan Island (UoC1)

The updated 2020 assessment of the Tristan lobster resource (Johnston & Butterworth, 2020a) estimated spawning biomass (Bsp) relative to carrying capacity (K) to be Bsp/K = 0.75, indicating a healthy resource. The updated general linear model (GLM) -standardized powerboat CPUE series for Tristan extended the time series from the 1994 to 2020/2021 seasons (Johnston & Butterworth, 2021i). The GLM analysis has been improved since the previous MSC reassessment, to account for overall fishing efficiency changes as informed by the data on fishermen's names. The standardized CPUE trend increased by 30% since 2019 and is well above the target reference level (I_{tar}) (Figure 4; Johnston & Butterworth (2021i). The trend has fluctuated around the I_{tar} over the past 5 years.

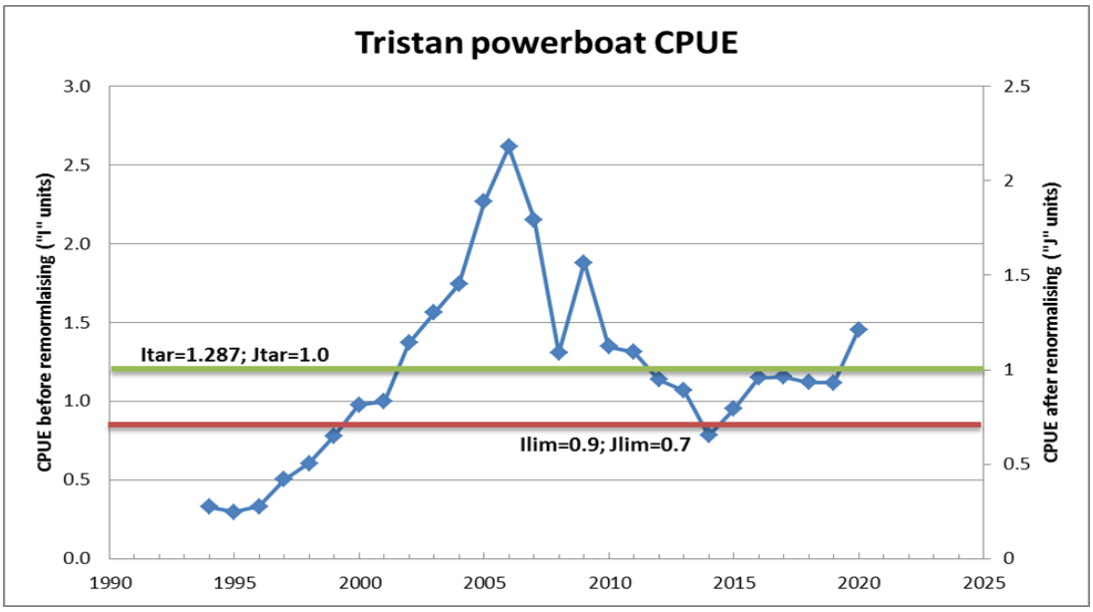


Figure 4. Rescaled GLM powerboat CPUE series for Tristan Island including adjustment for changing fisherman efficiency over time. The current OMP 2020 CPUE target J_{tar}=1.0 and limit J_{lim} = 0.70 are shown (equivalent to the previous I_{tar} and the I_{lim} values) (Johnston & Butterworth, 2021i)**.**

7.2.2.2 Inaccessible Island (UoC2)

The updated 2021 assessment of the Inaccessible lobster resource (Johnston & Butterworth, 2021m) estimated current spawning biomass (Bsp) to be 85% of the pristine level (Bsp/K = 0.85) indicating a very healthy state, and similar to the previous (2018) assessment. The updated GLMM-standardized longline CPUE series extends from 1997 to 2020/2021 (Johnston & Butterworth 2021l). The standardized CPUE for the latest season (9.680 kg / trap) is the second highest on record since 1997, and well above the I_{tar} (Figure 5). The trend has remained above the I_{tar} for the past 9 years.

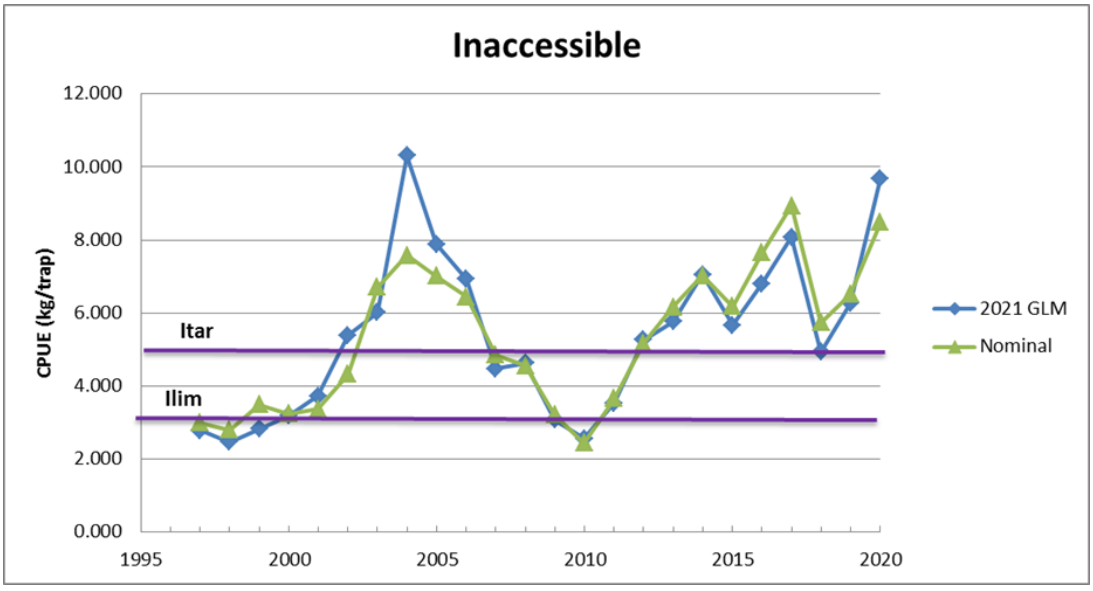


Figure 5. Inaccessible standardised CPUE relative to I_{tar} (5 kg/trap) and I_{lim} (3 kg/trap) values (Johnston & Butterworth 2021l)**.**

7.2.2.3 Gough Island (UoC3)

The updated 2021 assessment of the Gough lobster resource (Johnston & Butterworth, 2021f) estimated current spawning biomass (Bsp) to be 86% of the pristine level (Bsp/K = 0.86) indicating a very healthy state, and similar to the previous (2018) assessment (0.85). The updated GLMM-standardized longline CPUE series extends from 1997 to 2020/2021 and the standardized value is presently just above the I_{tar} (Figure 6). A difference between the nominal and standardized values for the latest season is explained by the majority of the 2020 season's catch being taken in months for which the relative catchability is poor, and longer tranches taken in these later months (which will reduce the nominal CPUE value). The change in fishing strategy resulted from the loss of the FV *Geo Searcher* at Gough in October 2020 – at the beginning of that fishing season. The trend has fluctuated around the I_{tar} since 2006.

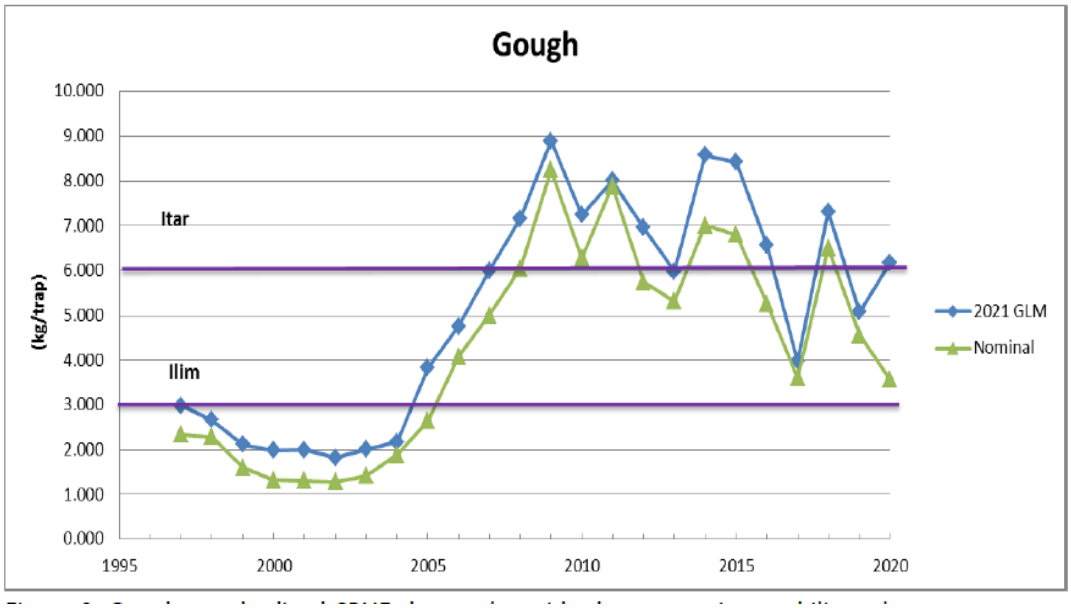


Figure 6. Gough standardised CPUE relative to the current I_{tar} and I_{lim} values. (Johnston & Butterworth, 2021k)

7.2.2.4 Nightingale Island (UoC4)

The updated 2020 assessment (Johnston & Butterworth, 2020c) estimated current spawning biomass (Bsp) to be between 75% and 85% of the pristine level indicating a healthy state. The updated GLMM-standardized longline CPUE series extended from 1997 to 2020/2021 (Johnston & Butterworth, 2021l). The value for the latest season (10.05 kg/trap) is again on an upward trend and more than double the I_{tar} value (5.0 kg/trap) (Figure 7).

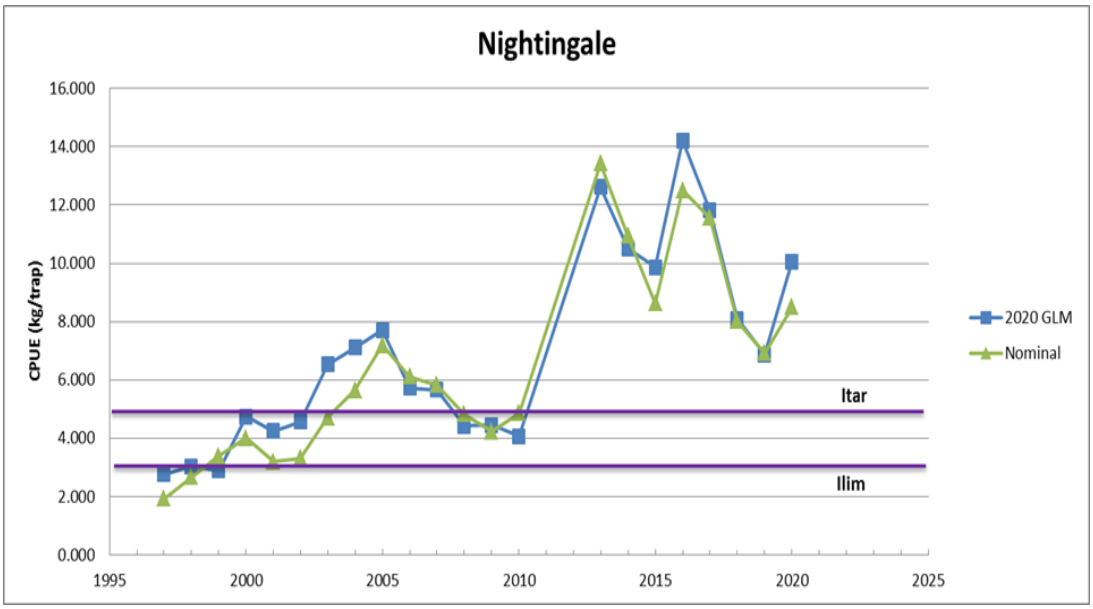


Figure 7. Nightingale standardised CPUE relative to the current Itar (5 kg/trap and Ilim (3 kg/trap) values (Johnston & Butterworth, 2021d).

7.2.3 Harvest strategy

The harvest strategy across UoCs remains target-based, relying on setting a TAC for each island each year, based primarily on trends in annually updated GLM standardized CPUE indices but survey data are also used in some instances. The TAC response to changes in the CPUE index relative to target (I_{tar}) and limit (I_{lim}) reference levels is specified as a set of decision rules within OMPs developed by MARAM for each island individually (Table 6). The OMPs incorporate forward projections of catch, Bsp/K and commercial catch rates, which take uncertainty into account through a series of robustness and sensitivity tests. The TAC recommendations derived from the OMP outputs (Johnston & Butterworth, 2021a) are ratified by the Tristan Fisheries Department and the Island Council, after review of events during the fishing season (for example, loss of FV *Geo Searcher* and replacement with FV *Edinburgh* in 2020) and considering relevant socio-economic information (for example, effects of Covid-19 pandemic). In the most recent season, these events have caused some roll-overs of quota between years. Decisions that departed from TAC recommendations have been more conservative, following a precautionary management strategy. OMPs for Tristan and Nightingale were updated in 2020, and for Gough and Inaccessible they were updated in 2021 (see Table 6).

Table 6. Most recent Bsp/K estimates, target (Itar) and limit (Ilim) reference points, and TACs per island.

	Island	Bsp/K	Itar (kg/trap)	Ilim (kg/trap)	2020/2021 GLM std CPUE	TAC in tonnes 2020/21 (2019/20)
UoC1	Tristan	0.75	1.287 *	0.9*	1.454*	120 (120)
UoC2	Inaccessible	0.85	5.0	3.0	9.68	98 (93)
UoC3	Gough	0.86	6.0	3.0	6.178	100 (105)
UoC4	Nightingale	0.75-0.85	5.0	3.0	10.049	89 (85)
*Itar and Ilim at Tristan is based on Powerboat CPUE series (kg/gear/hour); at the outer islands it is based on kg/trap of monster traps.						

The harvest strategy incorporates an open fishing season (25th August – 30th April) for the outer islands of Nightingale, Inaccessible and Gough. This is sometimes extended under a licence amendment. The season is closed from June until

the 25th August. The vessel usually departs Cape Town for the start of the season mid-August to do independent biomass lobster surveys before commencing commercial fishing early in September (Glass, 2015). The closed season coincides with the female egg-bearing season (May – October) and moulting in *J. tristani*. The fishing season for the Tristan local powerboats starts on the 1st July, until the TAC is caught, without a closed season. The rationale is that traps are not set overnight (when most berried animals are caught). The harvest strategy includes minimum landing sizes (minimum carapace length [CL]) per island of 70 mm at Tristan, 66 mm at Inaccessible, 75 mm at Gough and 70 mm at Nightingale. Differences among islands relate to differences in average size and size at maturity attained at specific islands (Pollock & Goosen, 1991; Glass, 2015).

7.2.4 Harvest Control Rules

Harvest Control Rules (HCR) are "*well-defined pre-agreed rules or actions used for determining a management action in response to changes in indicators of stock status with respect to reference points*" and are explicitly defined within a set of OMPs which have been adopted for all four islands for the purpose of TAC recommendations. The OMPs specify the data to be used and define how TACs are set in response to changes in the standardized CPUE trend (annually updated) in relation to reference points. The OMPs also incorporate Exceptional Circumstances rules, and specify the conditions under which they are activated, and the actions that must then be undertaken.

OMPs for all four islands have the same form, as set out below:

$$TAC_{y+1} = TAC_y + \alpha(I_y^{rec} - I^{tar})$$

where

I_y^{rec} is the average of the GLM standardized CPUE over the last three years (*y*-2, *y*-1,*y*),

I^{tar} is the CPUE target index, and

α is a tuning parameter – the larger the α value, the more "responsive" the OMP is to changes in the catch rate in the future.

A rule to control the inter-annual TAC variation is also applied. The baseline % TAC changes relative to the previous year ("max V%") is restricted to a maximum of either max V% up and max V% down:

If $TAC_{y+1} < (1 - \max \text{V\% down})TAC_y$ then $TAC_{y+1} = (1 - \max \text{V\% down})\, TAC_y$

If $TAC_{y+1} > (\max \text{V\% up})\, TAC_y$ then $TAC_{y+1} = (\max \text{V\% up})\, TAC_y$

Furthermore a maximum TAC (ceiling) or a minimum TAC (floor) may be imposed, where the latter is subject to Exceptional Circumstances (EC) rules where if I_y^rec drops below Ilim, the ECs apply and TAC decrease constrains are overridden.

An overcatch (above the TAC) of more than 0.5 MT at any island in a given season is taken off the TAC allocated for the following season. Roll-overs (when the TAC has not been fully caught in a fishing season) were implemented in the most recent (2021) TAC recommendations (Johnston & Butterworth, 2021e; Johnston & Butterworth, 2021h).

7.2.5 Information and monitoring

Extensive data are available to support the harvest strategy, such that there is a good understanding of stock structure, stock productivity, fleet composition and other aspects of stock dynamics. Data include: long-term commercial logbook data on fishing effort and catch per island (stratified by season, area, soak time, trap type, fishing depth of gear); size, sex ratio, maturity and discard proportions collected by on-board observers (100% coverage); annual

biomass surveys (since 2006) using small-mesh traps; tagging for growth, movement and population studies; and ad hoc data on genetic stock structure and lobster diet by size and area.

All lobster catches made by powerboats at Tristan are weighed directly before entering the factory, on factory scales that are checked in accordance with a HACCP plan. A recent concern that packed weight was larger than landed weight (green weight of whole lobsters) could be explained as a conversion error – in which the standard conversion factor of 0.3329 (tail weight/whole weight) does not fully address natural variability inherent in lobster sex, size or body condition. For example, the tail weight of adult female lobsters is proportionally heavier than that of males of the same size; hence packed weight of tails will increase (relative to landed weight) if the proportion of females in packs increase (relative to males). A greater proportion of females than usually was caught in 2020/2021 and more tail trays were packed, explaining the discrepancy between landed and packed weight at Tristan (pers. com. Clinton de Bod, Ovenstone). This makes no difference to the accuracy of the quota control system, nor to the data used in the stock assessment, as long as the landed weight of whole lobsters is used.

7.2.6 Assessment approach

Analytical stock assessments per island take place on a rotational basis – each 3-4 years. The latest assessments took place in 2020 (Tristan and Nightingale) and in 2021 (Gough and Inaccessible). Sophisticated age-structured production models are applied that follows cohorts with removal of catch, natural mortality and discard mortality. Recruitment is modelled in terms of fluctuations around expected mean recruitment from a generalized stock recruitment function couched in terms of the pre-equilibrium ('virgin') female spawning biomass (Bsp/K). Catch numbers at age are modelled separately for commercial and survey data. Commercial selectivity at length is modelled as logistic curves changing over time. Values of discard mortality and natural mortality are fixed rather than estimated. Population dynamics are initialized in 1990 based on an estimated fraction of virgin spawning biomass and a fixed fishing proportion of 0.01 prior to 1990.

The models (for individual islands) are fitted to the following data: GLM standardized CPUE data (accounting for season, area, soak time, depth and gear effects in log-book data per island); catch data; biomass survey index data; catch-at-length data from observers and surveys; and discard percentage (Figure 8). Model fitting proceeds by minimizing the total negative log-likelihood, with likelihood contributions defined for each data component and a penalty function is applied for residuals around the stock recruitment function. A Bayesian approach is used to model prior distributions of stock recruitment function, survey and commercial selectivity, and initial age structure. The above age-structured assessment models are implemented in the AD Model Builder framework, are consistent with the different sources of available data and biological information and accounts for uncertainty in a quantitative manner (see below).

The fitted assessment models provide a framework for forward projection of stock biomass and CPUE under different management regimes for testing of OMPs and EC rules, and hence are fully supportive of the HCR. Because the models do not define BMSY, the assessment team referred to MSC guidance GSA2.2.3.1 where in cases where neither BMSY nor the PRI are analytically determined, the following default reference points may be used to measure stock status depending on the species: BMSY = 40%B0. In the assessments of this fishery K is biomass at pre-exploited levels (e.g., ~ B0) and current Spawning biomass (Bsp) is given relative to K.

Importantly, the OMP approach falls outside the traditional 'MSY approach' that usually underlies definition of reference points. The reference points are derived from observed CPUE values, or modifications of these based on operational properties, and relate to quantities that are reliably estimated for the fisheries (standardized CPUE values). The basis of the OMP parameters relates to their operational properties as evaluated in stock projections (notably their ability to provide a relatively consistent TAC at high catch rates). OMP performance is tested through stochastic forward projections of the age-based stock assessment models, evaluating TAC stability and distribution of expected stock status in relation to pre-exploitation levels, an approach that is robust to the main sources of uncertainty.

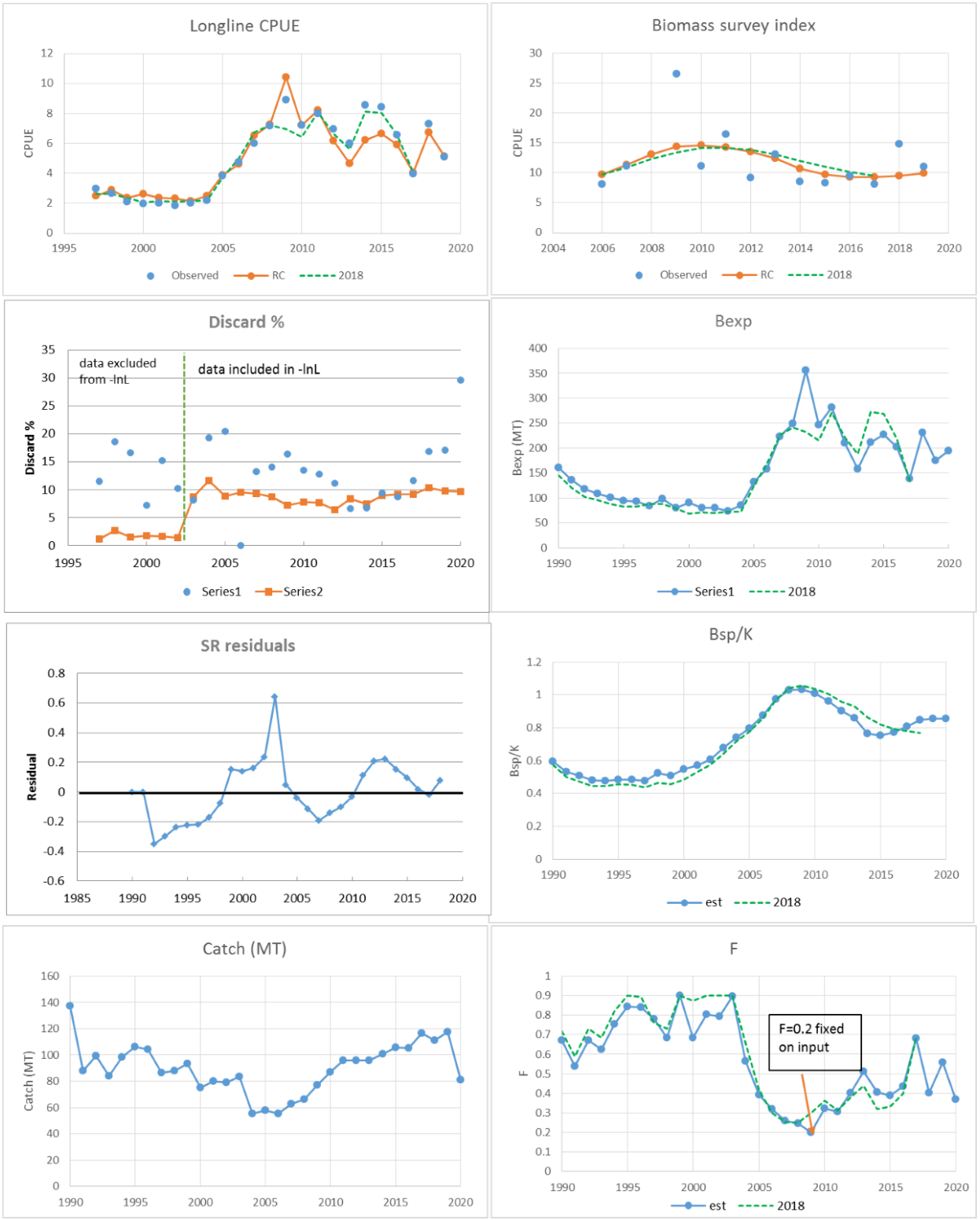


Figure 8. Gough 2021 revised reference case (RC) assessment results. The green dashed lines indicate the 2018 assessment's estimated values (Johnston & Butterworth, 2021f)

7.2.7 Uncertainty in the assessment

The different elements of the assessment are rigorous in accounting for uncertainty about biological and fishery processes. A probabilistic approach to evaluating stock status in relation to reference points is implemented through

forward projection of the age-structured assessment model in developing and testing the OMPs and EC rules and formulating advice on TACs. The approach taken in this testing is to consider the operational properties of the management procedures in terms of exploitable and spawning biomass, CPUE, recruitment and TACs, for which 95% prediction envelopes are provided. For example, stochastic trajectories for a candidate OMP (CMP5.5, I_{tar} set as 5.5 kg/trap) for Gough (Johnston & Butterworth, 2021b) are projected for catch, spawning biomass (Bsp/K) and commercial catch rates, showing the 5th and 95th percentiles (Figure 9).

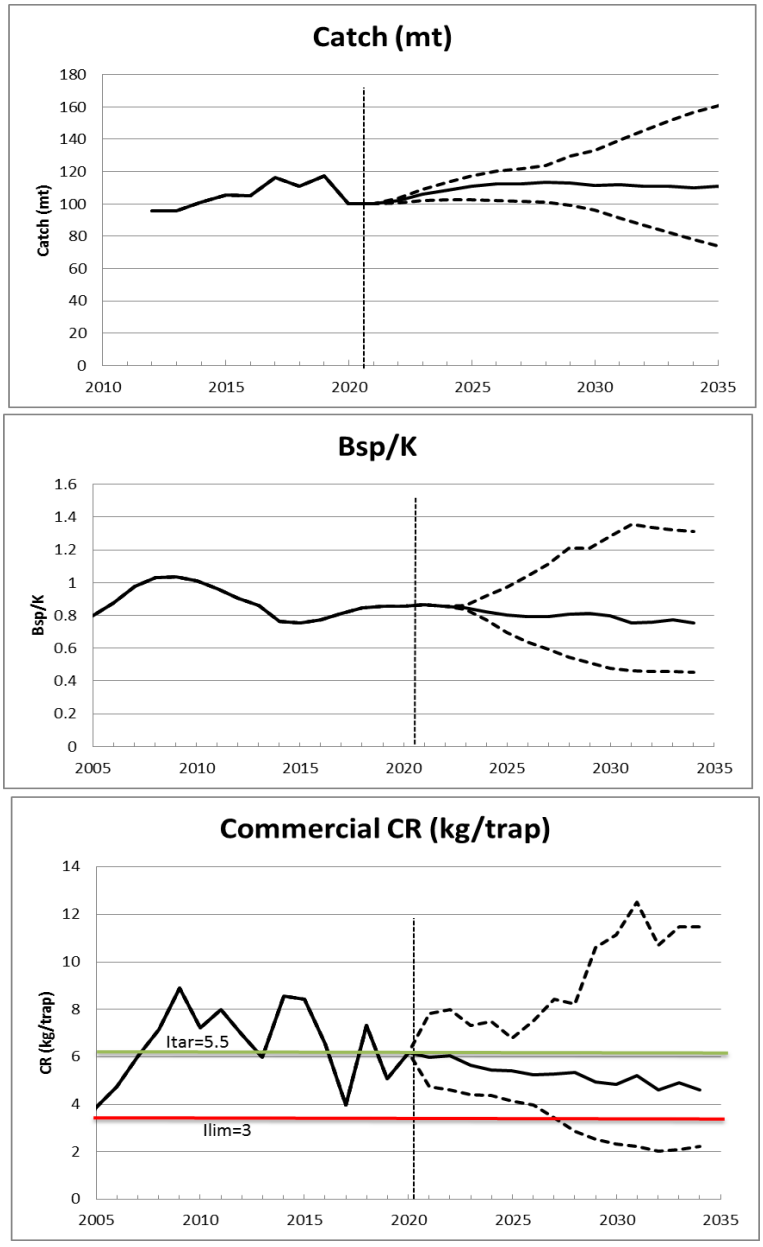


Figure 9. Stochastic trajectories for VAR5.5 at Gough Island. The solid line is the median, with the dashed lines representing the 5th and 95th percentiles (from Johnston & Butterworth, 2021b**)**

7.2.7.1 Catch profiles

The fishery began in 1949, but data on catches per island are only available since the 1967/68 fishing season (DFT 2020; Roscoe 1979) (Figure 10). Catches peaked in the 1971/72 and 1975/76 seasons at Gough Island, and in the 1974/75 and 1976/77 seasons at Inaccessible. Exceptionally large catches during this period coincide with an increase in fishing effort (larger monster traps introduced), when two new longliners entered the fishery, and another vessel was upgraded. Catches made since 1991 have been under TAC management, i.e., output control, set by the FD. In 1993, the Natural Resources Department (now the FD) was established on Tristan Island and has been responsible for the collection of catch and fishing effort information. Over the past three decades, Tristan Island has consistently yielded larger catches than the fisheries around Nightingale, Inaccessible and Gough islands.

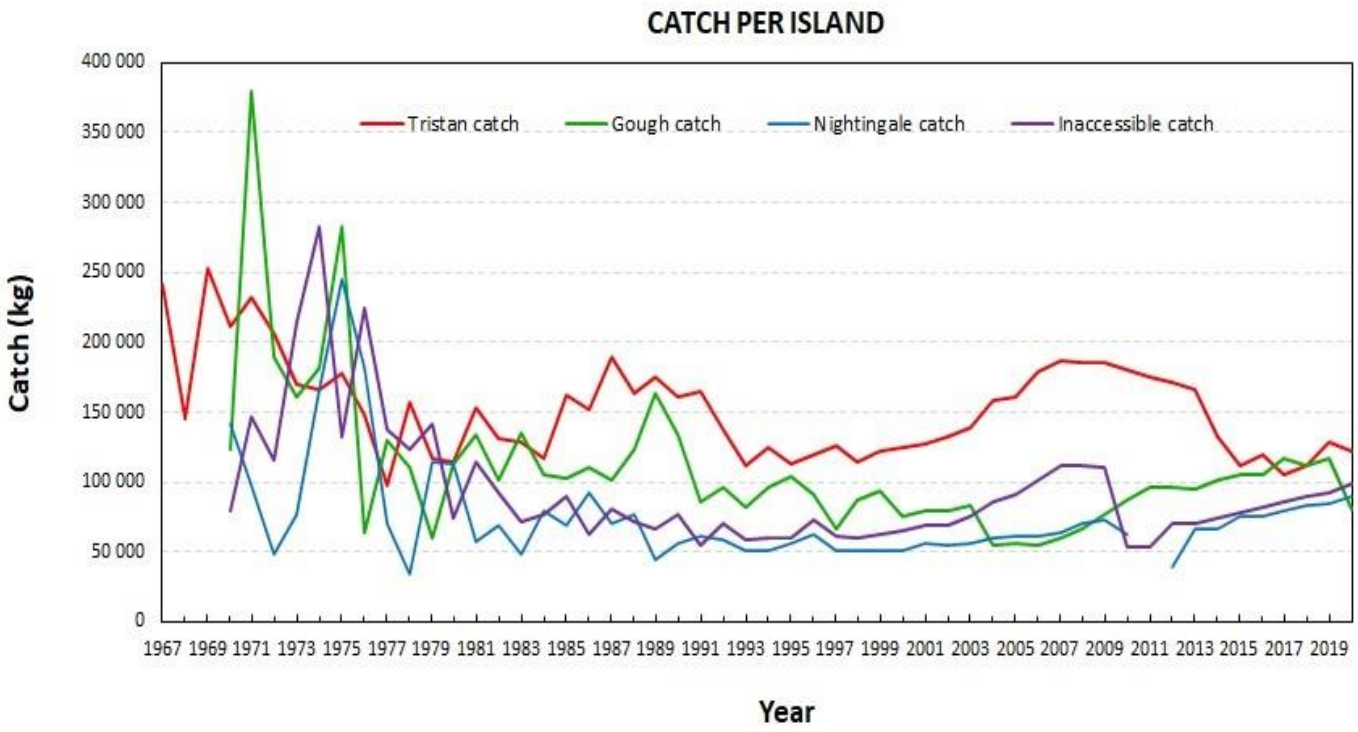


Figure 10. Catch profiles at the four islands for the period 1967 – 2020 (DFT, 2020)**.**

Catch related to IUU fishing is considered insignificant around Inaccessible, Nightingale and Tristan based on information provided by the concessionaire (Table 7) but may occur infrequently around Gough.

Table 7. IUU estimates for 2001-2009. *Based on actual observations of IUU vessels, landing and export documentation. # No. of sightings of potential IUU vessels; nominal 10 tons IUU estimated

Season	IUU (MT)
2001/02	40
2002/03	45
2003/04	34.90*
2004/05	43.48*
2005/06	20
2006/07	20
2007/08	10#
2008/09	10#

Some subsistence fishing for lobsters occurs at Tristan, estimated to be < 5 MT per year (J. Glass pers. Comm.).

7.2.8 Total Allowable Catch (TAC) and catch data

Table 8. Total Allowable Catch (TAC) and landing data.

Year	TRISTAN	INACCESSIBLE	GOUGH	NIGHTINGALE	TRISTAN	INACCESSIBLE	GOUGH	NIGHTINGALE	TRISTAN	INACCESSIBLE	GOUGH	NIGHTINGALE
	Quota (t)				Landings (t)				% Quota landed			
2016-17	120	81	110	75	119.5	81.7	105.1	75.9	99.6	100.9	95.5	101.2
2017-18	120	85	116	79	105.2	85.4	116.3	79.1	87.7	100.5	100.3	100.1
2018-19	120	89	111	83	111.5	89.6	111.8	83.7	92.9	100.7	100.7	100.8
2019-20	120	93	105	85	129	92.8	117.2	84.7	107.5	99.8	111.6	99.6
2020-21	120	98	100	89	122.3	99.2	81	89.3	101.9	101.2	81.0	100.3

7.3 Principle 1 Performance Indicator scores and rationales

7.3.1 PI 1.1.1 – Stock status

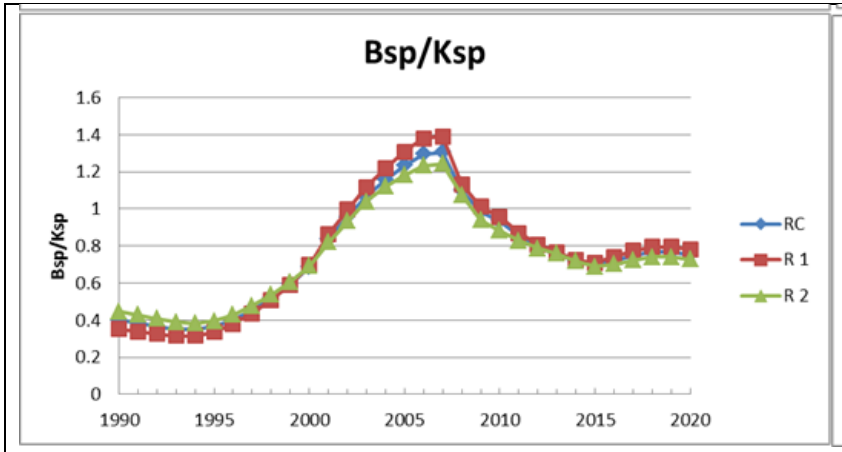
PI 1.1.1		The stock is at a level which maintains high productivity and has a low probability of recruitment overfishing		
Scoring Issue		SG 60	SG 80	SG 100
a	Stock status relative to recruitment impairment			
	Guide post	It is **likely** that the stock is above the point where recruitment would be impaired (PRI).	It is **highly likely** that the stock is above the PRI.	There is a **high degree of certainty** that the stock is above the PRI.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**

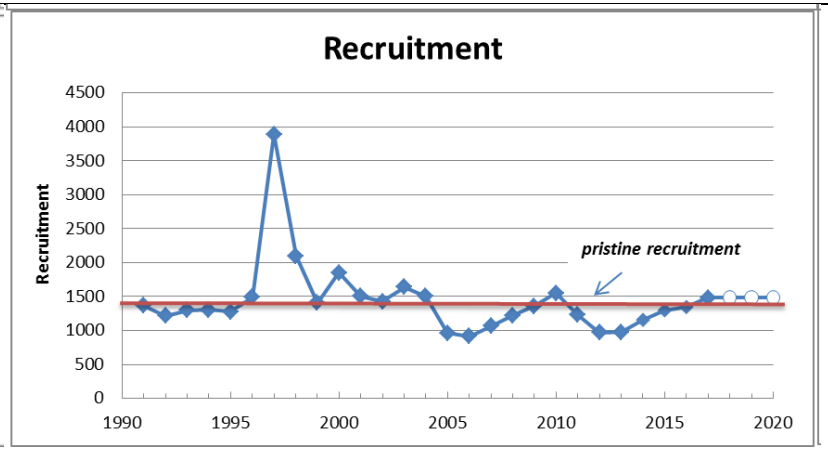
Rationale

The most recent assessments of stock status for the four UoCs took place in 2020 (Tristan and Nightingale) and in 2021 (Inaccessible and Gough). The assessments are based on age-and sex-structured population models to estimate the status of lobster stocks at each island individually. They are based on extensive long-term datasets that are updated annually and take uncertainty into account in a probabilistic way. The models do not define PRI or B_{MSY} and therefore the assessment team refer to MSC guidance GSA2.2.3.1 where in cases where neither BMSY nor the PRI are analytically determined, the following default reference points may be appropriate for measuring stock status depending on the species: B_{MSY} = 40%B0; PRI=20%B0. In the assessments of this fishery K is biomass at pre-exploited levels (e.g., ~ B0) and current Spawning biomass (Bsp) is given relative to K. The rationales below (per island) support, with a high degree of certainty, that stocks are above the PRI – hence **all SGs including SG100 are met** for all UoCs.

Tristan (UoC1)

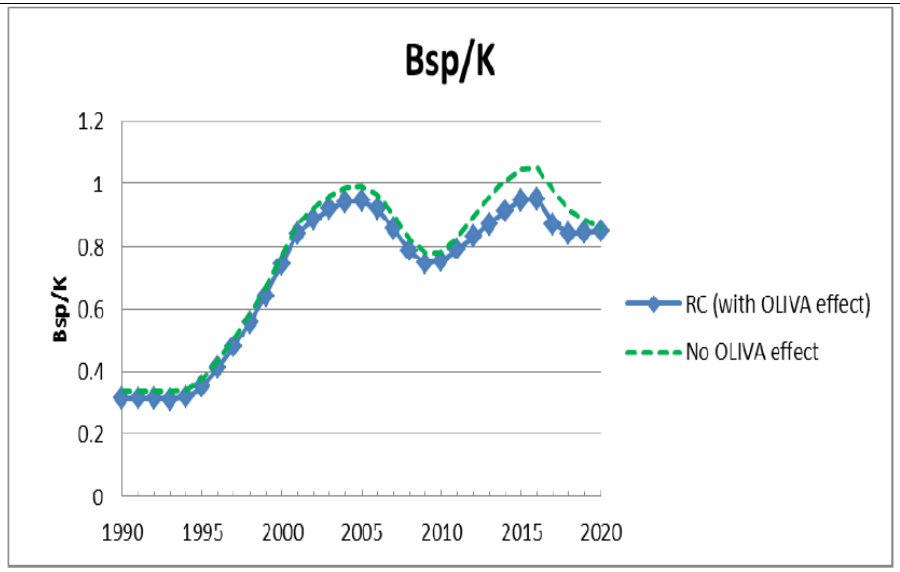
The updated 2020 assessment of the Tristan lobster resource (Johnston & Butterworth, 2020a) incorporated the most recent data available and explicitly accounted for separate datasets available from the powerboats, the MFV *Edinburgh* / *Geo Searcher* and the annual biomass survey. Results were similar to previous assessments, but the decline in abundance since ~2006 appears to have ended, with increases in exploitable and spawning biomass over the 2015+ period. The Figure below shows model estimates of abundance for the reference case model (RC) and robustness tests in which it is assumed that the fishing proportion in 2009 was either below (R1; F_{2009}=0.2) or above (R2; F_{2009} = 0.4) the RC assumption (RC; F_{2009} = 0.3). Spawning biomass (Bsp) relative to K was estimated to be Bsp/K = 0.75, indicating a healthy resource in 2020, an improvement on the 2015 stock status assessment (as reported in the 2016 MSC reassessment report) which estimated Bsp/K at 65% of pre-exploitation levels. For lobsters, the point of reproductive impairment (PRI) is likely to be well below 50% and using the MSC default of PRI=20%B0 it is therefore reasonable to conclude that there is a high degree of certainty that the stock is above this level. **SG60 to SG100 are met** for UoC1.





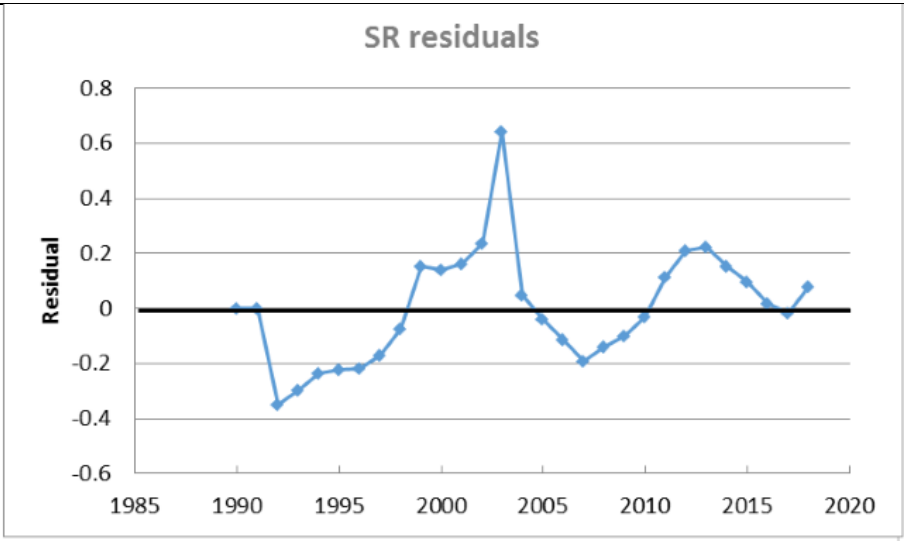
Inaccessible (UoC2)

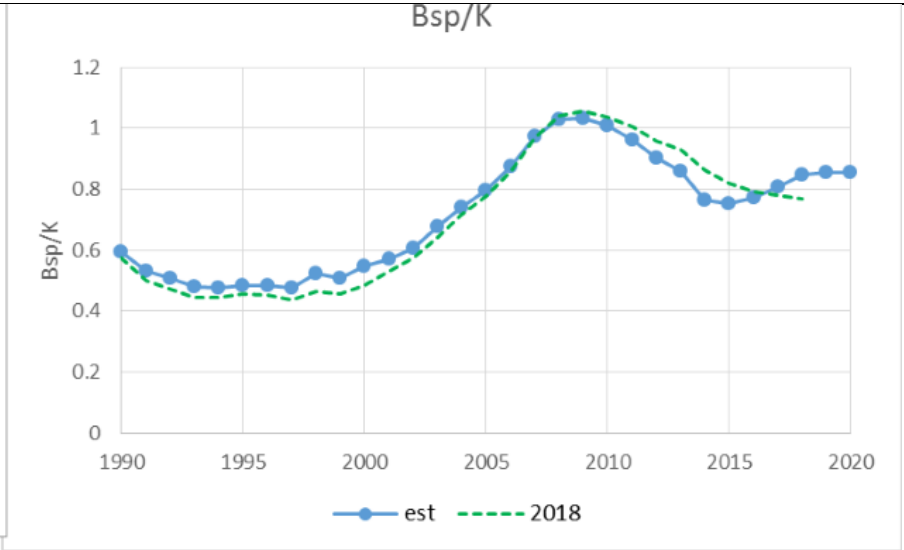
The 2021 assessment of the resource at Inaccessible (previously assessed in 2018) included updated longline data from the commercial fishery (1997-2019) and biomass surveys (2006 – 2019, excl. 2008) (Johnston & Butterworth, 2021m). Data from the 2020 season were not yet available at the time of the assessment. The Figure below shows comparative model fits to the spawning biomass trends for the Reference case model (with the OLIVA effect, i.e. mortality induced by spillage in 2011) and the model assuming no OLIVA effect in 2011. There is visually no difference in the model fits to the data, with the RC model estimates becoming identical with the OLIVA estimate by 2020. Current spawning biomass (Bsp) relative to K was estimated to be Bsp/K = 0.85 – a very healthy level and similar to the previous 2018 assessment. Given the point of reproductive impairment (PRI) is likely to be well below 50% and using the MSC default of PRI=20% B0 it is therefore reasonable to conclude that there is a high degree of certainty that the stock is above this level. **SG60 to SG100 are met** for UoC2.



Gough (UoC3)

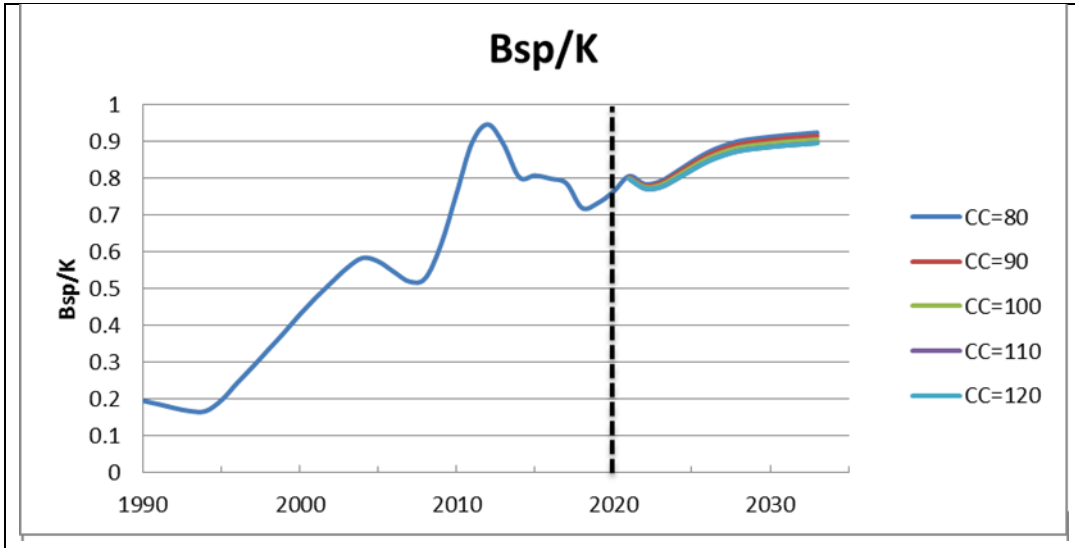
The 2021 assessment of the resource at Gough (previously assessed in 2018) included updated data from the commercial fishery (1997-2020) and biomass surveys (2006-2020) (Johnston & Butterworth, 2021j; Johnston & Butterworth, 2021f). The updated 2021 assessment produced more optimistic results with respect to current spawning biomass for a number of reasons: fitting to further data; estimation of a new female selectivity parameter; removal of pre-2003 discard % data from the likelihood; and changing the Reference Case M assumption from 0.2 to 0.1/year and the F2009 (fishing proportion) assumption of 0.3 to 0.2 following initial model fits. The current spawning biomass is estimated to be Bsp/K = 0.86 – a very healthy state (see Figure below for RC outputs). Given the point of reproductive impairment (PRI) is likely to be well below 50% and using the MSC default of PRI=20% B0 it is therefore reasonable to conclude that there is a high degree of certainty that the stock is above this level. **SG60 to SG100 are met** for UoC3.





Nightingale (UoC4)

The updated 2020 assessment of the resource at Nightingale (Johnston & Butterworth, 2020c) incorporated 2019 data from both the commercial fishery and the biomass surveys. The recent (2013+) high GLM standardised CPUE values (and biomass survey index values) at Nightingale suggested that the anticipated negative impact of the OLIVA incident in 2011 on adult lobsters was previously overstated, and that the additional adult mortality was much less than originally assumed. For this reason, the 2020 Reference Case (RC) assessment assumed zero OLIVA-associated additional adult mortality in 2011, but the RC continued to assume an additional 80% juvenile mortality. Results indicated that the juvenile mortality rate was also likely to have been less than this RC assumption, and it was proposed that the RC be revised to assume additional juvenile mortality of only 20%. The current spawner biomass at Nightingale (Bsp/K) was estimated to be 0.75-0.85, signifying a healthy stock status (see Figure below) and is projected to increase even further based on reference case deterministic projections of Bsp, Bsp/K and Bexp for a range (80 MT – 120 MT) of future annual constant catches (CCs). Given the point of reproductive impairment (PRI) is likely to be well below 50% and using the MSC default of PRI=20%B0 it is therefore reasonable to conclude that there is a high degree of certainty that the stock is above this level. Therefore, **SG60 to SG100 are met** for UoC4.



The foregoing discussion is based on the assumption that the recruitment results from spawning stocks on an island-by-island basis. An alternative view, not considered in the assessments, is that recruitment is generated by spawning stocks at a higher spatial scale, with larvae dispersing among islands (or connecting populations on different islands) as inferred from genetic analyses (von der (Heyden et al., 2007). The likelihood of impaired recruitment under this scenario is much reduced. This lends confidence to the conclusion of high certainty that stocks are above the level at which recruitment would be impaired.

b	Stock status in relation to achievement of Maximum Sustainable Yield (MSY)			
	Guide post		The stock is at or fluctuating around a level consistent with MSY.	There is **a high degree of certainty** that the stock has been fluctuating around a level consistent with MSY or has been above this level over recent years.
	Met?		**Yes - all UoAs**	**Yes – all UoAs**

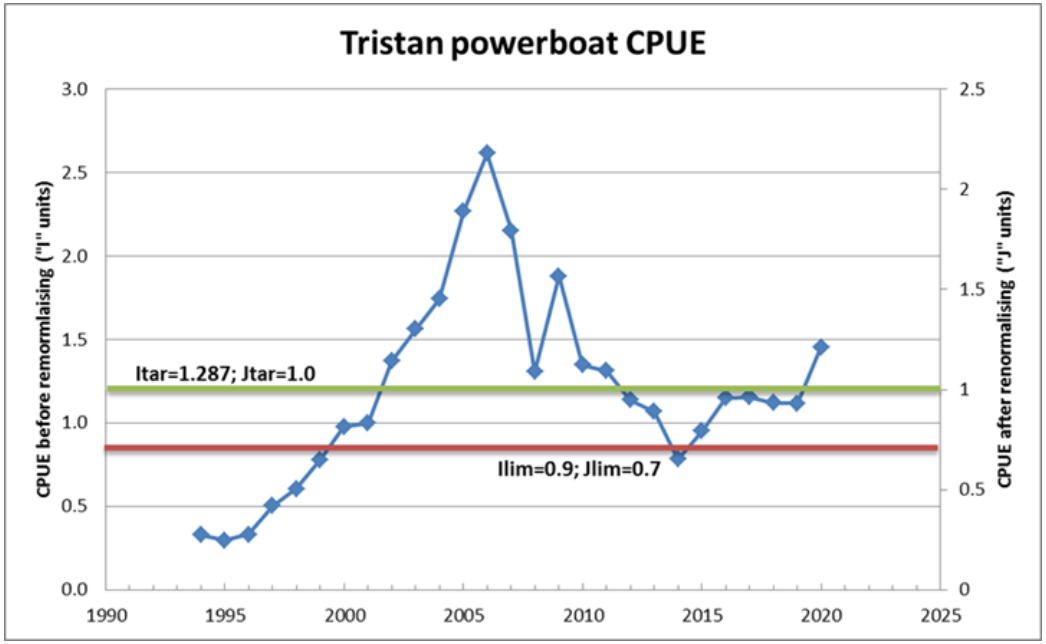
Rationale

The previous MSC reassessment (Gascoigne et al., 2016) indicated scores meeting SG80 for Tristan and SG100 for the other three islands, based on target reference points set in Operational Management Plans (OMP), in terms of standardized commercial CPUE values. See PI 1.2.2 for further information. The models do not define B_{MSY} and therefore the assessment team refer to MSC guidance GSA2.2.3.1 where in cases where neither BMSY nor the PRI are analytically determined, the following default reference points may be appropriate for measuring stock

status depending on the species: B_{MSY} = 40%B0. In the assessments of this fishery K is biomass at pre-exploited levels (e.g., ~ B0) and current Spawning biomass (Bsp) is given relative to K. GLM-standardized CPUE trends since then confirm that stocks at all islands are above (or fluctuating around) the target reference points for all islands – as a proxy for MSY. **SG80 is met** for all islands. The rationales below **support scores of SG80 and SG100** for each island individually:

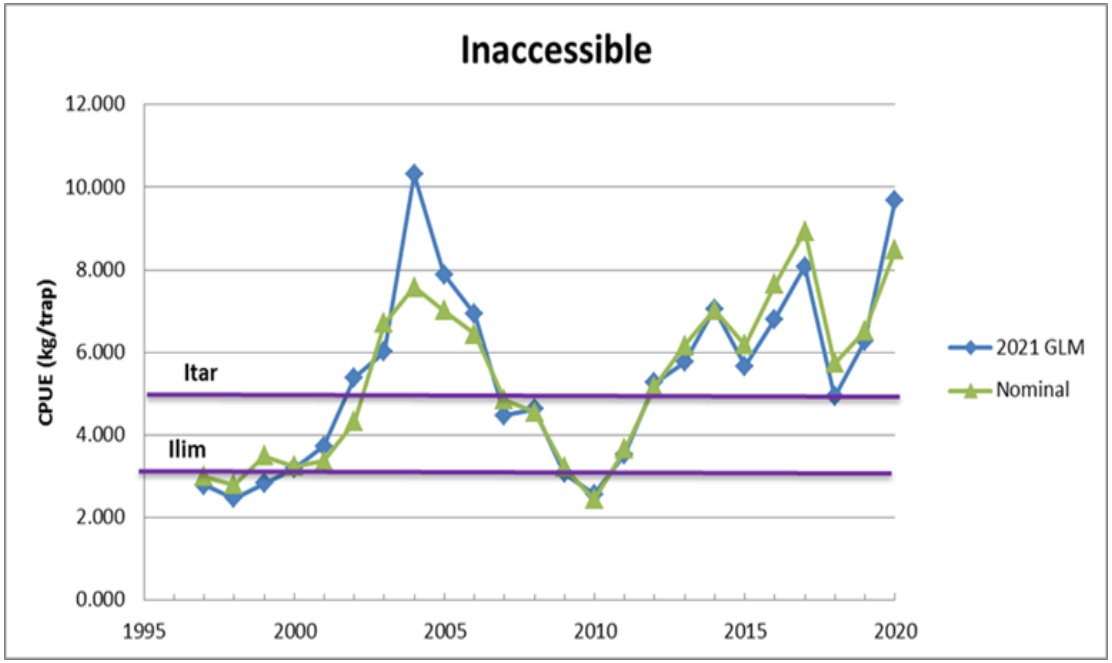
Tristan

For Tristan, the target reference point (I_{tar}) is set at 1.287 kg/trap/hour (equivalently a j_{tar} of 1.00 kg/trap/hour based on a rescaled GLM) which is the GLM-standardized CPUE for 2010-2012. The GLM-standardized powerboat CPUE series for Tristan, updated annually with the latest data, now includes the 2020 catch and effort data, with the time series extending from the 1994 to 2020 seasons (Johnston & Butterworth, 2021i). The updated GLM was rescaled to account for the overall fishing efficiency changes as informed by the data on fishermen's names (available for the 2005-2007 and 2013-2020 seasons only) (Johnston & Butterworth, 2021i). The inclusion of the fishing efficiency changes in a rescaled GLM-standardized CPUE indicated a more optimistic CPUE trend compared to the original GLM, shown in the Figure below. The inclusion of the most recent data for the 2020 season in the updated (and rescaled) GLM showed a substantial increase of about 30% in the standardized CPUE since the 2019 season, and the current value of 1.454 kg/hour/gear is well above the I_{tar} of 1.287 kg/hour/gear (Johnston & Butterworth 2021i). Furthermore, the values since 2016 are at or fluctuating around the target level (**SG80 met**) and including the results from the recent stock assessment, estimating Bsp/K = 0.75, there is a high degree of certainty that the stock is fluctuating at a level consistent with MSY at Tristan (**SG100 met**).



Inaccessible

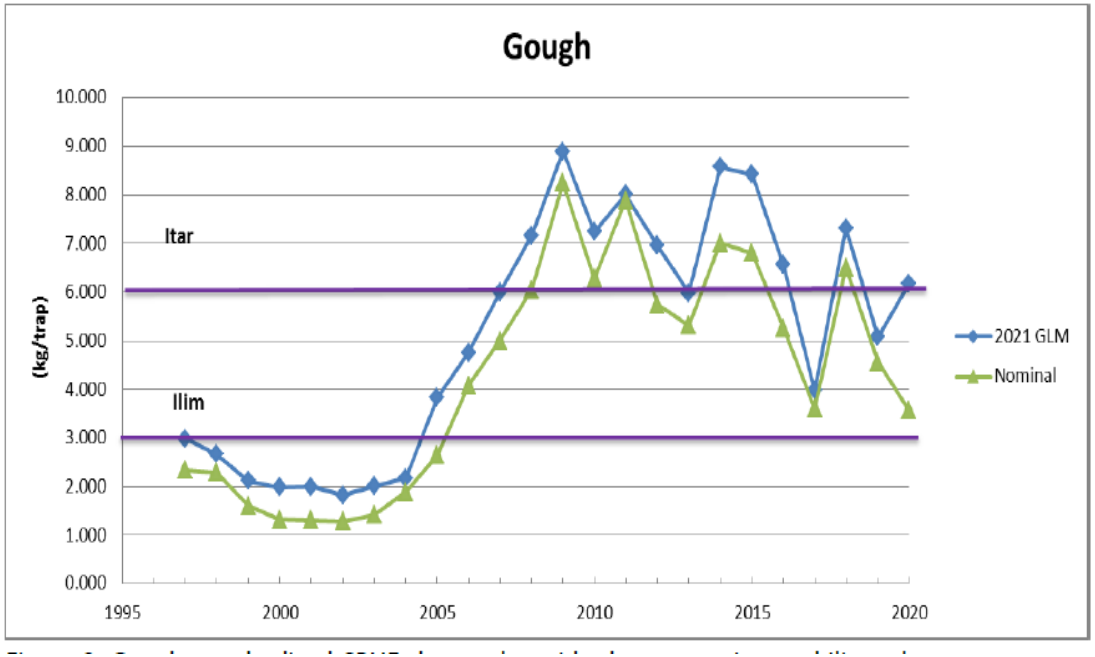
The Inaccessible standardized CPUE for the 2020 season of 9.68 kg/trap is the second highest on record (since 1997) and considerably above the current I_{tar} of 5 kg/trap, shown in the Figure below (Johnston & Butterworth, 2021l). The general upward trend in CPUE at Inaccessible has thus continued since around 2011, with the exception of 2018. Including the results from the 2021 stock assessment, which estimated the spawning biomass (Bsp/K) to be 85% there is a high degree of certainty that the stock is fluctuating at a level consistent with MSY at Inaccessible (**SG80 and SG100 met**).



Gough

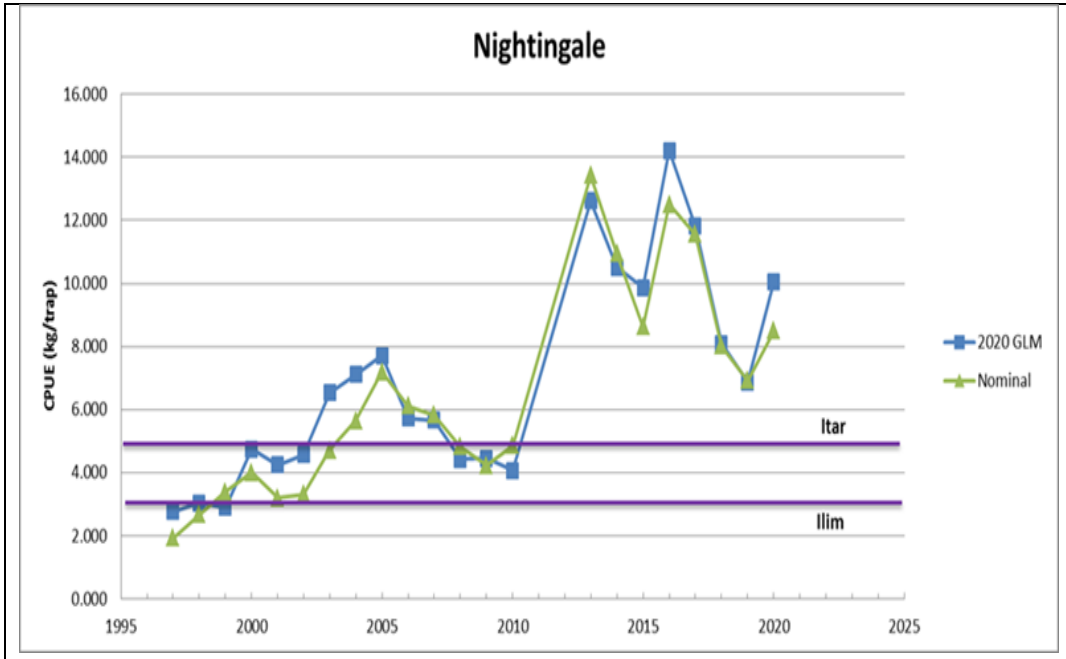
The GLMM-standardized longline CPUE series for Gough was updated with the most recent 2020 catch and effort data, and now covers a 24-year period from 1997-2020 (Johnston & Butterworth, 2021f). The standardised CPUE value for the current season (6.178 kg/trap) is now just above the Itar value (6.0 kg/trap) and is higher than that of the previous season (Figure below). A large difference between the standardised and nominal CPUE values for the 2020 season was attributed to the majority of the 2020 season's catch being taken in months for which the relative catchability is very poor, as well as longer tranches taken in these later months (which will reduce the nominal CPUE value). The seasonal shift in fishing effort (later in 2020 than in other years) was as a result of the loss of the FV *Geo Searcher* in October 2020. Overall, the standardized CPUE index have been fluctuating around the I_{tar} since 2007, dipping

below the I_{tar} in 2 instances, when it remained above the I_{lim}. Including the results from the 2021 stock assessment, which estimated the spawning biomass (Bsp/K) to be 0.85, there is a high degree of certainty that the stock is fluctuating at a level consistent with MSY at Gough (**SG80 and SG100 met**).



Nightingale

The GLMM-standardized longline CPUE series for Nightingale was updated with the most recent 2020 catch and effort data. The time series used for the 2021 GLMM now extends from 1997 to 2020 excluding the 2011 and 2012 seasons, when the fishery at Nightingale was closed due to the grounding of the OLIVA in March 2011 (Johnston & Butterworth, 2021l). The recent standardized CPUE for Nightingale continues to be high (well above the I_{tar} level) and show an increase of about 30% above the 2019 level (Figure below). The series has now remained well above the I_{tar} of 5 kg/trap since 2013, with the current value (10.049 kg/trap) more than double the I_{tar}. Including the results from the 2021 stock assessment, which estimated the spawning biomass (Bsp/K) to be between 0.75 and 0.85, there is a high degree of certainty that the stock is fluctuating at a level consistent with MSY at Nightingale (**SG80 and SG100 met**).



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Johnston, S.J. & Butterworth, D.., 2020a. 2020_04. Updated 2020 Tristan da Cunha rock lobster assessment. MARAM/TRISTAN/2020/FEB/04, University of Cape Town.

Cross-referencing below:

(Johnston & Butterworth 2021j; Johnston & Butterworth 2021f), (Johnston & Butterworth 2021i), (von der(Heyden et al. 2007), (Johnston & Butterworth 2021m), (Johnston & Butterworth 2021l), (Gascoigne et al. 2016), (Johnston & Butterworth 2020c), (Johnston & Butterworth 2020a)

Stock status relative to reference points			
	Type of reference point	Value of reference point	Current stock status relative to reference point
Reference point used in scoring stock relative to PRI (SIa)	Operational Management Procedure (OMP)	Current spawning biomass (Bsp) relative to pristine (K): Bsp/K Model-estimated values Value not specified. For rock lobster, Bsp/K = 0.4 is considered highly conservative. GSA2.2.3.1 In the case where the PRI is not analytically determined, the following default reference point may be appropriate for measuring stock status depending on the species: PRI=20%B0=½BMSY.	Tristan: 0.75 Inaccessible: 0.85 Gough: 0.86 Nightingale: 0.75-0.85
Reference point used in scoring stock relative to MSY (SIb)	Operational Management Procedure (OMP) GLM Standardized CPUE level relative to target (I_{tar}) and limit (I_{lim}) reference points	<u>Target reference point (I_{tar})</u> Tristan: 1.287 kg/trap/hour (equivalently a j_{tar} of 1.00 kg/trap/hour based on a rescaled GLM) Inaccessible: 5.0 kg/trap. Gough: 6.0 kg/trap Nightingale: 5.0 kg/trap	<u>Current stock status</u> Tristan: 1.454 kg/trap/hour Inaccessible: 9.68 kg/trap Gough: 6.178 kg/trap Nightingale: 10.049 kg/trap

		Limit reference point (I_{lim}) Tristan: 0.9kg/trap/hour (equivalently a j_{lim} of 0.7 kg/trap/hour based on a rescaled GLM) Inaccessible: 3.0 kg/trap. Gough: 3.0 kg/trap Nightingale: 3.0 kg/trap	

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Data-deficient? (Risk-Based Framework needed)	**No**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**100**
Condition number (if relevant)	**N/a**

7.3.2 PI 1.1.2 – Stock rebuilding

N/a

7.3.3 PI 1.2.1 – Harvest strategy

PI 1.2.1		There is a robust and precautionary harvest strategy in place		
Scoring Issue		SG 60	SG 80	SG 100
a	Harvest strategy design			
	Guide post	The harvest strategy is **expected** to achieve stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and the elements of the harvest strategy **work together** towards achieving stock management objectives reflected in PI 1.1.1 SG80.	The harvest strategy is responsive to the state of the stock and is **designed** to achieve stock management objectives reflected in PI 1.1.1 SG80.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**

Rationale

MSC defines a harvest strategy as 'the combination of monitoring, stock assessment, harvest control rules and management actions, which may include a Management Plan (MP) or an MP (implicit) and be tested by MSE' (MSC – MSCI Vocabulary v1.1).

A harvest strategy provides a framework that links management actions to specific objectives for the fishery. The OMPs that have been developed for the four islands individually have two clear objectives: (i) to maintain catch rates at recent levels associated with high stock levels, in most cases defined in terms of standardized CPUE estimated for 2010-2012; and (ii) to provide stability in catches from year to year, constraining inter-annual changes in TAC to less than 5% unless the Exceptional Circumstances rule (i.e. limit reference point) is triggered. These are related to maintaining the ongoing importance of the fishery to the Tristan da Cunha economy. The key issue remains that the fishery plays a crucial role in the social and economic structures of the Tristan da Cunha community, such that the community has a vested interest in, and keen awareness of, the need for long-term sustainability of the rock lobster resource. The harvest strategy is therefore generally conservative in cases where more than one option is available.

The harvest strategy across UoCs remains target-based, relying on setting a TAC for each island each year, based primarily on trends in annually updated GLM standardized CPUE indices but survey data are also used in some instances. The TAC response to changes in the CPUE index relative to target ($I_{tar)}$ and limit (I_{lim}) reference levels is specified as a set of decision rules within OMPs developed by MARAM for each island individually. The OMPs incorporate forward projections of catch, Bsp/K and commercial catch rates, which take uncertainty into account through a series of robustness tests. The TAC recommendations derived from the OMP outputs (Johnston & Butterworth 2021a) are ratified by the Tristan Fisheries Department and the Island Council, after review of events during the fishing season (for example, loss of FV *Geo Searcher* and replacement with FV *Edinburgh* in 2020) and considering relevant socio-economic information (for example, effects of Covid-19 pandemic). In the most recent season, these events have caused some roll-overs of quota between years. Decisions that departed from TAC recommendations have been more conservative, following a precautionary management strategy – for example, the TAC at Tristan was set at a lower 'floor-level' of 120 tonnes for the

2016/2017 season based on empirical observations. Thereafter OMP outputs were implemented for TAC setting since. OMPs for Tristan and Nightingale were updated in 2020, and for Gough and Inaccessible they were updated in 2021. Based on this rationale, the harvest strategy is responsive to the state of the stock for each of the four UoCs individually and its elements work together towards achieving stock management objectives (**SG60 and SG80 met**).

The harvest strategy was specifically designed for this fishery (i.e. rules-based OMP per island that respond to changes in GLM standardized CPUE indices), and incorporate operational aspects such as closed seasons that match with the female egg-bearing season (May – October) and with moulting seasons. The harvest strategy design includes a fisheries independent biomass survey undertaken at the beginning of each fishing season, with the data feeding into the GLM-standardized abundance indices, and into the stock assessments undertaken every 3-4 years, on a rotational basis per island. The purposive design of the harvest strategy **meets SG100**.

b	Harvest strategy evaluation			
	Guide post	The harvest strategy is **likely** to work based on prior experience or plausible argument.	The harvest strategy may not have been fully **tested** but evidence exists that it is achieving its objectives.	The performance of the harvest strategy has been **fully evaluated** and evidence exists to show that it is achieving its objectives including being clearly able to maintain stocks at target levels.
	Met?	**Yes - all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**

Rationale

Management decisions are made for each island consistent with the defined OMPs. Forward projections of OMPs provide evidence that the harvest strategy will achieve its objectives, **meeting requirements for SG60 and SG80**. At the previous MSC reassessment (2016) it was too early to evaluate the performance of the OMPs fully, and thus SG100 could not be met at that time. Since then, regular evaluations of OMP performance combined with assessments of stock status have been key components of harvest strategy evaluation. The performance of OMPs is evaluated each 3 – 4 years, on a rotational basis per island, coupled with an assessment of stock status. OMPs have been developed and implemented at the various islands as follows: Tristan Island (commencing 2013/2014), Gough Island (commencing 2014/2015), Inaccessible Island (commencing 2014/2015) and Nightingale Island (commencing 2017/2018). Evaluations of the OMPs with improvements have since then led to at least 2 generations of OMPs for each island, with the most recent ones applied from 2020 (Tristan and Nightingale) and 2021 (Gough and Inaccessible). Stock assessments per UoC are undertaken each 2nd or 3rd year, and recent assessments (in 2020 and 2021) have confirmed a healthy stock status at each of the four islands, with Bsp/K ranging between 0.75 and 0.86. The performance of the harvest strategy is therefore evaluated regularly, and evidence exists (long-term trends in GLM standardized CPUE for each island, fluctuating around target reference points; maintained high spawning biomass) that the strategy is achieving its objectives, including being clearly able to maintain stocks at target levels (**SG100 met**).

c	Harvest strategy monitoring

	Guide post	Monitoring is in place that is expected to determine whether the harvest strategy is working.		
	Met?	**Yes – all UoAs**		
Rationale				
Commercial catch and effort is monitored continuously, with 100% observer coverage on the MFV *Edinburgh* (formerly MFV *Geo Searcher*). Catch and effort of powerboats at Tristan (UoC1) are captured in factory records as the weights landed by each boat on each day of fishing. Fisheries independent biomass surveys have been undertaken each year (with some exceptions) since 2006. Since 1997, the size composition and sex ratios of lobsters in commercial catches have been measured by observers, and since 2006, size / sex ratio data have also been collected during the fisheries independent survey undertaken each year. Monitoring of the harvest strategy is extensive (**SG60 met**).				
d	Harvest strategy review			
	Guide post			The harvest strategy is periodically reviewed and improved as necessary.
	Met?			**Yes – all UoAs**
Rationale				

There is an agreed schedule for the review of OMPs and assessments of stock status for each Island. The schedule has been adhered to, and the latest reviews with improvements were undertaken in 2020 and 2021. The Table below shows the accepted schedule of periods when OMPs are expected to be updated and reviewed (Johnston & Butterworth, 2021h). **SG100 is met for all islands.**

Year	Type	Nightingale	Tristan	Gough	Inaccessible
2017	Review	YES	YES	NO	NO
2018	Review	NO	NO	YES	YES
2019	Review	No for all islands, but commence exploring the incorporation of biomass survey indices into the OMPs			
2020	Review	YES	YES	NO	NO

2021	Review	NO	NO	YES	YES
2022	Review	NO for all islands. Update all assessments.			

e	Shark finning			
	Guide post	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.
	Met?	**N/a**	**N/a**	**N/a**
Rationale				
N/a – Lobsters are not sharks				
f	Review of alternative measures			
	Guide post	There has been a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of the target stock, and they are implemented, as appropriate.
	Met?	**Yes – all UoAs**	**Yes - all UoAs**	**No – all UoAs**
Rationale				
Unwanted catch in this fishery can be defined as undersized and egg-bearing female lobsters. Both are returned directly to the sea if captured and recorded in the logbooks. Survival rate of *Jasus* to air exposure is known to be high (Haupt et al., 2006), indicating that post capture mortality of berried females and juveniles is likely to be low. All traps are open allowing free access and retreat from the traps by the lobsters. A mesh size of 70 mm ensures the majority of juveniles can pass through. The fishery doesn't use deck grid sorters and as the lobsters are hand sorted there is minimal damage. Fishing does not take place during the main egg-bearing season in winter. These measures are included as part of the Fishery Management Plan for the fishery and therefore available for review should the situation require amendment. The Fisheries Management Plan (DFT, 2020) is a living document that is updated regularly for its management objectives and how these objectives are to be achieved. **SG60 and SG80 and are met.** There was no evidence that reviews took place every 2 years (i.e. biennial), and thus **SG100 is not met**				

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Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**95**
Condition number (if relevant)	**N/a**

7.3.4 PI 1.2.2 – Harvest control rules and tools

PI 1.2.2		There are well defined and effective harvest control rules (HCRs) in place		
Scoring Issue		SG 60	SG 80	SG 100
a	HCRs design and application			
	Guide post	**Generally understood** HCRs are in place **or available** that are **expected** to reduce the exploitation rate as the point of recruitment impairment (PRI) is approached.	**Well defined** HCRs are **in place** that **ensure** that the exploitation rate is reduced as the PRI is approached, are expected to keep the stock **fluctuating around** a target level consistent with (or above) MSY, or for key LTL species a level consistent with ecosystem needs.	The HCRs are expected to keep the stock **fluctuating at or above** a target level consistent with MSY, or another more appropriate level taking into account the ecological role of the stock, **most** of the time.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**Yes - all UoAs**
Rationale				

Harvest Control Rules (HCR) are "well-defined pre-agreed rules or actions used for determining a management action in response to changes in indicators of stock status with respect to reference points". Since the previous MSC reassessment in 2016, OMPs have gone through a period of development and refinement, and HCRs are now explicitly defined within a set of OMPs, adopted for each of the four islands, for the purpose of scientific recommendations for TACs. The latest set of OMPs for Tristan and Nightingale Islands (summarized by Johnston & Butterworth, 2020b), Inaccessible (Johnston & Butterworth, 2021d) and Gough (Johnston & Butterworth, 2021b) specify well-defined HCRs, used to recommend TACs for the 2020/21 and 2021/22 seasons (Johnston & Butterworth, 2020e; Johnston & Butterworth, 2020d; Johnston & Butterworth, 2021a; Johnston & Butterworth, 2021h) which maintain stocks fluctuating around target levels consistent with MSY (**SG60 and SG80 met**). These OMPs specify the data to be used and define how TACs are set in response to changes in a GLM standardized CPUE trend (annually updated) in relation to target and limit reference points.

Rationales support **SG100 being met** per island (i.e. HCRs expected to keep the stock fluctuating at or above a target level taking into account the ecological role of the stock, most of the time) are as follows:

Tristan

The new Tristan OMP (2020) is a target-based rule based on the recent commercial CPUE, viz.: $TACy{+}1 = TACy + \alpha\ (Jy\ rec - J\ tar)$. Improvements over OMP-2017 were that $Jyrec$ is now the average of the GLM standardized (where pertinent) CPUEs over the last three years (y-2, y-1, y), where data for three different CPUE series are incorporated in the standardized CPUE index (see below), and normalized to its average over 2010-2012; and that $J\ tar$ is the target value for this combined index, which is set = 1.0, and α = 25

Apart from the standard powerboat CPUE index that have been used previously in the TAC-setting equation, OMP-2020 now also includes the MFV *Edinburgh/Geo Searcher* CPUE and the biomass survey index at Tristan. The three indices are weighted (inverse variance) in the underlying assessments.

The % TAC change relative to the previous year is restricted to a maximum of either 5% up or 5% down.

A further rule (used since 2016) is that: If $TACy$+1 < 120t then $TACy$+1 = 120t. Thus a "floor" TAC level of 120 tons is set, BUT this is linked to an associated lower limit for the observed recent CPUE 3-yr average, below which this 120t floor level TAC is over-ruled on the basis of Exceptional Circumstances occurring. In practice, if the combined catch rate ($Jy\ rec$) drops below a threshold level (J_{lim}), the TAC may decrease more than 5%, to a maximum value of 20%, on a sliding scale depending on the value of $Jy\ rec$.

Quantitative simulation testing takes place during the development of OMPs, to ensure that their TAC recommendations will maintain the stock at or above an MSY-relevant target level for most of the time (70% SA2.5.4). **SG100 met for Tristan.**

Nightingale

OMP-2020 for Nightingale is a target-based rule based on the recent commercial CPUE, viz.: $TACy$+1 = $TACy + \alpha(Iy\ rec - I\ tar)$ where $Iy\ rec$ is the average of the GLM standardized CPUE over the last three years (y-2, y-1, y), $I\ tar$ is the CPUE target value, which has a value of 5.0, and α is a tuning parameter which is selected to have a value of 5.0. An improvement on OMP-2017 is that the GLM-standardized CPUE index in OMP-2020 is now based on both commercial CPUE and the biomass survey (previously only the commercial CPUE was used). The baseline %TAC change relative to the previous year is restricted to a maximum of 5%, up or down. A precautionary metarule rule is also incorporated into the OMP, whereby the 5% TAC decrease constraint is increased by up to 20% if the standardized CPUE index drops below a threshold (I_{lim} = 3.0 kg/trap) when "Exceptional Circumstances" would apply. Furthermore, a ceiling (upper bound) applies to the TAC: If TACy+1 > TACceiling then TACy+1 = TACceiling. The selected ceiling is 95 MT, which can only be reached if the CPUE performance at Nightingale is very positive in the future.

Quantitative simulation testing takes place during the development of OMPs, to ensure that their TAC recommendations will maintain the stock at or above an MSY-relevant target level for most of the time (70% SA2.5.4). **SG100 met for Nightingale**.

Gough

An OMP was first developed and agreed upon for Gough in 2014 and used to set the TAC at this island for the 2014-2017 fishing seasons. The Gough OMP was updated in 2018 (used for 2018-2020 seasons), and the new 2021 OMP (Johnston & Butterworth, 2021b; Johnston & Butterworth, 2021g; Johnston, 2021) was used for setting the TAC for 2021/2022 fishing season. Whereas OMP 2014 and OMP 2018 relied only on the commercial CPUE data in the GLM standardized CPUE, OMP-2021 now includes the biomass survey index as part of *Irec y* in the OMP formula, in a similar manner to that of Tristan (see above). The OMP is target-based, relying on the TAC setting formula ($TAC_{y+1} = TAC_y + \alpha(I_y^{rec} - I^{tar})$ with a rule to limit inter-seasonal variation to 5% up or down, and an Exceptional Circumstances metarule for where the 5% TAC decrease constraint could be widened to as much as 20% if the CPUE index dropped below a threshold level.

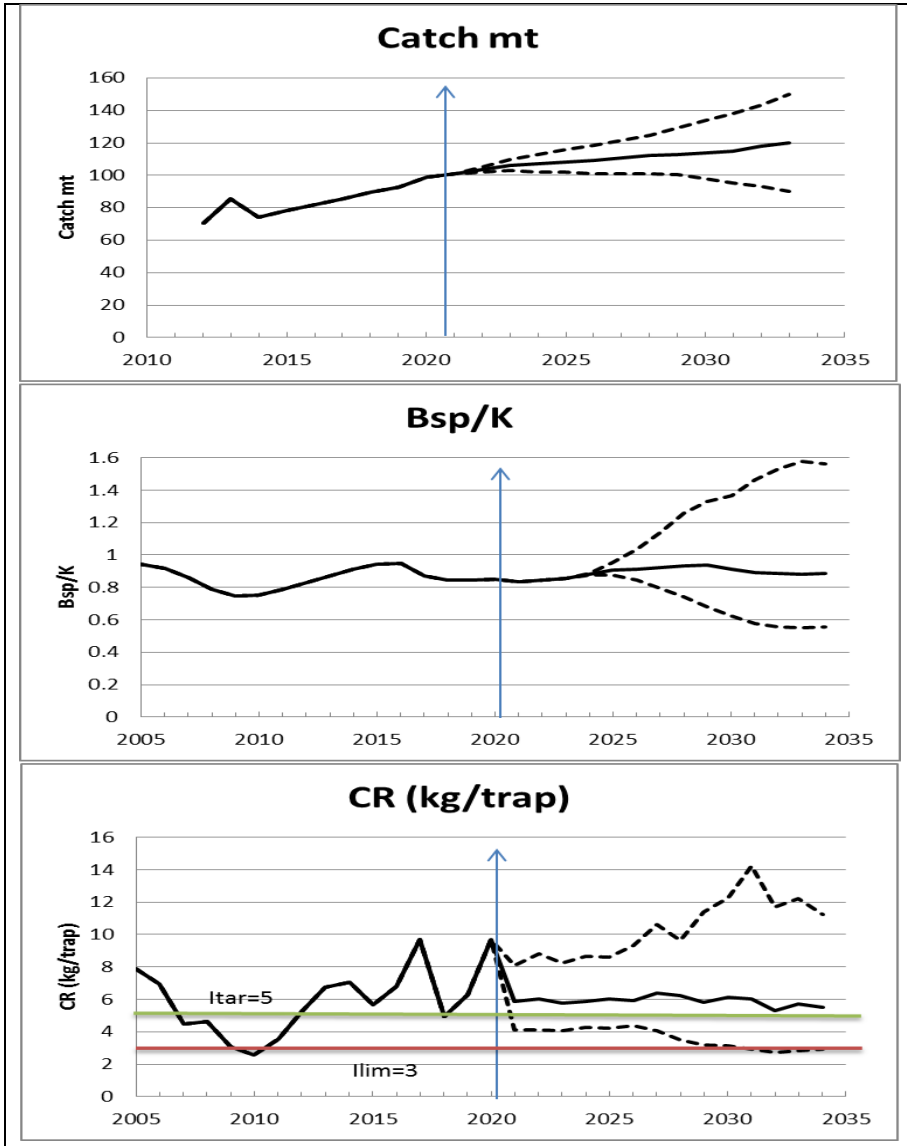
During OMP-2021 development, several Candidate OMPs (or CMPs) were tested which differed with regards to the I_{tar} level, included the updated commercial CPUE and biomass survey data as inputs, and the latest revised assessment model (2021 model taking account of 2020 CPUE, catch values and discard %). Stochastic results and sensitivity results for a range of robustness tests (Johnston & Butterworth, 2021b; Johnston & Butterworth, 2021g) showed the finally selected CMP (CMP5b, which lowers the I_{tar} to 5.5kg/trap and leaves the I_{lim} at

3.0kg/trap) to be robust to a wide range of uncertainties. Based on the quantitative simulation testing to ensure that TAC recommendations will maintain the stock at or above an MSY-relevant target level for most of the time (70% SA2.5.4), **SG100 is met for Gough**.

Inaccessible

OMP-2020 for Inaccessible is a target-based rule based on the recent commercial CPUE, viz.: $TACy{+}1 = TACy + \alpha(Iy\ rec - I\ tar)$ where $Iy\ rec$ is the average of the GLM standardized CPUE over the last three years (y-2, y-1, y), $I\ tar$ is the CPUE target value, which has a value of 5.0, and α is a tuning parameter which is selected to have a value of 5.0. An improvement on OMP-2017 is that the GLM-standardized CPUE index in OMP-2020 is now based on both commercial CPUE and the biomass survey (previously only the commercial CPUE was used) (Johnston & Butterworth 2021d). The baseline % TAC change relative to the previous year is restricted to a maximum of 5%, up or down. A precautionary metarule rule is also incorporated into the OMP, whereby the 5% TAC decrease constraint is increased by up to 20% if the standardized CPUE index drops below a threshold (I_{lim} = 3.0 kg/trap) when "Exceptional Circumstances" would apply.

Several candidate OMPs (CMPs) were trialled and the selected CMP1 (with a I_{tar} = 5.0 kg/trap) subjected to a series of 10 robustness test (The figure above shows s). Stochastic trajectories of expected catch and Bsp/K for the reference case and robustness tests indicated that CMP1 performed well, producing median Bsp (2032/K) values of at least 0.8 and above 0.5 at the lower 5% percentile). Based on the quantitative simulation testing **SG100 is met for Inaccessible.**



The figure above shows stochastic trajectories for CMP1 (I_{tar}=5) at Inaccessible Island. The solid line is the median, with the dashed lines representing the 5th and 95th percentiles.

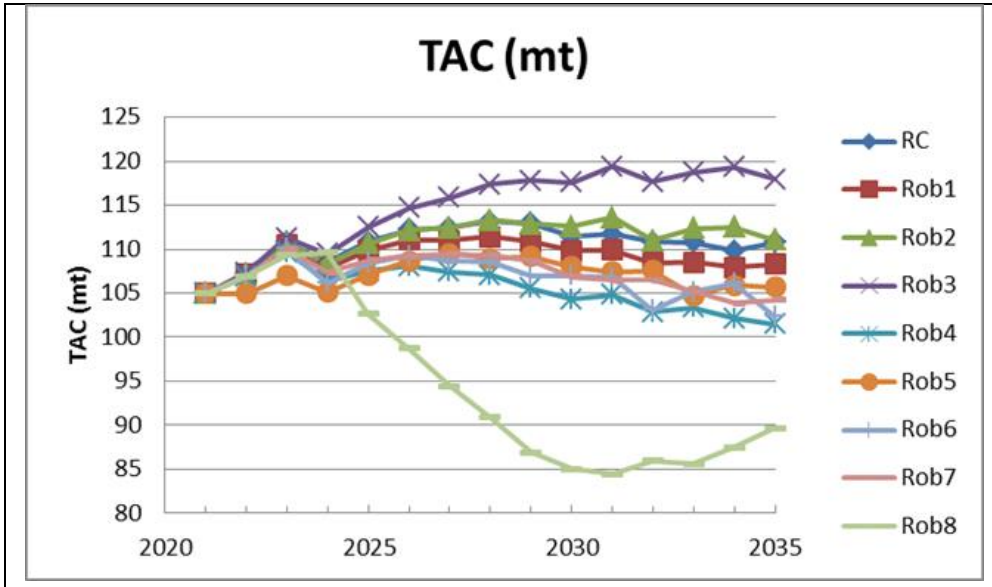
b	HCRs robustness to uncertainty			
	Guide post		The HCRs are likely to be robust to the main uncertainties.	The HCRs take account of a **wide** range of uncertainties including the ecological role of the stock, and there is **evidence** that the HCRs are robust to the main uncertainties.
	Met?		**Yes - all UoAs**	**Yes - all UoAs**
Rationale				

Harvest control rules take a wide range of uncertainties into account in several ways. Firstly, the age-based stock assessment model incorporates uncertainty in the stock dynamics that underlie fishery productivity – growth, natural mortality, discard mortality, stock-recruitment relationship, maturity – using a Bayesian approach to incorporating prior assumptions about the stock recruitment relationship, commercial and survey selectivity, and initial age structure. The assessment model is fitted to data from commercial and survey CPUE, commercial and survey catch at length, and commercial discard proportions, and uncertainty around model outcomes is then carried forward into the projections used in robustness testing of the OMPs.

The robustness testing itself explores fishery performance (TAC, catch and biomass trajectories) under alternative OMP and EC scenarios (i.e. alternative reference points and sensitivity of management to stock status in relation to these reference points). Simulation testing is used to explore departures of observations from what was expected. GLM- and GLMM-standardized CPUE values take into account seasonal, area, trap type, soak time and depth effects for log-sheet data from Inaccessible, Gough and Nightingale, seasonal effects for the trip-level powerboat data for Tristan, and most recently the overall efficiency changes as informed by the data on fishermen's names (Johnston & Butterworth, 2021i). Short-term inter-annual variability in CPUE is taken into account by the use of three-year averages of standardized values for comparison with the target reference points in the OMP, each of which is itself an average CPUE value for a period considered representative of the fully productive fishery.

In a recent robustness test that assumed that 35% of juvenile lobsters died in 2020 (due to oil from the Geo Searcher sinking at Gough; test Rob8 in Johnston & Butterworth (2021b) outputs showed that the TAC would be modified downwards relative to the Reference Case OMP (Figure below) in response to a reduction in catch rates as the smaller juvenile cohorts move through the population. Thus, the effects of uncertainty in juvenile mortality rates could be explored.

The HCRs take account of the ecological role of the lobster stock by maintaining lobster biomass at a level high enough to prevent changes in benthic food webs, or trophic imbalances or cascades. *Jasus tristani* is an opportunistic omnivore with a diet that reflects impoverished reef habitats (Blamey et al. 2019). Lobster gut contents differed among islands, depths and sizes. Kelp (*Macrocystis spp.*), sponges, bivalves and hydroids were the most common food items but gut contents also included nematodes, whelks, barnacles, polychaetes and cannibalism on other lobsters. Uncertainty regarding the effects of a soya spill at Nightingale island was addressed through a lobster gut content analysis and as sensitivity tests in OMPs.



Taken together, these analyses constitute a rigorous approach to accounting for a wide range of uncertainties in selection of HCRs. As in the previous (2016) MSC reassessment, **SG60, SG80 and SG100 are thus met for all four islands**.

c	HCRs evaluation			
	Guide post	There is **some evidence** that tools used **or available** to implement HCRs 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 HCRs.	**Evidence clearly shows** that the tools in use are effective in achieving the exploitation levels required under the HCRs.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**Yes - all UoAs**

Rationale

As discussed in detail under Guideposts a and b, the HCRs are appropriate to the task of setting exploitation levels consistent with the aims of the harvest strategy, and effective in achieving the levels required by the HCR, thus **meeting the requirements of SG60 and SG80**. Reasonable proxies of the exploitation rates based on the annually updated GLM-standardized CPUE trends provide strong evidence that HCRs are effective in achieving required exploitation levels. The OMPs and ECs have now been in place for a further 5 years (since the previous MSC

reassessment in 2016, when they were not in place for sufficient time to pass at SG100), and the team is confident that their long-term effectiveness have now been demonstrated, thus **meeting SG100 for all four islands.**
References
Johnston, S.J. & Butterworth, D.., 2021b. Extended CMP results for VAR6, VAR5.5 and Var5 for Gough island lobster. MARAM/TRISTAN/2021/JUL/13., University of Cape Town. Johnston, S.J. & Butterworth, D.., 2021g. Revised CMP results for VAR6, VAR5.5 and Var5. MARAM/TRISTAN/2021/JUL/12., University of Cape Town. Johnston, S.J. & Butterworth, D.., 2021d. Inaccessible CMP results. MARAM/TRISTAN/2021/JUL/14., University of Cape Town. Johnston, S.J. & Butterworth, D.., 2021i. Updated (and rescaled) Tristan Island GLM-standardised Jasus tristani lobster CPUE to take account of data for the 2020 season. MARAM/TRISTAN/2021/APR/02., University of Cape Town. Blamey, L.K. et al., 2019. Diet of the spiny lobster *Jasus paulensis* from the Tristan da Cunha archipelago: Comparisons between islands, depths and lobster sizes. Estuarine, Coastal and Shelf Science, (219), pp.262–272. Cross references below: (Johnston & Butterworth, 2021b; Johnston & Butterworth, 2021g;) , (Johnston & Butterworth 2021b; Johnston & Butterworth 2021g), (Johnston & Butterworth, 2021d), (Johnston & Butterworth, 2021i), (Blamey et al., 2019),

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**100**
Condition number (if relevant)	**N/a**

7.3.5 PI 1.2.3 – Information and monitoring

PI 1.2.3		Relevant information is collected to support the harvest strategy		
Scoring Issue		SG 60	SG 80	SG 100
a	Range of information			
	Guide post	**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 are available to support the harvest strategy.	A **comprehensive range** of information (on stock structure, stock productivity, fleet composition, stock abundance, UoA removals and other information such as environmental information), including some that may not be directly related to the current harvest strategy, is available.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**No – all UoAs**

Rationale

Various data are available to support the harvest strategy, such that there is a good understanding of stock structure, stock productivity, fleet composition and other aspects of stock dynamics, to the extent that **SG60 and SG80 was met** at all four islands during the previous MSC reassessment in 2016 (Gascoigne et al., 2016). Weaknesses at that time were stated as the absence of a recruitment index, monitoring of juveniles, relatively coarse resolution of catch and effort data at the outer islands, where catch and effort data of individual powerboats are not used, and high mortalities during tagging of lobsters to provide growth and productivity information.

Logbook data on catch and effort are available for Inaccessible, Gough and Nightingale, and MARAM applies generalized linear models (GLMs) to account for seasonal, area, soak time, trap type (monster and bee hive) and depth effects to standardize these data (Johnston & Butterworth 2015). GLM-standardized CPUE values are available from 1997/98 onwards for the three islands, as kg/trap, as an indicator of stock status relative to target and limit reference points. Powerboat catch and effort data for Tristan are available at a trip level since 1994, to calculate CPUE as kg/trap/hour. MARAM applies a generalized linear model (GLM) to these data to provide a standardized CPUE index for 1994/95 onwards – as a measure of stock status. The GLM-standardized CPUE series provide the basis for applying the HCR on an island-by-island basis, and the Research Plan notes that future work will attempt stratification at a smaller spatial scale. CPUE data from powerboats fishing the three outer islands and from the Edinburgh are not used, however.

Catch monitoring by observers (100% coverage, except during the Covid pandemic) involves collection of around 5,000 random samples from each island in each fishing season for stock structure (size, sex, maturity state). Discard composition is also monitored – to obtain data on size, sex, and egg-bearing composition of discarded lobsters. These data are used as input to stock assessment models, and also support biological understanding of the stock more generally.

Annual biomass surveys are undertaken before the start of the fishing season (Leg 1) at each island using the MFV *Edinburgh / Geo Searcher*). The survey has been conducted since 2006, involving 5 transects fished at Inaccessible, 8 at Gough, 4 at Nightingale and 8 at Tristan. The MFV *Edinburgh* sets 9 small mesh (50 mm) monster traps per line at selected positions and depths along transects perpendicular to the coast. The biomass survey index and catch at length data from the surveys are used as input for the assessment models. The survey indices of abundance have now been incorporated in the OMPs at all islands, together with the standardized commercial CPUE (see above).

Tagging protocols were initiated because of the Oliva incident in 2011. Tagging data are used to estimate lobster growth rates and population abundance. Currently tagging has been conducted during the 2012 - 2019 seasons, with no tagging conducted during the 2017 and 2020 seasons, the latter due to the sinking of the MFV *Geo Searcher* off Gough Island in October 2020. The tagging data that are available are also incorporated into the assessment model used in developing the OMPs. To date the following tagging has occurred at each of the islands:

Table 11. Lobster tagged at each island since 2012. Latest summary of recaptures is by Ovenstone (2021).

Island	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021
Tristan	2500	2000	2045*	2000	0	0	400	500	0
Inaccessible	2500	2000	None	2000	0	0	2500	2500	0
Nightingale	2000	2000	200	2000	0	0	2200	2100	0
Gough	5000	2000	None	2000	1000	0	2500	2500	0

*900 T-bar tags and 1045 Fish tags as part of an experiment to observe which tag was more suitable to *J tristani.*

Tagging was suspended for the 2015/2016 season, because low tag-return rates suggested a high mortality rate of tagged lobsters, resulting from tissue necrosis at the tag wound. Trials were conducted in holding tanks onboard the MFV *Geo Searcher* to gather information regarding survival and infection rates of lobster in confinement, and tag loss. Protocols to reduce necrosis were implemented. Tagging resumed in the 2018/2019 season, but was again suspended in 2020/2021 because of the loss of the MFV *Geo Searcher* and effects of Covid-19 (i.e., observer not present on board the vessel). The numbers of tag returns remained below expectations.

Small mesh traps used during annual biomass surveys provides information on recruitment of undersized cohorts into the fishery. Ad hoc studies have provided information on genetic stock structure (von der Heyden et al., 2007) – demonstrating a single genetic stock with no differentiation between islands based on mitochondrial DNA analysis; and on lobster diet which comprises of kelp (*Macrocystis* spp.), sponges, bivalves and hydroids nematodes, whelks, barnacles, polychaetes and cannibalism on other lobsters (Blamey et al., 2019). Lobster diet is opportunistic, influenced by lobster size, location, and depth of capture, and typical of impoverished reef systems – such as those at the four islands.

The range of information available at present has increased since the previous assessment in 2016, however, similar weaknesses remain than were identified in 2016. Information and monitoring is sufficient to **meet SG60 and SG80**, but **SG100 is not met** at all four islands				
b	Monitoring			
	Guide post	Stock abundance and UoA removals are monitored and **at least one indicator** is available and monitored with sufficient frequency to support the harvest control rule.	Stock abundance and UoA 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?	**Yes - all UoAs**	**Yes - all UoAs**	**Yes - all UoAs**
Rationale				
As noted above, catch monitoring is comprehensive, intensive, and regular and is supported by well designed, well sampled and regularly undertaken fishery-independent surveys. More than one indicator of stock abundance is available – i.e. GLM standardized CPUE of commercial data and biomass survey data. Uncertainty is rigorously addressed through standardization of CPUE data and the assessment model, and the robustness of assessment and management are extensively tested through forward projections. For the commercial fishery, **SG60, SG80 and SG100 are thus met** in all particulars.				
c	Comprehensiveness of information			
	Guide post		There is good information on all other fishery removals from the stock.	
	Met?		**Yes - all UoAs**	
Rationale				
IUU fishing is considered to be insignificant around Inaccessible, Nightingale and Tristan based on information provided by the concessionaire (see Table 7) but may occur infrequently around Gough. Considering the size of the EFZ and the remoteness of the islands, monitoring IUU activities has been problematic. In January 2015, the Tristan Island Fisheries Observer on board a trawler observed six different types of illegal fishing gear around the islands, but these comprised of jigging gear, gill netting and both surface and bottom long-line gear. There have been no new reported incidences of IUU activity in the Tristan EFZ since 2015.				

Some subsistence fishing for rock lobsters occurs at Tristan. Although unquantified, an upper estimate (based on the island population) is 7 MT per year. IUU and subsistence fishing are thus thought to be sufficiently understood, and small enough in quantity for the requirements of **SG80 to be met** in full for all islands
References
Ovenstone, 2021. Tristan da Cunha group of islands tagging, 2012-2021. October 2021: 81 pp, Ovenstone Agencies. Johnston, S.J. & Butterworth, D.., 2015. Updated 2015 GLMM- and GLMstandardised lobster CPUE from the Tristan da Cunha group of islands. MARAM/TRISTAN/2015/MAY/06. http://www.mth.uct.ac.za/maram/pub/2015/MARAM_Tristan_2015_MAY_06.pdf, University of Cape Town. Blamey, L.K. et al., 2019. Diet of the spiny lobster Jasus paulensis from the Tristan da Cunha archipelago: Comparisons between islands, depths and lobster sizes. Estuarine, Coastal and Shelf Science, (219), pp.262–272. Heyden, S., Groeneveld, J.C. & Matthee, C.A., 2007. Long current to nowhere? – Genetic connectivity of Jasus tristani populations in the southern Atlantic Ocean. African Journal of Marine Science, (29), pp.491–497. Cross referencing below Ovenstone (2021); Johnston & Butterworth (2015); Blamey et al. (2019); von der Heyden et al., 2007.

Draft scoring range	**≥80**	
Information gap indicator	**Information sufficient to score PI**	
Data-deficient? (Risk-Based Framework needed)	**No**	
Overall Performance Indicator scores added from Client and Peer Review Draft Report		
Overall Performance Indicator score	**90**	
Condition number (if relevant)	**N/a**	

7.3.6 PI 1.2.4 – Assessment of stock status

PI 1.2.4		There is an adequate assessment of the stock status		
Scoring Issue		SG 60	SG 80	SG 100
a	Appropriateness of assessment to stock under consideration			
	Guide post		The assessment is appropriate for the stock and for the harvest control rule.	The assessment takes into account the major features relevant to the biology of the species and the nature of the UoA.
	Met?		**Yes - all UoAs**	**No - all UoAs**
Rationale				

The outcome of the 2016 MSC reassessment was that the stock status assessments took into account the major features relevant to the biology of the species and the nature of the UoA and hence all four islands met SG100. Since 2016, sophisticated age-structured models have been applied to assess the status of lobster stocks at all four islands – with further development and improvements in assessments. The assessments are based on an age- and sex-structured population model that follows cohorts with removal of catch, natural mortality, and discard mortality. Recruitment is modelled in terms of fluctuations around expected mean recruitment from a generalized stock recruitment function relating numbers of recruits at age 0 to spawner biomass at the start of each year. Parameter estimation for this function is couched in terms of the pre-equilibrium ('virgin') female spawning biomass Ksp, and the steepness of the stock recruitment relationship which is the ratio of recruitment at 0.2 Ksp to that at virgin stock biomass.

Catch numbers at age are modelled separately for commercial and survey (Leg 1) catches, as a function of stock numbers at age, selectivity at length and annual fishing proportion (harvest rate). Numbers at length are distributed among age classes according to normal distributions around mean length at age from a von Bertalanffy growth function (VBGF). Parameters for the VBGF were derived based on observed increments for lobsters of 85 mm CL (tagging data are centred around this size), selecting an asymptotic length ($L\infty$) that produced best fits (by inspection of outputs) to the CPUE and catch at length data, and determining the growth coefficient (k) that fitted to the observed growth increment at 85 mm CL ('pivot' method). Inaccessible and Tristan are considered separately from Nightingale and Gough in terms of growth, and two different sources of data on growth were used.

Commercial selectivity at length is modelled as logistic curves changing over time. Female selectivity is assumed to be a fixed proportion of male selectivity. Survey catch at length is assumed to be time invariant, but with the same proportionality between males and females as in the commercial catch. Values of discard mortality and natural mortality are fixed rather than estimated, with some exploration of appropriate values. Population dynamics are initialized in 1990 based on an estimated fraction of virgin spawning biomass and a fixed fishing proportion (F) of 0.01 prior to 1990. Use of a fixed F prior to 1990 implies that only a relative fishing proportion trend is estimated in years since 2009.

The models (for individual islands) are fitted to the following data: GLM standardized CPUE data (accounting for season, area, soak time, depth and gear effects in log-book data per island); catch data; biomass survey index data; catch-at-length data from observers and surveys; and discard percentage. Model fitting proceeds by minimizing the total negative log-likelihood, with

likelihood contributions defined for each data component and a penalty function is applied for residuals around the stock recruitment function. In a Bayesian approach, prior distributions are defined for elements of the stock recruitment function, survey and commercial selectivity and initial age structure, but the mode of the posterior of distribution is found by the maximum of the product of the likelihood and the priors rather than by the time-consuming process of Bayesian integration (e.g. by MCMC). The above age-structured assessment models are implemented in the AD Model Builder framework, are consistent with the different sources of available data and biological information and accounts for uncertainty in a quantitative manner (see below). The fitted assessment models, for which there is extensive robustness and sensitivity testing, provide a framework for forward projection of stock biomass and CPUE under different management regimes for testing of OMPs and EC rules, and hence are fully supportive of the HCR.

The figure below shows the Gough (2021) revised reference case (RC) assessment results. The green dashed lines indicate the 2018 assessment's estimated values (Johnston & Butterworth 2021f). The assessment is appropriate for the stocks under consideration and **SG80** is met for all four islands. Use of a fixed value for fishing proportion (F) prior to 2009 – a major feature of the assessment which could have been estimated instead of fixed – prevents a score of **SG100 across all Islands.**

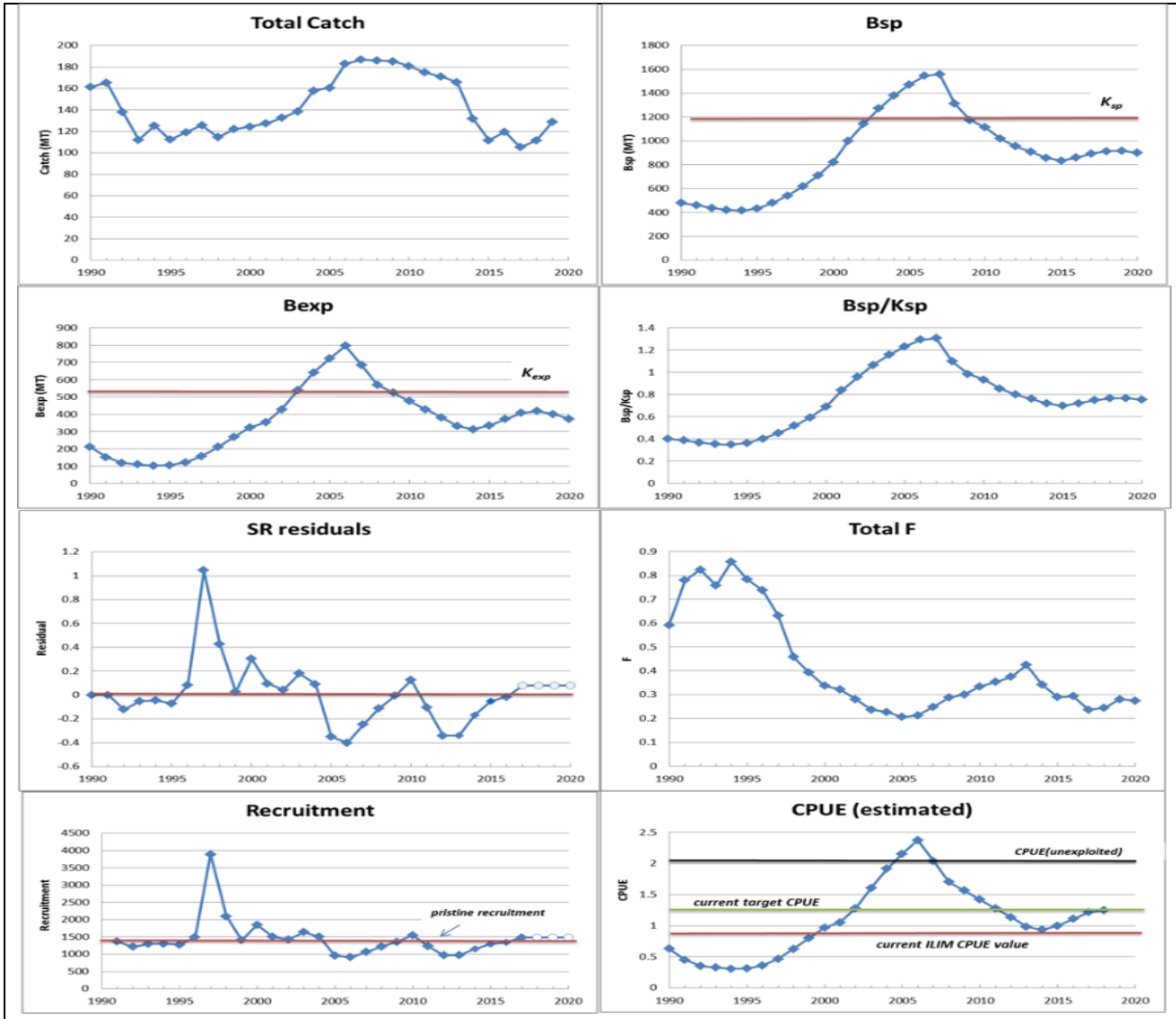
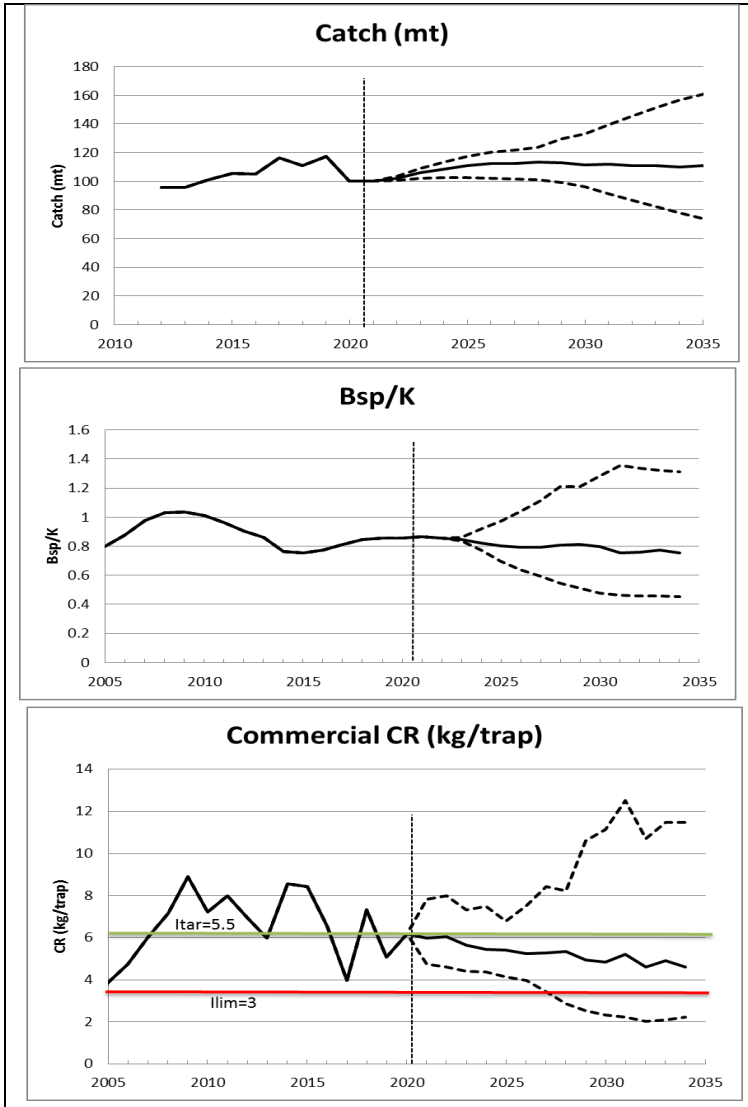


Figure 11. Gough 2021 revised reference case (RC) assessment results. The green dashed lines indicate the 2018 assessment's estimated values (Johnston & Butterworth 2021f)**.**

b	Assessment approach			
	Guide post	The assessment estimates stock status relative to generic reference points appropriate to the species category.	The assessment estimates stock status relative to reference points that are appropriate to the stock and can be estimated.	
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	
Rationale				
The stock assessment fits analytical assessment models to data described under Guidepost (a) and estimates Bsp/K (spawning biomass relative to pristine level, K) to indicate the present stock status. The pristine level (K) is therefore the implicit reference point, against which the present stock status is estimated, as a proportion. Bsp/K of all four islands were between 0.75 and 0.85 – which indicate very healthy stocks. Although no proportionate reference points are explicitly stated, the Bsp/K levels at which recruitment of lobster stocks may be affected are below 0.4. Target and limit reference points are explicitly stated in OMPs, based on GLM-standardized CPUE trends, which account for seasonal, area, soak time, depth, and gear effects in log-book data for each island. The long-term trends indicate stock status relative to explicit reference points (I_{tar} and I_{lim}) set for each island and used for management purposes. Stock status is therefore estimated relative to reference points that are appropriate for the stocks, **meeting both SG60 and SG80**.				
c	Uncertainty in the assessment			
	Guide post	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?	**Yes - all UoAs**	**Yes - all UoAs**	**Yes - all UoAs**
Rationale				
The 2016 MSC reassessment confirmed that uncertainty in the assessment was taken into account in a probabilistic way and relative to reference points, and that SG100 was met for all four islands. In the present cycle, uncertainty is taken into account in the assessment models, as an integral part of the GLM standardization of the CPUE trends, as robustness tests to during development and selection of OMPs and in setting of TACs. All possible account is made of uncertainty and of producing a model of stock and fishery dynamics that is maximally consistent with different sources of available data and knowledge of the biology of *J. tristani* (see SI a above). The fitted assessment models, for which there is extensive robustness and sensitivity testing of input parameters, provide a framework for forward projection of stock biomass and CPUE under different management regimes for testing of OMPs and EC rules. Robustness tests				

during OMP development test a range of variants (candidate OMPs) using stochastic information and sensitivity tests in forward projections of Catch, Bsp/K, catch rates and TAC (see Johnston & Butterworth (2021b; 2021d) as examples). The choice of target reference points (I_{tar}) determines which OMP variant is selected for the next 3-4-year cycle. The figures below show stochastic trajectories for an OMP variant at Gough Island for which I_{tar} of 5.5kg/trap was selected (median, 5th and 95th percentiles) and TAC projections in which robustness test 8 (Rob8) assumes 35% juvenile mortality in 2020 (potential effect of oil spilled when the Geo Searcher sank in Oct 2020). In Rob8 the OMP reduces the TAC over the period that the affected cohort progresses through the population. The different elements of the assessment are therefore subjected to a rigorous accounting of uncertainty, in a probabilistic approach, and relative to target reference points. **All SGs to SG100 are met** for all four islands.



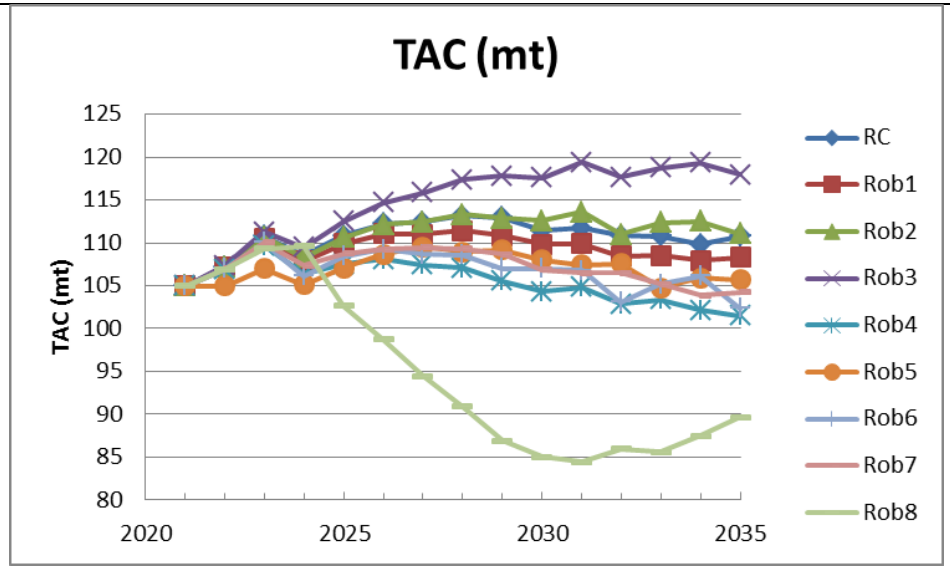


Figure 12. stochastic trajectories for an OMP variant at Gough Island for which Itar of 5.5kg/trap was selected (median, 5th and 95th percentiles) and TAC projections in which robustness test 8 (Rob8) assumes 35% juvenile mortality in 2020 (potential effect of oil spilled when the Geo Searcher sank in Oct 2020).

d	Evaluation of assessment			
	Guide post			The assessment has been tested and shown to be robust. Alternative hypotheses and assessment approaches have been rigorously explored.
	Met?			**Yes - all UoAs**
Rationale				
Alternative hypotheses and assessment approaches have been rigorously explored for all four islands (see guideposts a-c above). **SG100 is met**.				
e	Peer review of assessment			
	Guide post		The assessment of stock status is subject to peer review.	The assessment has been **internally and externally** peer reviewed.
	Met?		**Yes - all UoAs**	**Yes - all UoAs**
Rationale				
The stock assessment is subject to internal peer review within MARAM, and is reviewed also through dialogue between MARAM, Ovenstone and the Tristan Government (with support from MRAG) on a regular basis. An external peer review by the UK-based consultancy MRAG was undertaken at the request of the Tristan Government in 2013 (Edwards & Rademayer, 2013). In 2017, CEFAS (Centre for Environment, Fisheries and Aquaculture Science) undertook a review of the analysis, assessment and harvest control rules used to provide the status of the stock and TACs (CEFAS, 2017). Overall, the 2017 external review found that the assessments and procedures for testing and selecting OMPs were appropriate. Several of the recommendations from the external review were incorporated during subsequent assessments and testing of the OMP. taken up in subsequent assessment of stock status, **SG80 and SG100 are reached for all four islands.**				
References				
CEFAS, 2017. Review of: Tristan da Cunha rock lobster (Jasus tristani). Report CR049. 26 p, CEFAS, UK.				

Edwards & Rademayer, 2013. Fisheries Advice to the Tristan da Cunha Administration. Phase II: Development of a new management plan for rock lobster fisheries in the Tristan da Cunha archipelago, MRAG Ltd London. Johnston, S.J. & Butterworth, D.., 2021b. Extended CMP results for VAR6, VAR5.5 and Var5 for Gough island lobster. MARAM/TRISTAN/2021/JUL/13., University of Cape Town. Johnston, S.J. & Butterworth, D.., 2021f. Revised 2021 assessment of Jasus tristani rock lobster at Gough island. MARAM/TRISTAN/2021/JUL/11., University of Cape Town. Johnston, S.J. & Butterworth, D.., 2021d. Inaccessible CMP results. MARAM/TRISTAN/2021/JUL/14., University of Cape Town. Cross referencing below: CEFAS (2017), Edwards & Rademayer (2013), Johnston & Butterworth (2021b; 2021f; 2021d)	
Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**95**
Condition number (if relevant)	**N/a**

7.4 Principle 2

7.4.1 Designation of species under Principle 2

Under the MSC Standard, a fishery's impact on non-target species is assessed differently depending on whether a species is from a "managed" stock or not, or considered Endangered, Threatened or Protected (ETP). Non-target species in the catch are categorised as follows:

Primary species (Assessed under Performance Indicators (PIs) 2.1.1 – 2.1.3):

- Species in the catch that are not covered under P1.
- Species that are within scope of the MSC programme, i.e. no amphibians, reptiles, birds or mammals.
- Species where management tools and measures are in place, intended to achieve stock management objectives reflected in either limit (LRP) or target reference points (TRP). Primary species can therefore also be referred to as 'managed species.

Secondary species (Assessed under PIs 2.2.1 – 2.2.3):

- Species in the catch that are not covered under P1.
- Species that are not managed in accordance with limit or target reference points, i.e. do not meet the primary species criteria.
- Species that are out of scope of the programme, but where the definition of ETP species is not applicable (see below).

ETP (Endangered, Threatened or Protected) species (Assessed under PIs 2.3.1 – 2.3.3):

- Species that are recognised by national ETP legislation.
- Species listed in binding international agreements (CITES Appendix I (unless the particular stock is not endangered), and binding agreements concluded under the Convention on Migratory Species (CMS), e.g., Annex 1 of the Agreement on Conservation of Albatross (ACAP), Table 1 Column A of the African-Eurasian Migratory Waterbird Agreement (AEWA), etc.);
- Species classified as 'out-of scope' (amphibians, reptiles, birds and mammals) that are listed in the IUCN Redlist as vulnerable (VU), endangered (EN) or critically endangered (CE).

Both **primary** and **secondary** species are defined as 'main' if they meet the following criteria:

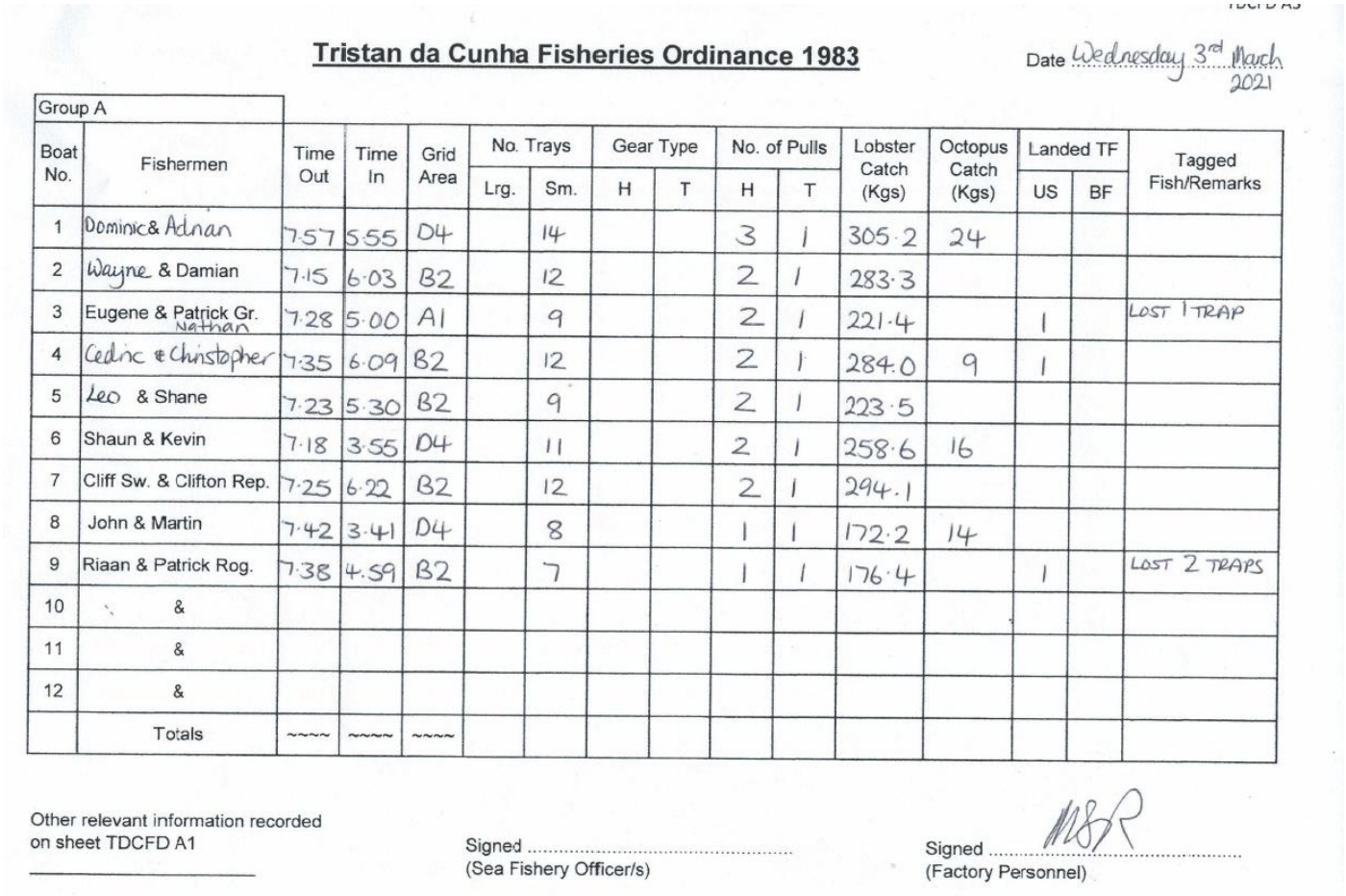
- The catch comprises 5% or more by weight of the total catch of all species by the UoC.
- The species is classified as 'less resilient' and comprises 2% or more by weight of the total catch of all species by the UoC. Less resilient is defined here as having low to medium productivity, or species for which resilience has been lowered due to anthropogenic or natural changes to its life-history.
- The species is out of scope but is not considered an ETP species (secondary species only);

In both cases teams may still designate species as 'main', even though it falls under the designated weight thresholds of 5% or 2%, as long as a plausible argument is provided as to why the species should warrant that consideration (GSA 3.4.2).

7.4.2 Data availability and adequacy

There are three sub-sectors to the UoAs under consideration in the fishery each with data supporting catch. The sectors use three types of gear: box traps, monster traps and hoop nets. Box traps are deployed from the powerboats around all four islands, hoop nets are deployed from powerboats at Tristan only (UoA 1), and monster traps are deployed from the FV *Edinburgh* at the three outer islands (not Tristan - UoA 1).

Tristan department of fisheries (TDF) provides ordinance records on all powerboat fishing activities for UoA 1 which includes octopus bycatch records and remarks (lost gear etc) which are filled out by the factory on the vessels return to the island (Figure 13). These data are transposed into a running spreadsheet of landed catches for this sector of UoA 1 (Figure 14). Discards from UoA 1 are only recorded from the FV Edinburgh and not recorded by the Tristan Island powerboat fleet due to logistical constraints.



Tristan da Cunha Fisheries Ordinance 1983

Date Wednesday 3rd March 2021

Group A

Boat No.	Fishermen	Time Out	Time In	Grid Area	No. Trays		Gear Type		No. of Pulls		Lobster Catch (Kgs)	Octopus Catch (Kgs)	Landed TF		Tagged Fish/Remarks
					Lrg.	Sm.	H	T	H	T			US	BF	
1	Dominic & Adnan	7.57	5.55	D4		14			3	1	305.2	24			
2	Wayne & Damian	7.15	6.03	B2		12			2	1	283.3				
3	Eugene & Patrick Gr. Nathan	7.28	5.00	A1		9			2	1	221.4		1		LOST 1 TRAP
4	Cedric & Christopher	7.35	6.09	B2		12			2	1	284.0	9	1		
5	Leo & Shane	7.23	5.30	B2		9			2	1	223.5				
6	Shaun & Kevin	7.18	3.55	D4		11			2	1	258.6	16			
7	Cliff Sw. & Clifton Rep.	7.25	6.22	B2		12			2	1	294.1				
8	John & Martin	7.42	3.41	D4		8			1	1	172.2	14			
9	Riaan & Patrick Rog.	7.38	4.59	B2		7			1	1	176.4		1		LOST 2 TRAPS
10	&														
11	&														
12	&														
	Totals	~~~~	~~~~	~~~~											

Other relevant information recorded on sheet TDCFD A1

Signed ..... (Sea Fishery Officer/s)

Signed ..... (Factory Personnel)

Figure 13. Example fishery ordinance record from 2021 for the Tristan powerboat fleet. Source: TFD.

Tristan powerboat cpue data												
Date	Group	Boat number		Data								
10-Aug-20	A	1										
10-Aug-20	A	2	Date	Sum of Time fished	Sum of Catch (kg)	Average of Nominal CPUE	Average of Rescaled Nominal CPUE	Sum of No. Pulls - Traps	Sum of No. Pulls - Hoopnets	Sum of Octopus Catch (kg)	Net fish landed (minus nets, tagged and berry fish)	
10-Aug-20	A	3	10-Aug-20	89.48	3463.0	1.2027	1.2931	10	23	88	3417.0	
10-Aug-20	A	5	25-Aug-20	114.43	5954.0	1.6293	1.7715	12	35.5	149	5894.0	
10-Aug-20	A	6	26-Aug-20	105.98	5111.0	1.5070	1.6345	11	31	122	5057.4	
10-Aug-20	A	7	28-Aug-20	119.33	5240.0	1.3656	1.4758	12	38	73	5184.6	
10-Aug-20	A	8		429.23	19768.0	1.4343	1.5528	45	127.5	432		
10-Aug-20	A	10	12-Sep-20	109.37	3511.3	0.9782	1.1516	12	33	58	3469.0	
10-Aug-20	A	11	19-Sep-20	115.38	4906.3	1.3275	1.5629	12	34	45	4850.1	
10-Aug-20	A	12		224.75	8417.6	1.1529	1.3573	24	67	103		
25-Aug-20	B	1	15-Oct-20	142.72	10771.0	2.3683	2.6052	12	52	54	10692.4	
25-Aug-20	B	2	17-Oct-20	143.47	8120.9	1.7687	1.9319	12	48	77	8060.4	
25-Aug-20	B	3	28-Oct-20	138.20	6911.2	1.5329	1.6671	12	40.5	80	6844.7	
25-Aug-20	B	4	29-Oct-20	119.87	7686.2	2.0021	2.1940	12	41.5	32	7620.8	
25-Aug-20	B	5		544.25	33489.3	1.9180	2.0995	48	182	243		
25-Aug-20	B	6	11-Nov-20	141.98	8082.9	1.7804	1.7545	12	45	58	8018.2	

Figure 14. Tristan powerboat recorded data for CPUE analysis. Data shows total catch (sum of Catch), bycatch of octopus and landed weight (sum of catch minus tagged and berried fish). Source: **Ovenstone Agencies.**

For the FV *Edinburgh* data, the catch data is recorded daily in a fishing logbook (Figure 15) which is signed by the observer. Both its powerboats and its own monster traps are summarised in a spreadsheet split between the powerboat and FV *Edinburgh* operations (Figure 16). Discards are monitored in the factory by the observer during fishing operations onboard. They are recorded in the spreadsheet (Figure 16) and summarised by Island and month (Figure 17). The discarded bycatch recorded on the vessel is mostly berried females and undersized lobster.

Section:	Incoming Lobster Products	EDINBURGH	Form 1 A (i)
Title:	FACTORY INCOMING LOBSTER INSPECTION REPORT AND PURGING SELECTION- SORTING AREA		OVENSTONE AGENCIES

ISLAND:		DATE:		LANDING:		WATER TEMP:	

LINE #	TIME	TANKED	TAILED	SMALLS	BERRY	5 Fingers	Jacks	Whelk	Other	Specify	COMMENTS	Corrective Action
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
TOTAL												

INSPECTED BY:		PRINT NAME:		DATE:	
OPERATIONAL SUPERVISOR:		PRINT NAME:		DATE:	

DATE OF LAST ISSUE:	New	Date reviewed:	New	Authorised by:	Compiled by:
DATE OF THIS ISSUE:	AUGUST 2021	Page no:	3.2	D Venn	E Mac Kenzie

Figure 15. *FV Edinburgh* reporting form. Source Ovenstone Agencies.

Vessel ID	Trip No.	Shoot date	No	Trap Type	Shoot time	traps sh	Lat_deg	t_M	S_N	Long_Deg	ng_M	E_W	Start depth	End depth	Heading	Haul_Date	Haul_ime	Traps hauled	Retained_kg	Discard_kg	Island	Grid_No
G	22	10-Sep-20	1	M	18:50	20	37	24	S	12	29.4	W	33	32	135	11-Sep-20	10:10	20	327	39	N	B3
G	22	10-Sep-20	2	M	18:55	20	37	24	S	12	29.1	W	21	12	125	11-Sep-20	09:10	20	335	46	N	C3
G	22	10-Sep-20	3	M	19:05	20	37	24	S	12	29	W	24	29	115	11-Sep-20	09:50	20	247	45	N	B4
G	22	10-Sep-20	4	M	19:10	20	37	24	S	12	28.5	W	36	25	155	11-Sep-20	08:45	20	284	56	N	C4
G	22	10-Sep-20	5	M	19:15	20	37	24	S	12	27.9	W	35	37	115	11-Sep-20	08:20	19	148	37	N	C5
G	22	10-Sep-20	6	M	19:25	20	37	25	S	12	28.2	W	19	20	165	11-Sep-20	07:15	20	134	16	N	C4
G	22	10-Sep-20	7	M	19:30	20	37	25	S	12	28	W	12	21	160	11-Sep-20	07:25	20	256	42	N	D5
G	22	10-Sep-20	8	M	19:35	20	37	25	S	12	27.6	W	28	26	345	11-Sep-20	07:40	19	256	55	N	D5
G	22	10-Sep-20	9	M	19:45	20	37	26	S	12	27.9	W	28	33	150	11-Sep-20	14:05	20	420	21	N	D5
G	22	10-Sep-20	10	M	19:55	20	37	26	S	12	28	W	43	40	255	11-Sep-20	13:35	20	505	16	N	E5
G	22	10-Sep-20	11	M	20:00	20	37	26	S	12	28.8	W	27	30	265	11-Sep-20	13:10	20	218	56	N	E4
G	22	10-Sep-20	12	M	20:05	20	37	26	S	12	29.4	W	25	31	295	11-Sep-20	12:15	20	212	49	N	E3
G	22	10-Sep-20	13	M	20:15	20	37	26	S	12	29.9	W	32	27	340	11-Sep-20	11:50	20	237	45	N	D3
G	22	10-Sep-20	14	M	20:20	20	37	25	S	12	29.9	W	23	24	10	11-Sep-20	11:15	20	448	105	N	D3
G	22	10-Sep-20	15	M	20:25	20	37	25	S	12	29.5	W	31	34	350	11-Sep-20	10:45	20	234	80	N	C3
G	22	10-Sep-20	16	M	20:55	20	37	27	S	12	29.3	W	39	35	85	11-Sep-20	12:45	20	348	37	N	E3
G	22	10-Sep-20	17	M	21:10	20	37	26	S	12	27.4	W	34	37	0	11-Sep-20	14:30	20	330	56	N	E5
G	22	11-Sep-20	1	M	07:35	20	37	25	S	12	28	W	13	22	0	12-Sep-20	07:15	20	84	30	N	D4
G	22	11-Sep-20	2	M	07:55	20	37	25	S	12	27.8	W	21	24	350	12-Sep-20	07:30	20	200	26	N	D5
G	22	11-Sep-20	3	M	08:40	20	37	24	S	12	27.8	W	38	32	290	12-Sep-20	14:25	20	133	15	N	C5
G	22	11-Sep-20	4	M	09:00	20	37	24	S	12	28.4	W	21	16	305	12-Sep-20	14:00	20	296	10	N	C4
G	22	11-Sep-20	5	M	09:40	20	37	24	S	12	28.7	W	16	24	290	12-Sep-20	13:40	20	214	22	N	C4
G	22	11-Sep-20	6	M	10:05	20	37	24	S	12	28.9	W	27	28	300	12-Sep-20	13:20	20	145	14	N	B4
G	22	11-Sep-20	7	M	10:30	20	37	24	S	12	30.2	W	70	45	20	12-Sep-20	12:25	19	41	7	N	B2
G	22	11-Sep-20	8	M	11:05	20	37	25	S	12	29.4	W	28	27	160	12-Sep-20	11:50	20	112	26	N	C3
G	22	11-Sep-20	9	M	11:30	20	37	25	S	12	29.8	W	20	25	40	12-Sep-20	11:20	20	316	15	N	D3
G	22	11-Sep-20	10	M	12:00	20	37	26	S	12	29.9	W	23	15	155	12-Sep-20	10:45	20	455	21	N	D3
G	22	11-Sep-20	11	M	12:35	20	37	26	S	12	29.5	W	18	17	115	12-Sep-20	10:15	20	241	30	N	E3
G	22	11-Sep-20	12	M	13:00	20	37	27	S	12	29.2	W	40	38	75	12-Sep-20	09:50	20	165	30	N	E3
G	22	11-Sep-20	13	M	13:30	20	37	26	S	12	28.9	W	27	18	85	12-Sep-20	09:30	20	221	42	N	E4
G	22	11-Sep-20	14	M	13:55	20	37	26	S	12	28.6	W	35	42	85	12-Sep-20	09:05	20	230	26	N	E4
G	22	11-Sep-20	15	M	14:20	20	37	26	S	12	27.7	W	32	27	335	12-Sep-20	08:15	20	122	34	N	E5
G	22	11-Sep-20	16	M	14:45	20	37	26	S	12	27.4	W	32	53	185	12-Sep-20	07:55	20	204	79	N	E5
G	22	11-Sep-20	17	M	15:00	20	37	27	S	12	27.9	W	87	39	55	12-Sep-20	08:40	20	265	54	N	E5
G	22	12-Sep-20	1	M	07:45	20	37	25	S	12	27.4	W	39	57	145	13-Sep-20	14:20	20	70	5	N	C5
G	22	12-Sep-20	2	M	08:10	20	37	26	S	12	27.5	W	33	32	350	13-Sep-20	12:50	20	203	25	N	E5

Vessel 2020.2021 | Powerboat 2020.2021 | TACs 2020.2021 | Inaccessible | Inaccessible PB | Inaccessible discard Sept | Inaccessible discard Oct | Inaccessible discard Nov | Inaccessible discard Jan ...

Figure 16. Example of FV *Edinburgh* (and FV *Geo Searcher*) raw data records. This record includes positional and depth information, catch composition data (including discard weight), octopus catches and time date stamps. Source: **Ovenstone Agencies.**

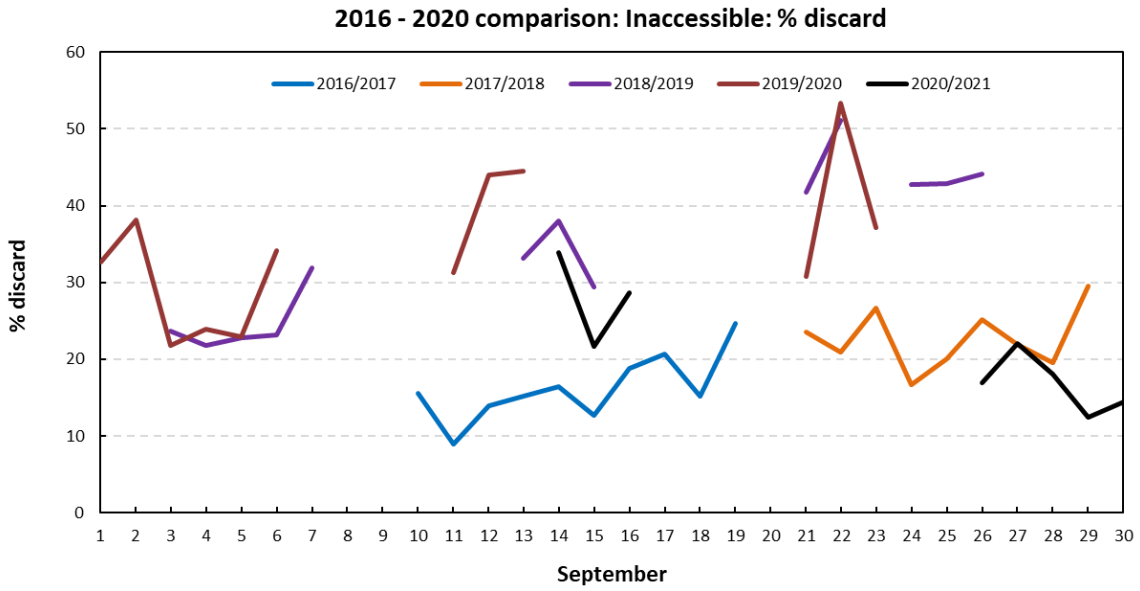


Figure 17. Discard percentage of undersize lobster at Inaccessible Island between 2016-2020. Source **Ovenstone Agencies.**

7.4.3 Observers

It is the Tristan Fisheries Department policy to try and maintain a 100% Sea Fishery Observer coverage on all vessels licenced to fish within Tristan's EEZ. However, in 2020 due to Covid there was no observer coverage onboard the FV *Geo Searcher* from the 10th September 2020 (when the new fishing season began) to the 7th October 2020.

The 2019-2020 observer report contained the following information (Tristan, 2020b).

The lobster vessel Geo Searcher operated 12-17 longlines, each with 20 monster traps and four powerboats. During the 2019/20 fishing season the Geo Searcher made three trips, catching the full TAC at Gough, Nightingale and Inaccessible. However, for the third trip no Sea Fishery Observers were present onboard due to Covid 19.

On all occasions when a Sea Fishery Observer was present onboard, they also carried out the duties of a Sea Fishery Officer. At the start of the season before commercial fishing begins, a fisheries independent biomass survey is carried out around all of the islands. At this time, several Sea Fishery Observers join the vessel to help with the extra work.

During the 2019/20 fishing season a total of 33,637 commercial size composition samples were collected.

Objectives of a Sea Fishery Observer remains as per Jones et al. (2019):

- To check compliance with all rules, regulations and license conditions as set out by the Tristan da Cunha Government / Tristan da Cunha Fisheries Department.
- To check the accuracy of catch records, processing records, etc.
- To collect / record any samples or data as requested by the Tristan da Cunha Government or Tristan da Cunha Fisheries Department.
- Observe fishing procedures and check that all is carried out according to the fishing regulations.
- Check that any undersize or berry lobster landed are not processed.
- To collect 500+ random carapace length samples a day (with the aim to collect +-5000 samples from each of the 4 islands within the season).
- To tag lobsters and collect any other samples or data as required by the Tristan Fisheries department.
- Carry out the Fisheries Independent Biomass Surveys around the Tristan group of islands.
- Record all bird interactions with the vessel and ensure that at night all lights are extinguished.
- Record any illegal or suspicious fishing vessels in the area.
- Ensure no plastics / rubbish are discarded or burnt at sea.

7.4.4 Primary and secondary species

The only significant bycatch from the fishery is octopus (*O. vulgaris,* & *O. magnificus*) which comprises of > 5% of the catch per annum in two of the four UoAs (

Table 9). The octopus catch for the last five seasons is summarised in Table 9. The Fishery Management Plan (FMP) for 2020 notes that most of the octopus bycatch was landed by the FV *Geo Searcher*/FV *Edinburgh*, with the Tristan island fleet only landing a small portion. The different fishing practices and gear types of the FV *Edinburgh* provide a possible reason for the higher catches of octopus. Gear is set by the FV *Edinburgh* and left to soak for 24 hours, whilst the Tristan island fleet set gear for approximately 10 hours per day only (DFT 2020). The FV *Edinburgh* is able to access deeper waters (DFT 2020) also which may influence octopus catchability. Finally, octopus is more often caught during the winter months when catches of lobster are low, and fishing effort by the Tristan powerboats is limited. In 2020 catches of octopus show increased landings due to the fishery operating later in the season than usual, a result of the loss of the FV Geo Searcher (Table 9).

Table 9. Octopus catches by UoA between 2016 and 2021 in Kg and as percentage of total catch (landed weight plus discards estimated at 10%). Catches over 5% in bold as octopus is considered main.

FISHING SEASON	TRISTAN	GOUGH	NIGHTINGALE	INACCESSIBLE	TRISTAN	GOUGH	NIGHTINGALE	INACCESSIBLE
	Landed weight (kg)				% catch			
2016/2017	4,544	8,082	1,732	8,555	3.5	**7.0**	2.1	**9.5**
2017/2018	3,072	4,120	438	2,640	2.7	3.2	0.5	2.8
2018/2019	3,491	1,787	1,759	6,126	2.8	1.5	1.9	**6.2**
2019/2020	2,758	4,095	1,810	3,472	1.9	3.2	1.9	3.4
2020/2021	2,793	4,779	6,050	7,650	2.1	**5.4**	**6.2**	**7.0**

Barrett & Laptikhovsky (2021) describes the first octopus species as morphologically and ecologically very similar to the common octopus (*Octopus vulgaris*); so called *O. vulgaris* type III. The second is the southern giant octopus (*Enteroctopus magnificus*). Both species also occur around southern Africa from Namibia to Durban so have nearly identical ranges. *E. magnificus* is also recorded on seamounts within Tristan's Exclusive Economic Zone (EEZ) (Barrett & Laptikhovsky 2021). The octopus species (*Octopus vulgaris* and *Enteroctopus (Octopus) magnificus*) are not managed via a stock assessment nor stock management objectives related to any reference points therefore it must be considered a secondary species. There is no known biologically based limit for the octopus stocks and therefore the Risk Based Framework (RBF) must be used to assess their status (see Section 0). The Barrett & Laptikhovsky (2021) report describes a similar approach to the RBF in their report and this is used to guide the scores of the MSC process. The Barrett & Laptikhovsky (2021) approach is shown in Appendix 8.4 Stakeholder Input along with the other stakeholder input.

Beyond the catches of octopus minor catches of discards remain in line with those identified in the last certification report (Gascoigne et al. 2016) and without any significant change in fishing practice or location remain relevant. The results of a 2013 report "Tristan Rock Lobster (*J tristani*) fishery bycatch: Initial Report (2013)," by Latham cited in the 2020 FMP (DFT 2020) remains the key document. The fishery discards are updated in the 2020 FMP and these discards which comprise <5% of the catch consist of the following species:

- *Argobuccinium tristanensis* (Tristan Whelk)
- *Nemadactylus monodactylus* (Five Finger)
- *Sebastes capensis* (False Jacopever)
- *Helicolenus mouchezi* (Soldier)
- *Bassanago neilseni* (Hairy Conger)
- *Henrica Sp.* (Starfish)

Five finger is the most abundant of these and they are known predators of rock lobster. There is anecdotal evidence of increasing biomass of this species around Tristan (DFT, 2020). This is thought to be the reduction of its use as bait in Tristan fisheries (J. Glass pers comm.)

7.4.5 Bait

The main bait used in the traps are MSC certified South African hake heads. The bait tally varies annually. A general estimate is the following: 30 tons utilised by the Tristan Island powerboats, and 100 tons (three fishing trips) for the vessel (FV *Edinburgh*). The island fishermen occasionally substitute a small percentage of five finger *Nemadactylus monodactylus* into their nets when they catch them accidentally in their gear (DFT, 2020). As per the MSC interpretation on bait '*… if bait is purchased from a processing plant, such as fish heads and backbones, no specific assessment is required.*' [1]. In this fishery then the hake heads are therefore not considered further in the scoring of this assessment under Primary and Secondary species and because they are derived from the South Atlantic ecosystem are not considered as having any adverse influence on the ecosystem around Tristan. For five finger they do not reach the 5% threshold for main species or (2% for less resilient species) and therefore are considered a secondary minor species.

[1] https://mscportal.force.com/interpret/s/article/Assigning-bait-category-in-FCR-v2-0-plus-RBF-and-cumulative-considerations-FCR-v2-0-SA-3-1-7-SA-3-4-2-GSA-3-4-2-1527262006141

7.4.6 ETP species

The initial two certifications of this fishery concluded that birds were the only ETP group interacting with the fishery, and no information provided during this assessment has changed that view. Marine mammals such as whales, dolphins and seals are present in the waters around the islands (Caselle et al., 2017) and can be in considerable numbers. For instance the subantarctic fur seal (*Arctocephalus tropicalis*) hauls out on the islands and numbers have remained stable over multiple decades (Caselle et al., 2017). There however remains no indication of any interaction between this species and the fishery based on observer information, the Tristan government (J. Glass pers. Comm.) or logbook records.

Seabirds remain the principal species group of concern in the fishery for ETP species from their interaction with the main vessel fishing vessel (FV *Edinburgh*/ FV *Geo Searcher*). The interactions of seabirds with the vessel tends to occur in a small number of events (one or a handful per year) when the vessel is forced to turn on the deck lights at night, usually when the vessel has to move the anchor which can't be avoided and for which lights are needed (Ryan et al., 2021; Glass & Ryan, 2013). According to the latest available data bird strikes occurred on 13% of fishing nights between 2013 and 2021 with mortality from those strikes at 4% (Ryan et al., 2021). Bird interactions with the vessel do not typically occur during normal fishing operations. Because the interactions occur at night and priority is given to handling the birds correctly to avoid mortality, identification to species is not always confirmed. Ryan et al. (2021) confirms that the principal species involved are mainly prions *Pachyptila spp*. and storm petrels of family *Oceanitidae*. Better data are now available on interactions of the FV *Edinburgh* with birds, due to Condition 2 on the initial certification (see MEP, 2011). These data are summarised annually in the audit reports and a paper was published (Glass & Ryan, 2013) on the initial results. This has now been updated for the 2021 paper (Ryan et al., 2021). Bird interaction numbers are available for the fishery from 2013 onwards are shown in Table 11 and are reported within Ryan et al. (2021). Condition of birds has been recorded also allowing mortality events to be considered (Table 12).

In total, there are eight confirmed species which interact with the vessel and their conservation status is shown in Table 13. The majority of interactions occurred at Inaccessible (Table 11). There was a total of 70 confirmed bird mortalities over this eight-year period representing an average percentage mortality across all species of 2.8%. Post-release mortality rates (unobserved mortality) are not known directly from the UoA, but birds are handled carefully and dried out if water-logged and observer data includes condition / fate information ratings ranked at five levels as summarised in Table 10. This confirms that from 199 interaction events only 13% resulted in any direct mortality and > 50% resulted in the sea birds being released in healthy (A1) or minor injury (A2) condition. Due to the fate codes being attributed at the incident level (a single bird interaction or 50 birds interacting are both a single occurrence) the proportion of mortality occurrences should be qualified against the overall rate of mortality which averages 2.8% across all species. Ryan et al. (2021) using a slightly different analysis concluded that mortality was 4%.

Table 10. Bird interactions outcome with fate / condition code from interaction. Total number of occurrences = 199. Note an occurrence may include multiple birds and therefore the fate code describes the overall outcome of the incident not individual outcomes.

Fate code	Number of occurrences
AO =Alive condition not determined	52 (26%)
A1= Alive in healthy condition	100 (50%)
A2= Alive with minor injuries	14 (7%)
A3= Alive with life threatening injuries not likely to survive	0
D = dead	26 (13%)
Unknown / not recorded	8 (4%)

Table 11. Summary table of interaction events from the UoAs of seabirds between 2013 and 2021. Source: J. Glass - Tristan da Cunha's Director of Fisheries.

Year	Island	White bellied storm petrel	White faced storm petrel	Diving petrel	Atlantic petrel	Soft plumaged petrel	Little shearwater	Prions	Cape petrel	Unidentified
2013	Gough	1	0	0	0	0	1	2	0	5
2013	Inaccessible	12	0	0	7	0	0	41	3	0
2013	Nightingale	0	0	0	0	0	0	3	0	0
2014	Gough	6	0	0	0	0	0	0	0	0
2014	Inaccessible	22	63	12	0	36	8	27	0	213
2014	Nightingale	21	36	0	12	31	8	27	0	13
2014	Unknown	0	0	0	0	0	0	1	0	0
2015	Gough	16	0	0	0	0	0	20	0	3
2015	Inaccessible	11	7	6	10	0	0	14	0	1
2016	Gough	0	3	0	0	0	1	3	0	0
2016	Inaccessible	3	5	0	0	0	0	4	0	0
2017	Gough	118	5	0	0	0	4	76	0	1
2017	Inaccessible	98	11	0	1	0	12	16	0	0
2017	Nightingale	13	7	0	0	0	10	0	0	0
2018	Gough	6	5	0	0	0	3	8	0	0
2018	Inaccessible	2	20	0	9	1	13	12	0	0

Year	Island	White bellied storm petrel	White faced storm petrel	Diving petrel	Atlantic petrel	Soft plumaged petrel	Little shearwater	Prions	Cape petrel	Unidentified
2018	Nightingale	0	0	0	3	0	0	0	0	0
2019	Gough	16	11	0	0	0	4	12	0	0
2019	Inaccessible	24	43	0	2	0	26	13	0	14
2019	Nightingale	4	0	0	0	0	1	180	0	15
2020	Inaccessible	0	0	0	0	0	0	0	0	153
2021	Gough	0	2	0	1	0	0	2	0	0
2021	Inaccessible	12	0	0	3	0	24	7	0	0
2021	Nightingale	19	3	0	0	0	18	27	0	7
Total		404	221	18	48	68	133	495	3	425
% total interactions across species		22.3	12.2	1.0	2.6	3.7	7.3	27.3	0.2	23.4

Table 12. Summary table of mortality events from the UoAs of seabirds between 2013 and 2021. Notes: There were no mortality events in some years (2013, 2014), 2021 season is only partial in year data. The notes column indicates circumstances of the mortality event if recorded. The final row is the % mortality of total interactions, dividing the total number of interactions by total mortality of species * 100. Source: J. Glass - Tristan da Cunha's Director of Fisheries.

Year	Island	White bellied storm petrel	White faced storm petrel	Diving petrel	Atlantic petrel	Soft plumaged petrel	Little shearwater	prions	Cape petrel	unidentified	Total Mortality	notes
2015	Gough	2	0	0	0	0	0	2	0	1	5	
2015	Inaccessible	0	0	0	3	0	0	4	0	0	7	
2016	Gough	0	0	0	0	0	0	1	0	0	1	Adverse weather conditions
2017	Gough	3	0	0	0	0	2	0	0	0	5	
2017	Inaccessible	1	0	0	0	0	2	0	0	0	3	Deteriorating weather conditions. Overcast, rain.
2018	Gough	1	0	0	0	0	0	2	0	0	3	
2018	Inaccessible	0	0	0	0	0	3	7	0	0	10	Deteriorating weather conditions. Overcast, raining
2019	Gough	4	3	0	0	0	0	4	0	0	11	Overcast / raining at night
2019	Inaccessible	1	0	0	0	0	0	0	0	0	1	
2019	Nightingale	0	0	0	0	0	0	3	0	2	5	Due to recovering Power Boats at 21:00 hours, ship's lights on, overcast, strong wind and raining.
2020	Inaccessible	0	0	0	0	0	0	0	0	7	7	Due to deteriorated weather conditions, heavy rain and overcast, 146 birds landed on board, of these 7 dead, all recorded by observer Warren Glass.
2021	Nightingale	3	0	0	0	0	0	4	0	5	12	Two Separate incidences 1. Overcast and heavy rain throughout the day and night

Year	Island	White bellied storm petrel	White faced storm petrel	Diving petrel	Atlantic petrel	Soft plumaged petrel	Little shearwater	prions	Cape petrel	unidentified	Total Mortality	notes
												2. Vessel dropping anchor and recovering Power Boats in the darkness, ship's deck lights on, overcast and raining.
Total mortality of species		15	3	0	3	0	7	27	0	15	70	
% total mortality by species		21.4	4.3	0	4.3	0	10	38.6	0	21.4		
% mortality of total interactions		3.7	1.4	0.0	6.3	0.0	5.3	5.5	0.0	3.5		Average percentage mortality across all species = 2.8%

Table 13. Species name, population status and notes on threats for all ETP birds identified in Table 11. Source: https://www.iucnredlist.org/

Name	Species	Status	Population	Notes
White bellied storm petrel	*Fregetta grallaria*	IUCN Least Concern - but decreasing trend	Brooke (2004) estimated the global population to number around 300,000 individuals	Last assessed 2018 - Pan global population key threat is considered invasive species (rodents on islands)
White faced storm petrel	*Pelagodroma marina*	IUCN Least Concern - but decreasing trend	The population size is extremely large, and hence does not approach the thresholds for Vulnerable under the population size criterion. Brooke (2004) estimated the global population to number at least 4,000,000 individuals.	Last assessed 2018 - Pan global population key threat is considered Garbage and solid waste
Diving petrel	*Pelecanoides urinatrix*	IUCN Least Concern	Brooke (2004) estimated the global population to exceed 16,000,000 individuals.	Last assessed 2018 - populations present in all oceans but restricted distributions around coastlines and islands. Tristan Islands known breeding site.

Name	Species	Status	Population	Notes
Atlantic petrel	*Pterodroma incerta*	IUCN Endangered	1,800,000	Last assessed 2019 - Tristan Islands known breeding site. Present across the southern Atlantic. Threats include - invasive species and hunting.
Soft plumaged petrel	*Pterodroma mollis*	IUCN Least Concern	The population size is extremely large, and hence does not approach the thresholds for Vulnerable under the population size criterion (<10,000 mature individuals with a continuing decline estimated to be >10% in ten years or three generations, or with a specified population structure). For these reasons the species is evaluated as Least Concern.	Last assessed 2018 - population resident from West Atlantic though to New Zealand. Absent in the Pacific. Key threat is considered invasive species (rodents on islands). Breeding population in Tristan
Little shearwater	*Puffinus assimilis*	IUCN Least Concern	100,000-499,999	Last assessed 2018 - threats are predation often from invasive mammals.
Prions	*Pachyptila vittata*	IUCN Least Concern - but decreasing trend	Brooke (2004) estimated the global population to exceed 15,000,000 individuals.	Last assessed 2018
Cape petrel	*Daption capense*	IUCN Least Concern	Brooke (2004) estimated the global population to exceed 2,000,000 individuals.	Last assessed 2018 - threats are predation often from invasive mammals.

7.4.7 ETP measures

ETP measures in place for birds on the FV Edinburgh includes directions to crew to close all portholes after dark and turn off all unnecessary lights, as night-time strike is the principal source of interaction. Compliance with this is checked by the observer onboard. A laminated sheet of instructions (Figure 18) has been completed and is held on the FV Edinburgh describing how to handle the birds that come onboard the vessel. If wet birds are found onboard, they are to be put into separate boxes by species until dry, and only to be released after dark the next night or when dry but not during daylight, particularly if it is a prion. All interactions with birds are recorded on the bird recording sheet, which is kept by the chief officer and cross referenced by the observer at the end of the trip.

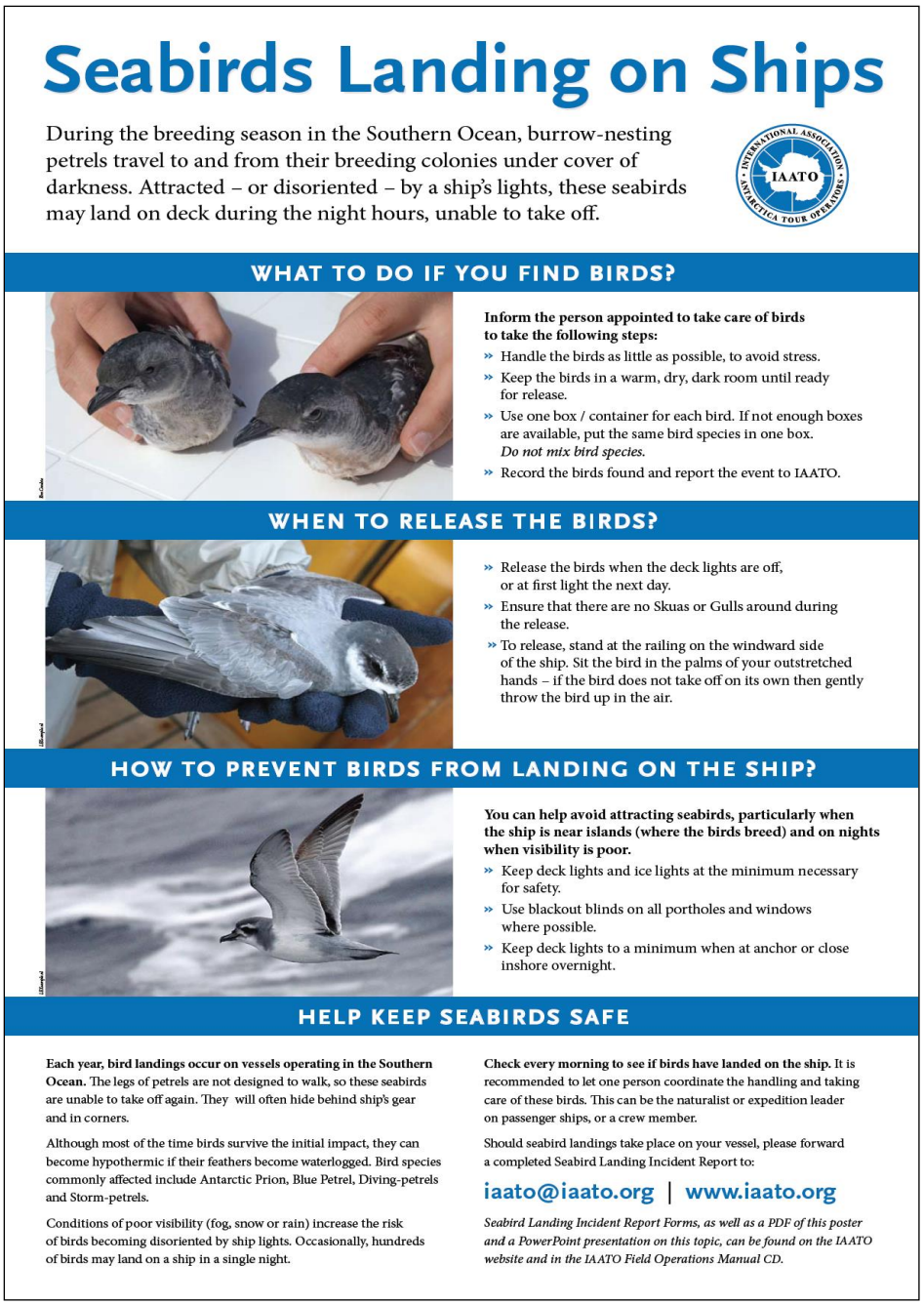


Figure 18. The bird handling protocol used in the fishery is based on a protocol developed by the International Association of Antarctic Tour Operators IAATO. Source: IAATO.

For the 2021 season Birdlife South Africa have sent the *FV Edinburgh* bird handling posters which will be placed in prominent positions onboard (Figure 19). BirdLife also presented a PowerPoint to the Bridge officer on bird identification. New measures being considered from 2021 if that the chief mate of the FV *Edinburgh* will take photos of the birds encountered as a method of recording species and condition. Recent communication with Birdlife SA recommends numerous photos to be taken, to enable ease of identification, especially feet for diving petrels and colouration on tail feathers (J. Nelson pers.comm.). In conjunction with Peter Ryan an ornithologist at the FitzPatrick Institute at the University of Cape Town there is consideration being given to freezing dead seabirds which have been impacted by the vessel and returning these to South Africa. At present customs clearance is yet to be cleared for this activity and it not a current practice.

Figure 19. Bird life South Africa poster, presented to the *FV Edinburgh* for the 2021 season.

7.4.8 Habitats

The MSC FCR v2.01 requires habitats interacting with the fishery to be defined as 'commonly-encountered', 'VME' or 'minor', with definitions as given inTable 14.

Table 14. Habitat definitions as per the MSC Fisheries Certification Requirements v2.01.

FCR reference	Definition
SA3.13.3.1	A commonly encountered habitat shall be defined as a habitat that regularly comes into contact with a gear used by the UoA, considering the spatial (geographical) overlap of fishing effort with the habitat's range within the management area(s) covered by the governance body(s) relevant to the UoA.
SA3.13.3.2	A Vulnerable Marine Ecosystem (VME) shall be defined as is done in paragraph 42 subparagraphs (i)-(v) of the FAO Guidelines (definition provided in GSA3.13.3.2). This definition shall be applied both inside and outside EEZs and irrespective of depth.
GSA3.13.3.2	VMEs have one or more of the following characteristics, as defined in paragraph 42 of the FAO Guidelines: Uniqueness or rarity – an area or ecosystem that is unique or that contains rare species whose loss could not be compensated for by similar areas or ecosystems Functional significance of the habitat – discrete areas or habitats that are necessary for survival, function, spawning/ reproduction, or recovery of fish stocks; for particular life-history stages (e.g., nursery grounds, rearing areas); or for ETP species Fragility – an ecosystem that is highly susceptible to degradation by anthropogenic activities Life-history traits of component species that make recovery difficult – ecosystems that are characterised by populations or assemblages of species that are slow growing, are slow maturing, have low or unpredictable recruitment, and/or are long lived Structural complexity – an ecosystem that is characterised by complex physical structures created by significant concentrations of biotic and abiotic features
N/a	Minor habitats are those that do not meet the above definitions.

The MSC Principles and Criteria require that fisheries do not cause serious or irreversible harm to habitat structure and function. When assessing the status of habitats and the impacts of fishing, teams are required to consider the full area managed by the local, regional, national, or international governance body(s) responsible for fisheries management in the area(s) where the UoA operates (the "managed area" for short) (SA3.13.5, MSC FCRv2.01). The MSC also specifies that the team shall use all available information (e.g. bioregional information) to determine the range and distribution of the habitat under consideration, and whether this distribution is entirely within the 'managed area' or extends beyond the 'managed area' (SA3.13.5.1, MSC FCRv2.01).

7.4.8.1 Notes on MSC guidance

For both commonly encountered and VME habitats, the SG80 requirement under PI 2.4.1 (outcome status) is that "The UoA is highly unlikely to reduce structure and function of [the habitat] to a point where there would be serious or irreversible harm". However, key differences exist in the way that the MSC requires impacts from fishing activities to be assessed for commonly encountered and VME habitats, based on different definitions of 'serious or irreversible harm' for each habitat type.

For commonly encountered (and minor) habitats, the team shall interpret 'serious or irreversible harm' as reductions in habitat structure and function such that the habitat would be unable to recover at least 80% of its structure and function within 5-20 years if fishing on the habitat were to cease entirely (SA3.13.4, MSC FCRv2.0). For VME habitats, the team shall interpret "serious or irreversible harm" as reductions in habitat structure and function below 80% of the unimpacted level (SA3.13.4.1).

The essence of these different approaches is that it is accepted that fishing is an extractive process, such that the MSC requirement is that commonly encountered (and minor) habitats can recover from impacts within a reasonable

timeframe. In contrast, VME habitats may have only limited ability to recover, and/or recovery may take a long time, so the MSC requirement is that fisheries do not cause more than 20% damage total to VMEs (GSA3.13).

There are several important considerations regarding the MSC's VME habitat requirement that were clarified through the MSC Interpretations website (https://mscportal.force.com/interpret/s/global-search/VME):

- It is not the responsibility of an assessment team to identify habitats as VME within the fished area. Instead, VMEs need to be identified by a local, regional, national, or international management authority/governance body. In this case we consider what VMEs have been accepted, defined or identified by the Tristan / UK government.
- The history of fishing and when the VME was identified is critical to establishing what the 'unimpacted level' is; if a VME was already impacted by any fishery/UoA prior to its identification as a VME, and fishing impacts occurred prior to 2006, then the 'unimpacted level' is considered to be the status at the point of designation[2].

7.4.9 Habitat area under consideration

The habitat under consideration in this assessment is the habitats of Tristan da Cuhna Island group to a depth of 200 m. This is defined on the basis that the UoAs operate only on the islands and the fishery operates in depths < 150 m. The managed area is the Tristan 687,247 km^2 Marine Protection Zone (MPZ).

The MSC defines 'habitat' as 'the chemical and bio-physical environment, including biogenic structures, where fishing takes place' (Table GSA2, MSC FCRv2.01). For assessment purposes, the MSC requires that benthic habitats are described according to the following criteria (SA3.13.2 and Table GSA6, MSC FCR v2.01):

- characterising substratum - i.e. fine (mud, sand), medium, large or solid reef of biogenic origin;
- geomorphology - i.e. flat, low relief, outcrop or high relief; and
- biota (i.e., large erect, small erect/encrusting/burrowing, no fauna or flora, or flora).

This is known as the SGB criteria.

7.4.10 Habitat information

Previous assessments of this fishery describe the benthic fauna and flora of the islands being comprised of steep profile exposed rocky ground with low species diversity but high biomass (Gascoigne et al. 2016; Gascoigne et al. 2013). The most common taxa are decapod crustaceans (mostly *Jasus tristani*), gastropod molluscs, soft corals and echinoderms (starfish and urchins). Grazing by the urchin *Arbacia crassispina* dominates the subtidal ecosystem, and this urchin is in turn a common prey for rock lobsters. Based on references at the time of the previous assessments' report, the immediate subtidal zones are usually covered with patches of short seaweed consisting of species of *Cladophora, Plocamium, Epymenia, Halopteris, Polysiphonium, Gigartina* and *Dictyota*. This gives way to the pale kelp *Laminaria pallida* at around 10 m and is then replaced in deeper waters by the giant kelp *Macrocystus pyrifera*, which surrounds all the islands with a kelp fringe at depths from 10 m – 40 m. The southern island of Gough does have a different seaweed assemblage to that of the northern Islands, resultant of the latitude difference and currents at this island. This difference is mainly related to the smaller algae community (Scott, 2017).

[2] Note: The year 2006 was chosen because it is the date of the UNGA Resolution 61/105

There is no evidence of any change in these descriptions of the habitats but there are a few valuable updates on habitat information available at this reassessment.

The Tristan Marine Management Plan (Tristan, 2020a) describes the Tristan da Cunha's EEZ as including three broad habitat types: rich and healthy rocky inshore habitats with extensive kelp forests that support the Tristan rock lobster and many other finfish species; vast, open ocean areas deeper than 3000 m that provide rich foraging grounds for many seabirds, sharks and tuna; and seamounts, covered with abundant cold-water coral reefs and sponge grounds that typify vulnerable marine ecosystems (Figure 20). It is only the first of these habitats which fully overlap with the fishery.

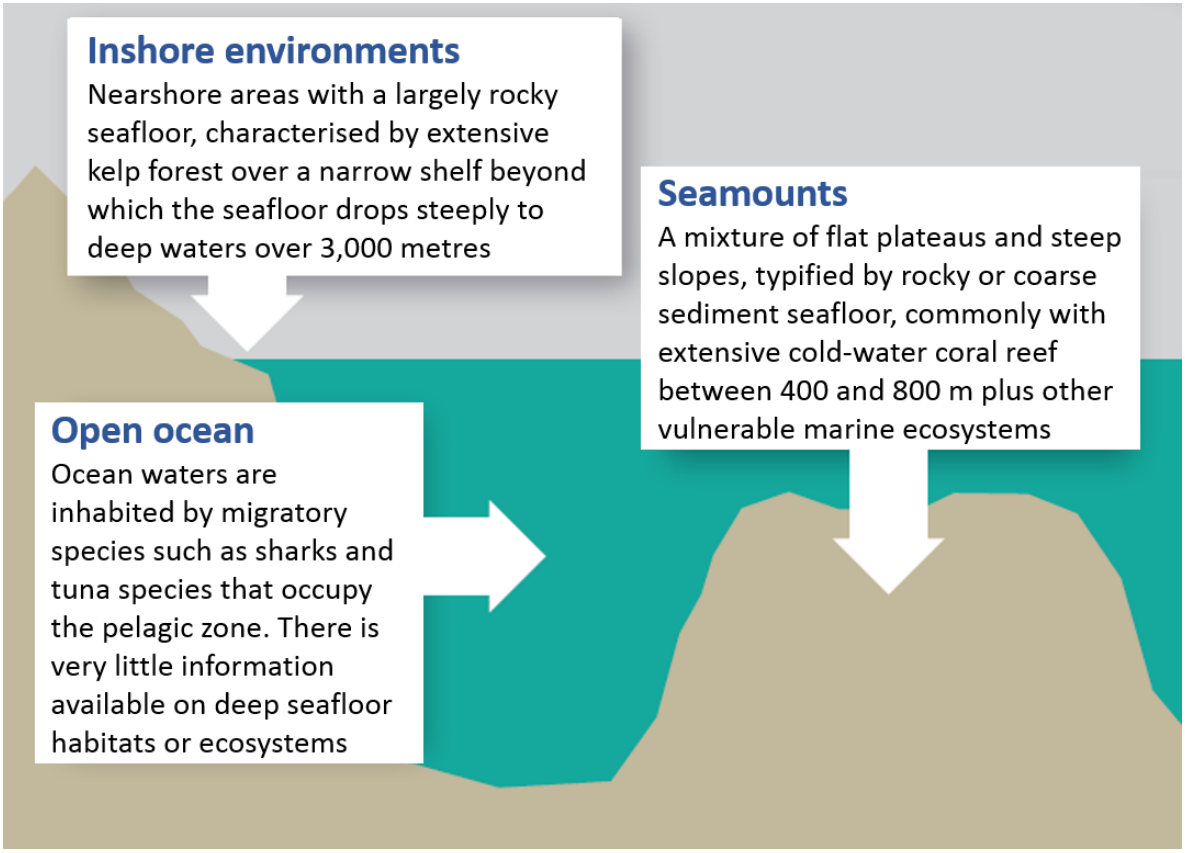


Figure 20. Graphical representation of the major habitat types found in Tristan da Cunha waters: inshore habitats adjacent to the land, deep open ocean, and large seamounts rising from the seafloor. Source: Tristan (2020a)**.**

However, the seabed below 40 m to the limits of the fishery ~150 m is less well studied and varies significantly from the habitats that are above 40 m (Scott, 2017). The key source of information in these depths comes from a survey in 2013 which found that in the area below 40 m – 300 m the seafloor surrounding the islands was rocky, with some areas of sand, especially off the north-east Inaccessible Island. At many sites, such as around Gough Island and Inaccessible Island, echinoderms (e.g., brittle stars, sea stars and sea urchins) and arthropods (e.g., hermit crabs) were well represented (Figure 22). Larger boulders offer a good growing surface for bryozoans, corals, hydroids and sponges, in particular on the slopes surrounding Tristan da Cunha itself. Through creating new habitats, they offer food and hiding places for representatives of higher trophic levels such as echinoderms, arthropods, worms and fishes. A follow up report on that survey includes evidence and reviews of information which show that the 40 m – 300 m region is dominated by faunal assemblages of octocorals, black coral (*antipatharian*) *Leiopathes* sp., zooanthid anemones, several gastropod, nudibranch and bivalve molluscs, crabs and hermit crabs, and large erect bryozoans (Figure 22). The seabed around both Gough and the northern islands falls rapidly to depths of 2000 m – 3000 m within a few kilometres of the coast. This means that the majority of the seabed within the 12 nautical mile territorial and 200 nautical mile EEZ limits around the islands is well below 300 m and beyond the depth of the fishery. So, the fishing

grounds are spatially tightly confined around the Islands (see Figure 25 and discussion on fishery footprint below). Despite the low level of sampling, the Scott report provides a list of species present in this region (table 5 Scott, 2017) suitable to define the habitat under the SGB criteria. Substratum - solid reef / boulder; geomorphology - high relief; and biota - large erect, small erect / encrusting / fauna, however Scott reports that this region of the Tristan shelf has been little sampled as it sits below diving depth and remote survey work and further work should be done (Scott, 2017). As of the site visit for the fishery in 2021 the assessment team were also provided with additional photographic evidence of the habitat structure below 40 m taken by the Tristan Fishery department (Figure 23 and Figure 24) these show habitats characterized by bedrocks and cobbles covered by crustose coraline algae with occasionally by sea-fans to almost 100 m.

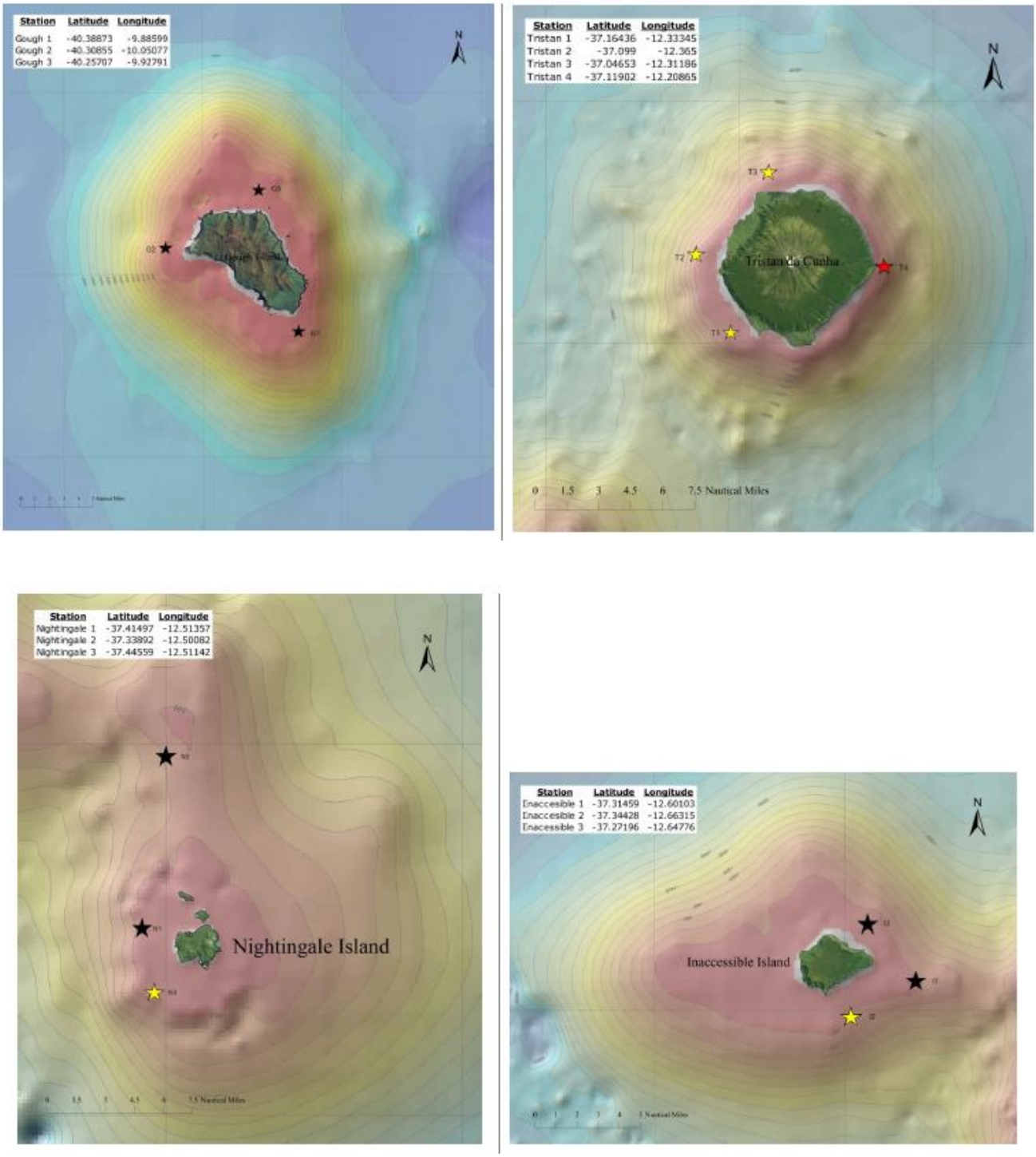
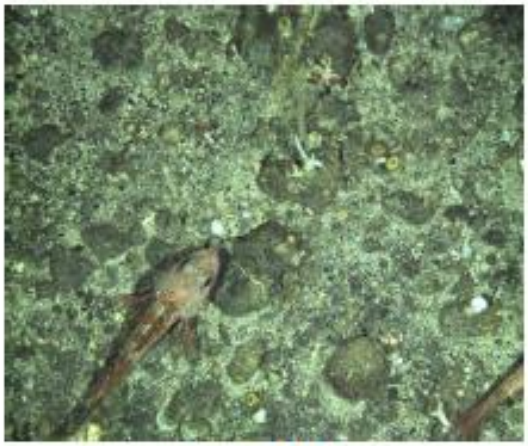
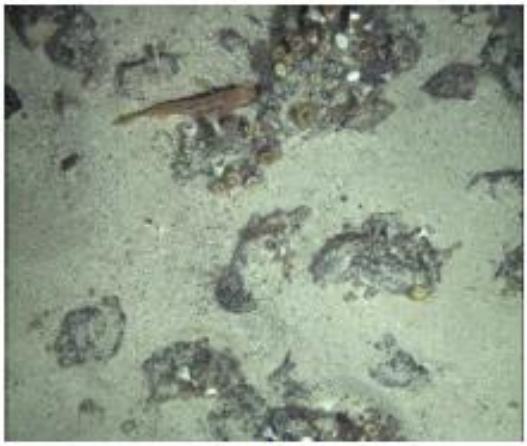


Figure 21. Sample sites at each of the four islands at depths between 40 m and 300 m from the BAS (2013) **survey. Black star = AGT, RMT8, SUCS; yellow star = SUCS alone, red star = AGT, SUCS). · Agassiz trawl (AGT): 3 stations at each of 3 sites (where practicable, given steep and abrasive topography), · Shallow Underwater Camera System (SUCS): 10-20 photos of 0.5 m^2 per site, · Rectangular Midwater Trawl (RMT8): 1 tow per site at each of multiple depths.**

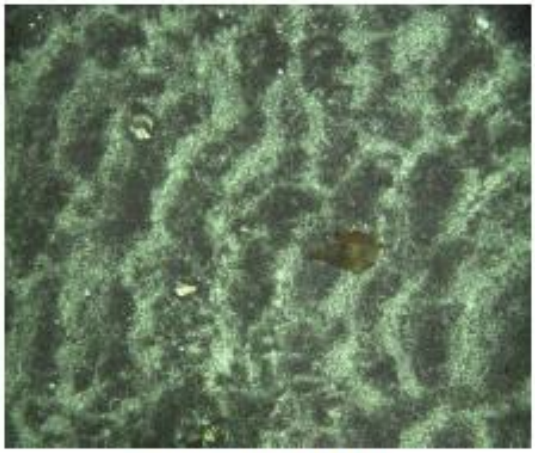


Gough Island

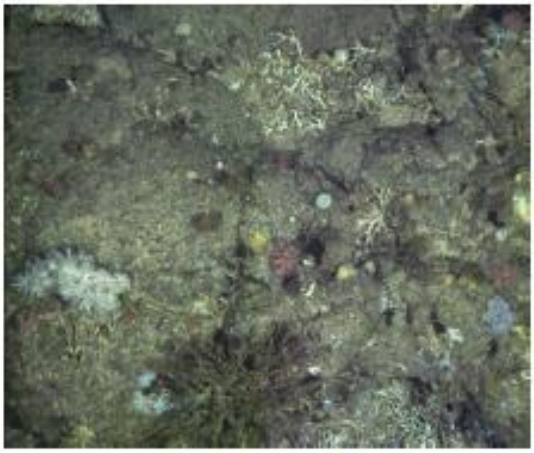


Esk Guyot Seamount

Tristan da Cunha



Inaccessible Island



Nightingale Island

Figure 22. Camera lander images from each of the four islands. Note the Esk Guyot seamount is outside the range of the UoA. Source: BAS (2013)**. The** Scott (2017) **report provides the following comment on the species seen in the Nightingale island image: 120 m, on upward-facing rock with patches of bryozoan gravel. The image is rather indistinct but includes numerous small cup corals, a white soft coral, pink soft coral *Rhodelinda gardneri*, small encrusting sponges and a possible spionid worm clump bottom centre.**

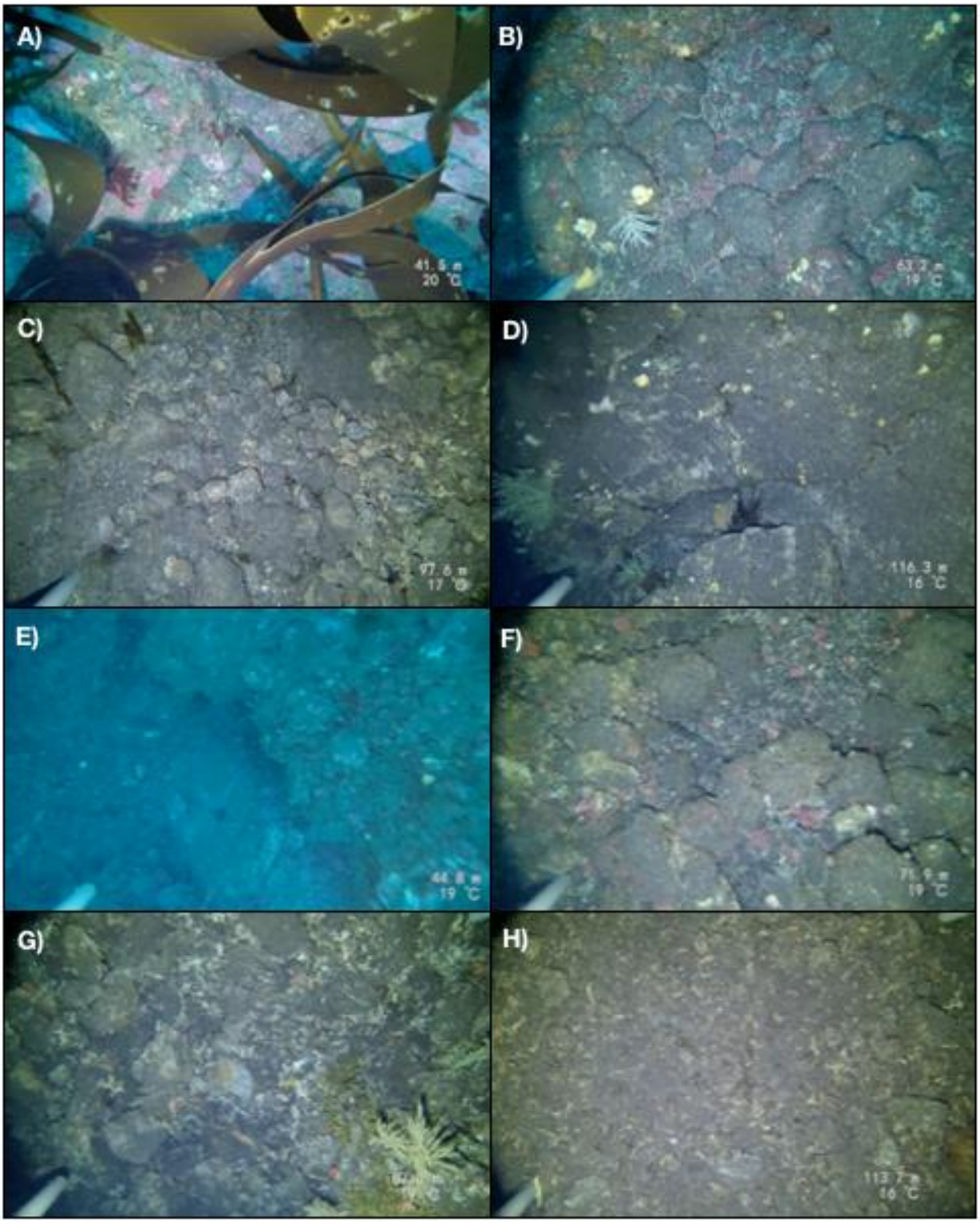


Figure 23. Seabed images of benthic habitats off the north (A-D) and north-west (E-H) coasts of Tristan Island (March 2021). Habitats were characterised mainly by bedrocks and cobbles, occasionally by sea-fans (D and G) and crustose coraline algae (B and F). Source: TDF.

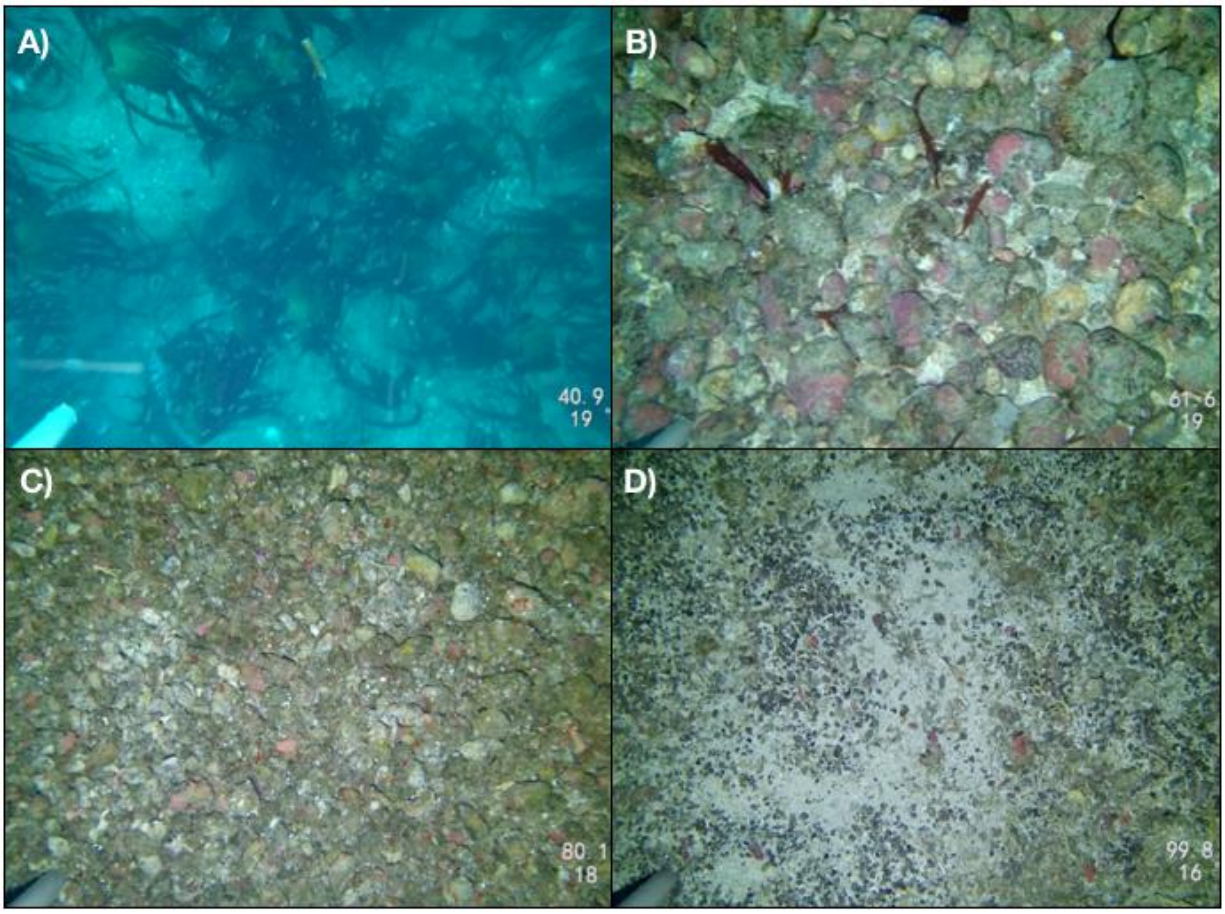
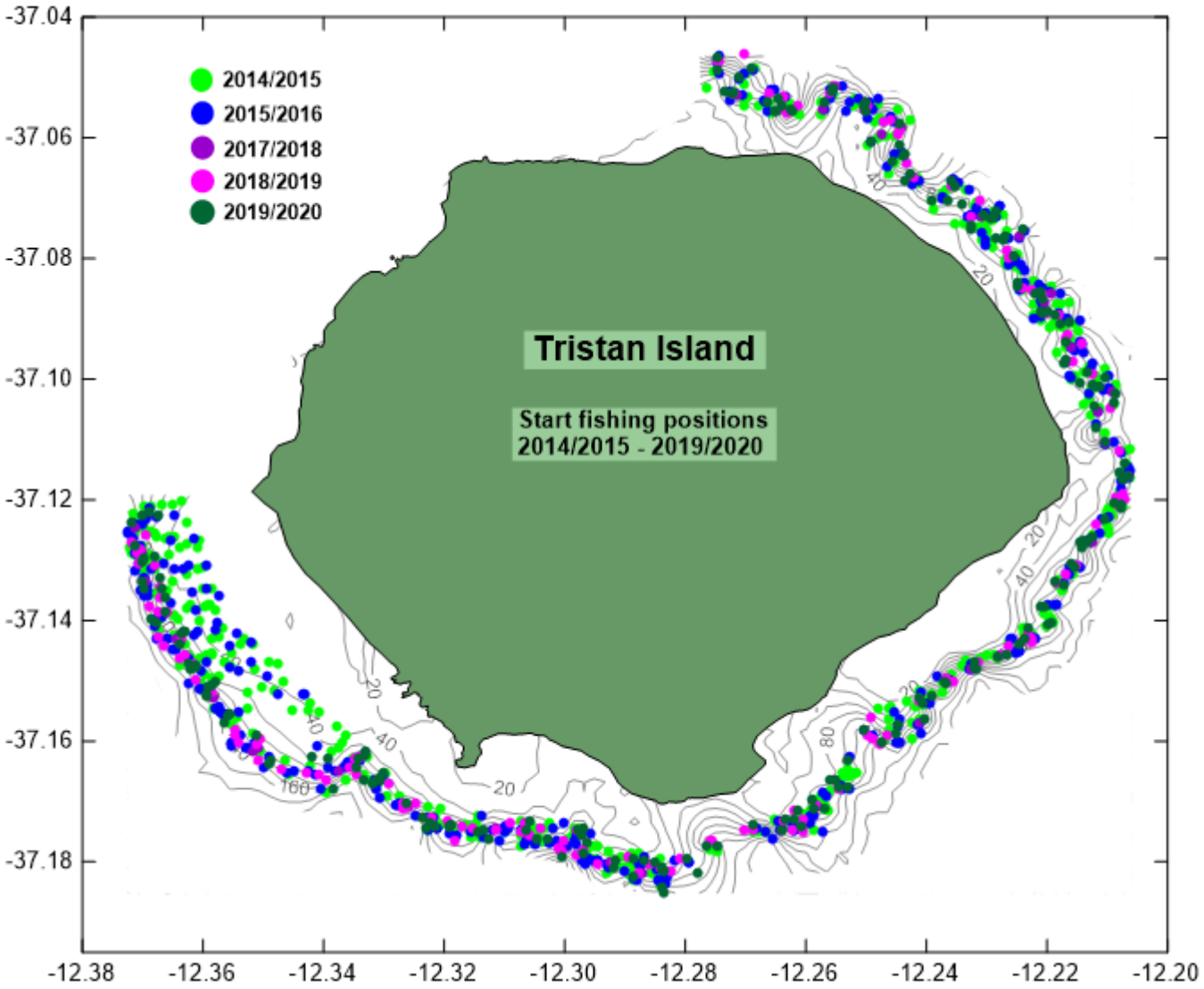


Figure 24. Seabed images of deep-water benthic habitats off the west coast of Nightingale Island near the shipwreck of Olivia March 2021. Habitats were characterised by kelp A, cobbles and pebbles covered by crustose coraline algae B) and C) and sand at almost 100 m. Source: TDF.

Fishery footprint information displayed against bathymetry information is available from the main fishing vessel (FV *Edinburgh* and FV Geo *Searcher*) from 2013 to 2021 for all four islands (Figure 25). This data shows that the fishery operates to a maximum depth of around 160 m with the concentration of effort at all islands at 20 m – 80 m deep. The fishery technically could fish deeper than this range but the absence of the target species in deep waters precludes this.


2014/2015
2015/2016
2017/2018
2018/2019
2019/2020
Tristan Island
Start fishing positions
2014/2015 - 2019/2020
-37.04
-37.06
-37.08
-37.10
-37.12
-37.14
-37.16
-37.18
-12.38
-12.36
-12.34
-12.32
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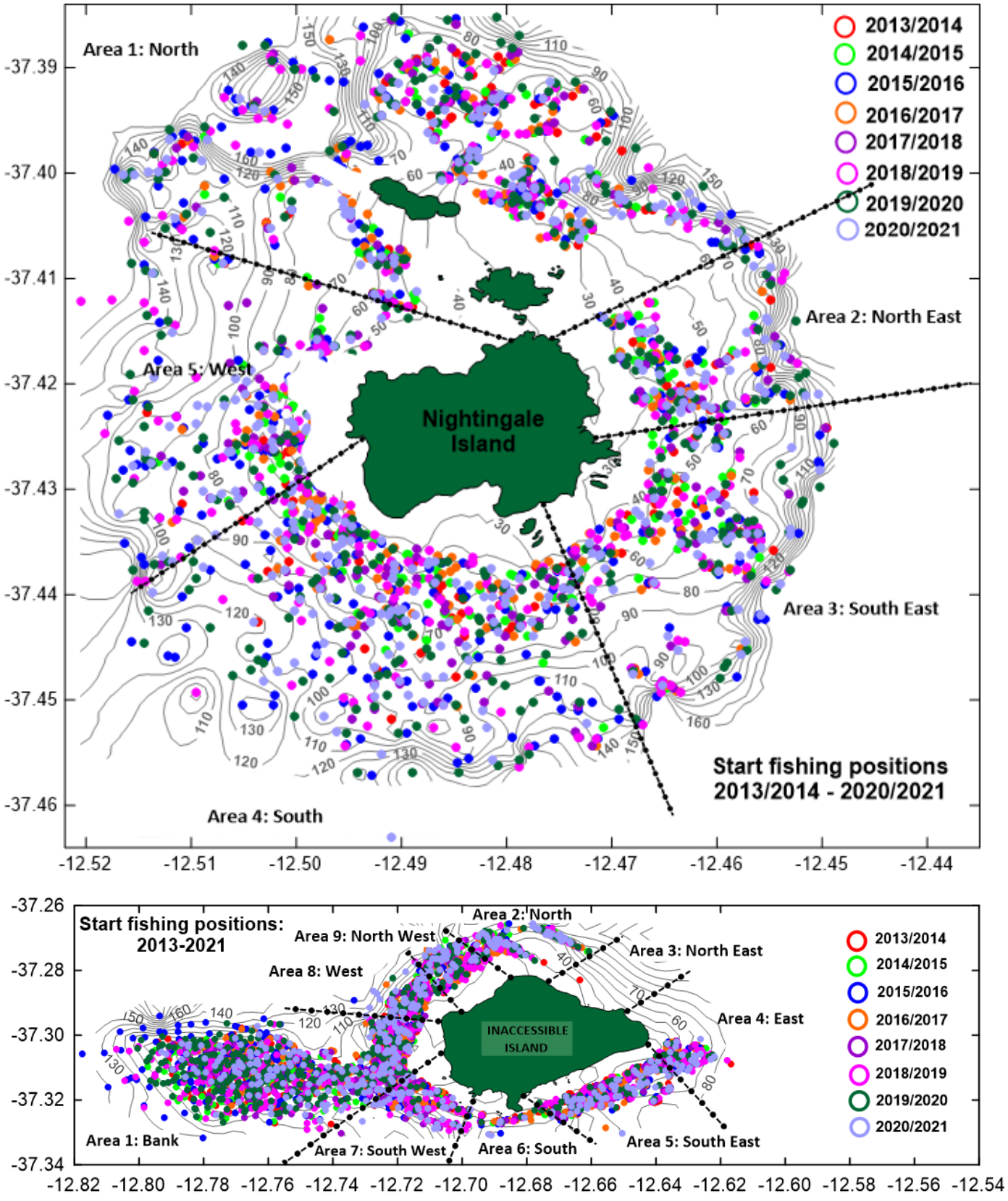
-12.28
-12.26
-12.24
-12.22
-12.20


Area 1: North
Area 2: North East
Area 3: South East
Area 4: South
Area 5: West
Nightingale Island
2013/2014
2014/2015
2015/2016
2016/2017
2017/2018
2018/2019
2019/2020
2020/2021
Start fishing positions
2013/2014 - 2020/2021
-37.39
-37.40
-37.41
-37.42
-37.43
-37.44
-37.45
-37.46
-12.52
-12.51
-12.50
-12.49
-12.48
-12.47
-12.46
-12.45
-12.44

Start fishing positions:
2013-2021
Area 1: Bank
Area 2: North
Area 3: North East
Area 4: East
Area 5: South East
Area 6: South
Area 7: South West
Area 8: West
Area 9: North West
INACCESSIBLE ISLAND
2013/2014
2014/2015
2015/2016
2016/2017
2017/2018
2018/2019
2019/2020
2020/2021
-37.26
-37.28
-37.30
-37.32
-37.34
-12.82
-12.80
-12.78
-12.76
-12.74
-12.72
-12.70
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-12.62
-12.60
-12.58
-12.56
-12.54

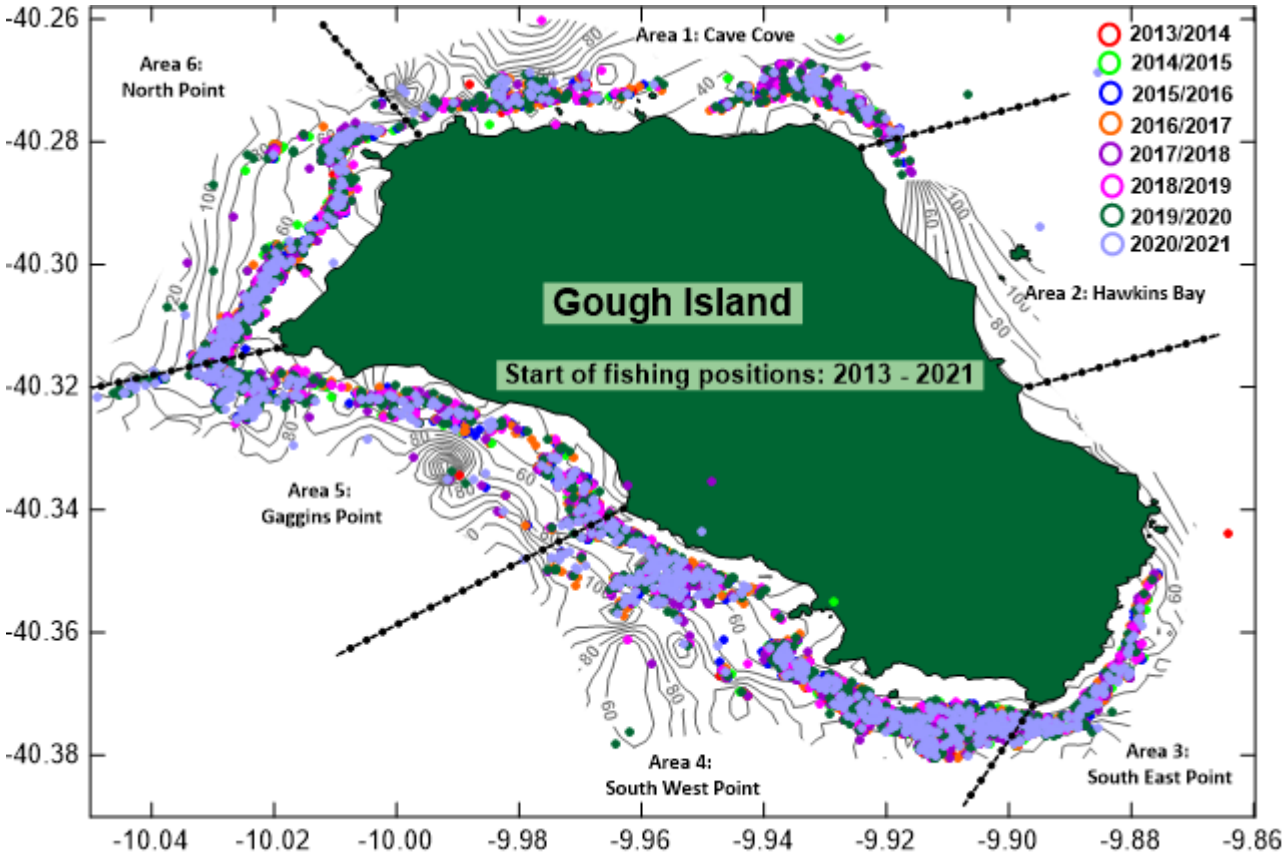

Figure 25. Fishing Positions of the FV *Edinburgh*/FV *Geo Searcher* 2013 to 2021 at each of the four Islands in the fishery. Note the Northwestern ¼ of Tristan Island is fished exclusively by the Tristan powerboat fleet and therefore FV *Edinburgh* records are not available in this region. Source: Ovenstone.

The 2017 ecosystem survey of the islands (Caselle et al., 2017), provides detailed information defining the SGB of the main habitats. The survey found kelp-dominated boulder reefs as the dominant habitat type with very little variation in substrate type or physical relief among islands (Figure 26). Patches of sand did exist but even in these, small boulders were evident. The major habitat forming species in the island was giant kelp (*Macrocystis pyrifera*), with pale kelp (*Laminaria pallida*) forming very dense sub canopy forests at some sites, with the extent of the habitat mapped (and predicted) based on satellite imagery (Figure 27). Biogenic habitats were present at the deep-sea camera sites on 40% of the camera deployments, including sea pens, crinoids, whip corals, and small to very large gorgonians (Caselle et al., 2017). However, these are in depths beyond 500 m (Caselle et al., 2017) and therefore do not reflect any overlap with the fishery.

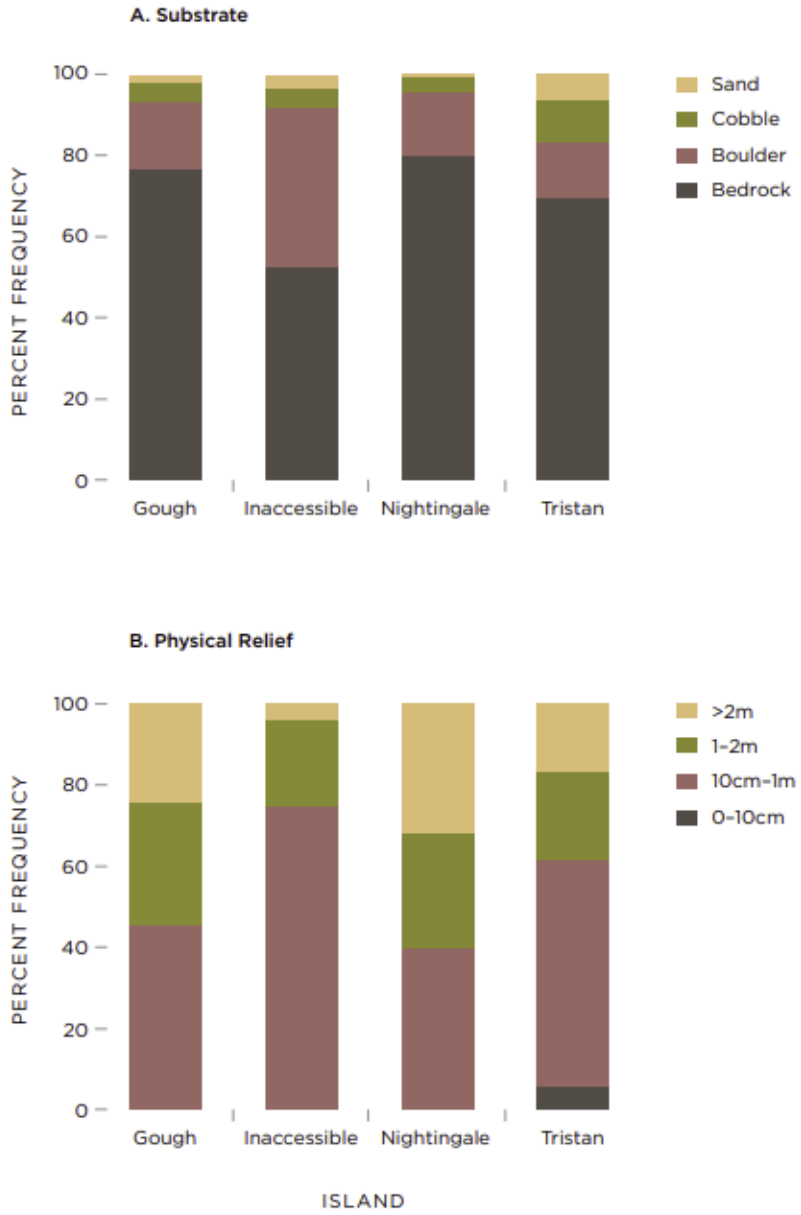

Figure 26. Substrate composition and physical relief estimated using visual SCUBA surveys in nearshore kelp forests (10 m and 20 m depth) in the Tristan da Cunha Islands. Source: (Caselle et al., 2017)**.**

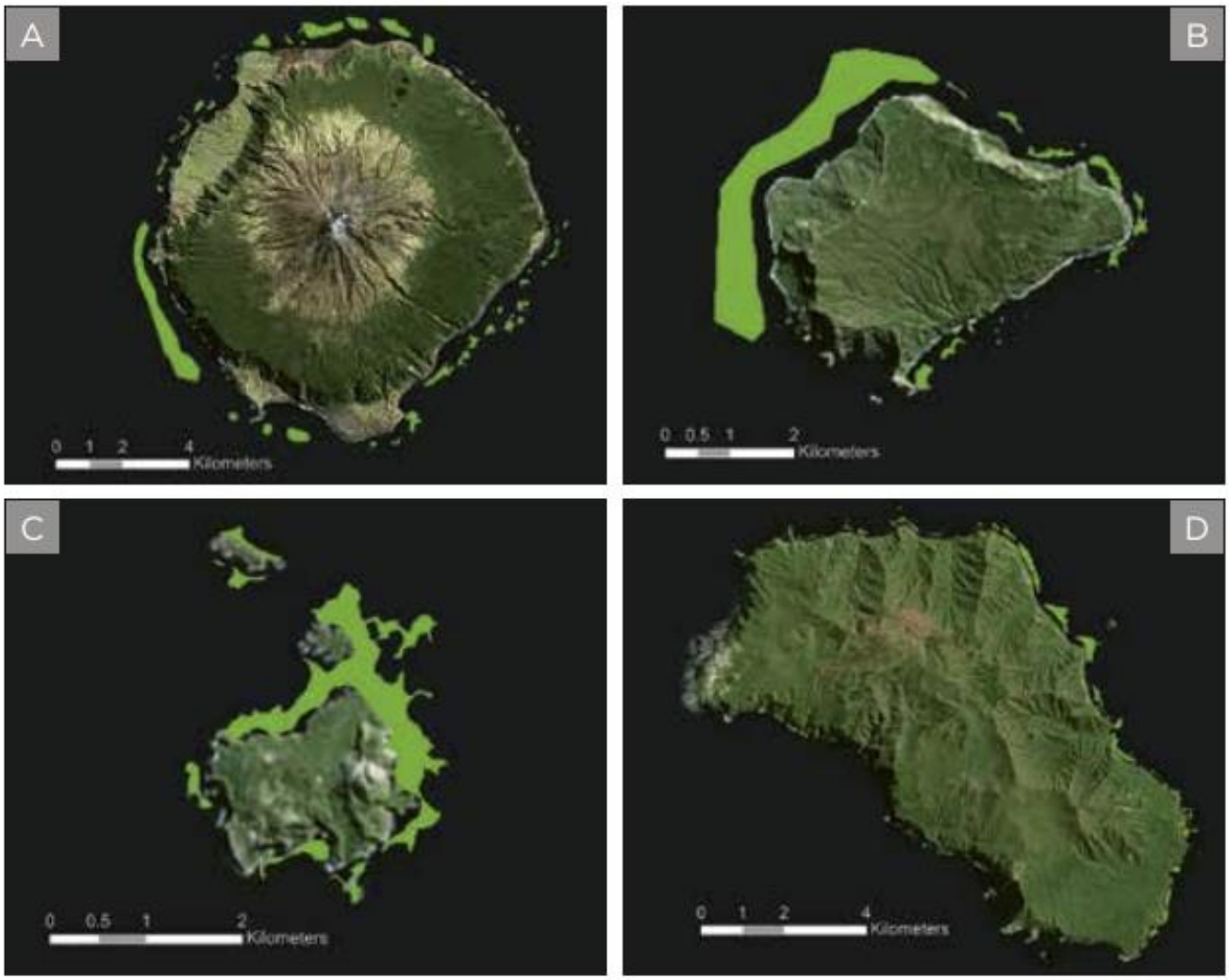

Figure 27. Predicted kelp distributions for (A) Tristan, (B) Inaccessible, (C) Nightingale, and (D) Gough islands. Green polygons represent kelp canopy observed from Landsat 7 or Landsat 8 images or predicted kelp occurrence based on other high-resolution imagery or features seen in Landsat images. Source: (Caselle et al., 2017)**.**

7.4.11 VMEs

VMEs are defined according to FAO guidelines. The VME concept was derived from concerns over overfishing impacts in deep sea areas beyond national jurisdiction, but the MSC requires that the VME definition be applied inside and outside EEZs and irrespective of depth (SA3.13.3.2). With respect to the current fishery VMEs are considered to be the seamount habitats and deep water biogenic habitats described by Caselle et al. (2017) which include sea pens, crinoids, whip corals, and very large gorgonians (Caselle et al., 2017). As described in the research paper and protected under the Marine Protection Zone (MPZ) (see section 7.4.12) these occur outside of the fishery's operating depth and area and there is no overlap between these VMEs and the fishery.

7.4.12 Habitat Protection

The managed area is the Tristan EEZ and includes the 687,247km^2 Marine Protection Zone (MPZ) (Figure 28).

Since 2016 the UK Blue Belt Programme[3] helped to develop and enhance marine protection in Tristan da Cunha (UK 2020). Highlights of the program for Tristan include:

- Providing improved knowledge of Tristan da Cunha's inshore, seamount and open ocean ecosystems, identifying key habitats, species and threats. Working with the Tristan da Cunha Island Council to inform their marine protection strategy based on this information and conducting policy analysis to help the Island Council identify the most appropriate legislative approach to underpin their strategy.
- Conducting two major marine surveys around Tristan da Cunha waters on the RRS *Discovery* and the RRS *James Clark Ross* to improve our understanding of the marine environment. During the surveys, the Blue Belt team trained local staff, surveyed key fishing grounds, mapped the sea floor, gathered water samples and collected physical specimens.
- Providing Tristan da Cunha with a new vessel for inshore biodiversity monitoring. Refurbished Tristan da Cunha's fisheries patrol vessel and provided extensive training to members of the Tristan da Cunha's fisheries department on vessel maintenance and at-sea survival techniques.
- Providing UK-based training in compliance and enforcement for Tristan da Cunha Fisheries Department staff and supported the training of additional scientific observers to monitor fishing operations.
- Supporting Tristan da Cunha Fisheries Department to streamline their fishery data management systems.
- Helping Tristan da Cunha designate a recommended 'Area To Be Avoided' around the islands to encourage shipping traffic to keep a safe distance from Tristan da Cunha's vulnerable habitats. The 25 nm area around the Tristan top islands and Gough Island will now appear on new issues of Admiralty charts for the Island's going forward (DFT, 2020). This was implemented on 1st April 2020.

On the 13th October 2020 The Government of Tristan announced a 687,247 km^2 Marine Protection Zone (MPZ) – almost three times the size of the UK around Tristan and its islands. The designation is a result of extensive stakeholder engagement with the Tristan community including the UK Government Blue Belt Program, PSPB and PEW. The level of marine protection, includes no fishing or other extractive activities permitted across 91% of the entire area, also known as a 'no-take zone' and makes the Tristan islanders the guardians of the largest no-take zone in the Atlantic Ocean[4] (Figure 28). The MPZ serve as a feeding ground for the critically endangered Tristan albatross and endangered Atlantic yellow-nosed albatross, as well as the vulnerable spectacled petrel. Eighty-five percent of the world's endangered northern rockhopper penguins breed on Tristan, whose nutrient-rich waters support 11 different species of cetaceans, including Shepherd's beaked whales and fin whales—the second-largest whale on the planet. Gough Island, southernmost in the chain, supports 80% of the world's population of subantarctic fur seals, as well as a colony of elephant seals (PEW press release 2020).

The rock lobster fishery underwent extensive assessment as part of the designation process and the fishery footprint (nearshore 50 nm) sits outside of the principle MCZ designation.

[3] https://www.gov.uk/government/publications/the-blue-belt-programme
[4] https://www.tristandc.com/government/news-2020-11-12-mpzgov13nov2020.php

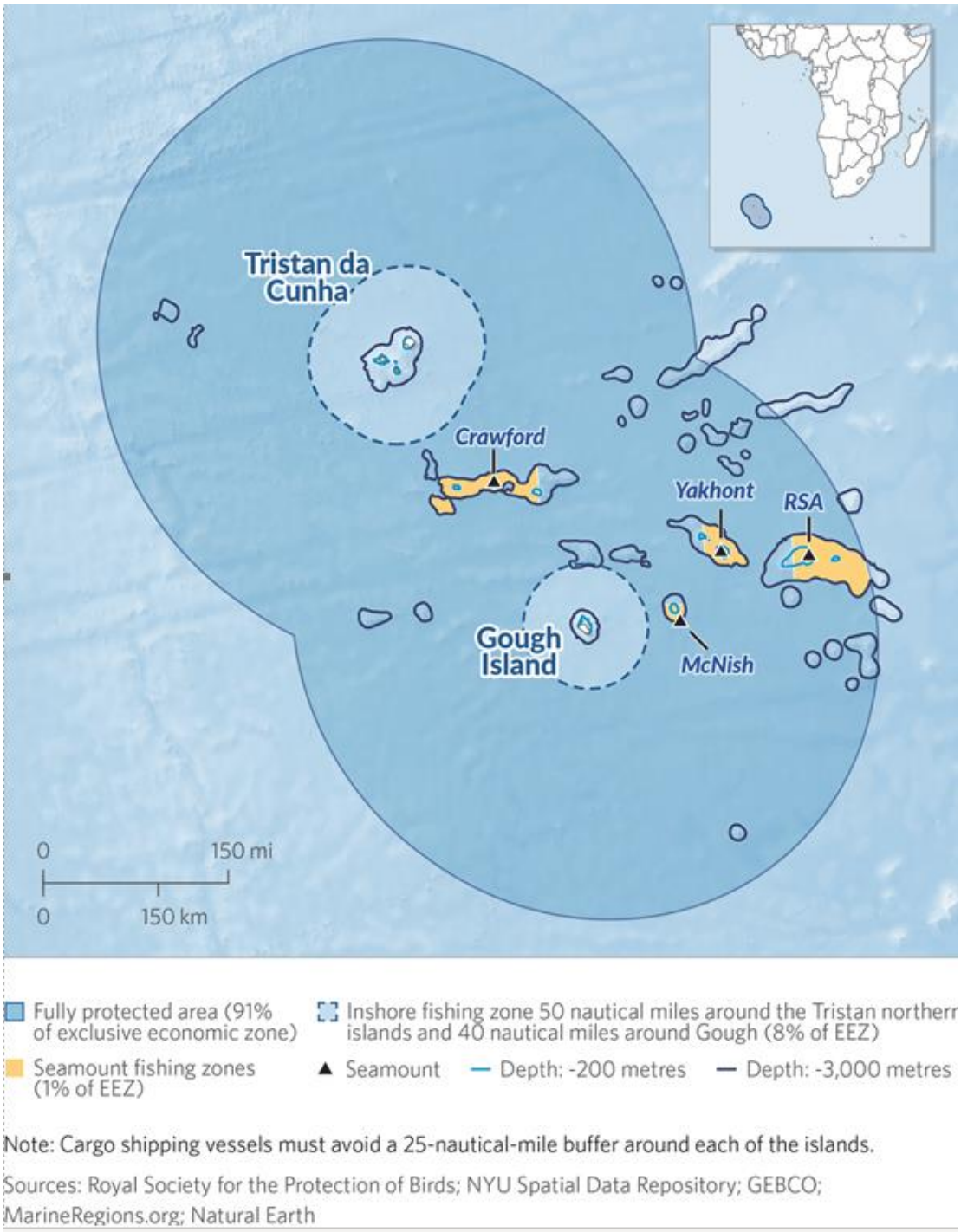

Figure 28. Tristan 687,247km^2 Marine Protection Zone (MPZ) with internal designations. Source: PEW press release (2020).

The fishing zones within the Tristan EEZ are shown in Figure 29. The UoA operates in the inshore fishing zone. Covering 69,000 km^2 equal to 9% of the EEZ, Inshore Fishing Zones have been designated to support a healthy and sustainable commercial lobster fishery, as well as long-term subsistence and recreational fisheries for the community according the Marine Management Plan (Tristan, 2020a). Two Inshore Fishing Zones exist, encircling the northern islands (Tristan, Inaccessible and Nightingale) and Gough Island. They extend from the shoreline (Low Water Mark) to 50 nm offshore. They are closed to all commercial fishing methods except for the lobster fishery, subsistence fishing by Tristan Islanders and future small-scale sustainable commercial fisheries.

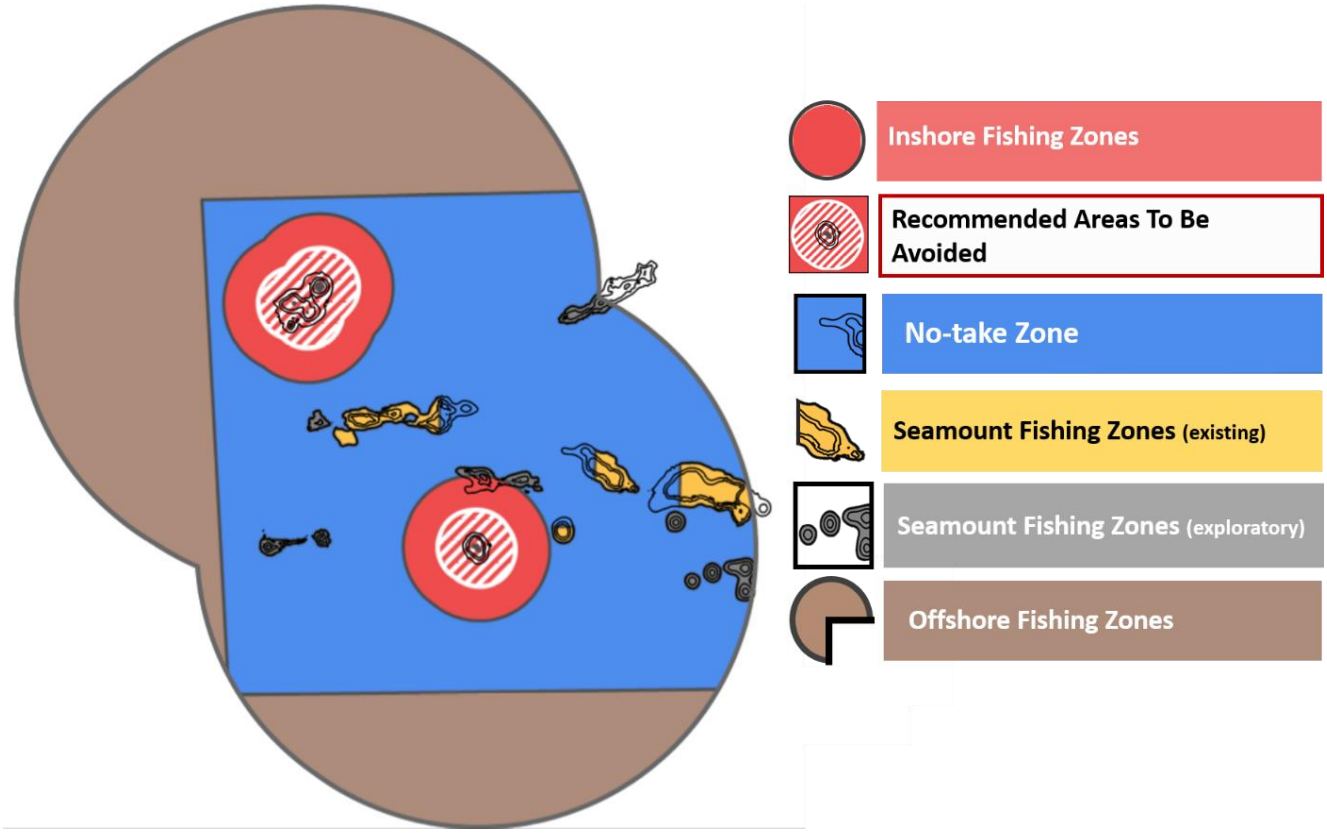

Figure 29. Management zones in the Tristan EEZ. The UoAs operate in the inshore fishing zone the Recommended areas to be avoided areas are there for shipping traffic and designed to reduce the risk of maritime accidents. Source: Tristan (2020a)**.**

7.4.13 Ecosystem

The ecosystem under consideration is the Tristan da Cunha Island Group as defined by Caselle et al. (2017) in their ecosystem study. Caselle et al. (2017) found that the major habitat-forming species in the island was giant kelp (*Macrocystis pyrifera*), with pale kelp (*Laminaria pallida*) forming very dense sub canopy forests at some sites. Both species are reported to be prominent components of the diet of Tristan lobsters. The researchers found that the kelp forest communities were not particularly species rich but composed of a simple trophic structure compared to more diverse kelp forests in other parts of the world. Notwithstanding this, reef biomass was high. Total fish biomass ranged between 1.5 – 2.75 tonnes / ha, which indicated a healthy fish assemblage dominated by five finger (*Nemadactylus monodactylus*) both numerically and in terms of biomass at all four islands (Caselle et al., 2017). The top ecosystem predators are comprised of sevengill sharks (*Notorynchus cepedianus*), blue sharks (*Prionace glauca*), shortfin mako sharks (*Isurus oxyrinchus*) and subantarctic fur seal (*Arctocephalus tropicalis*).

Community structure did vary between islands in terms of the fish assemblages with less variation in the benthic community structure (Figure 30), this is mainly driven by latitude, wave exposure and water temperature variation. The study quantified the likely key components of this simple food web:

- Kelps and benthic algae at the base providing both food and shelter;
- Urchins (and possibly the invasive Porgy) as the primary grazers;
- Five finger, false jacopever, wrasses, lobsters and octopus as the main carnivores;
- Sevengill sharks and possibly yellowtail as the primary piscivores;
- Lobsters as omnivores, consuming both algal material and benthic invertebrates.

Potentially important transient species include seals, sealions and rockhopper penguins which may also feed in the kelp forests. The authors note that simple food webs, such as Tristan's, are far less resilient in the face of perturbations that might reduce or remove one of the links than systems with greater functional redundancy. The key at risk elements in the system being loss of kelp forming habitat as a function of climate change and depletion of key predators such as rock lobster (notable in places like Tasmania) and climate-related changes to the distribution / abundance and recruitment of rock lobster.

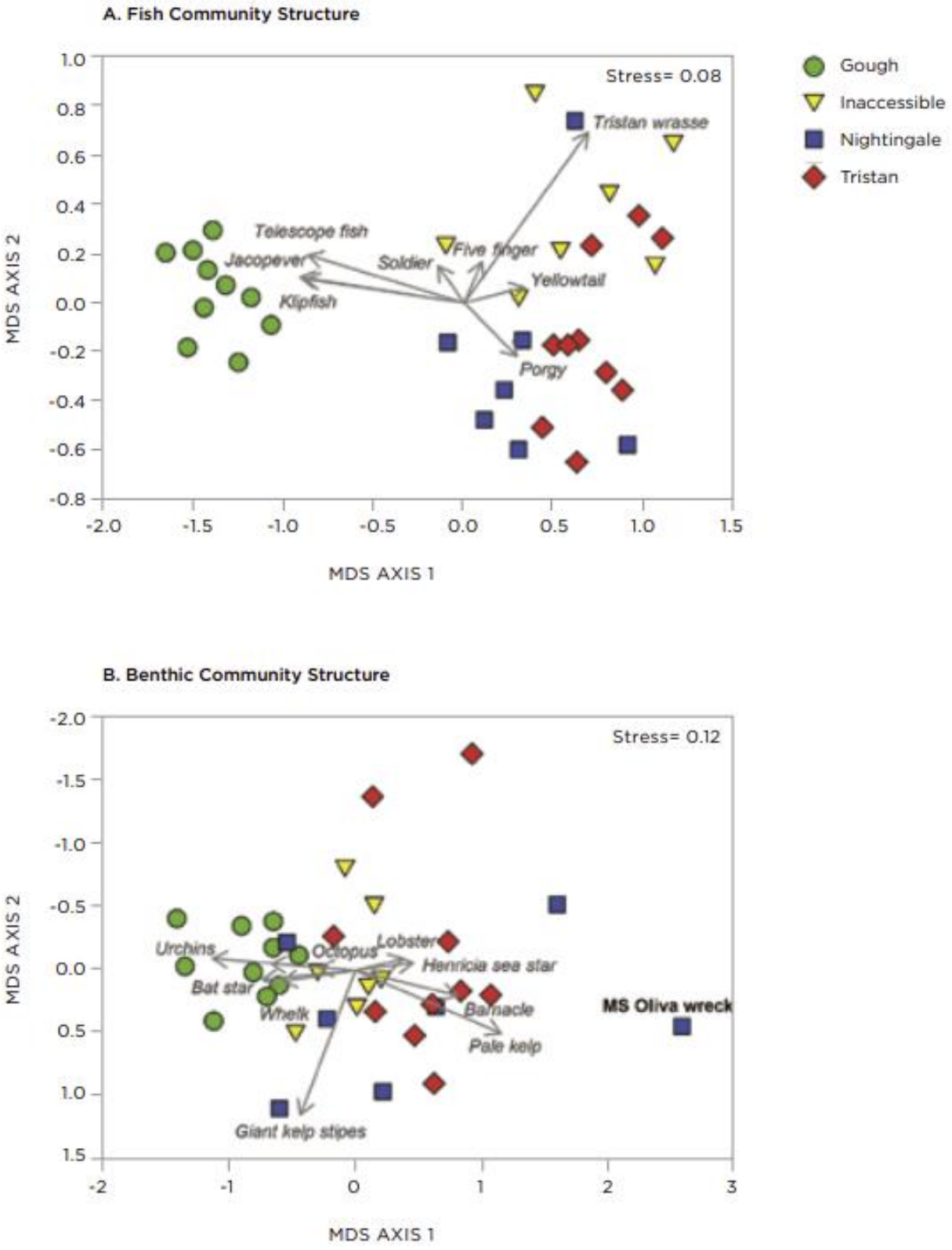

Figure 30. Multivariate description of fish and benthic communities in the Tristan da Cunha Islands from nearshore SCUBA surveys. Source (Caselle et al., 2017)**.**

7.4.13.1 Gear loss

For the FV *Edinburgh* gear is retrieved using a track plotter, with GPS waypoints plotted at the time of setting. Power boat gear, which is set inshore, is retrieved by sight only. There is no marking of gear in the fishery as the UoA is the only trap fishery in the Tristan EEZ and therefore all lost traps / hoop nets are the responsibility of the UoA. All traps are buoyed and the colour of buoys changes to allow for position reference. No radio beacons are used in the fishery. Gear loss estimates are provided in Table 15 calculated by the difference between deployed and hauled gear and showing that gear loss is about 0.15% of all deployed gear over the past 3 years.

Table 15. Gear loss estimates for the UoAs for the past three seasons. PB = powerboats GS = FV *Geo Searcher*. Source: Ovenstone

Season	Island	VESSEL: Geo Searcher / Edinburgh				TRISTAN POWERBOAT (ISLAND)					
		Total traps set	Total traps hauled	Total traps lost	% trap loss	No. of traps	No. of hoop nets	Lost traps	Lost hoop nets	% trap loss	% hoop net loss
2018/2019	Inaccessible	10600	10580	20	0.19						
2018/2019	Nightingale	6540	6510	30	0.46						
2018/2019	Gough	10880	10869	11	0.10						
2018/2019	Tristan PB					4610	10560	13	3	0.28	0.03
2019/2020	Inaccessible	9689	9675	14	0.14						
2019/2020	Nightingale	7680	7665	15	0.20						
2019/2020	Gough	15540	15503	37	0.24						
2019/2020	Tristan (GS)	4180	4174	6	0.14						
2019/2020	Tristan PB					4494	10272	1	6	0.02	0.06
2020/2021	Inaccessible	9080	9073	7	0.08						
2020/2021	Nightingale	7780	7759	21	0.27						
2020/2021	Gough	18435	18415	20	0.11						
2020/2021	Tristan PB					4704	9408	6	0		
TOTAL		**100404**	**100223**	**181**	**0.18**	**13808**	**30240**	**20**	**9**	**0.14**	**0.03**

7.4.13.2 Ecosystem management

As a UK Overseas Territory, Tristan da Cunha is included within several international and national policies and plans that recognise and address marine issues. These are considered at length within The Marine Management Plan (Tristan 2020a). In brief they consist of:

- The **UK Overseas Territories Biodiversity Strategy** to meet their international obligations for the conservation and sustainable use of biodiversity. One of the five strategic priorities is to develop ecosystem-based initiatives for the conservation and sustainable use of the marine environment.
- The UK Government's 25 Year Environment Plan to meet the United Nations Sustainable Development Goal 14 ('Life under Water').
- 2016-2020 Blue Belt Programme, which aimed to protect over 4 million square kilometres of ocean around the UKOTs, through scientific assessment, implementation, management, monitoring and surveillance.
- World Heritage Site designation, Gough and Inaccessible islands (RSPB, 2010).

In September 2019, the Island Council adopted a Marine Protection Strategy for the entire EEZ, to maintain marine ecosystems in a healthy, productive and resilient condition so that they could continue to support the Tristan da Cunha community. The Strategy introduced measures to address the threats to Tristan da Cunha's marine environment by:

- Prohibiting all bottom trawling to protect benthic habitats
- Introducing a No-take Zone to protect seamount and open water habitats
- Adopting precautionary catch limits and conservation measures to strengthen seamount fisheries management practices
- Addressing illegal fishing to prevent overfishing
- Introducing recommended Areas To Be Avoided (ATBA) around all the islands to reduce the risk of collisions and pollution incidents from transiting cargo vessels.

The Marine Management Plan (Tristan 2020a) outlines how the Tristan da Cunha Government will manage its waters in line with the Marine Protection Strategy. The five aims of the Marine Management Plan are:

- To make sure that Tristan da Cunha's marine environment (both its benefits and the activities that are undertaken within it) are well understood through research, monitoring and management;
- To ensure that fishing practices are sustainable;
- To involve the Tristan da Cunha community and other stakeholders in management;
- To ensure that opportunities for resource use in the future can be explored if fully assessed and carefully managed; and
- That management is effective and can adapt to future issues.

The Marine Management Plan also outlines objectives that will help to achieve each of these aims. A review committee and process have been established to measure the successful achievement of the Plan's aims and objectives.

7.4.14 Cumulative impacts

The MSC introduced requirements for cumulative impact assessments in Principle 2 with the release of the FCR v2.0. These requirements are to ensure that MSC certified fisheries will no longer cumulatively be at risk of generating negative impacts on Principle 2 species (and habitat).

- For primary species, cumulative impacts assess whether the collective impact of overlapping MSC fisheries are hindering the recovery of 'main' primary species that are below a point of recruitment impairment (PRI); i.e. ensuring that the combined impact of MSC fisheries are not harming the recovery of the stock; if relevant this is scored at PI 2.1.1 SIa SG80.
- For secondary species, the same intent applies when a species is below a biologically based limit, but only in cases where two or more MSC fisheries have 'main' catches that are 'considerable', defined as a species being ten per cent or more of the total catch; if relevant this is scored at PI 2.2.1 SIa SG80.
- For ETP species, the combined impacts of MSC fisheries on all ETP species needs to be evaluated, but only in cases where either national and/or international requirements set catch limits for ETP species and only for those fisheries subject to the same national legislation or within the area of the same binding agreement'; if relevant this is scored at PI 2.3.1 SIa SG80.
- For habitats, in contrast, cumulative impacts are evaluated in the management PI (PI 2.4.2). The requirements here aim to ensure that the impacts of all fisheries (including non-MSC fisheries) on habitats, including vulnerable marine ecosystems (VMEs), are managed cumulatively to ensure serious and irreversible harm does not occur; this is scored for all fisheries and habitat types at SIa SG100. If relevant, there is also consideration of the UoA's compliance with VME management measures established by other fisheries at SId SG80.

Outcome Performance Indicator	Element	Cumulative impact?	Rationale
2.1.1 Primary species (main)	N/A	No	No main elements
2.2.1 Secondary species (main)	Octopus	No	RBF
2.3.1 ETP outcome	N/A	No	No elements scored by PI 2.3.1a
2.4.2 VME management	N/A	No	No other MSC fisheries present in the Tristan EEZ.

7.4.15 Scoring elements

Table 16. Scoring elements

<table>
<tr><th>Component</th><th>Scoring elements</th><th>Designation</th><th>Data-deficient</th></tr>
<tr><td>Secondary</td><td>Octopus vulgaris and Enteroctopus (Octopus) magnificus</td><td>Main</td><td>Yes</td></tr>
<tr><td>ETP</td><td><table>
<tr><td>White bellied storm petrel</td><td>Fregetta grallaria</td></tr>
<tr><td>White faced storm petrel</td><td>Pelagodroma marina</td></tr>
<tr><td>Diving petrel</td><td>Pelecanoides urinatrix</td></tr>
<tr><td>Atlantic petrel</td><td>Pterodroma incerta</td></tr>
<tr><td>Soft plumaged petrel</td><td>Pterodroma mollis</td></tr>
<tr><td>Little shearwater</td><td>Puffinus assimilis</td></tr>
<tr><td>prions</td><td>Pachyptila vittata</td></tr>
</table></td><td>N/A</td><td>No</td></tr>
</table>

Component	Scoring elements	Designation	Data-deficient
	Cape petrel | *Daption capense*		
Habitats	Kelp habitat can be described as substratum type - boulders and bedrock; geomorphology - steep shelf and Biota – kelp dominated. The deeper fauna dominated habitat can be described as substratum - solid reef / boulder with sand patches; geomorphology - high relief; and biota - large erect, small erect / encrusting / fauna.	Commonly-encountered	No
	The deeper fauna dominated habitat can be described as substratum - solid reef / boulder with sand patches; geomorphology - high relief; and biota - large erect, small erect/encrusting/ fauna.	Commonly-encountered	No
	Substratum type – bedrock seamounts; geomorphology - deep shelf and seamount; and biota – sea pens, crinoids, whip corals, and very large gorgonians.	VME	No

7.5 Principle 2 Performance Indicator scores and rationales

7.5.1 PI 2.1.1 – Primary species outcome

PI 2.1.1		The UoA aims to maintain primary species above the point where recruitment would be impaired (PRI) and does not hinder recovery of primary species if they are below the PRI		
Scoring Issue		SG 60	SG 80	SG 100
a	Main primary species stock status			
	Guide post	Main primary species are **likely** to be above the PRI. OR If the species is below the PRI, the UoA has measures in place that are **expected** to ensure that the UoA does not hinder recovery and rebuilding.	Main primary species are **highly likely** to be above the PRI. OR If the species is below the PRI, there is either **evidence of recovery** or a demonstrably effective strategy in place **between all MSC UoAs which categorise this species as main**, to ensure that they collectively do not hinder recovery and rebuilding.	There is a **high degree of certainty** that main primary species are above the PRI **and are** fluctuating around a level consistent with MSY.
	Met?	**Yes – All UoAs**	**Yes – All UoAs**	**Yes – All UoAs**
Rationale				

Based on the evidence presented in section 7.4.2 there is strong evidence that no primary species are caught by this fishery and therefore SA3.2.1 applies and the team determines that none of the UoAs have an impact on this particular component, it **meets the score of SG100** under this Outcome PI.

b	Minor primary species stock status			
	Guide post			Minor primary species are highly likely to be above the PRI. OR

				If below the PRI, there is evidence that the UoA does not hinder the recovery and rebuilding of minor primary species.
	Met?			**Yes – All UoAs**
Rationale				

Based on the evidence presented in section 7.4.2 there is strong evidence that no primary species are caught by this fishery and therefore SA3.2.1 applies and the team determines that none of the UoAs have an impact on this particular component, it **meets SG100** under this Outcome PI.

References	
Ovenstone & TFD, 2021. Fishery management Plan for the Tristan da Cunha fishery for lobster Jasus tristani, Ovenstone and Tristan da Cunha Fishery Department. Tristan Island powerboat database 2021 Edinburgh/Geo Searcher catch database 2021 Tristan Fishery Department Ordinance records Observer records	
Draft scoring range and information gap indicator added at Announcement Comment Draft Report	
Draft scoring range	**≥80 All UoAs**
Information gap indicator	**Information sufficient to score PI**
Data-deficient? (Risk-Based Framework needed)	**No**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**100**
Condition number (if relevant)	**N/a**

7.5.2 PI 2.1.2 – Primary species management strategy

PI 2.1.2		There is a strategy in place that is designed to maintain or to not hinder rebuilding of primary species, and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place for the UoA, if necessary, that are expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are likely to be above the PRI.	There is a **partial strategy** in place for the UoA, if necessary, that is expected to maintain or to not hinder rebuilding of the main primary species at/to levels which are highly likely to be above the PRI.	There is a **strategy** in place for the UoA for managing main and minor primary species.
	Met?	**Yes – All UoAs**	**Yes – All UoAs**	**No – All UoAs**
Rationale				

In the context of this performance indicator (Source: MSC FCR v2.01; Table SA8):

- "Measures" are actions or tools in place that either explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere.

- A "partial strategy" represents a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically.

- A "strategy" represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome, and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts.

The measures available for consideration under the management of the fishery for this component are:

1. Limited entry fishery – UoA 1 – limited licences for powerboats. UoA 2-4 – licence limited to FV *Edinburgh* and its 4 powerboats
2. Closed seasons

3. Gear type - A standard mesh size of 70 mm is used on all trap types. All three gear types (box traps, monster traps and hoop nets) are open – i.e. lobsters and octopus entering the traps can also exit at will by the same opening. There is therefore no risk of ghost fishing by lost traps, and no need for escape gaps.
4. Near 100% observer coverage.
5. Extensive catch composition and landings reporting.

There are no primary main or minor species identified for this fishery as per the evidence base presented in section 7.4.2. This is in part because no other species other than the target stocks of rock lobster are subject to stock management objectives reflected in either limit (LRP) or target reference points (TRP), and secondly because the catch profile is dominated by the target stock. As such the 'if necessary' statement of the SG60 and SG80 scoring guideposts is warranted here and as such both SGs are reached **SG60 and SG80 met**.

SG100 is not met on the basis that the management strategy for the fishery has not been designed to manage primary species as required for the definition of 'strategy' required by the MSC.

b	Management strategy evaluation			
	Guide post	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 measures/partial strategy will work, based on some information directly about the fishery and/or species involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the fishery and/or species involved.
	Met?	**Yes – All UoAs**	**Yes – All UoAs**	**Yes – All UoAs**
Rationale				

There are no primary main or minor species identified for this fishery as per the evidence base presented in section 7.4.2. This is in part because no other species other than the target stocks of rock lobster are subject to stock management objectives reflected in either limit (LRP) or target reference points (TRP), and secondly because the catch profile is dominated by the target stock. As such the 'if necessary' statement identified in SIa of the SG60 and SG80 scoring guideposts is warranted here on the basis of this MSC Interpretation (link) and as such both SGs are reached **SG60 and SG80 met**.

SG100 is met on the basis direct of information from the fishery which shows that:

a. because no other species other than the target stocks of rock lobster are subject to stock management objectives reflected in either limit (LRP) or target reference points (TRP), so by default the partial strategy will work
b. The information base for the fishery is comprehensive (catch composition is detailed and there is a high level of observer coverage)

c	Management strategy implementation

	Guide post		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is **clear evidence** that the partial strategy/strategy is being **implemented successfully and is achieving its overall objective as set out in scoring issue (a).**
	Met?		**Yes – All UoAs**	**Yes – All UoAs**
Rationale				

There are no primary main or minor species identified for this fishery as per the evidence base presented in section 7.4.2. This is in part because no other species other than the target stocks of rock lobster are subject to stock management objectives reflected in either limit (LRP) or target reference points (TRP), and secondly because the catch profile is dominated by the target stock. As such the 'if necessary' statement identified in SIa of the SG80 scoring guideposts is warranted here on the basis of this MSC Interpretation (link) and as such **SG80 is met**.

Clear evidence of the partial strategy being implemented is available in the catch composition data and observer data from the fishery together with the lack of stocks managed by limit (LRP) or target reference points (TRP) in the geographical area of the fishery. **SG100 is met.**

d	Shark finning			
	Guide post	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.
	Met?	**N/a**	**N/a**	**N/a**
Rationale				

There are no sharks identified in this component from the information sources presented in section 7.4.2.

e	Review of alternative measures			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of main primary species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of unwanted catch of all primary species, and they are implemented, as appropriate.

	Met?	**N/a**	**N/a**	**N/a**
Rationale				

There are no primary main or minor species identified for this fishery as per the evidence base presented in section 7.4.2. Therefore, there is no unwanted catch of primary species and this SI does not apply

References	
Ovenstone & TFD, 2021. Fishery management Plan for the Tristan da Cunha fishery for lobster Jasus tristani, Ovenstone and Tristan da Cunha Fishery Department. Tristan Island powerboat database 2021 Edinburgh/Geo Searcher catch database 2021 Tristan Fishery Department Ordinance records Observer records	
Draft scoring range and information gap indicator added at Announcement Comment Draft Report	
Draft scoring range	**≥80 all UoAs**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**95**
Condition number (if relevant)	**N/a**

7.5.3 PI 2.1.3 – Primary species information

PI 2.1.3		Information on the nature and extent of primary species is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage primary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impact on main primary species			
	Guide post	Qualitative information is **adequate to estimate** the impact of the UoA on the main primary species with respect to status. **OR** **If RBF is used to score PI 2.1.1 for the UoA:** Qualitative information is adequate to estimate productivity and susceptibility attributes for main primary species.	Some quantitative information is available and is **adequate to assess** the impact of the UoA on the main primary species with respect to status. **OR** **If RBF is used to score PI 2.1.1 for the UoA:** Some quantitative information is adequate to assess productivity and susceptibility attributes for main primary species.	Quantitative information is available and is **adequate to assess with a high degree of certainty** the impact of the UoA on main primary species with respect to status.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**Yes - all UoA**
Rationale				

The information available for consideration under this component are:

1. Tristan Fishery Department Ordinance records (UoA 1 – powerboat fleet) (Figure 13).
2. Powerboat summarised landing data with octopus catch
3. FV *Edinburgh* / *Geo Searcher* catch database with octopus and discard weights (discards of undersized and berried females)
4. Effort (Number of days per season, number of traps hauled per season) for the Edinburgh/Geo Searcher.
5. Observer records of all fishing trips
6. Latham (2013) initial report on the bycatch profile of the lobster fishery.

In none of the above sources have any primary species been identified. The sources include fishery dependent data with external observation (observer verification of records) and a separate scientific study Latham (2013). Furthermore, that none of the other known stocks in the area are managed via reference points provides a high degree of certainty that the data for this component for main primary species is adequate. **SG60, SG80 and SG100 are met**.

b	Information adequacy for assessment of impact on minor primary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor primary species with respect to status.
	Met?			**Yes – all UoAs**
Rationale				

Although there is no known primary species, there is a system for recording of the complete catch record for minor species through the observer program and the catch profile has been reported on Latham (2013), therefore **SG100 is met.**

c	Information adequacy for management strategy			
	Guide post	Information is adequate to support **measures** to manage **main** primary species.	Information is adequate to support a **partial strategy** to manage **main** primary species.	Information is adequate to support a **strategy** to manage **all** primary species, and evaluate with a **high degree of certainty** whether the strategy is achieving its objective.
	Met?	**Yes – all UoAs**	**Yes - all UoAs**	**No - all UoAs**
Rationale				

As per the scoring of PI2.1.2 no partial strategy is deemed required given the lack of interaction between the UoAs and primary species. Nonetheless, there are a number of measures described in PI2.1.2a which would constitute a partial strategy for this component. Further, the information base presented in 2.1.3 SIa shows that should a main primary species be identified the information collecting capacity of the UoA is adequate to detect this**. SG60 and SG80 are met**. As there is no management system in place suitable to described as a 'strategy' in relation to primary species **SG100 cannot be met**.

References

Ovenstone & TFD, 2021. Fishery management Plan for the Tristan da Cunha fishery for lobster Jasus tristani, Ovenstone and Tristan da Cunha Fishery Department.Tristan Island powerboat database 2021 Edinburgh/Geo Searcher catch database 2021 Tristan Fishery Department Ordinance records Observer records	
Draft scoring range	**≥80 all UoAs**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**95**
Condition number (if relevant)	**N/a**

7.5.4 PI 2.2.1 – Secondary species outcome

PI 2.2.1		The UoA aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biological based limit		
Scoring Issue		SG 60	SG 80	SG 100
a	Main secondary species stock status			
	Guide post	Main secondary species are **likely** to be above biologically based limits. **OR** If below biologically based limits, there are **measures** in place expected to ensure that the UoA does not hinder recovery and rebuilding.	Main secondary species are **highly likely** to be above biologically based limits. **OR** If below biologically based limits, there is either **evidence of recovery** or a **demonstrably effective partial strategy** in place such that the UoA does not hinder recovery and rebuilding. **AND** Where catches of a main secondary species outside of biological limits are **considerable**, there is either **evidence of recovery** or a, **demonstrably effective strategy in place between those MSC UoAs that have considerable catches of the species**, to ensure that they collectively do not hinder recovery and rebuilding.	There is a **high degree of certainty** that main secondary species are above biologically based limits.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**No - all UoAs**
Rationale				

See RBF in section 9.9.
Scores are 94 and 96 for *Octopus vulgaris* and *Enteroctopus (Octopus) magnificus* respectfully.
Score capped at SG80

b	Minor secondary species stock status			
	Guide post			Minor secondary species are highly likely to be above biologically based limits. **OR** If below biologically based limits', there is evidence that the UoA does not hinder the recovery and rebuilding of secondary species
	Met?			**No – all UoAs**
Rationale				

Not evaluated therefore **SG100 not met**

References	
See RBF section 9.9 Ovenstone & TFD, 2021. Fishery management Plan for the Tristan da Cunha fishery for lobster Jasus tristani, Ovenstone and Tristan da Cunha Fishery Department.Tristan Island powerboat database 2021 Edinburgh/Geo Searcher catch database 2021 Tristan Fishery Department Ordinance records Observer records	
Draft scoring range	**≥80**
Information gap indicator	**More information sought**
Data-deficient? (Risk-Based Framework needed)	**Yes**

Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**80**
Condition number (if relevant)	**N/a**

7.5.5 PI 2.2.2 – Secondary species management strategy

PI 2.2.2		There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species and the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of unwanted catch		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place, if necessary, which are expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a **partial strategy** in place, if necessary, for the UoA that is expected to maintain or not hinder rebuilding of main secondary species at/to levels which are highly likely to be above biologically based limits or to ensure that the UoA does not hinder their recovery.	There is a **strategy** in place for the UoA for managing main and minor secondary species.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**No – all UoAs**
Rationale				

In the context of this performance indicator (Source: MSC FCR v2.01; Table SA8):

- "Measures" are actions or tools in place that either explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere.

- A "partial strategy" represents a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically.

- A "strategy" represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome, and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts.

The measures available for consideration under the management of the fishery for this component are:

1. Limited entry fishery – UoA 1 – limited licences for powerboats. UoA 2-4 – licence limited to FV *Edinburgh* and its 4 powerboats
2. Closed seasons

3. Gear type - A standard mesh size of 70 mm is used on all trap types. All three gear types (box traps, monster traps and hoop nets) are open – i.e. lobsters and octopus entering the traps can also exit at will by the same opening. There is therefore no risk of ghost fishing by lost traps, and no need for escape gaps.
4. Near 100% observer coverage.
5. Extensive catch composition and landings reporting.
6. New measure to be introduced in 2021 is octopus Identification guides for both the FV Edinburgh and the Tristan Factory to aid species separation.

There are no secondary main species identified for UoAs 1 and 4 in this fishery as per the evidence base presented in section 6.4.2. As such the 'if necessary' statement of the SG60 and SG80 scoring guideposts is warranted here and as such both SGs are reached **SG60 and SG80 met.**

For UoA 2 and 3 the octopuses *Octopus vulgaris* and *Octopus magnificus* are considered main secondary species. The measures listed above can be considered an effective partial strategy for these species. The open nature of the traps allows for escape, volumes of catch are monitored and verified by on-board observer. These records are reported on each year within the FMP and are suitable to allow for review of effectiveness if required. **SG60 and SG80 are met.**

SG100 is not met for all UoAs on the basis that the management strategy for the fishery has not been designed to manage secondary species specifically based on the definition of 'strategy' required by the MSC.

b	Management strategy evaluation			
	Guide post	The measures are considered **likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/species).	There is **some objective basis for confidence** that the measures/partial strategy will work, based on some information directly about the UoA and/or species involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on information directly about the UoA and/or species involved.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**No – All UoAs**
Rationale				

For UoAs 1 and 4 there are no secondary main species identified for this fishery as per the evidence base presented in section 7.4.2. As such the 'if necessary' statement identified in SIa of the SG60 and SG80 scoring guideposts is warranted here on the basis of this MSC Interpretation (link) and as such both **SG60 and SG80 met**.

For UoAs 2 and 3 objective basis of confidence in the partial strategy for octopus working comes from the extensive reporting records of the fishery and its independent verification via observers. Further, the catches of octopus show no apparent negative trend over time and nor would the team expect to see any given the open nature of the traps, the low intensity of the fishery and the life-history attributes of the octopus (see the RBF analysis). **SG60 and SG80 met**.

SG100 is not met across the UoAs on the basis that information on the minor species (five finger etc) is not comprehensive enough to draw conclusions assign a high confidence that the partial strategy is working.

c	Management strategy implementation			
	Guide post		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is **clear evidence** that the partial strategy/strategy is being **implemented successfully and is achieving its objective as set out in scoring issue (a).**
	Met?		**Yes – all UoAs**	**No – All UoAs**
Rationale				

For UoAs 1 and 4 there are no secondary main species identified for this fishery as per the evidence base presented in section 7.4.2. As such the 'if necessary' statement identified in SIa of the SG60 and SG80 scoring guideposts is warranted here on the basis of this MSC Interpretation (link) and as such **both SG60 and SG80 met**.

For UoAs 2 and 3 (octopus) clear evidence of the partial strategy being implemented is available in the catch composition data and observer data from the fishery, plus the annual reporting of landed quantities.

The partial strategy for this fishery is not designed with secondary species in mind and although it is clearly implemented successfully there is no objective for managing the secondary species and therefore **SG100 is not met**.

d	Shark finning			
	Guide post	It is **likely** that shark finning is not taking place.	It is **highly likely** that shark finning is not taking place.	There is a **high degree of certainty** that shark finning is not taking place.
	Met?	**N/a**	**N/a**	**N/a**
Rationale				

There are no sharks identified in this component from the information sources presented in section 7.4.2.

e	Review of alternative measures to minimise mortality of unwanted catch			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of **unwanted** catch

		minimise UoA-related mortality of **unwanted** catch of main secondary species.	related mortality of **unwanted** catch of main secondary species and they are implemented as appropriate.	of all secondary species, and they are implemented, as appropriate.
	Met?	**N/a**	**N/a**	**No**
Rationale				

All octopus are wanted catch by the fishers, as evidenced by the landed weights of this species and processing records and that there is no quota limit of size limit for the stock. As the only main secondary species therefore there is no unwanted catch and **SG60 and SG80 are not applicable**. For SG100 there is no biennial review of alternative measures for unwanted catch of minor secondary species and therefore **SG100 is not met**.

References	
Ovenstone & TFD, 2021. Fishery management Plan for the Tristan da Cunha fishery for lobster Jasus tristani, Ovenstone and Tristan da Cunha Fishery Department.Tristan Island powerboat database 2021 Edinburgh/Geo Searcher catch database 2021 Tristan Fishery Department Ordinance records Observer records	
Draft scoring range and information gap indicator added at Announcement Comment Draft Report	
Draft scoring range	**≥80 – All UoAs**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**80**
Condition number (if relevant)	**N/a**

7.5.6 PI 2.2.3 – Secondary species information

PI 2.2.3		Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the UoA and the effectiveness of the strategy to manage secondary species		
Scoring Issue		SG 60	SG 80	SG 100
a	Information adequacy for assessment of impacts on main secondary species			
	Guide post	Qualitative information is **adequate to estimate** the impact of the UoA on the main secondary species with respect to status. **OR** **If RBF is used to score PI 2.2.1 for the UoA:** Qualitative information is adequate to estimate productivity and susceptibility attributes for main secondary species.	Some quantitative information is available and **adequate to assess** the impact of the UoA on main secondary species with respect to status. **OR** **If RBF is used to score PI 2.2.1 for the UoA:** Some quantitative information is adequate to assess productivity and susceptibility attributes for main secondary species.	Quantitative information is available and **adequate to assess with a high degree of certainty** the impact of the UoA on main secondary species with respect to status.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**No - all UoAs**
Rationale				

The information available for consideration under this component are:

1. Tristan Fishery Department Ordinance records (UoA 1 – powerboat fleet) (Figure 13).
2. Powerboat summarised landing data with octopus catch
3. FV *Edinburgh* / *Geo Searcher* catch database with octopus and discard weights (discards of undersized and berried females)
4. Effort (Number of days per season, number of traps hauled per season) for the Edinburgh/Geo Searcher.
5. Observer records of all fishing trips
6. Latham (2013) initial report on the bycatch profile of the lobster fishery.

Information on octopus catches (the only main species for UoA 2 and 4) and recognised main bycatch species is good. Information on catch weights of this scoring element is available in the catch returns from all three sub-sectors of the fishery and these records are overseen by fishery observers. Furthermore, there is a separate scientific study Latham (2013) on bycatch from the fishery.

The quantitative RBF scoring of octopus under PI2.2.1 shows that information for the productivity and susceptibility attributes for these species is adequate to assess the fisheries impact. Based on this and the fishery derived information listed above **SG60 and SG80 are met** across the UoAs.

For all UoA **SG100 cannot be achieved** as there is no RBF scoring option for this SG and there cannot be a high degree of certainty on UoA impact against octopus cannot be achieved without knowledge of the stock status of this species (potentially species *Octopus vulgaris* and *Enteroctopus (Octopus) magnificus*).

b	Information adequacy for assessment of impacts on minor secondary species			
	Guide post			Some quantitative information is adequate to estimate the impact of the UoA on minor secondary species with respect to status.
	Met?			**No - all UoAs**
Rationale				

Latham (2013) bycatch profile of the lobster fishery is the only source of information from the fishery with respect to minor species. However, there is no information on the status of these stocks suitable to estimate UoA impact and therefore **SG100 cannot be met**.

c	Information adequacy for management strategy			
	Guide post	Information is adequate to support **measures** to manage **main** secondary species.	Information is adequate to support a **partial strategy** to manage **main** secondary species.	Information is adequate to support a **strategy** to manage **all** secondary species, and **evaluate** with a **high degree of certainty** whether the strategy is **achieving its objective**.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**No - all UoAs**
Rationale				

As per the scoring of PI2.1.2 no partial strategy is deemed required given the lack of interaction between the UoAs and secondary species. Nonetheless, there are a number of measures described in PI2.1.2a which would constitute a partial strategy for this component. Further, the information base presented in 2.1.3 SIa shows that should a main primary species be identified

the information collecting capacity of the UoA is adequate to detect this. **SG60 and SG80 are met**. As there is no management system in place suitable to described as a 'strategy' in relation to primary species **SG100 cannot be met**.

References	
Tristan Fishery Department Ordinance records (UoA 1 – powerboat fleet) (Figure 13). Powerboat summarised landing data with octopus catch FV Edinburgh / Geo Searcher catch database with octopus and discard weights (discards of undersized and berried females) Effort (Number of days per season, number of traps hauled per season) for the Edinburgh/Geo Searcher. Observer records of all fishing trips Latham (2013) initial report on the bycatch profile of the lobster fishery.	
Draft scoring range and information gap indicator added at Announcement Comment Draft Report	
Draft scoring range	**≥80 all UoAs**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**80**
Condition number (if relevant)	**N/a**

7.5.7 PI 2.3.1 – ETP species outcome

PI 2.3.1		The UoA meets national and international requirements for the protection of ETP species The UoA does not hinder recovery of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Effects of the UoA on population/stock within national or international limits, where applicable			
	Guide post	Where national and/or international requirements set limits for ETP species, the **effects of the UoA** on the population/ stock are known and **likely** to be within these limits.	Where national and/or international requirements set limits for ETP species, the **combined effects of the MSC UoAs** on the population /stock are known and **highly likely** to be within these limits.	Where national and/or international requirements set limits for ETP species, there is a **high degree of certainty** that the **combined effects of the MSC UoAs** are within these limits.
	Met?	**N/a**	**N/a**	**N/a**
Rationale				

This UoA interacts with ETP bird species only (see Section 7.4.6 for detail), none of which have limits. This scoring issue is therefore not relevant.

b	Direct effects			
	Guide post	Known direct effects of the UoA are likely to not **hinder recovery** of ETP species.	Known direct effects of the UoA are likely to not **hinder recovery** of ETP species.	There is a **high degree of confidence** that there are no **significant detrimental direct effects** of the UoA on ETP species.
	Met?	**Yes – All UoAs**	**Yes – All UoAs**	**Yes – All UoAs**
Rationale				

The ETP species which interact with the fishery are birds – see section 7.4.6. Note that these interactions take place with the FV *Edinburgh*, not with the powerboat fishery at Tristan. However, since the FV *Edinburgh* fishes at Tristan, then they apply at all four UoAs, hence all are included in the scoring.

In total, there are eight confirmed species (scoring elements) requiring consideration here these are:

Name	Species	Status	Population
White bellied storm petrel	*Fregetta grallaria*	IUCN Least Concern - but decreasing trend	Brooke (2004) estimated the global population to number around 300,000 individuals
White faced storm petrel	*Pelagodroma marina*	IUCN Least Concern - but decreasing trend	The population size is extremely large, and hence does not approach the thresholds for Vulnerable under the population size criterion. Brooke (2004) estimated the global population to number at least 4,000,000 individuals.
Diving petrel	*Pelecanoides urinatrix*	IUCN Least Concern	Brooke (2004) estimated the global population to exceed 16,000,000 individuals.
Atlantic petrel	*Pterodroma incerta*	IUCN Endangered	1,800,000
Soft plumaged petrel	*Pterodroma mollis*	IUCN Least Concern	The population size is extremely large, and hence does not approach the thresholds for Vulnerable under the population size criterion (<10,000 mature individuals with a continuing decline estimated to be >10 % in ten years or three generations, or with a specified population structure). For these reasons the species is evaluated as Least Concern.
Little shearwater	*Puffinus assimilis*	IUCN Least Concern	100,000-499,999
prions	*Pachyptila vittata*	IUCN Least Concern - but decreasing trend	Brooke (2004) estimated the global population to exceed 15,000,000 individuals.
Cape petrel	*Daption capense*	IUCN Least Concern	Brooke (2004) estimated the global population to exceed 2,000,000 individuals.

There are some unidentified interactions as well recorded in the record but these cannot be attributed to species. A total of 199 direct interaction events (multiple birds per event) were recorded of which there were a total of 70 confirmed bird mortalities over the eight-year period representing an average percentage mortality across all species of 2.8%. Post-release mortality rates (unobserved mortality) are not known directly from the UoA, but birds are handled carefully and dried out if water-logged and observer data includes condition/fate information ratings ranked at five levels as summarised in Table 10. This confirms that from 199 interaction events only 13% resulted in any direct mortality and > 50% resulted in the sea birds being released in healthy (A1) or minor injury (A2) condition. Due to the fate codes being attributed at the incident level (a single bird interaction or 50 birds interacting are both a single occurrence) the proportion of mortality occurrences should be qualified against the overall rate of mortality which averages 2.8% across all species.

The total number of interactions across all species across the time period is 1,815 individuals, of which there were 70 known mortalities. Of the known scoring elements, the lowest estimated population size of any of the species is the lower bound estimate of 100,000 individuals of little shearwater. Unfortunately, the most recent population size estimates for some species are rather old (IUCN cite Brooke in 2004), but the population estimates of these species are very large and the IUCN updated their status in 2018 indicating confidence that the estimates have not changed. Table SA9 requires for SG100 to be met that probability of no significant detrimental direct effects of the UoA on ETP species has to be >90%. Given that the total individuals impacted

across all species (1,815) is less than 2% of the lowest population estimate of the lowest single species (little shearwater) it can be concluded that **SG60, SG80 and SG100 are met are all elements**.

c	Indirect effects			
	Guide post		Indirect effects have been considered for the UoA and are thought to be **highly likely** to not create unacceptable impacts.	There is a **high degree of confidence** that there are no **significant detrimental indirect effects** of the UoA on ETP species.
	Met?		**Yes – All UoAs**	**No – All UoAs**
Rationale				

Indirect impacts are likely to be pollution /litter from the vessel, loss of parents to nesting chicks from adult mortality and sub-lethal injury impacting the birds. The fishery does not land on any of the islands other than Tristan (already inhabited) so will not cause indirect effects such as disturbance to breeding. Given the low numbers of direct mortality across the scoring elements the loss of parents is considered low risk. The vessel has an in-place policy on litter retention in place to reduce impact on this indirect effect. The direct effect from injury or shock from landing on the vessel not resulting in immediate mortality. The vessel uses best practice in handling birds. Details are given in the section 7.4.7 – essentially, they are placed in individual boxes and kept dry, warm, dark, and quiet until release at first light the next morning. Notices are placed abundantly around the ship reminding the crew what to do. On this basis, the team considered that **SG80 is met**. It is not known for certain, however, that all apparently uninjured birds handled in this manner do survive, so there may be some unidentified mortality, hence **SG100 is not met** ('high degree of confidence').

References	
Table 10, Table 11, Table 12, Table 13 FV *Edinburgh* logbook records Redlist – IUCN - https://www.iucnredlist.org/	
Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Data-deficient? (Risk-Based Framework needed)	**No**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	

Overall Performance Indicator score	**90**
Condition number (if relevant)	**N/a**

7.5.8 PI 2.3.2 – ETP species management strategy

PI 2.3.2		The UoA has in place precautionary management strategies designed to: - meet national and international requirements; - ensure the UoA does not hinder recovery of ETP species. Also, the UoA regularly reviews and implements measures, as appropriate, to minimise the mortality of ETP species		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place (national and international requirements)			
	Guide post	There are **measures** in place that minimise the UoA-related 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 UoA'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 UoA'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?	**N/a**	**N/a**	**N/a**
Rationale				

There are no national and international requirements for the protection of ETP species related to this SI therefore the alternative SIb is scored.

b	Management strategy in place (alternative)			
	Guide post	There are **measures** in place that are expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **strategy** in place that is expected to ensure the UoA does not hinder the recovery of ETP species.	There is a **comprehensive strategy** in place for managing ETP species, to ensure the UoA does not hinder the recovery of ETP species.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**
Rationale				

In the context of this performance indicator (Source: MSC FCR v2.01; Table SA8):

- “Measures” are actions or tools in place that either explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere.

- A “strategy” represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome, and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts.

- A “comprehensive strategy” (applicable only for ETP component) is a complete and tested strategy made up of linked monitoring, analyses, and management measures and responses.

The restriction of the gear to highly selective traps and hoop-nets is probably the most important factor in minimizing impacts on ETP species. These gears catch negligible amounts of bycatch, and no interactions with ETP species with the gear have ever been reported. Nonetheless observer coverage and reporting are in place should any events occur. The only interactions with ETP species apply to the FV *Edinburgh* (seabirds landing and striking the ship at night) and therefore efforts are directed at this element of the UoAs. The fishery has a clear strategy in place to minimise these interactions based on a protocol developed by the International Association of Antarctic Tour Operators (IAATO) (Figure 18) – showing minimal lights at night (including use of blackout blinds), turning on lights only in an emergency, using best practice in handling and releasing birds which arrive on board and recording all interactions on the night-watchman's logsheet which is signed off by the observer. The strategy has clearly worked to reduce mortalities and is subject to review and improvement with external support from stakeholders (RSPB and Peter Ryan (UCT)). Evidence of this is the consideration of new measures from 2021 for the chief mate of the FV *Edinburgh* will take head shot photos of the birds encountered as a method of recording species and condition. In conjunction with Peter Ryan an ornithologist at the FitzPatrick Institute at the University of Cape Town there is consideration being given to freezing dead seabirds which have been impacted by the vessel and returning these to South Africa.

More generally, the island is a signatory to ACAP and has an implementation plan for conservation of these species under the agreement (Wolfaardt et al., 2009). There are site management plans in place for the islands e.g. Gough and Inaccessible Islands World Heritage Site Management Plan (RSPB, 2010) and biodiversity action plans (RSPB, 2012). Ongoing research and monitoring on bird populations on the Islands including attempted eradication programs for invasive rodents.

On this basis, the team concluded that **SG60, SG80 and SG100 are met**.

c	Management strategy evaluation			
	Guide post	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 measures/strategy will work, based on **information** directly about the fishery and/or the species involved.	The strategy/comprehensive 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?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**
Rationale				

A quantitative analysis of the data recorded by the observers on the Edinburgh shows that the strategy is working and has been subject to quantitative analysis in peer review journals (Ryan et al., 2021; Glass & Ryan, 2013). Ryan et al. (2021) states that the steps taken to reduce light emitted by fishing vessels after the problem was first highlighted (1990's) greatly decreased the numbers of birds impacted by this fishery (Glass & Ryan 2013). Though they also note that the level of impact has remained more or less constant at this reduced level over the last decade. The overall rate of mortality averages 2.8% according to the analysis of the assessment team or 4% according to Ryan et al. (2021) across all species. **SG60, SG80 and SG100 are met**.

d	Management strategy implementation			
	Guide post		There is some **evidence** that the measures/strategy is being implemented successfully.	There is **clear evidence** that the strategy/comprehensive strategy is being implemented successfully and **is achieving its objective as set out in scoring issue (a) or (b).**
	Met?		**Yes – all UoAs**	**Yes – all UoAs**
Rationale				

Evidence of implementation come from:

- 2013-2021 – logbook records of catches which are verified by the observers onboard.
- Annual summaries of the impacts in the FMP.
- Continued improvement in the strategy through new measures being considered.

SG80 and SG100 are met

e	Review of alternative measures to minimize mortality of ETP species			
	Guide post	There is a review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species.	There is a **regular** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality of ETP species and they are implemented as appropriate.	There is a **biennial** review of the potential effectiveness and practicality of alternative measures to minimise UoA-related mortality ETP species, and they are implemented, as appropriate.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes– all UoAs**
Rationale				

The logbook records of catches are summarised each year in the FMP for the fishery, there is effective review of the impacts between the UoA concession holder and the Tristan Fisheries Department in regard to the need for new measures each year. The proposal for new measures in 2021 including photographing birds and storing dead specimens, shows the system is seeking improvement and trialling new methods**. SG60, SG80 and SG100 are met.**

References
Tristan *FV Edinburgh* logbooks Oberver summary reports J. Glass – Fisheries Director pers comm. Ovenstone & TFD, 2021. Fishery management Plan for the Tristan da Cunha fishery for lobster Jasus tristani, Ovenstone and Tristan da Cunha Fishery Department. DFT, 2020. Fishery Management Plan (FMP) for the exploitation of the spiny lobster Jasus Tristani in the waters of Tristan da Cunha, Department of Fisheries of Tristan da Cunha. *https://iaato.org/wp-content/uploads/2020/03/IP166-Systematic-Conservation-Plan-for-the-Antarctic-Peninsula.doc*

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**100**
Condition number (if relevant)	**N/a**

7.5.9 PI 2.3.3 – ETP species information

PI 2.3.3		Relevant information is collected to support the management of UoA 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	Information adequacy for assessment of impacts			
	Guide post	Qualitative information is **adequate to estimate** the UoA related mortality on ETP species. **OR** **If RBF is used to score PI 2.3.1 for the UoA:** Qualitative information is **adequate to estimate productivity and susceptibility** attributes for ETP species.	Some quantitative information is **adequate to assess** the UoA related mortality and impact and to determine whether the UoA may be a threat to protection and recovery of the ETP species. **OR** **If RBF is used to score PI 2.3.1 for the UoA:** Some quantitative information is **adequate to assess productivity and susceptibility attributes** for ETP species.	Quantitative information is available to assess with a high degree of certainty the **magnitude of UoA-related impacts, mortalities and injuries and the consequences for the status** of ETP species.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**No – all UoAs**
Rationale				

The information base from the fishery in relation to ETP species comes from:

- Tristan FV *Edinburgh* logbooks – which are countersigned by the observer onboard
- Observer summary reports
- J. Glass – Fisheries Director pers comm.
- Annual summaries in the Fishery Management Plan (Ovenstone & TFD 2021; DFT 2020)
- IUCN Redlist population estimates

- Peer review Journal publications of the observer data (Ryan et al., 2021; Glass & Ryan, 2013)

In total these are sufficient to evaluate the mortality from the fishery and estimate the impact of fishing, as set out in the rationale for PI2.3.1. **SG60 and SG80 are met.** For SG100, there are two problems with the 'high degree of certainty': firstly, that for the most recent season (2020 – nightingale), a large interaction event did not identify the species concerned. Secondly, global population estimates for these species are quite approximate and quite old (see rationale and references in Table 13 back to 2004 in some cases), making outcome status difficult to estimate even when individual fisheries such as this one collect good data and the overall impact against the population is low. For this reason the team concluded that **SG100 was not met** in full.

b	Information adequacy for management strategy			
	Guide post	Information is adequate to support **measures** to manage the impacts on ETP species.	Information is adequate to measure trends and support a **strategy** to manage impacts on ETP species.	Information is adequate to support a **comprehensive strategy** to manage impacts, minimize mortality and injury of ETP species, and evaluate with a **high degree of certainty** whether a strategy is achieving its objectives.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**
Rationale				

There is a comprehensive strategy to manage bird impacts from the FV *Edinburgh*, supported by monitoring data which can be used to measure trends. The key reason for impact is understood (lights on at night) and minimised where possible. Hence **SG60 and SG80 are met**. For SG100, there is a comprehensive strategy which minimises mortality and injury, and can be evaluated to be achieving its objectives, as argued in the rationale for PI3.2.2 above. The team debated whether it is achieving its objectives with 'a high degree of certainty' and came to the conclusion that despite some uncertainties in the data which have precluded SG100 being met for the other scoring issues (SIa), the impact of the fishery on these species is so minor that these uncertainties in the data do not have much impact on the evaluation of the outcome of the strategy. Hence **SG100 is met**.

References
Tristan FV *Edinburgh* logbooks – which are countersigned by the observer onboard Observer summary reports J. Glass – Fisheries Director pers comm. Annual summaries in the Fishery Management Plan (Ovenstone & TFD 2021; DFT 2020) Ovenstone & TFD, 2021. Fishery management Plan for the Tristan da Cunha fishery for lobster Jasus tristani, Ovenstone and Tristan da Cunha Fishery Department.

DFT, 2020. Fishery Management Plan (FMP) for the exploitation of the spiny lobster Jasus Tristani in the waters of Tristan da Cunha, Department of Fisheries of Tristan da Cunha. IUCN Redlist population estimates	
Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**90**
Condition number (if relevant)	**N/a**

7.5.10 PI 2.4.1 – Habitats outcome

PI 2.4.1		The UoA does not cause serious or irreversible harm to habitat structure and function, considered on the basis of the area covered by the governance body(s) responsible for fisheries management in the area(s) where the UoA operates		
Scoring Issue		SG 60	SG 80	SG 100
a	Commonly encountered habitat status			
	Guide post	The UoA is **unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	The UoA is **highly unlikely** to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the commonly encountered habitats to a point where there would be serious or irreversible harm.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**No - all UoAs**
Rationale				

The commonly encountered habitats under assessment are kelp covered boulders and bedrock as described by Caselle et al. (2017) to 40 m depth and within the Tristan Marine Management Plan (Tristan, 2020a) and the deeper 40 m -300 m faunal dominated boulder bedrock as described by BAS (2013) and Scott (2017). Under the MSC SGB criteria the kelp habitat can be described as substratum type - boulders and bedrock, Geomorphology - steep shelf and Biota – kelp dominated. The deeper fauna dominated habitat can be described as substratum - solid reef / boulder cobbles with sand patches; geomorphology - medium relief; and occasional biota - large erect, small erect/encrusting/ fauna. These habitats are classified as commonly encountered as they are the principal habitat of the target species and the one which regularly comes into contact with the traps as per the requirements of SA3.13.3.1. the distribution of the kelp habitat is known as depicted in Figure 27. For the deeper fauna dominated habitats distribution is less well known but is identified from those survey samples in Figure 21 and Figure 22, the description of species groups described in Scott (2017), and recent TDC photos (Figure 23 and Figure 24). It covers all areas below 40 m on all islands down to depths exceeding the limits of the fishery at 300 m. The overlap of both habitats can be assessed in comparison with the fishery footprints and bathymetry data in Figure 25. This data shows that the FV *Edinburgh* fishery operates to a maximum depth of around 160 m with the concentration of effort at all islands at 20 m – 80 m depth. For the Tristan powerboats the distribution of effort by depth is further restricted to waters less than 30 m due to the traps being hand pulled and therefore only the kelp dominated habitats are encountered by this sector.

Direct impact on the commonly encountered habitats is through the traps landing on the kelp / fauna, by dragging through the kelp/fauna on haulage and anchoring of the vessel. Traps generally cause very little physical damage to benthic habitats. The previous assessments of this fishery (Gascoigne et al., 2016; Gascoigne et al., 2013) concluded this on the basis of the UoA using i) static gear, ii) limited anchoring sites used repeatedly, iii) a relatively low number of total fishing days at each island (for example FV *Edinburgh* at Tristan ~ 30 per annum).and iv) that the Tristan Group's exposure in the Southern Ocean means the environment is naturally very physically energetic. Indeed, in the last reassessment the Peer Reviewer pointed out that '*The fishery occurs in a highly energetic environment where natural physical disturbance of the habitat is likely to be far greater than any impact of the fishery. This additional evidence should be included within the rationale for meeting SG80*.'

For this assessment there is no change in gear or impact types from the previous assessment; the impact of the gear can occur during the deployment (traps landing on sensitive substrate), when a trap is in-situ and during hauling (via abrasion), the impact of the ropes on the substrate and potentially through ghost fishing. However, there is additional information available at this audit which includes: the addition of the fauna dominated boulder habitat from 40 m to 300 m, updated fishery footprint information (Figure 25) and information on trap loss rates at ~0.15% of all deployments in the past 3 years (Table 15). That the fishery footprint does not overlap entirely with the fauna dominated deeper habitat across all its depth range 40 m -300 m, and that the footprint is concentrated at 80 m, along with the low trap loss rates, can be added to the list of conclusions that the impacts, described above that the UoAs are highly unlikely to damage these habitats to a point where structure and function of the habitat would be serious or irreversible against the MSC definition of such, that the habitat would be unable to recover at least 80% of its structure and function within 5-20 years if fishing on the habitat were to cease entirely (SA3.13.4, MSC FCRv2.0). **SG60 and SG80 are considered met**.

Neither the 2013 survey of the Tristan environment, nor the 2017 scuba survey noted any evidence of permanent scarring from the fishery on the habitats, nor state any concern on the detrimental impact of the fishery on the benthic habitat (though it is noted this was not an objective of the work in either case). Similarly as summarised in Gascoigne et al. (2013), littoral surveys from the 1980s and the 2000s also recorded no evidence of fishery damage. However, given that no survey has ever set direct objectives to assess the damage to the commonly encountered habitats, **SG100 is not met.**

b	VME habitat status			
	Guide post	The UoA is **unlikely** to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	The UoA is **highly unlikely** to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.	There is **evidence** that the UoA is highly unlikely to reduce structure and function of the VME habitats to a point where there would be serious or irreversible harm.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**No - all UoAs**
Rationale				

The VMEs under assessment are hard substrate faunal communities consisting of sea pens, crinoids, whip corals, and very large gorgonians (Caselle et al., 2017) as described by Caselle et al. (2017) and within the Tristan Marine Management Plan (Tristan, 2020a). Under the MSC SGB criteria this is substratum type – bedrock seamounts, Geomorphology - deep shelf and seamount and Biota – sea pens, crinoids, whip corals, and very large gorgonians. These habitats are classified as VMEs as they fulfil the criteria of GSA3.13.3.2 in being unique, rare, and fragile to human activities.

The depth distribution of these habitat is known as depicted in Figure 20 and spatially in Figure 28 and the overlap of this habitat can be assessed in comparison with the fishery footprints in Figure 25. This data shows that the FV *Edinburgh* fishery operates to a maximum depth of around 160 m with the concentration of effort at all islands at 20 m – 80 m depth. For the Tristan powerboats the distribution of effort by depth is further restricted to waters less than 30 m due to the traps being hand pulled.

Direct impact on the VME habitats is through the traps landing on the emergent fauna, dragging through the habitat on haulage and anchoring of the vessel if encountered. The depth of the fishing effort and the depth of occurrence of these habitats means overlap between the two is very low, and therefore any serious or irreversible harm from direct impacts which would reduce

habitat structure and function below 80% of the unimpacted level (SA3.13.4.1) is not highly likely. The initial assessment in 2013 did report that the captain of the FV *Edinburgh* at the time, stated that the monster traps do occasionally bring up sea fans *Callogorgia verticillata*, a species commonly found in the Tristan area. Whether these sea fans are part of a VME / pVME or just individuals is unknown.

On the basis that the overlap between the UoAs and the VME is minimal as result of the fishery operating depth **SG60 and SG80 can be assessed as being met**. However, there is evidence that occasional encounters (haul up of sea fans) occurs and the depth boundaries between fauna dominated communities on the slopes of the islands is not clearly defined therefore the team do not consider that **SG100 can be met.**

c	Minor habitat status			
	Guide post			There is **evidence** that the UoA is highly unlikely to reduce structure and function of the minor habitats to a point where there would be serious or irreversible harm.
	Met?			**No – all UoAs**
Rationale				

As per SIb there is some uncertainty in completeness of information in the fauna dominated communities on the slopes of the islands as identified by Scott (2017) where minor habitats may be undefined, therefore **SG100 is not met**

References
Caselle, J. et al., 2018. First quantification of subtidal community structure at Tristan da Cunha Islands in the remote South Atlantic: From kelp forests to the deep sea. PLos one, 13(3). Caselle, J.E. et al., 2017. Ecosystem Assessment of the Tristan Da Cunha Islands., oyal Society for Protection of Birds and Tristan da Cunha Government. Tristan Marine Management Plan (Tristan 2020a) – Tristan, 2020a. Tristan da Cunha Marine Management Plan, Tristan da Cunha Government. Scott, S., 2017. A Biophysical Profile ofthe Tristan da Cunha Archipelago, PEW - Commissioned and reviewed by The Pew Charitable Trusts. BAS, 2013. South Atlantic wilderness; assessment of Tristan da Cunha's seabed biodiversity, British Antarctic Survey, Natural Environment Research Council, Madingley Road, Cambridge, UK. Figure 25, Figure 26, Figure 27

Cross reference (Scott 2017; BAS 2013)	
Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Data-deficient? (Risk-Based Framework needed)	**No**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**80**
Condition number (if relevant)	**N/a**

7.5.11 PI 2.4.2 – Habitats management strategy

PI 2.4.2		**There is a strategy in place that is designed to ensure the UoA does not pose a risk of serious or irreversible harm to the habitats**		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	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 all MSC UoAs/non-MSC fisheries on habitats.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**No - all UoAs**
Rationale				

In the context of this performance indicator (Source: MSC FCR v2.01; Table SA8):

- “Measures” are actions or tools in place that either explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere.

- A “partial strategy” represents a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically.

- A “strategy” represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome, and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts.

The measures available for consideration under the management of the fishery for this component are:

- Limited entry fishery – UoA 1 – limited licences for powerboats. UoA 2-4 – licence limited to FV *Edinburgh* and its 4 powerboats
- The short fishing seasons at each island limits the numbers of traps being set and therefore subsequent damage.
- Closed areas – MCZ 50 nm from all islands (relevant to VMEs and FCR2.01 SA3.14.2.2b)
- VMS records of the FV *Edinburgh* (relevant to VMEs and FCR2.01 SA3.14.2.2a)
- 100% observer coverage of FV *Edinburgh* operations (excepting in 2020 with the covid pandemic).
- Depth limits of the fishery (powerboats limited by use of hand pulling traps to ~30 m, FV *Edinburgh* by topography of the islands ~ 150 m)
- Monitoring of habitats in the form of scientific dive surveys– e.g. Caselle et al. (2017), the Blue Belt Programme. Though these have not been regular or directed specifically at monitoring fishery impact on habitats they provide background information on habitat condition and potential damage. The Marine Management Plan (Tristan, 2020a) Objective A1 plans to *‘identifying baseline information for all habitats and monitoring of inshore habitats, key species, seamounts’* allowing establishment of baselines for these key habitats by 2026.
- The Tristan Marine Plan as shown in the table below as relevant to this PI;

Objective A1. Scientific research and monitoring are conducted to support ongoing management.				
Actions	**Indicators and targets**	**Milestone**	**Responsible**	**Priority**
i. Establish a scientific research and monitoring plan that ensures that external scientists and stakeholders contribute directly or indirectly to enhancing knowledge and improving management	Research and monitoring plan adopted and prioritised. The plan will include objectives related to: - identifying baseline information for all habitats (see A1ii) - monitoring of inshore habitats, key species, seamounts (see A1iii-iv) - studying climate change risks and ecosystem benefits (see A1vi-vii) - monitoring of marine litter (see A2v) - monitoring non-native species (see A3i)	By March 2022	TdCG with external support	High

Objective A1. Scientific research and monitoring are conducted to support ongoing management.				
N.B the plan will complement but not duplicate the monitoring actions contained in the C&E Strategy	- monitoring inshore subsistence fishing (see B1iv)			
ii. Conduct scientific research surveys to better establish baseline and monitoring information	Baselines established for key habitats; additional monitoring data collected	By end 2026	TdCG with external support	High
iii. Initialise inshore surveys to monitor health of biodiversity and key habitats	Key indicator species are identified. Inshore surveys are designed, and first stage completed. Catch rates of indicator species reported in a standardised time series dataset.	By March 2021	TdCG with external support	High
v. Monitor species living on seabed of previously trawled seamounts to track habitat recovery	Density and structure of seafloor (benthic) habitat forming species showing recovery	As research survey opportunities allow	External support for TdCG	Medium

There can be considered a good understanding of impact types on the habitat in the area and in broad terms the restriction of fishing gear to traps set on hard substrata resultant from the gear/target species relationship is a relevant management measure which will restrict habitat damage.

The team considered that these measures together comprised a 'partial strategy' to avoid habitat damage, with a reasonable basis for confidence that it would work, given that past and recent habitat surveys do not indicate any signs of damage and the plan for future work in this area to further understand the impacts. However, at present, it cannot be said as required by SA3.14.2.1 that a comprehensive risk assessment has been completed, nor have impacts of fishing gear on all habitats been directly tested. Finally, there are no records being kept on when or where dislodged fauna such as sea fans are encountered by the fishery. Thus, **SG60 and SG80 are met** but **SG100 is not met**.

NOTE: as per this derogation if a fishery has a partial management strategy in place that protects and avoids vulnerable marine ecosystems (VMEs) and potential VMEs, then commonly accepted move-on rules are not required (at the SG60 level). Move -on rules and clauses SA3.14.2.2a, b only apply where VMEs are encountered. As noted in section 7.4.8.1. the designation of VMEs is the responsibility of national governments etc and for this fishery there is minimal overlap with VMEs. Seafans alone are not VMEs (although they may be considered VME indicator species) and the haul of occasional sea fans evidenced in the fishery would not need to be considered in reference to move -on rules, as they occur outside of (p)VMEs.

b	Management strategy evaluation			
	Guide post	The measures are **considered likely** to work, based on plausible argument (e.g. general experience, theory or comparison with similar UoAs/habitats).	There is some **objective basis for confidence** that the measures/partial strategy will work, based on **information directly about the UoA and/or habitats** involved.	**Testing** supports **high confidence** that the partial strategy/strategy will work, based on **information directly about the UoA and/or habitats** involved.

	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**No - all UoAs**
Rationale				

It is known from wider comparative and stakeholder-based studies that trap fishing is not particularly damaging to habitats relative to mobile gears (e.g. (Eno et al., 2001; Chuenpagdee et al., 2003)). This fishery has always been considered a relatively low impact fishery with its gear type, low number of fishing days, a single vessel fishing UoAs 2-4 and limited number of Tristan vessels in UoA 1, and small depth footprint**. Suitable to meet SG60**

Objective basis for confidence for this comes from those comparative studies but also from the surveys which do not report any evidence of habitat damage by the fishery, **SG80 is met**. In line with the previous assessment, the team considered that given the paucity of direct testing of the gear on the habitats involved, and the lack of a systematic recording mechanism for any habitat features which may be dislodged by traps from the habitats (an implied requirement of 'testing') therefore **SG100 is not met.**

c	Management strategy implementation			
	Guide post		There is **some quantitative evidence** that the measures/partial strategy is being implemented successfully.	There is **clear quantitative evidence** that the partial strategy/strategy is being implemented successfully and is achieving its objective, as outlined in scoring issue (a).
	Met?		**Yes - all UoAs**	**No - all UoAs**
Rationale				

Quantitative evidence showing successful implementation is available for the following measures in the fishery:

VMS data of the FV *Edinburgh* showing position in relation to depth since 2013 (Figure 25).

Number of fishing days and number of pot hauls.

Observer annual summaries showing percentage coverage of operations and with observers confirming logbooks for fishing positions.

Distributional evidence of kelp forests (Figure 26) and sea mounts (Figure 28).

SG80 is met

With respect to the objective of habitat management objective for SG100, the Tristan Marine plan states that one objective is to make sure that Tristan da Cunha's marine environment (both its benefits and the activities that are undertaken within it) are well understood through research, monitoring and management and secondly that management is effective and can adapt to

future issues. The team assess that without detailed knowledge of the lower region of the habitat structure of the fishery footprint, where the interface between kelp dominated and faunal dominated communities; or the extent of the faunal dominated habitats, and without recording of seapen or other habitat feature bycatch in trap hauls, **SG100 cannot be met**.

d	Compliance with management requirements and other MSC UoAs'/non-MSC fisheries' measures to protect VMEs			
	Guide post	There is **qualitative evidence** that the UoA complies with its management requirements to protect VMEs.	There is **some quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.	There is **clear quantitative evidence** that the UoA complies with both its management requirements and with protection measures afforded to VMEs by other MSC UoAs/non-MSC fisheries, where relevant.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**Yes - all UoAs**
Rationale				

Almost all VMEs for the fishery occur in waters deeper than the fishery and are protected by the MCZ no take zone. Evidence of compliance for this comes from VMS records of the FV *Edinburgh* and maps of the MCZ showing the fishery operating exclusively in the Inshore fishing area (Figure 25, Figure 29). **SG60 is met**. There are no other MSC fisheries in the vicinity to which the SG80 and SG100 is relevant. The only other fisheries operating in the same inshore fishing area to the UoAs is sustenance fishing by Tristan islanders and there are no additional measures from this fishery to which the UoAs need abide by. **SG80 and SG100 are met**.

References	
Caselle, J. et al., 2018. First quantification of subtidal community structure at Tristan da Cunha Islands in the remote South Atlantic: From kelp forests to the deep sea. PLos one, 13(3). Caselle, J.E. et al., 2017. Ecosystem Assessment of the Tristan Da Cunha Islands., oyal Society for Protection of Birds and Tristan da Cunha Government. Tristan Marine Management Plan (Tristan 2020a) - Tristan, 2020a. Tristan da Cunha Marine Management Plan, Tristan da Cunha Government. Scott, S., 2017. A Biophysical Profile ofthe Tristan da Cunha Archipelago, PEW - Commissioned and reviewed by The Pew Charitable Trusts. BAS, 2013. South Atlantic wilderness; assessment of Tristan da Cunha's seabed biodiversity, British Antarctic Survey, Natural Environment Research Council, Madingley Road, Cambridge, UK.. Figure 25, Figure 26, Figure 27 Cross reference (Scott 2017; BAS 2013)	
Draft scoring range	**≥80**

Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**85**
Condition number (if relevant)	**N/a**

7.5.12 PI 2.4.3 – Habitats information

PI 2.4.3		Information is adequate to determine the risk posed to the habitat by the UoA and the effectiveness of the strategy to manage impacts on the habitat		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	The types and distribution of the main habitats are **broadly understood**. **OR** **If CSA is used to score PI 2.4.1 for the UoA:** Qualitative information is adequate to estimate the types and distribution of the main habitats.	The nature, distribution, and **vulnerability** of the main habitats in the UoA area are known at a level of detail relevant to the scale and intensity of the UoA. **OR** **If CSA is used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is adequate to estimate the types and distribution of the main habitats.	The distribution of all habitats is known over their range, with particular attention to the occurrence of vulnerable habitats.
	Met?	**Yes – all UoAs**	**No – all UoAs**	**No – all UoAs**
Rationale				

Information on habitat type and distribution suitable to allow SGB description is available from independent research such as Caselle et al. (2018; 2017), and (Scott, 2017; BAS, 2013). Previous iterations of this report also identified older surveys which included habitat information such as Darwin Initiative project (DPLUS005) (Gascoigne et al. 2016) which inform on this also. **SG60 can be met**.

In relation to VMEs (SA3.15.6) the fishery footprint is available from VMS data and is shown in Figure 25. Closed areas (no overlap with UoA in any case) are known. There are no precautionary trigger levels for VME indicator organisms in place.

In relation to SG80 the adequacy of information for the commonly encountered kelp habitat (nominally 0 m to 40 m) is known from dive surveys, and mapping suitable to produce distribution maps and identify key habitat forming species (section 7.4.10 and Figure 27) (Caselle et al. (2018; 2017), and (Scott, 2017; BAS, 2013)). As noted above the UoA footprint is well recorded and overlap between the UoA and the habitat can be matched. Given that the fishery is conducted by a single vessel (FV Edinburgh) only, except for a quarter of Tristan Island, and for only a few limited trips each year the intensity of the fishery can be considered low. With respect to the Tristan Island fleet their footprint is limited to the NE quarter of UoA 1, the number of fishing

days is limited by suitable weather (~90 days a year), and the number of boats and pots is restrictive. These aspects mean the intensity of this section of the fishery is equally low. For the commonly encountered kelp habitat (nominally 0 m to 40 m) SG80 is met for this element.

In relation to SG80, the adequacy of information for the commonly encountered deep boulder rock habitat (between 40 m and 300 m) the scale and intensity of the UoA has the same low attributes detailed for the commonly encountered kelp habitat (nominally 0 m to 40 m) above apply, with the addition that the Tristan fleet do not fish below 40 m so the impact on their section of the Tristan coast is nil for this element. However, the habitat type is only known from the surveys of BAS (2013) and recent photographs (Figure 23 and Figure 24) and although habitat types and key species are known there are concerns on the paucity of distribution and complexity highlighted by Scott (2017). Presumably this is also partly the rationale for the marine plan objectives shown in PI 2.4.2. Based on this concern the team **do not** consider the distribution and vulnerability (SA3.15.4.2) of this habitat element is known in sufficient detail around all the islands to conclude that SG80 is met at present. **SG80 is not met for this element.**

b	Information adequacy for assessment of impacts			
	Guide post	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. **OR** **If CSA is used to score PI 2.4.1 for the UoA:** Qualitative information is adequate to estimate the consequence and spatial attributes of the main habitats.	Information is adequate to allow for identification of the main impacts of the UoA on the main habitats, and there is reliable information on the spatial extent of interaction and on the timing and location of use of the fishing gear. **OR** **If CSA is used to score PI 2.4.1 for the UoA:** Some quantitative information is available and is adequate to estimate the consequence and spatial attributes of the main habitats.	The physical impacts of the gear on all habitats have been quantified fully.
	Met?	**Yes – all UoAs**	**No – all UoAs**	**No – all UoAs**
Rationale				

Information on the fishery footprint is available from VMS data and is shown in Figure 25 suitable to understand spatial overlap with the habitats when compared against bathymetry data, sample sites and projected distribution maps (Figure 20 to Figure 27). Logbooks from the fishery and daily position recording from both the FV *Edinburgh* and the powerboats provides information on the timing and location of use of the fishing gear. Main impacts can be assigned from comparative and stakeholder-based studies show that trap fishing is not particularly damaging to habitats relative to mobile gears (e.g. (Eno et al., 2001; Chuenpagdee et al., 2003)). On this basis the team consider that **SG60 is met** and the majority of the SG80 requirements are met. However, the lack of any recording system of habitat interactions (e.g. video camera or trap recovered dislodged fauna) is viewed as limitation in the fishery against the ability to define spatial extent of interaction as required for SG80 therefore **SG80 is not met**.

c	Monitoring			
	Guide post		Adequate information continues to be collected to detect any increase in risk to the main habitats.	Changes in all habitat distributions over time are measured.
	Met?		**No – all UoAs**	**No – all UoAs**
Rationale				

As per the rationale in rationale in SIa and SIb there is a lack of adequate information for the commonly encountered deep boulder rock habitat (between 40 m and 300 m) and there is no systematic recording of fauna tangled in the pots (however irregularly this occurs) or video surveys of this zone. Although there are objectives within the marine plan to address this (Tristan 2020a) at present there is no continuing information collection suitable in this habitat, **therefore SG80 and SG100 are not met.**

References
Caselle, J. et al., 2018. First quantification of subtidal community structure at Tristan da Cunha Islands in the remote South Atlantic: From kelp forests to the deep sea. PLos one, 13(3). Caselle, J.E. et al., 2017. Ecosystem Assessment of the Tristan Da Cunha Islands., oyal Society for Protection of Birds and Tristan da Cunha Government. Tristan Marine Management Plan (Tristan 2020a) - Tristan, 2020a. Tristan da Cunha Marine Management Plan, Tristan da Cunha Government. Scott, S., 2017. A Biophysical Profile ofthe Tristan da Cunha Archipelago, PEW - Commissioned and reviewed by The Pew Charitable Trusts. BAS, 2013. South Atlantic wilderness; assessment of Tristan da Cunha's seabed biodiversity, British Antarctic Survey, Natural Environment Research Council, Madingley Road, Cambridge, UK. Figure 25, Figure 26, Figure 27

Draft scoring range	**60-79**
Information gap indicator	**Information sufficient to score PI, but stakeholder input welcomed.**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**60**

Condition number (if relevant)	**1**

7.5.13 PI 2.5.1 – Ecosystem outcome

PI 2.5.1		The UoA 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	Ecosystem status			
	Guide post	The UoA 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 UoA 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 UoA 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?	**Yes - all UoAs**	**Yes - all UoAs**	**No - all UoAs**
Rationale				

The key ecosystem elements at risk are: 1. loss of kelp forming habitat as a function loss of predators such as rock lobster (notable in places like Tasmania and California) 2. climate-related changes to the distribution/abundance and recruitment of rock lobster. 3. Invasive species disrupting the ecosystem.

The food web ecology of the ecosystems at the Tristan group are researched and understood (Caselle et al., 2018; Caselle et al., 2017) with knowledge of the difference between the island groups based on latitude (Figure 30). Although this knowledge base does not include direct studies (e.g. ecosystem modelling) clarifying trophic transfer in the ecosystem in a quantitative way.

Jasus tristani is a scavenger (like most other rock lobster species) and a proportion of its diet consists of kelp and algal material. Its main predators are most probably urchins and some fish and shark species. Larval stages of rock lobster drift in the water column as zooplankton for extended periods (i.e. months) and are likely to have high mortality rates due to predation and displacement by currents.

Given its high abundance and large size, *J. tristani* clearly plays an important role in the trophic organization of the benthic ecosystem at Tristan. They are likely predatory on urchins, a primary herbivore in the ecosystem, and may provide top-down control of the herbivore population within the kelp communities. Loss of healthy rock lobster populations in other temperate ecosystems through fishing mortality has been linked to urchin population growth and creation of urchin barrens (Ling et al., 2009; Eurich et al., 2014). These effects are often linked to climate change. However, the stock assessment suggests that populations are not very depleted relative to natural levels (see rationales for PIs 1.1.1) and as that biomass is being maintained at levels much closer to unfished biomass than would be typical for a fishery, there is no reason to suppose that lobster is not playing its full role in the ecosystem as both predator and prey.

As well as the loss of rock lobsters targeted by the UoAs, octopus are also caught by the fishery and are a main species in some UoAs (see

Table 9). Octopuses are predators, and in this environment may feed largely on juvenile rock lobster, as well as on bivalves and other crustacean and mollusc species. Natural predators of octopus are conger and moray eels and some sharks. Octopus species in general are fast growing and have a rapid turnover ('r-selected species'), making the populations resilient to fishing pressure, even if the overall population size is unknown.

With respect to invasive species there have been past concerns of establishment of European mussels (*Mytilus spp.*) and an ongoing concern with the South American silver bream (porgy - *Diplodus argenteus argenteus*), a fish introduced with a stranded oil rig in 2006, and now abundant around Tristan (Scott, 2017). According to previous iterations of this fishery reports these do not appear to have had any knock-on effects on the ecosystem so far (Sue Scott, pers. comm. within Gascoigne et al., 2016) but the impacts have not been fully explored, and juvenile rock lobster have been found in the gut of porgy (Scott, 2017). Clearly introduction of invasive species such as porgy are not an issue generated by the fishery itself, and therefore the UoAs are not highly unlikely to play a role in these ecosystem elements disrupting the ecosystem function, but it is noted here as a key issue identified and managed by the Tristan marine plan (Tristan, 2020a).

Overall, the team considered that it was highly unlikely that the fishing mortality of lobsters or octopus is high enough to disrupt the trophic functioning of benthic ecosystems at Tristan da Cunha, despite the undoubted importance of *J. tristani* as a component of the benthos, and as the UoAs are not responsible for the invasive species introduction (or management) **SG60 and SG80 are met.**

Nonetheless, as mentioned above there have been no direct studies (e.g. ecosystem modelling through ecosim etc) clarifying the roles of *J. tristani* or octopus in the ecosystem in a quantitative way, so hard evidence is still lacking in some respects – thus **SG100 is not met**.

References
MARAM stock assessments for rock lobster in each of the UoAs Gascoigne, J., Bell, M. & Japp, D., 2016. MSC Public Certification Report (PCR) Tristan da Cunha Rock lobster, Marine Stewardship Council, London. Tristan, 2020a. Tristan da Cunha Marine Management Plan, Tristan da Cunha Government. Caselle, J. et al., 2018. First quantification of subtidal community structure at Tristan da Cunha Islands in the remote South Atlantic: From kelp forests to the deep sea. PLos one, 13(3). Caselle, J.E. et al., 2017. Ecosystem Assessment of the Tristan Da Cunha Islands., oyal Society for Protection of Birds and Tristan da Cunha Government. Ling, S.D. et al., 2009. Overfishing reduces resilience of kelp beds to climate-driven catastrophic phase shift. Proceedings of the National Academy of Sciences, 106(52), pp.22341–22345. Available at: https://www.pnas.org/content/106/52/22341. Eurich, J., Selden, R. & Warner, R., 2014. California spiny lobster preference for urchins from kelp forests: Implications for urchin barren persistence. Marine Ecology Progress Series, 498, pp.217–225.

Cross reference links: Gascoigne et al. (2016) and Tristan (2020a) (Caselle et al. 2018; Caselle et al. 2017) (Ling et al. 2009; Eurich et al. 2014)	
Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Data-deficient? (Risk-Based Framework needed)	**No**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**80**
Condition number (if relevant)	

7.5.14 PI 2.5.2 – Ecosystem management strategy

PI 2.5.2		There are measures in place to ensure the UoA does not pose a risk of serious or irreversible harm to ecosystem structure and function		
Scoring Issue		SG 60	SG 80	SG 100
a	Management strategy in place			
	Guide post	There are **measures** in place, if necessary, which take into account the **potential impacts** of the UoA on key elements of the ecosystem.	There is a **partial strategy** in place, if necessary, which takes into account **available information and is expected to restrain impacts** of the UoA 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 which contains measures to **address all main impacts of the UoA** on the ecosystem, and at least some of these measures are in place.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**No - all UoAs**
Rationale				

In the context of this performance indicator (Source: MSC FCR v2.01; Table SA8):

- “Measures” are actions or tools in place that either explicitly manage impacts on the component or indirectly contribute to management of the component under assessment having been designed to manage impacts elsewhere.

- A “partial strategy” represents a cohesive arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome and an awareness of the need to change the measures should they cease to be effective. It may not have been designed to manage the impact on that component specifically.

- A “strategy” represents a cohesive and strategic arrangement which may comprise one or more measures, an understanding of how it/they work to achieve an outcome, and which should be designed to manage impact on that component specifically. A strategy needs to be appropriate to the scale, intensity and cultural context of the fishery and should contain mechanisms for the modification fishing practices in the light of the identification of unacceptable impacts.

The following measures in place for the three ecosystem elements identified in PI 2.5.1 (1. loss of kelp forming habitat as a function loss of predators such as rock lobster (notable in places like Tasmania and California) , 2. climate-related changes to the distribution/abundance and recruitment of rock lobster. 3. Invasive species disrupting the ecosystem.

1. Annual stock assessments of rock lobster at the 4 Islands fished by the UoA.
2. Annual TACs set at precautionary levels as described in Principle 1 of this assessment

3. Limited entry fishery.
4. Monitoring of habitats in the form of scientific dive surveys– e.g. Caselle et al., (2017) and the Blue Belt Programme. Though these have not been regular or directed specifically at monitoring fishery impact on habitats, they provide background information on habitat condition and potential damage.
5. The Marine Management Plan (Tristan, 2020a) includes the following objectives which show the strategy developed to manage ecosystem risks:

Objective A1. Scientific research and monitoring are conducted to support ongoing management.				
Actions	**Indicators and targets**	**Milestone**	**Responsible**	**Priority**
i. Establish a scientific research and monitoring plan that ensures that external scientists and stakeholders contribute directly or indirectly to enhancing knowledge and improving management N.B the plan will complement but not duplicate the monitoring actions contained in the C&E Strategy	Research and monitoring plan adopted and prioritised. The plan will include objectives related to: - identifying baseline information for all habitats (see A1ii) - monitoring of inshore habitats, key species, seamounts (see A1iii-iv) - studying climate change risks and ecosystem benefits (see A1vi-vii) - monitoring of marine litter (see A2v) - monitoring non-native species (see A3i) - monitoring inshore subsistence fishing (see B1iv)	By March 2022	TdCG with external support	High
ii. Conduct scientific research surveys to better establish baseline and monitoring information	Baselines established for key habitats; additional monitoring data collected	By end 2026	TdCG with external support	High
iii. Initialise inshore surveys to monitor health of biodiversity and key habitats	Key indicator species are identified. Inshore surveys are designed, and first stage completed. Catch rates of indicator species reported in a standardised time series dataset.	By March 2021	TdCG with external support	High
iv. Monitor populations of key species (selected seabirds; sharks, marine mammals, lobster, kelp)	Key indicator species are identified. Populations of indicator species are monitored and not declining	By March 2022. By end 2026. Review every 5 years	External support for TdCG	Medium

v. Monitor species living on seabed of previously trawled seamounts to track habitat recovery	Density and structure of seafloor (benthic) habitat forming species showing recovery	As research survey opportunities allow	External support for TdCG	Medium
vi. Identify the potential risk of current and predicted impacts of climate change on marine resources, habitats, and ecosystems	Data required to inform climate change studies established and models developed	By end 2025	External support for TdCG	Medium
vii. Identify, and where possible value, the benefits the marine environment provides for the community	Assessments are complete for key ecosystems and/or services	By end 2025	External support for TdCG	High

Objective A3. Risks of invasive non-native species introduction are kept to a minimum				
Actions	**Indicators and targets**	**Milestone**	**Responsible**	**Priority**
i. Sample for marine alien species and take action to control new threats if possible	Non-native species sampling undertaken	By end 2021	TdCG	High
ii. Develop and adopt clear biosecurity policies for cruise and expedition vessels visiting Tristan da Cunha	Biosecurity Policy adopted, including marine non-native species issues	By end 2021	TdCG	High
iii. Assess the level of risk posed by ballast water exchange from vessels visiting Tristan da Cunha EEZ and take recommended measures if medium, high or very high-risk vessels are identified	Ballast water risk assessed, and policy and measures adopted	By end 2022	TdCG with external support	Low

The team considered that there is a strategy to avoid species introductions; and that the fishing method and management objectives, which result in high biomass, constitute a partial strategy suitable for **SG60 and SG80 to be met**. This is compiled within the marine management plan which include a strategy for regular review and adaption, which should allow SG100 to be met. However, the marine management plan does not include any plan to carry out ecosystem modelling of the benthic foodwebs so **SG100 is not met**

b	Management strategy evaluation

	Guide post	The **measures** are considered likely to work, based on plausible argument (e.g., general experience, theory or comparison with similar UoAs/ ecosystems).	There is **some objective basis for confidence** that the measures/ partial strategy will work, based on some information directly about the UoA and/or the ecosystem involved.	**Testing** supports **high confidence** that the partial strategy/ strategy will work, based on information directly about the UoA and/or ecosystem involved.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**No - all UoAs**
Rationale				

In relation to alien species, the strategy in place has so far avoided any major marine introductions and monitoring (via the marine management plan) is planned to continue this assessment.

In relation to lobster biomass, it is a clear objective of the fishery to maintain CPUE at high levels, even at the expense of taking a reduced TAC and maintains biomass well above the MSY level, according to the stock assessments. The overall footprint of the fishery is low (low-impact gears and a relatively low number of fishing days at each island, as given above). **SG60 to SG80 are met**. For SG100 the stock assessments include testing (see Principle 1) but there is no such available testing which has looked at the impact of what may occur in terms of ecosystem dynamics should the lobster population be reduced to a point where its ecosystem function is impacted or indeed where that point may be. **SG100 is not met**

c	Management strategy implementation			
	Guide post		There is **some evidence** that the measures/partial strategy is being **implemented successfully**.	There is **clear evidence** that the partial strategy/strategy is being **implemented successfully and is achieving its objective as set out in scoring issue (a).**
	Met?		**Yes - all UoAs**	**Yes - all UoAs**
Rationale				

The Marine Plan is in place. There are few invasive introductions and monitoring is planned. The stock assessments are in place, TACs are set at levels reflecting the advice in the stock assessments and stocks are maintained at high levels **SG80 and SG100 are met**.

References
MARAM stock assessments for rock lobster in each of the UoAs

MARAM stock assessments for rock lobster in each of the UoAs

Gascoigne, J., Bell, M. & Jap, D., 2016. MSC Public Certification Report (PCR) Tristan da Cunha Rock lobster, Marine Stewardship Council, London.

Tristan, 2020a. Tristan da Cunha Marine Management Plan, Tristan da Cunha Government.

Caselle, J. et al., 2018. First quantification of subtidal community structure at Tristan da Cunha Islands in the remote South Atlantic: From kelp forests to the deep sea. PLos one, 13(3).

Caselle, J.E. et al., 2017. Ecosystem Assessment of the Tristan Da Cunha Islands., oyal Society for Protection of Birds and Tristan da Cunha Government.

Ling, S.D. et al., 2009. Overfishing reduces resilience of kelp beds to climate-driven catastrophic phase shift. Proceedings of the National Academy of Sciences, 106(52), pp.22341–22345. Available at: https://www.pnas.org/content/106/52/22341.

Eurich, J., Selden, R. & Warner, R., 2014. California spiny lobster preference for urchins from kelp forests: Implications for urchin barren persistence. Marine Ecology Progress Series, 498, pp.217–225.

Cross reference links:

Gascoigne et al. (2016) and Tristan (2020a)

(Caselle et al. 2018; Caselle et al. 2017)

(Ling et al. 2009; Eurich et al. 2014)

the Blue Belt Programme

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**85**
Condition number (if relevant)	

7.5.15 PI 2.5.3 – Ecosystem information

PI 2.5.3		There is adequate knowledge of the impacts of the UoA on the ecosystem		
Scoring Issue		SG 60	SG 80	SG 100
a	Information quality			
	Guide post	Information is adequate to **identify** the key elements of the ecosystem.	Information is adequate to **broadly understand** the key elements of the ecosystem.	
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	
Rationale				

There have been various surveys over the years around all the islands of the Tristan group, including descriptive and some quantitative assessments allowing characterisation of the main features of the benthic ecosystem (i.e. kelp, urchins and lobster, with a variety of species of sessile suspension feeders such as sponges and seafans, characteristic of a cold-water, high energy oceanic environment). The old surveys are summarised and cited in the previous assessment reports (e.g. the Darwin project, the 1980s surveys, the surveys of the wrecking of the Oliva and the DPLUS005 project) (Gascoigne et al., 2016; Gascoigne et al., 2013). Since then there is the work of the blue belt programme and the quantification of subtidal community structure by Caselle (Caselle et al. 2018; Caselle et al. 2017).

For the rock lobster fishery, the annual logbooks, tagging studies and stock assessments provide a robust data set (as described in Principle 1)

The assessment team previously considered that the available data (including the information on lobster dynamics) was sufficient to understand the key elements of the ecosystem, and since then the situation has only improved. **SG60 and SG80 are met**.

b	Investigation of UoA impacts			
	Guide post	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, but **have not been investigated** in detail.	Main impacts of the UoA on these key ecosystem elements can be inferred from existing information, and **some have been investigated in detail**.	Main interactions between the UoA and these ecosystem elements can be inferred from existing information, and **have been investigated in detail**.
	Met?	**Yes - all UoAs**	**Yes - all UoAs**	**No - all UoAs**

Rationale

The role of lobster in the ecosystem (i.e. its predators and prey) is fairly well understood. Its prey and predators are known and its function in the ecosystem has been explored (Caselle et al., 2018; Caselle et al., 2017) and can be referenced against other temperate ecosystems. Perhaps more importantly, the very conservative management of this fishery (maintaining biomass at above 50% of the unfished level) should ensure that the fishery is having a minimal impact on ecosystem structure and function. The establishing monitoring protocols under the Marine plan will consolidate the existing knowledge base and aid better understanding of environmental-driven fluctuations in lobster recruitment, ecosystem dynamics and invasive species impact (if any). **SG60 and SG80 are met**. Not all the interactions have been evaluated or quantified in detail e.g., there is no ecosystem model developed (e.g. ecosim) **SG100 is not met**.

c	Understanding of component functions			
	Guide post		The main functions of the components (i.e., P1 target species, primary, secondary and ETP species and Habitats) in the ecosystem are **known**.	The impacts of the UoA on P1 target species, primary, secondary and ETP species and Habitats are identified and the main functions of these components in the ecosystem are **understood**.
	Met?		**Yes - all UoAs**	**No - all UoAs**
Rationale				

As described in section 7.4.13 and PI 2.5.1 the benthic ecosystem functional groups are known. Caselle et al. (2017) and Caselle et al. (2018) describe the functions as follows:

- kelps and benthic algae at the base providing both food and shelter;
- urchins (and possibly the invasive Porgy) as the primary grazers;
- five finger, false jacopever, wrasses, lobsters and octopus as the main carnivores;
- sevengill sharks and possibly yellowtail as the primary piscivores;
- lobsters as omnivores, consuming both algal material and benthic invertebrates.

On this basis **SG80 is met**

In relation to SG100, it is reasonable to say that the impacts of the fishery on these components can be identified – in most cases they are minor (as described throughout the Outcome PIs of this P2 section) but they are not non-existent. It is not, however, true to say that the function of each component (i.e. octopus, individual bird species, deep boulder habitat function/distribution) in the ecosystem is understood in any great detail. **SG100 is partly met but not met in full**.

d	Information relevance			
	Guide post		Adequate information is available on the impacts of the UoA on these components to allow some of the main consequences for the ecosystem to be inferred.	Adequate information is available on the impacts of the UoA on the components **and elements** to allow the main consequences for the ecosystem to be inferred.
	Met?		**Yes – all UoAs**	**Yes – all UoAs**
Rationale				

Sufficient information (lobster stock assessments, landings of octopus, interactions with birds, footprint of the fishery at each island) is available to infer impact on the ecosystem the marine plan seeks to extend this knowledge providing confidence that the fishery is having minimal impact on the ecosystem**. SG80 and SG100 are met**.

e	Monitoring			
	Guide post		Adequate data continue to be collected to detect any increase in risk level.	Information is adequate to support the development of strategies to manage ecosystem impacts.
	Met?		**Yes – all UoAs**	**Yes – all UoAs**
Rationale				

Adequate information continues to be collected by the fishery (e.g. lobster stock assessments, landings of octopus, interactions with birds, footprint of the fishery at each island) and the Island's marine plan specifically will address information gaps in knowledge and monitor for future change in relation to climate and increased risk. This marine plan which includes requirements for review can be considered adequate to develop further strategies as required. **SG80 and SG100 are met**.

References
MARAM stock assessments for rock lobster in each of the UoAs MARAM stock assessments for rock lobster in each of the UoAs Gascoigne, J., Bell, M. & Jap, D., 2016. MSC Public Certification Report (PCR) Tristan da Cunha Rock lobster, Marine Stewardship Council, London.

Tristan, 2020a. Tristan da Cunha Marine Management Plan, Tristan da Cunha Government.

Caselle, J. et al., 2018. First quantification of subtidal community structure at Tristan da Cunha Islands in the remote South Atlantic: From kelp forests to the deep sea. PLos one, 13(3).

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Ling, S.D. et al., 2009. Overfishing reduces resilience of kelp beds to climate-driven catastrophic phase shift. Proceedings of the National Academy of Sciences, 106(52), pp.22341–22345. Available at: https://www.pnas.org/content/106/52/22341.

Eurich, J., Selden, R. & Warner, R., 2014. California spiny lobster preference for urchins from kelp forests: Implications for urchin barren persistence. Marine Ecology Progress Series, 498, pp.217–225.

BAS, 2013. South Atlantic wilderness; assessment of Tristan da Cunha's seabed biodiversity, British Antarctic Survey, Natural Environment Research Council, Madingley Road, Cambridge, UK.

Cross reference links

Gascoigne et al. (2016) *and* Tristan (2020a)

(Caselle et al. 2018; Caselle et al. 2017)

(Ling et al. 2009; Eurich et al. 2014)

(BAS 2013)

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**90**
Condition number (if relevant)	**N/a**

7.6 Principle 3

There have been no significant changes in the management framework of the fishery since the 2016 reassessment (Gascoigne et al., 2016; Tristan, 2021). The fishery falls entirely under Tristan da Cunha jurisdiction (local law consistent with British Overseas Territorial laws), where it is managed by the Tristan Fisheries Department with input from stakeholders through the Fisheries Council and making recommendations to the Island Council (see flow diagram Figure 31; (DFT 2020), with the Administrator approving final decisions.

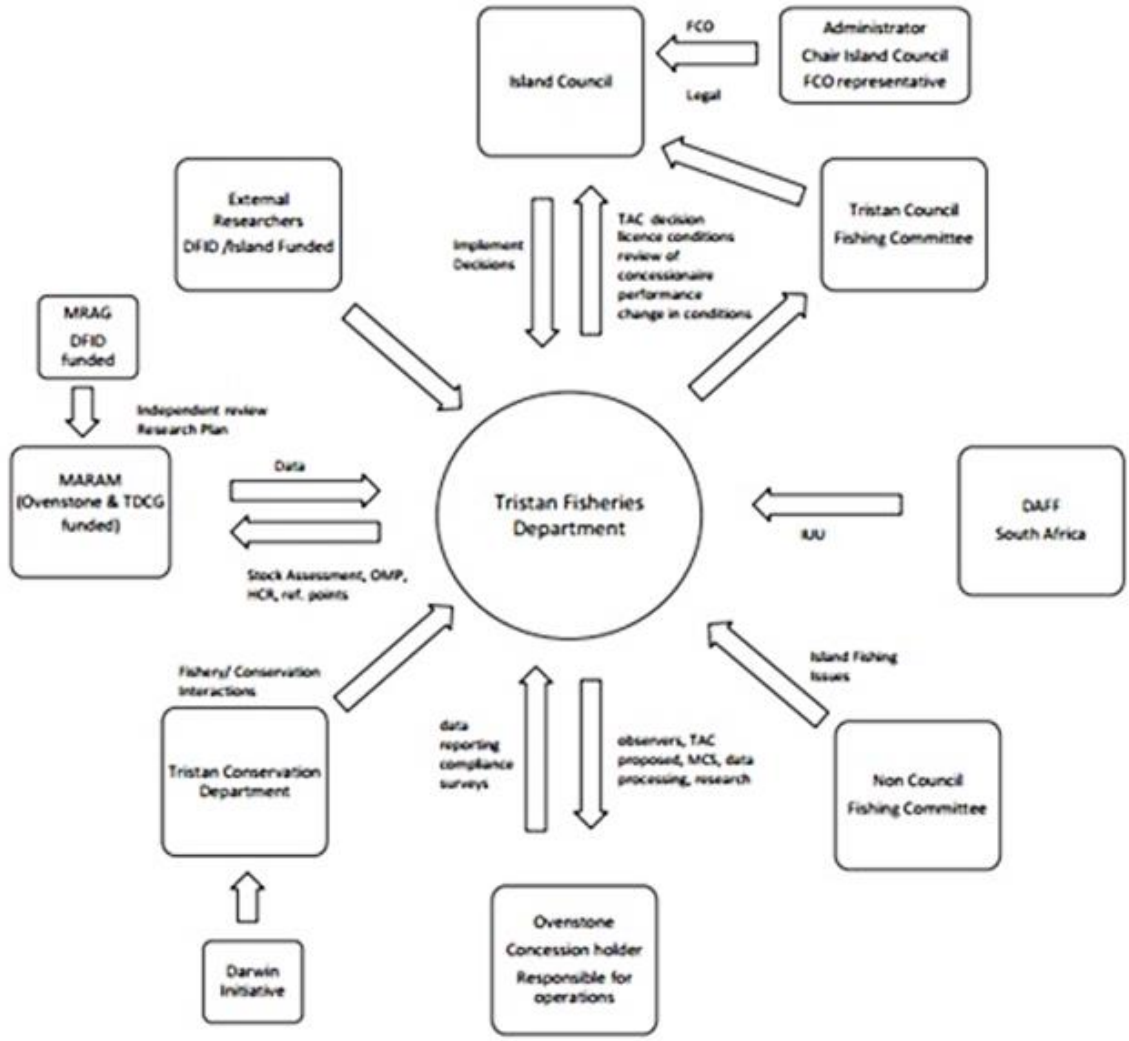

Figure 31. Flow diagram demonstrating Tristan Fisheries Department management of the fishery. Source: DFT, 2020.

The Concession Agreement suggests that the objective of the fishery is 'to protect stocks of lobster and/or octopus and maintain a maximum sustainable yield…'. The dependency of the island economy on the resource, and the consequent need for sustainability, does underpin the management of the fishery, with sustainability a key driver of day-to-day decision-making (Glass, 2015). As with the 2016 reassessment, it is clear that the long-term objectives are explicit, straightforward, and clear, and that they drive management decision-making in general terms.

There have been notable improvements in fishery-specific management, specifically the adoption and refinement of OMPs for each of the islands (latest adopted OMPs developed in 2020 and 2021) and the introduction of a formalized Fisheries Management Plan in 2017 that incorporates amongst other things a research plan (a condition of the first certification). The Fisheries Management Plan (DFT, 2020) is a living document that is updated regularly and provides a basic description of the fishery and its status, as well as management objectives and how these objectives are to be

achieved. Management decisions have been precautionary – generally selecting the most conservative options regarding the preservation of stock status – and have arisen from scientific advice through recommendations and consultation.

Management responses to several events between the 2016 reassessment and the present have been comprehensive, transparent, and timely. Major events were the loss of the FV *Geo Searcher* at Gough in October 2020 and the Covid-19 pandemic and associated restrictions and impacts on global markets. Both these events elicited comprehensive responses in which the management body and concession holders acted in a cooperative way to resolve knock-on effects. Disputes could be resolved within existing mechanisms (Tristan, 2021), without the need for legal recourse. For example, a wage issue strike at the start of 2021/2022 fishing season could be resolved with an agreement that a review would be undertaken in 2021.

Regular internal review of the management systems took place (i.e. review of OMPs) with consultation and debate on choice of key aspects such as target reference points.

MSC Surveillance audits since recertification in 2016 confirmed that a single condition had been closed out by the 1st annual surveillance (2017), that no non-compliance issues were reported, and that monitoring remained at a high level (close to 100% coverage on board) despite the Covid-19 restrictions.

7.7 Principle 3 Performance Indicator scores and rationales

7.7.1 PI 3.1.1 – Legal and/or customary framework

PI 3.1.1		The management system exists within an appropriate legal and/or customary framework which ensures that it: - **Is capable of delivering sustainability in the UoA(s);** - **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	Compatibility of laws or standards with effective management			
	Guide post	There is an effective national legal system **and a framework for cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2	There is an effective national legal system and **organised and effective cooperation** with other parties, where necessary, to deliver management outcomes consistent with MSC Principles 1 and 2.	There is an effective national legal system and **binding procedures governing cooperation with other parties** which delivers management outcomes consistent with MSC Principles 1 and 2.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**
Rationale				
There has been no change since the previous reassessment (Gascoigne et al., 2016). Tristan da Cunha is part of the British Overseas Territory of St. Helena, Ascension and Tristan da Cunha, which has its own constitution. Tristan da Cunha has its own legislation, but the law of St Helena applies to the extent that it is not inconsistent with local law (DFT, 2020; Glass, 2015). The fishery falls entirely under Tristan da Cunha jurisdiction and lobster stocks around each of the islands in the archipelago are managed separately, so there is no requirement for cooperation with other governing parties on management. The concession holder is obligated through contract to comply with both the constitution of the Island as well as fulfil a range of conditions related to fishing the lobster stock sustainably (P1) and within the long-term ecosystem objective laid out for the island (P2) in Tristan Island Sustainable Development Plan. The concession holder has taken the initiative to strengthen the Island fishery management system through contracting of expertise including MARAM (Marine Resource Assessment and Management Group) to undertake quantitative stock assessments and develop OMPs related to scientific recommendations for the management of the fishery. The team considered that,			

as there had been no legal challenges with respect to the fishing concessions, that the national legal system in place was effective with binding procedures governing cooperation with other parties (in this case the concession holder) and that it is consistent with MSC Principles 1 and 2. **SG60, SG80 and SG100 are met.**				
b	Resolution of disputes			
	Guide post	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 UoA.	The management system incorporates or is 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?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**
Rationale				
There has been no change in the framework for the resolution of disputes since the previous reassessment (Gascoigne et al., 2016). On the basis of direct interviews with the Director of Fisheries and a review of his advice to the Island Administrator and Council, the reassessment team in 2016 concluded that the management system is consistent with local, national and international laws with long term sustainability as the primary objective. The most recent Council Committee Report (2021) demonstrates how disputes and disagreements have been addressed in a transparent way. The management system is transparent (see management flow chart, Figure 31) and the issuing of the concessions for exploitation is also transparent with no recent legal issues evident. Mechanisms for the resolution of disputes is set out clearly in the Fisheries Ordinance and the Concession Agreement, and are demonstrably applied (i.e. previous concession holders had been replaced after infractions; (Glass, 2015)). Either party is required to inform the other in writing of a dispute, and they have 15 days to resolve the issue, otherwise the concession license can be revoked or suspended pending agreement. Further the management system is broadly integrated into the long-term management of the Island group including the sustainable development plan. The grounding of the Oliva (2011), recent Covid-19 pandemic (2020+) and loss of the Geo Searcher (October 2020) elicited consolidated responses from both the Island community and the lobster concession holder to minimize ecological impact (Tristan, 2021). This resulted in an effective response that minimized impacts of pollution on the islands as well as closing on the fishery and adjustments to the management procedures (as well as resolution of insurance claims). This was considered as evidence that the management system was transparent and that legal disputes had been tested and were effective. **SG60, SG80 and SG100 are met.**				
C	Respect for rights			
	Guide post	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	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	The management system has a mechanism to **formally commit** to the legal rights created explicitly or established by custom of people dependent on

		manner consistent with the objectives of MSC Principles 1 and 2.	manner consistent with the objectives of MSC Principles 1 and 2.	fishing for food and livelihood in a manner consistent with the objectives of MSC Principles 1 and 2.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – All UoAs**

Rationale

There has been no change regarding respect for rights since the previous reassessment. The social and economic health of the island community depends almost entirely upon the lobster resource and this vulnerability has reinforced the need to sustain the lobster resource into the future. This dependency means that the community as a whole strongly supports the management of the fishery. Community involvement focuses on the fishery around Tristan Island, where designated fishers working from a set number of "powerboats" to catch the annual TAC. Island staff are employed in the factory on the island and through a "Fishery Committee" have direct input into the management of the fishery, via the Council (Council Committee Report, 2021). Locals are also employed as observers on board the Edinburgh, while it fishes at Gough, Inaccessible and Nightingale Islands, and during biomass surveys. Although the Edinburgh may occasionally mop up unused TAC at Tristan (when islanders were not able to do so because of adverse weather or low CPUE) this is generally avoided to maximise the direct benefits of the fishery to the community. **SG60, SG80 and SG100 are met.**

References

Council Committee Report. 2021. April 2021, 38 pp.

DFT, 2020. Fishery Management Plan (FMP) for the exploitation of the spiny lobster *Jasus Tristani* in the waters of Tristan da Cunha, Department of Fisheries of Tristan da Cunha.

Glass, J.P. 2015. The fishery and biology of the rock lobster *Jasus tristani* at the Tristan da Cunha island group. Cape Peninsula University of Technology, Cape Town, South Africa. MTech thesis. 165 pp.

Gascoigne, J., Bell, M. and Japp, D. 2016. Marine Stewardship Council (MSC) Reduced ReAssessment Tristan Da Cunha Rock Lobster Fishery (*Jasus tristani (paulensis*)) Final Report. 3001R05A | ME Certification Ltd. 128 pp.

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**

Overall Performance Indicator scores added from Client and Peer Review Draft Report

Overall Performance Indicator score	**100**
Condition number (if relevant)	**N/a**

7.7.2 PI 3.1.2 – Consultation, roles and responsibilities

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	Roles and responsibilities			
	Guide post	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?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**
Rationale				
There has been no change to the list of the organisations involved, their roles and responsibilities since the previous reassessment. There is a non-council Fishing Committee which includes fishermen and factory staff and management, which deals with practical / operational fishery issues such as wages, day-to-day management of the factory, regulations, product handling etc. The Fishing Council Committee includes Island Council members (min. 3), fishermen nominated by Administrator (from the Fishing Committee) and is chaired by Fisheries Dept. This Committee reports to the Island Council on fishing issues (see decision making flow chart for how they relate to each other) (see Council Committee Report, 2021). Decisions are taken by the Administrator, following the advice of the Island Council. Scientific advice is provided by MARAM and is a key input into management decision-making by the above bodies. The concession holders do not play a formal role in management decision-making except to finance the scientific work of MARAM, but they support the goal of long-term sustainability of the fishery and can argue their viewpoints as stakeholders, as demonstrated in recent discussions around TAC roll-overs between fishing seasons (Johnston & Butterworth 2021e; Johnston & Butterworth 2021h). The team concluded that roles and responsibilities are clear and explicitly defined in all areas. **SG60, SG80 and SG100 are met.**			
b	Consultation processes			
	Guide post	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?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**
Rationale				
A regular consultation process between the Island Administration and the lobster concession holder (Ovenstone) to seek and accept relevant information remains in place, as was the case in the 2016 reassessment (MEC, 2016). For the present assessment, consultation processes are summarized in the Council Committee Report of April 2021. The relationship appears healthy and mutual, with the operator providing funds to support management and subject to strict fishing conditions. The application of regulations and basic controls relating to the fishing operation are enforced, catch is continually monitored both on the Edinburgh and in the Tristan powerboat fishery. The Fisheries Officer on the Island was open to advice from numerous sources and seemed proactive and responsive to views on the state of the stocks in the fishery. In a recent example, disagreements on the potential effects of TAC roll-overs on stocks could be resolved through consultation and an associated mathematical simulation carried out by MARAM to test hypotheses regarding potential impacts of roll-overs on stock status. In this specific case further consultation included an expert at CEFAS (UK). Advice was accepted and incorporated into the management plan as roll-overs for the 2021/2022 fishing season. The consultation process was both transparent and rigorous, the process followed was indicative that the management system had checks and balances demonstrating that advice provided was carefully considered, and the decision-making process was effective (Council Committee Report, 2021). **SG60, SG80 and SG100 are met.**				
c	Participation			
	Guide post		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?		**Yes – all UoAs**	**Yes – all UoAs**
Rationale				
There is engagement between all parties including active debate on the issue relating to the application of the OMP at Tristan. Although face-to-face meetings between the island and the organisations based in Cape Town (i.e. Ovenstone, MARAM) are not always easy, both sides put in significant effort to ensure that they take place regularly (e.g. annual visits to the island by Ovenstone management, regular meetings whenever the Director of Fisheries or other Fisheries Department staff are in Cape Town). Effective engagement during the recent Covid-19 pandemic has been facilitated using Zoom conference calls. Due to the Covid-19 pandemic representatives of the concession holder cannot presently travel to the island, and a potential Council Committee meeting may take place in Cape Town when the Chief Islander visits in October 2021 (Committee Council Report, 2021). The team considered that the management system facilitates as far as possible the engagement and consultation of all parties. **SG80 and SG100 are met**				
References				

Gascoigne, J., Bell, M. & Jap, D., 2016. MSC Public Certification Report (PCR) Tristan da Cunha Rock lobster, Marine Stewardship Council, London. Johnston, S.J. & Butterworth, D.., 2021c. Impact of possible catch roll-overs at Gough island. MARAM/TRISTAN/2021/FEB/01., University of Cape Town. Johnston, S.J. & Butterworth, D.., 2021e. Recommendations on rock lobster TACs for Gough and Inaccessible islands for the 2021/22 season. MARAM/TRISTAN/2021/JUL/15, University of Cape Town. Johnston, S.J. & Butterworth, D.., 2021h. Summary of recommendations on rock lobster TACs for the Tristan group of islands for the 2021/22 season. MARAM/TRISTAN/2021/JUL/16., University of Cape Town. Tristan, 2021. Council Committee Report. 2021. April 2021, 38 pp., Tristan da Cunha Government. Cross reference links: Gascoigne et al. (2016), Johnston & Butterworth (2021c; 2021e; 2021h), Tristan (2021)

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**100**
Condition number (if relevant)	**N/a**

7.7.3 PI 3.1.3 – Long term objectives

PI 3.1.3		**The management policy has clear long-term objectives to guide decision-making that are consistent with MSC Fisheries Standard, and incorporates the precautionary approach**		
Scoring Issue		SG 60	SG 80	SG 100
a	Objectives			

	Guide post	Long-term objectives to guide decision-making, consistent with the MSC Fisheries Standard and the precautionary approach, are **implicit** within management policy.	**Clear** long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach are **explicit** within management policy.	**Clear** long-term objectives that guide decision-making, consistent with MSC Fisheries Standard and the precautionary approach, are **explicit** within **and required by** management policy.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**

Rationale

As an advance on the situation during the 2016 reassessment (Gascoigne et al., 2016), a Fisheries Management Plan (DFT, 2020) has now been completed as a living document which is updated annually with the newest management decisions, data and research. It is considered to be an information document which explains long-term objectives, including governance and management objectives, and how they are to be achieved. The management of the islands' resources and ecosystem is set out as an objective in general terms in national legislation and constitution, including the Tristan da Cunha Conservation Ordinance. The Fisheries Management Plan states explicitly – as the primary fishery-specific objective – the following: 'Maintain good management procedures that utilize a precautionary approach towards the long-term sustainability of the fishery, based on the biological and population characteristics of the species." Further, the long-term objectives for the sustainability of the island are integrated into the broader management of the island which is explicitly laid out in the Tristan da Cunha Island Council guidelines (2009): Tristan's Compass to the Future. These objectives are both consistent with the precautionary approach to fisheries as well as MSC principles and criteria. For fisheries, the overarching objective is 'to develop a sustainable fishery resource that is exploited for the widest benefit of the Tristan economy and society'. The fishery is operated by a single concessionaire. The Concession Agreement suggests (Section 2.1) that the objective of the fishery is 'to protect stocks of lobster and / or octopus and maintain a maximum sustainable yield…'. The dependency of the island economy on the resource, and the consequent need for sustainability, does underpin the management of the fishery, with sustainability a key driver of day-to-day decision-making (Glass, 2015). As with the 2016 reassessment, it is clear that the long-term objectives are explicit, straightforward and clear, and that they drive management decision-making in general terms. The 2016 reassessment team found that it was not clear that explicit long-term objectives were 'required by' management policy, since this would have implied an explicit upfront statement of the Tristan objectives in the Concession Agreement. The interpretation of the 2021 reassessment team differs from the 2016 interpretation, concluding that an explicit upfront statement of the Tristan objectives in the Concession Agreement is not a 'policy' but an outflow of the Island policy and therefore **SG60, SG80 and SG100 are met**.

References

DFT, 2020. *Fishery Management Plan (FMP) for the exploitation of the spiny lobster Jasus Tristani in the waters of Tristan da Cunha*, Department of Fisheries of Tristan da Cunha.

Fisheries Limits (Tristan da Cunha) Ordinance (Ordinances T1 of 1983, T1 of 1991, T2 of 1991, T1 of 1992 and T4 of 1997). An ordinance to define the fishery limits of Tristan da Cunha and to make provisions for the regulation of fishing within those limits and for other matters connected therewith.

Glass, J.P. 2015. The fishery and biology of the rock lobster Jasus tristani at the Tristan da Cunha island group. Cape Peninsula University of Technology, Cape Town, South Africa. MTech thesis. 165 pp.

Gascoigne, J., Bell, M. and Japp, D. 2016. Marine Stewardship Council (MSC) Reduced Re-Assessment Tristan Da Cunha Rock Lobster Fishery (Jasus tristani (paulensis)) Final Report. 3001R05A | ME Certification Ltd. 128 pp. Tristan da Cunha constitution – summary available at http://www.tristandc.com/newsgovconsistution.php Tristan da Cunha Island Council 2009. Tristan's Compass to the Future. (2009)	
Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**100**
Condition number (if relevant)	**N/a**

PI 3.2.1 – Fishery-specific objectives

PI 3.2.1		The fishery-specific management system 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	Objectives			
	Guide post	**Objectives**, which are broadly consistent with achieving the outcomes expressed by MSC's Principles 1 and 2, are **implicit** within the fishery-specific 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-specific 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-specific management system.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**
Rationale				
The fisheries objectives are stated explicitly in the Fisheries Management Plan (DFT, 2020) which has been completed since the previous reassessment in 2016. The Fisheries Management Plan states that 'The objective of the fishery is to ensure the long-term sustainability of Tristan rock lobster *Jasus tristani* resources and their habitat, including bycatch species, within the Tristan EFZ (Tristan, Gough, Nightingale, and Inaccessible Islands), and to maintain economic benefit from the fishery for the Tristan stakeholders'. For P1, stock status objectives and the means to achieve them are explicitly defined within OMPs developed for each island, and the desired outcomes (a management system responsive to changes in stock status to maintain a target level) have consistently been achieved during the previous reassessment cycle (since 2016) and during the present reassessment (see Principle 1 outcomes and harvest strategy). Since the initial certification the application of OMPs for each of the islands specifically adopts a conservative approach to managing the annual allowable catches, based on reference points which have been defined to maintain the long-term productivity of the stock (high catch rates). These are explicit in the OMPs, and where management has deviated from the OMPs (i.e. at Tristan) it is in the direction of greater precaution (i.e. not undermining this objective). The conservation ordinance (see 3.1.3) also states the MSY level as an explicit objective for both lobster and octopus. SG100 is met for P1. For P2, the previous reassessment found that objectives were incorporated only in the broader ecosystem management of the fishery and on that basis, considered that SG100 was not met. Since then, the Tristan da Cunha group of islands have become the largest no-take zone in the Atlantic (approx. 670,000 km^2) and the fourth largest on the planet. This joined the UK's Blue Belt of marine protection (Council Committee Report, 2021). The FMP now demonstrates explicit management objectives for P2 (beyond measures to protect ecosystems) to include monitoring and data collection to identify baseline information for all habitats, key species and seamounts. It establishes a plan to study climate change risks and ecosystem benefits (see A1vi-vii), monitoring of marine litter (see A2v) and monitoring non-native species (see A3i). Hence there is an increase in score from the 2016 determination that SG100 is now met for P2. **SG60, SG80 and SG100 are met.**				
References				

Council Committee Report. 2021. April 2021, 38 pp. DFT, 2020. *Fishery Management Plan (FMP) for the exploitation of the spiny lobster Jasus Tristani in the waters of Tristan da Cunha*, Department of Fisheries of Tristan da Cunha. Gascoigne, J., Bell, M. and Japp, D. 2016. Marine Stewardship Council (MSC) Reduced ReAssessment Tristan Da Cunha Rock Lobster Fishery (Jasus tristani (paulensis)) Final Report. 3001R05A | ME Certification Ltd. 128 pp.	
Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**100**
Condition number (if relevant)	**N/a**

7.7.4 PI 3.2.2 – Decision-making processes

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		
Scoring Issue		SG 60	SG 80	SG 100
a	Decision-making processes			
	Guide post	There are **some** decision-making processes in place that result in measures and strategies to achieve the fishery-specific objectives.	There are **established** decision-making processes that result in measures and strategies to achieve the fishery-specific objectives.	
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	
Rationale				
There is a structured decision-making process for the fishery, which remains unchanged since the 2016 MSC reassessment. This includes consultation with stakeholders including fishers and the concession holder, demonstrated in the flow diagram above. Ultimate decision-making remains with the Island Council and is generally based on the advice from the Fisheries Council. MARAM, in consultation with the Islands' management and the concession holders has been responsible for the quantitative assessments of the resource and also provides advice on allowable catches and OMPs. The fundamental objective remains to optimize the benefits from the resource while maintaining ecosystem balance and also the social and economic needs of the Islanders (DFT, 2020). Council meetings are documented and there is a clear order to the decision making as well as responsibilities (Council Committee, Report 2021). The OMPs have been developed in an open and transparent way that has allowed the Island management, including fishers to respond. In some instances, the fisheries council has, for example, disagreed with the management procedure and has, after consultation and debate, revised OMP outputs. A recent example is the roll-over of quota between years (Johnston & Butterworth 2021e). **SG60 and SG80 are met**			
b	Responsiveness of decision-making processes			
	Guide post	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?	**Yes – All UoAs**	**Yes – All UoAs**	**Yes – All UoAs**
Rationale				
The fishery is small and closely monitored, and all issues are responded to immediately and in great detail. The loss of the MFV *Geo Searcher* in October 2020 at Gough is a case in point (Council Committee Report, 2021). The serious nature of the issue – from different perspectives (spillage of pollutants and effects on nearby biota; replacement of the vessel; ability to catch the full TAC in the 2020/2021 season; impact of roll-overs on future stock status) were promptly addressed in a collaborative way with the Council, concession holder, MARAM and Insurers. An ITOPF report found that the risk to marine life was extremely low; the vessel was replaced by the MFV *Edinburgh*, which is well-suited and approved; most of the TAC at Gough were caught later in the season; the effects of the shift in fishing effort to later in the fishing season on the GLM standardized CPUE for Gough was explored analytically (Johnston & Butterworth, 2021k); and a roll-over of remaining TAC was debated, the potential effects tested in model runs (Johnston & Butterworth, 2021c) and approved. It is therefore clear that all issues identified were explored in a transparent and timely way and that short and long-term implications were considered in decision-making. **SG60, SG80 and SG100 are met.**				
c	Use of precautionary approach			
	Guide post		Decision-making processes use the precautionary approach and are based on best available information.	
	Met?		**Yes – all UoAs**	
Rationale				
Responses to nearly all issues are highly precautionary (see guidepost b). In addition to an agreed management procedure in place, the Fishery Council invariably follows a conservative (precautionary) approach when decisions must be made among I_{lim} options, or when implementing Exceptional Circumstances rules. This is not surprising, given the heavy reliance of the island economy on the future of the fishery, over the long term. **SG80 is met.**				
d	Accountability and transparency of management system and decision-making process			
	Guide post	Some information on the fishery's performance and management action is generally available on request to stakeholders.	**Information on the fishery's performance and management action is available on request**, and explanations are provided for any actions or lack of action associated with findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.	Formal reporting to all interested stakeholders **provides comprehensive information on the fishery's performance and management actions** and describes how the management system responded to findings and relevant recommendations emerging from research, monitoring, evaluation and review activity.

	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**
Rationale				
An important change following on the 2016 reassessment is that a Fisheries Management Plan has been finalized (DFT 2020) and that it continues to be updated with comprehensive information on the fisheries performance and management actions – including responses to findings and recommendations. Fishery performance is continually monitored, and a data base has been set up that allows for fishery indicators to be monitored e.g. catch rates. Catch rates remain the most critical indicator of the fisheries status with agreed CPUE reference points being set in the management procedures. Ongoing research undertaken by the Island staff included monitoring of size structure and general biological parameters. Changes to the fishery, because it is limited in scale, are generally picked up quickly by the fishers, and reported. The concession holder also has a contractual obligation to report on activities and catch performance on an ongoing basis and there is good communication in this regard between Island management and the concession holder. **SG60 and 80 are met**. In relation to SG100, the new Fisheries Management Plan is now considered to be 'formal reporting' on fishery performance, and in combination with documents prepared for various reasons (e.g. for MSC audits, or for reporting to the Island Council), **SG100 is now met**. This is an improvement on the 2016 reassessment, when it was not met because the FMP was still in development.				
e	Approach to disputes			
	Guide post	Although the management authority or fishery may be subject to continuing court challenges, it is not indicating a disrespect or defiance of the law by repeatedly violating the same law or regulation necessary for the sustainability for the fishery.	The management system or fishery is attempting to comply in a timely fashion with judicial decisions arising from any legal challenges.	The management system or fishery acts proactively to avoid legal disputes or rapidly implements judicial decisions arising from legal challenges.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**
Rationale				
The team identified no legal issues – the concession holder has a tight legal agreement and there are no indications that there are or have been any legal challenges. Generally, both the concession holder and the Islands management have a healthy working relationship and deal with issues proactively as demonstrated in the most recent Council Committee Report (2021) – where several issues that may have led to legal disputes were resolved through debate and exploration of other options (i.e. roll-overs; decisions on I_{tar} in the latest OMPs). **SG60, SG80 and SG100 are met.**				
References				
DFT, 2020. Fishery Management Plan (FMP) for the exploitation of the spiny lobster *Jasus Tristani* in the waters of Tristan da Cunha, Department of Fisheries of Tristan da Cunha. Gascoigne, J., Bell, M. & Jap, D., 2016. MSC Public Certification Report (PCR) Tristan da Cunha Rock lobster, Marine Stewardship Council, London.				

Johnston, S.J. & Butterworth, D.., 2021c. Impact of possible catch roll-overs at Gough island. MARAM/TRISTAN/2021/FEB/01., University of Cape Town.

Johnston, S.J. & Butterworth, D.., 2021e. Recommendations on rock lobster TACs for Gough and Inaccessible islands for the 2021/22 season. MARAM/TRISTAN/2021/JUL/15, University of Cape Town.

Johnston, S.J. & Butterworth, D.., 2021k. Updated 2021 GLMM -standardised lobster CPUE from Gough Island of the Tristan da Cunha outer group of islands. MARAM/TRISTAN/2021/MAY/06., University of Cape Town.

Tristan, 2021. Council Committee Report. 2021. April 2021, 38 pp., Tristan da Cunha Government.

Cross reference links:

DFT (2020), Gascoigne et al. (2016), Johnston & Butterworth (2021c; 2021k; 2021e), Tristan (2021)

Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**100**
Condition number (if relevant)	**N/a**

7.7.5 PI 3.2.3 – Compliance and enforcement

PI 3.2.3		Monitoring, control and surveillance mechanisms ensure the management measures in the fishery are enforced and complied with		
Scoring Issue		SG 60	SG 80	SG 100
a	MCS implementation			
	Guide post	Monitoring, control and surveillance **mechanisms** exist, and are implemented in the fishery and there is a reasonable expectation that they are effective.	A monitoring, control and surveillance **system** has been implemented in the fishery 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 and has demonstrated a consistent ability to enforce relevant management measures, strategies and/or rules.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**
Rationale				
The fishery remains tightly monitored with nearly 100% observer coverage on the vessels (MFV *Geo Searcher* up to 2020; MFV *Edinburgh* thereafter) at the outer islands. During the 2019 / 2020 fishing season, observers were carried on all vessel deployments to the outer islands, except for the mop-up operation to catch the last of the TAC at Tristan Island in March / April 2020 because of Covid-19 restrictions. A restricted number of power boats are used at Tristan (operated by islanders) and all landings are closely monitored and catches tallied (data provided on TAC reconciliation from logbooks). No incidents of non-compliance were reported during the 2019 / 2020 fishing season, based on the 3rd MSC surveillance audit report (Control Union, 2021). The fishery remains limited in scale both spatially and temporally. Because of the seasonality and limited area of operations on the main island of Tristan da Cunha, and because all catch has to be landed to the factory, compliance is therefore not an issue. The movements of the MFV *Edinburgh* are also tracked using a Vessel Monitoring System. The concession holder has been active in monitoring and trying to reduce IUU fishing on Tristan lobster by non-licence vessels (Gascoigne et al., 2016). The Fisheries Management Plan (DFT, 2020) recognizes that IUU gear may be used on the deep offshore fishing banks, but not by the concession holder and not targeted at lobster. **SG60, SG80 and SG100 are met.** Even though SG100 is met, it is recommended that a record of compliance issues be included in the Fisheries Management Plan.				
b	Sanctions			
	Guide post	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?	**Yes – All UoAs**	**Yes – All UoAs**	**Yes – All UoAs**
Rationale				
No change since the 2016 reassessment (Gascoigne et al., 2016; Jones et al., 2019; Jones & Groeneveld, 2020). A Fisheries Committee deals with any issues as they arise and performance of the fishery is continuously monitored. Sanctions are available as set out in the Concession Agreement. They demonstrably provide effective deterrence in that there is no evidence of any episodes of non-compliance (see scoring issue a) – although the team considered that goodwill and good relations are more important than the threat of sanctions in this regard. **SG60, SG80 and SG100 are met.**				
c	Compliance			
	Guide post	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?	**Yes – all UoAs**	**Yes – all UoAs**	**Yes – all UoAs**
Rationale				
No change since the 2016 reassessment (Gascoigne et al., 2016; Jones et al., 2019; Jones & Groeneveld, 2020). Because the spatial and temporal scale of the fishery is restricted, as well as due to the extremely close monitoring, there is a high degree of confidence that fishers comply with the management system. **SG60, SG80 and SG100 are met.**				
d	Systematic non-compliance			
	Guide post		There is no evidence of systematic non-compliance.	
	Met?		**Yes – all UoAs**	
Rationale				
There is no evidence of systematic non-compliance (Jones & Groeneveld, 2020). The fishery has limited effort due to poor sea conditions and offshore fishing is undertaken only using one vessel that has nearly 100% observer coverage. Confirmation of compliance has been provided annually to the CAB by the Tristan Fisheries Department since the first certification**. SG80 met.**				

References	
Jones & Groeneveld. 2020. Marine Stewardship Council (MSC) 3rd surveillance audit report, Tristan da Cunha rock lobster. January 2021, 35 pp. DFT, 2020. Fishery Management Plan (FMP) for the exploitation of the spiny lobster Jasus Tristani in the waters of Tristan da Cunha, Department of Fisheries of Tristan da Cunha. Gascoigne, J., Bell, M. and Japp, D. 2016. Marine Stewardship Council (MSC) Reduced ReAssessment Tristan Da Cunha Rock Lobster Fishery (Jasus tristani (paulensis)) Final Report. 3001R05A | ME Certification Ltd. 128 pp.	
Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**100**
Condition number (if relevant)	**N/a**

7.7.6 PI 3.2.4 – Monitoring and management performance evaluation

PI 3.2.4		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	Evaluation coverage			
	Guide post	There are mechanisms in place to evaluate **some** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **key** parts of the fishery-specific management system.	There are mechanisms in place to evaluate **all** parts of the fishery-specific management system.
	Met?	**Yes – All UoAs**	**Yes – All UoAs**	**Yes – All UoAs**
Rationale				
No change since the 2016 reassessment (Gascoigne et al., 2016; Jones et al., 2019; Jones & Groeneveld, 2020) – which found that mechanisms were in place to evaluate all parts of the fishery-specific management system. There is a systematic rotational schedule of evaluating and reviewing fisheries assessments, OMPs (incl. harvest strategy and control rules) and annual trends in GLM-standardized CPUE as indicators of stock status for each island. Evaluations, and implementation of associated changes in management systems, are up to date – with the latest evaluations having taken place in 2020 and in 2021. The OMPs are required to be reviewed every 4 years – this would entail testing the current models as well as revising the reference data set. The Tristan Island Council also undertakes an annual review of the concession holder's performance – this includes submissions from the concession holder (Ovenstone) relating to catch reconciliation, vessel performance, markets etc (Council Committee Report, 2021). Scientific advice provided by MARAM are occasionally referred to CEFAS, for an additional opinion, as recently, regarding decisions on roll-overs. Given the small scale of the fishery, as well as the ongoing surveillance audits and critical assessments through the OMP the team consider that full scientific reviews are not necessary, and the current system evaluates all significant parts of the management system **SG60, SG80 and SG100 are met.**				
b	Internal and/or external review			
	Guide post	The fishery-specific management system is subject to **occasional internal** review.	The fishery-specific management system is subject to **regular internal** and **occasional external** review.	The fishery-specific management system is subject to **regular internal and external** review.
	Met?	**Yes – all UoAs**	**Yes – all UoAs**	**No – all UoAs**
Rationale				

Annual surveillance audits since 2012 have subjected the management system to external review. The Fisheries Council and Island Council undertake regular internal reviews of the management and MARAM currently updates data reference sets. Stock status assessments and OMPs are reviewed every 3-4 years following a rotational schedule. External review takes place occasionally (Gascoigne et al. 2016) but not regularly. **SG80 is met** but since external review (except MSC audits) is not 'regular', **SG100 is not met.**	
References	
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Draft scoring range	**≥80**
Information gap indicator	**Information sufficient to score PI**
Overall Performance Indicator scores added from Client and Peer Review Draft Report	
Overall Performance Indicator score	**90**
Condition number (if relevant)	N/a

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9 Appendices

9.1 Assessment information

9.1.1 Previous assessments

Certified since 20th Jun 2011 this reassessment is the 3rd assessment for the fishery. The initial assessment resulted in three conditions on PIs 1.2.2, 2.3.3 and 3.2.4 which were closed by the time of the reassessment in 2016. At reassessment a further condition was raised on PI1.2.2 which was partially related to the previous condition on the fishery. This single condition which was closed at the year 1 audit (2018) and no other conditions have been raised since.

Table 17. Summary of previous assessment conditions

Condition	PI	Year Closed	Justification
Condition – 1.2.2: While the team agreed that the harvest control rule had been successful up till now, it is not considered to be sufficiently well-defined or transparent. This means that should a difficult situation arise (such as an unexplained decline in CPUE) it might be difficult for the Tristan management authorities to take appropriate decisions to sustain the optimal social and economic benefits derived from the fishery.	1.2.2	2014	(A well-defined and transparent harvest control rule) has now been met at all four islands, in the form of an OMP at three of the four and a precautionary harvest control procedure at Nightingale Island that takes into account uncertainty associated with the grounding of the MV *Olivia*.
Condition – 2.3.3: The fishery should keep quantitative data on close interactions with ETP species. This can take the form of noting the number of seabirds interacting with the Edinburgh – either suffering mortality or being released following the bird release protocol. It can be included in the observer protocol, or carried out by any other convenient means, as long as the data is quantitative and credible. The data should be periodically reviewed to ensure that mortality on ETP species from this fishery remains low. The system should be in place within two years of certification.	2.3.3	2014	Electronic logbooks have been implemented, and take the form of the previous paper logsheet, with the bird data recording incorporated. Paper logsheets continue to be completed at the request of the Tristan Fisheries Department. Bird data continues to be recorded and was provided to the audit team. There were in total 84 interactions and 3 mortalities in the 2013-14 season. Birds are identified to species.
Condition – 3.2.4: The fishery should work with the Tristan Fisheries Department to review existing research and make an assessment of key gaps in knowledge of the target species, by-catch species, ETP species, habitats and the wider ecosystem. On the basis of this analysis, the fishery should develop a prioritised research plan indicating where actions can be taken and where resources will be allocated as and when they become available. The research plan should be in place within two years of certification.	3.2.4	2014	The research plan was again revised and updated. The main new points are the following: • the Darwin project (see last year's report) has started with the shortterm inputs, but the lobster biologist post has not yet been filled; the pre-season survey continues as before, however the mid-season survey has been discontinued because it was

Condition	PI	Year Closed	Justification
			found that the data were not useful for stock assessment, because of difficulties in running it consistently from year to year; • catch monitoring (tonnage, effort, catch-at-size and sex ratios) continues; • the tagging programme (aimed at getting an improved growth model for each island) continues – there was some delay in the 2013-14 season because the Fisheries Department hoped to get advice from the biologist to be recruited under the Darwin project (see below) but since that post has not been filled, it was decided to continue with tagging as in previous seasons.
The fishery should put in place a well-defined HCR that acts to maintain the stock above the point of recruitment impairment or another suitably defined limit reference point.	1.2.2	2018	The OMP was agreed by the Island Council at a meeting on 6 July 2016, who made a small adjustment to the MARAM recommended OMP (a slightly higher I_{lim} value). It was used to set the TAC for the 2017-18 season and is due to run for three years before review. The OMP is well defined sets clear target and limit levels in terms of CPUE (I_tar^rec, I_lim). It has been tested by MARAM to ensure that it is robust to a variety of stressors, and unlike the previous OMP it includes a meta-rule to deal with 'Exceptional Circumstances'.

9.1.2 Small Scale fisheries

Table 18. Summary of previous assessment conditions

UoA	Percentage of vessels with length <15 m	Percentage of fishing activity completed with 12 nautical miles of shore
1	92%	100%
2	0	100%
3	0	100%
4	0	100%

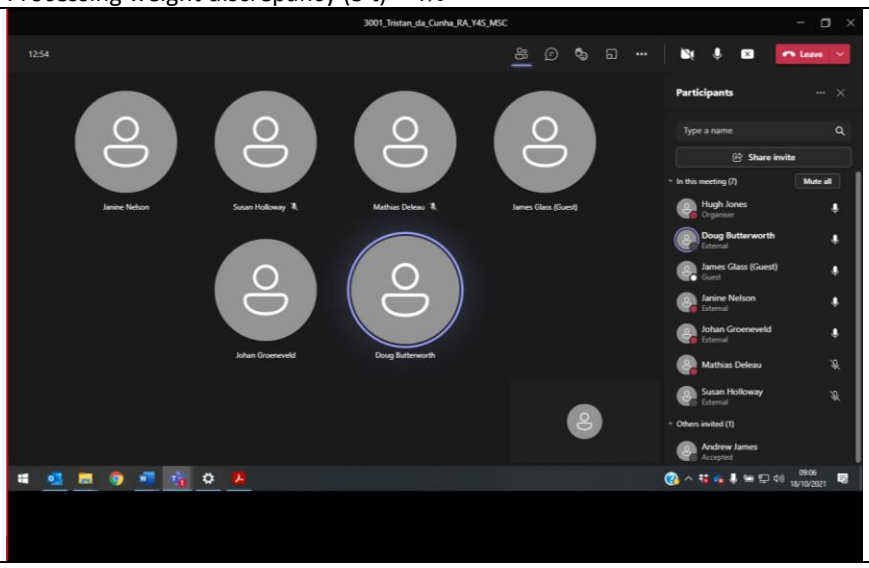
9.2 Evaluation processes and techniques

9.2.1 Site visits

The site visit was held remotely, with the opening meeting on the 18th October 2021. The closing meeting occurred on the same day. The individuals met during the site visit and their roles in the fishery are listed in section 9.2.2.

9.2.2 Stakeholder participation

Topic of discussion	opening meeting and client meeting and stakeholder meeting.	
Date	18/10/2021	
Format of discussion	conference call _MS teams	
Scope of Audit/Assessment	**Species**	Rock lobster (*Jasus tristani*)
	Stock	From the islands of the Tristan da Cunha group
	Geographical range of the fishery	The islands of the Tristan da Cunha group. UoA 1: Tristan UoA 2: Inaccessible UoA 3: Gough UoA 4: Nightingale
	Method of capture	Baited traps and hoop nets
	Client group	Ovenstone Agencies Management under jurisdiction of the Tristan da Cunha Fisheries Department, Island Council and Administrator.
	Other eligible fishers	none
Audit team members present	Hugh Jones (team leader and Principle 2) and Johan Groeneveld (Principle 1 and 3) Mathias Deleau – CU UK observer	
Client representation	Janine Nelson	
Stakeholder representation	James Glass – TdC fisheries Doug Butterworth – MARAM Susan Holloway - MARAM	

Summary of main points	Full discussion on P1 scoring with Doug B raising points in relation to the sensitivity of the models and the fixing of F within the model from 2009 value. Provides F in relative terms but not absolute terms should be considered in P1 scoring. All participants otherwise happy with Principle 1 ACDR scores. Principle 2 – RBF on octopus. All participants agreed that the scores suggested by the CAB in the RBF announcement were appropriate. Doug B. raise points regarding the PSA analysis as a whole and that simulation analysis shows the concept is not fit for purpose. Doug will consider looking at depletion exercise of the octopus stocks as a more appropriate method in the future. Discussion on a recommendation into a short working piece to identify species in the catches via DNA. This will be taken onboard by the CAB. Rob Lesley – Demersal fisheries Biologist will supply the client with Octopus ID guides to aid identification this will include a poster in the Tristan factory. Discussion on gear loss and the estimates and that the client has provide the data after the ACDR was published and should be included in the next version of the report. James Glass discussion on Darwin Marine Project and its report which has further evidence of habitat in the deeper section of the fishery. This report will be supplied to the CAB following the audit along with a CEFAS report on octopus catches. Discussion with James Glass on late season starting 2021 due to wage dispute in the factory which was resolved and will be reviewed for 2022.
Action points to follow	For P2 Bait use data from Janine Darwin marine project report from James CEFAS octopus report from James For P1 and P3 Comments to consider on: Sensitivities runs for the OMPs and fixed F for the models which give relative mortality but not in absolute terms. Fixed from 2009(?) Conflict resolution – wage issue strike at start of 2021 season with agreement made and review in 2021. Processing weight discrepancy (3 t) – 4%
Addition info	
CAB response code	Accepted (no score change - additional evidence presented) – ETP birds outcome, Octopus as Secondary species Accepted (score increased) – CEFAS report on external review PI 1.2.4 Accepted (minor score reduction) – 1.2.3 - Sensitivities runs for the OMPs and fixed F for the models which give relative mortality but not in absolute terms. Fixed from 2009(?)

9.2.3 Evaluation Techniques

a) Media announcements: CU UK selected the MSC as media outlet. The MSC press release targeted a wide range of stakeholders within the sustainable seafood industry, ensuring that key stakeholders were notified of this fishery's announcement.

b) Methodology for information gathering: Review of data and documentation, interview of stakeholders.

c) Scoring process: Scoring was agreed by the team via email correspondence. Consensus was reached for all scores.

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	FAIL	65	85
More than half	FAIL	75	95

Note that where there is only one scoring issue in the 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 rule for reaching the final recommendation: The decision rule for MSC certification is as follows:

- No PIs scores below 60;
- The aggregate score for each Principle, rounded to the nearest whole number, is 80 or above.

The aggregate score for each Principle is the sum of the weighted score of each Performance Indicator within that Principle.

9.2.3.1 RBF

Background

Following analysis of data records from the fishery logbooks and observer data, the octopus's *O. vulgaris, & O. magnificus* were found to be secondary main species in two of the four units of assessment.

No biologically based limits are available for this stock, derived either from analytical stock assessment or using empirical approaches. As such CU (UK) are required to announce the use of RBF for PI2.2.1 for these elements.

As per the requirements of Annex PF of the MSC FCP2.2., the required approach for PI 2.2.1 is use of the Productivity Susceptibility Analysis (PSA). The PSA is a tool that can be used by MSC Assessment

Teams to assess the risk posed by a fishery to species for which there is only limited information available. The RBF process is intended to gather and use information from stakeholders in a structured manner; it is also intended to produce a more precautionary assessment of impact than if the MSC's default assessment tree is employed. We have tried to simplify the PSA process to produce this questionnaire, but there is still some complexity in the process. Where we ask for information from stakeholder on areas of this PSA we have highlighted in the following sections in green highlight.

If you have any queries about the MSC process, you can find more information at the MSC website (www.msc.org), including information about the fishery (https://fisheries.msc.org/en/fisheries/joint-demersal-fisheries-in-the-north-sea-and-adjacent-waters/@@view); alternatively, you can get in touch with us directly (using the contact details below). The MSC also provides an official template for stakeholder comments, to use if you have views on this aspect of the fishery; it can be downloaded at http://www.msc.org/documents/get-certified/stakeholders. Thank you for taking the time to participate in this assessment.

Control Union (UK) Limited
56 High Street, Lymington,
Hampshire, SO41 9AH
United Kingdom
Tel: 01590 613007
Fax: 01590 671573
Email: infofishuk@controlunion.com
Web: http://uk.controlunion.com

Stakeholder information

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

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

Privacy, Transparency and Confidentiality

1. We ask for your e-mail address in case we need to contact you for clarification of your comments.

2. The MSC process requires assessment inputs to be transparent and verifiable. We will list you as a stakeholder that has contributed to this assessment and may publish your interview response in assessment documents.

3. Your privacy is important to us. We will not publish your e-mail address, nor will we share it with any third parties.

In accordance with the statement above, please provide the following information:

Name:

Company/Organisation:

City/Town:

Country:

Email Address:

Phone Number (please include international code):

Catch profiles and data availability

The only significant bycatch from the fishery is octopus (*O. vulgaris,* & *O. magnificus*) which comprises of > 5% of the catch per annum in two of the four UoAs (Table 9). The octopus catch for the last five seasons is summarised in Table 9. The Fishery Management Plan (FMP) for 2020 notes that most of the octopus bycatch was landed by the FV Geo Searcher/FV Edinburgh, with the Tristan island fleet only landing a small portion. The different fishing practices and gear types of the FV Edinburgh provide a possible reason for the higher catches of octopus. Gear is set by the FV Edinburgh and left to soak for 24 hours, whilst the Tristan island fleet set gear for approximately 10 hours per day only (DFT, 2020). The FV Edinburgh is able to access deeper waters (DFT, 2020) also which may influence octopus catchability. Finally, octopus is more often caught during the winter months when catches of lobster are low, and fishing effort by the Tristan powerboats is limited. In 2020

Table 19. Octopus catches by UoA between 2016 and 2021 in Kg and as percentage of total catch (landed weight plus discards (estimated at 10%). Catches over 5% in bold as octopus is considered main.

FISHING SEASON	TRISTAN	GOUGH	NIGHTINGALE	INACCESSIBLE	TRISTAN	GOUGH	NIGHTINGALE	INACCESSIBLE
	Landed weight (kg)				% catch			
2016/2017	4,544	8,082	1,732	8,555	3.5	**7.0**	2.1	**9.5**
2017/2018	3,072	4,120	438	2,640	2.7	3.2	0.5	2.8
2018/2019	3,491	1,787	1,759	6,126	2.8	1.5	1.9	**6.2**
2019/2020	2,758	4,095	1,810	3,472	1.9	3.2	1.9	3.4
2020/2021	2,793	4,779	6,050	7,650	2.1	**5.4**	**6.2**	**7.0**

The octopus species (*Octopus vulgaris* and *Enteroctopus (Octopus) magnificus*) is not managed via a stock assessment nor stock management objectives related to any reference points therefore it must be considered a secondary species. There is no known biologically based limit for the octopus stocks and therefore the Risk Based Framework must be used to assess its status.

Supporting information

In line with Annex PF of the MSC Fisheries Certification Process FCP 2.2, the following information should be provided to stakeholders prior to the RBF workshop taking place:

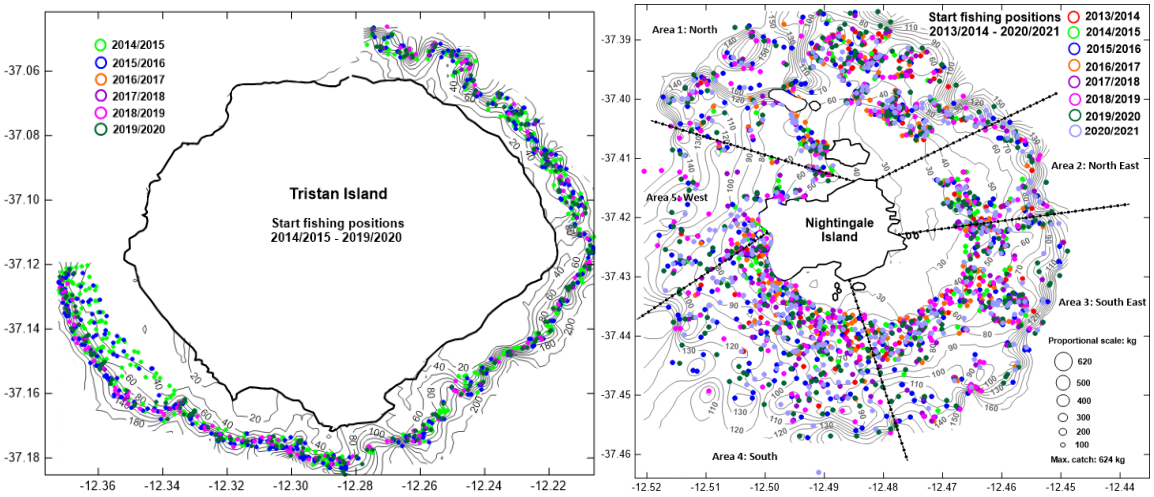
- Management arrangements in place together with any specific strategies, such as bycatch mitigation or recovery strategies
- Descriptions of any monitoring strategies in place, including at-sea observer programmes (coverage, duration, objectives).
- Maps of the distribution of fishing effort within the jurisdictional boundaries of the fishery
- Maps of distribution of all fishing effort on the target stock outside the fishery being certified
- Species, habitat and community distributions (including depth ranges)

Management systems

The measures available for consideration under the management of the fishery for this component are:

- Limited entry fishery – UoA 1 – limited licences for powerboats. UoA 2-4 – licence limited to FV Edinburgh and its 4 powerboats
- Closed seasons
- Gear type - A standard mesh size of 70 mm is used on all trap types. All three gear types (box traps, monster traps and hoop nets) are open – i.e. lobsters and octopus entering the traps can also exit at will by the same opening. There is therefore no risk of ghost fishing by lost traps, and no need for escape gaps.
- Near 100% observer coverage.
- Extensive catch composition and landings reporting.

Fishing location



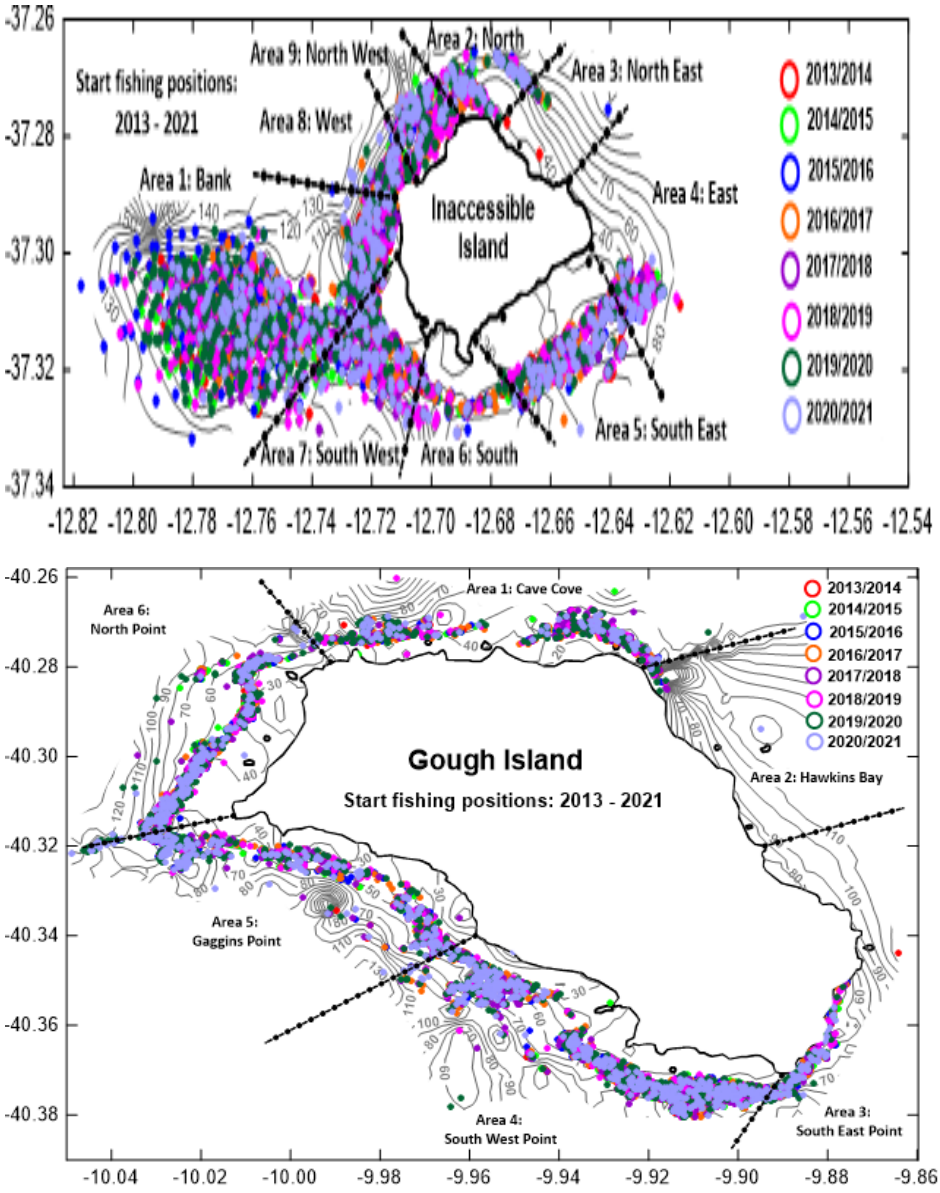


Figure 32. Fishing Positions of the FV Edinburgh/FV Geosearcher 2013 to 2021 at each of the four Islands in the fishery. Note the Northwestern ¼ of Tristan Island is fished exclusively by the Tristan powerboat fleet and therefore FV Edinburgh records are not available in this region. Source: Ovenstone.

Guide to PSA

The PSA is described in detail in the MSC Fisheries Certification Process V2.2 (Annex PF4, MSC 2018).

In summary, the data required for the PSA are divided in to two sections, one covering 'productivity' attributes (which effectively describe the biological attributes of the species', and one covering 'susceptibility' attributes (which effectively describe the potential for interaction between the species and the UoA).

The productivity attributes for a species are species-specific and do not change between fisheries, and the Assessment Team has already derived productivity information for each species from available online sources.

Information and provisional scoring of 'Productivity' is provided in the following sections. We request that you review this information and confirm that you agree with the Assessment Team's findings, or otherwise.

Information of "Susceptibility" is provided in the following sections. Please, review the 'Susceptibility' information provided and please use the space provided to draft your own scores for susceptibility to support finalisation of the PSA scores for the species under review.

Susceptibility attributes and scores

A few guidance notes have been listed below to aid stakeholders in the completion of the susceptibility questionnaire. Please note that this guidance is not exhaustive and stakeholders are encouraged to consult the MSC Fisheries Certification Requirements v2.01 (Annex PF).

Table: PSA susceptibility attributes and scores (extract from MSC FCRv2.0, Annex PF)

Susceptibility attribute	Low susceptibility (Low risk, score=1)	Medium susceptibility (medium risk, score=2)	High susceptibility (high risk, score=3
Areal overlap (availability) Overlap of the fishing effort with a species concentration of the stock	<10% overlap	10-30% overlap	>30% overlap
Encounterability The position of the stock/species within the water column relative to the fishing gear, and the position of the stock/species within the habitat relative to the position of the gear	Low overlap with fishing gear (low encounterability)	Medium overlap with fishing gear	High overlap with fishing gear (high encounterability) Default score for target species (P1)
Selectivity of gear type Potential of the gear to retain species	a Individual < size at maturity are rarely caught	a Individuals < size at maturity are regularly caught	a Individuals < size at maturity are frequently caught
	b Individuals < size at maturity can escape or avoid gear	b Individuals < half the size at maturity can escape or avoid gear	b Individuals < half the size at maturity are retained by gear
Post-capture mortality (PCM) The chance that, if captured, a species would be released and that it would be in a condition permitting subsequent survival	Evidence of majority released postcapture and survival	Evidence of some released postcapture and survival	Retained species or majority dead when released Default score for retained species (P1 or P2)

Where there is limited information available to score a susceptibility attribute, the more precautionary score shall be awarded:

Aerial overlap:

- Where the impacts of fisheries other than the UoA are taken into account, the areal overlap shall be scored as the combined overlap of all listed fisheries with the areal concentration of a stock

- The scoring of areal overlap shall consider the concentration of species and the overlap of the fishing gear with the concentration species

Encounterability:

- Where the impacts of fisheries other than the UoA are taken into account, encounterability shall be scored as the combined encounterability of all listed fisheries

- The scoring of encounterability shall consider the concentration of species and the overlap of the fishing gear with the concentration species

- The deployment of fishing gear in relation to each species adult habitat is the main aspect to be considered for each species

Gear selectivity:

'Rarely' means that the capture of individuals smaller than the size at maturity occurs in less than 5% few gear deployments.

'Regularly' means that the capture of individuals smaller than the size at maturity occurs in 5% to 50% of the gear deployments.

'Frequently' means that the capture of individuals smaller than the size at maturity occurs in more than 50% of gear deployments.

Post-capture mortality:

- The team shall use its knowledge of species biology and fishing practice together with independent field observations to assess the chance that, if captured, a species would be released and that it would be in a condition to permit subsequent survival

- In the absence of observer data or other verified field observations made during commercial fishing operations that indicate the individuals are released alive and post-release survivorship is high, the default value for the PCM of all species shall be high.

PSA

Is shown in section 9.9 of this report.

Stakeholder comments on Octopus vulgaris and Enteroctopus (Octopus) magnificus PSA

1) Are there any 'Productivity' provisional scores that you do not agree with?

2) If you disagree with any provisional score, please provide your score and any supporting information with references if available.

3) Are there any 'susceptibility' provisional scores that you do not agree with?

4) If you disagree with any provisional score, please provide your score and any supporting information with references if available.

9.3 Peer Review Reports

9.3.1 General comments

Question	Yes/No	Peer Reviewer Justification	CAB Response to Peer Reviewer's comments
Is the scoring of the fishery consistent with the MSC standard, and clearly based on the evidence presented in the assessment report?	Yes	The assessment team has scored the fishery consistent with the MSC Standard and the scores and rationales are clearly based on the evidence presented in the report. I agree with the assessment team's conclusion that the fishery should be recertified. With the single condition at reassessment in 2016 having been closed at the first surveillance audit, it is appropriate that this second reassessment is considered as a reduced reassessment. There are a number of PIs for which I have questioned the scores, but none of these have implications for the overall conclusion that the fishery should be recertified. My comments require primarily additional evidence to justify the scores, which is perhaps understandable given that this is a reduced reassessment and some of the detail of the justifications may not have been carried forward from the previous assessment. For Principle 1, my main query concerns how the reference points based upon CPUE relate to a level consistent with MSY. For Principle 2, there is detailed background information on both ETP species and habitats which provides robust justification for the scores for these components. In relation to primary species, I question the assessment team's decision not to score the bait species - South African hake - used in the lobster traps. See comments on scoring of PI 2.1.1. For Principle 3, the key change since the previous reassessment has been the formal publication of the Fisheries Management Plan in 2017. Given that many of the rationales for the scoring of PIs for Principle 3 relate to this FMP, and many have subsequently been increased since the previous	Thank you. Assessment team responses to the PR comments are provided in the Individual PI section below this general comments section.

Question	Yes/No	Peer Reviewer Justification	CAB Response to Peer Reviewer's comments
		assessment, it would be helpful if the key components of the FMP could be described in the report.	
Are the condition(s) raised appropriately written to achieve the SG80 outcome within the specified timeframe?	Yes	Condition 1 on PI 2.4.3 is appropriately written in order to achieve a score of 80 by the 4th surveillance audit.	Thank you
Optional: General Comments on the Peer Review Draft Report (including comments on the adequacy of the background information if necessary). Add extra rows if needed below, including the codes in Columns A-C.	NA	This is a very clearly written report which provides comprehensive references to source material. Whilst acknowledging that this is a reduced reassessment report, there are some sections of the report where a little more detail would help justify some of the scoring rationales, particularly in relation to Principles 1 and 3. There is a condensed description of the assessment methodology in which a single example of the assessment results is shown in Figure 8 for Gough. Some additional detail on this example of the output from the model would be helpful - perhaps move Figure 10 forward? Similarly in section 7.2.7, there is a description of stochastic trajectories for a candidate OMP, but a figure depicting this example would be helpful to the reader. This lack of detail is not helped by a major omission from the report of a reference list, as readers cannot refer to source material for any additional clarification. Some minor points: The section on harvest strategy should state that there is a minimum landing size (not given in the report) and that the landing of berried females is prohibited. It would be helpful if the TAC and landings data in Table 8 could be presented in order of UoA (cf. Table 6). The potential impact of the OLIVA incident is considered in various scoring rationales, so it would be helpful to provide a very brief description of the incident early on in the background information.	Thank you Additional detail has been provided – most of the PI comments in the section below. Additional detail on the output of the model is provided, including a new Figure showing the stochastic trajectories at Gough (see section 7.2.7) Omitting the reference section was an oversight – now fixed. Minor points: Minimum landings size now included in 7.2.3 as follows: “The harvest strategy includes minimum landing sizes (minimum carapace length [CL]) per island of 70 mm at Tristan, 66 mm at Inaccessible, 75 mm at Gough and 70 mm at Nightingale. Differences among islands relate to differences in average size and size at maturity attained at specific islands (Pollock, 1991; Glass, 2015).“ Table 8 has been restructured in order of UoAs

Question	Yes/No	Peer Reviewer Justification	CAB Response to Peer Reviewer's comments
		The glossary is missing many of the acronyms referenced in the text , e.g., Ilim, Bsp, GLM, RC, EC, TFD/FD, MCMC, VME etc.	The MV Olivia was a merchant vessel carrying soya bean product which sunk on the Island of Nightingale in 2011. Details of the incident are here https://www.tristandc.com/newsmsolivahome.php and are reported on in previous certification cycles of this fishery. As the incident is now 10 years old it was not included in this reduced RA. Glossary has been updated

9.3.2 PI comments

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
1.1.1	Yes	No (change to rationale expected, not to scoring)	NA	For SIb, the rationale takes into account both an estimate of Bsp/K from the recent stock assessments (which in all UoAs is well above a Bmsy proxy of 0.5B0) and current CPUE in relation to target and limit reference points. Most emphasis is placed upon the current values of CPUE, but there is no explanation either in the background information or the scoring rationales as how these reference points relate to a level consistent with MSY. Presumably the reference points are based upon some historical period when the stock was considered to be at a high level, but more explanation is required.	More background information is provided to explain that the OMP approach does not rely on MSY estimates to obtain reference points. Because the models do not define B_{MSY}, the assessment team referred to MSC guidance GSA2.2.3.1 where in cases where neither B_{MSY} nor the PRI are analytically determined, the following default reference points may be used to measure stock status depending on the species: BMSY = 40%B0. In the assessments of this fishery K is biomass at pre-exploited levels (e.g., ~ B0) and current Spawning biomass (Bsp) is given relative to K."	Accepted (no score change, change to rationale)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
					The rationale in 7.2.6 has been improved as follows: "Importantly, the OMP approach falls outside the traditional 'MSY approach' that usually underlies definition of reference points. The reference points are derived from observed CPUE values, or modifications of these based on operational properties, and relate to quantities that are reliably estimated for the fisheries (standardized CPUE values). The basis of the OMP parameters relates to their operational properties as evaluated in stock projections (notably their ability to provide a relatively consistent TAC at high catch rates). OMP performance is tested through stochastic forward projections of the age-based stock assessment models, evaluating TAC stability and distribution of expected stock status in relation to pre-exploitation levels, an approach that is robust to the main sources of uncertainty.	
1.1.2	NA (PI not scored)	NA (PI not scored)	NA	NA	n/a	
1.2.1	No (scoring implications unknown)	Yes	NA	SIf. More evidence should be provided that alternative measures to minimise mortality of undersized and berried lobsters are reviewed on a biennial basis to justify a score of 100. For example, has there been an evaluation of escape vents, closing areas of high abundance of undersized/berried females or 'move-on' rules if a high proportion of catches are undersized?	With reference to "review on a biennial basis", the team found no evidence of specific reviews of alternative measures at 2-year intervals, and hence SG100 was not reached. Rescored at SG80.	Accepted (non-material score reduction)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
1.2.2	Yes	No (change to rationale expected, not to scoring)	NA	As for PI 1.1.1, there needs to be some additional explanation as to how the target reference point relates to MSY. A hint is given in the rationale for SIb.	Improved rationale and explanation provided in PI 1.1.1 above and section 7.2.6 which allows cross reference to this PI and hopefully satisfies the needs regarding reference points	Accepted (no score change, additional evidence presented)
1.2.3	Yes	Yes	NA	Scoring agreed.	n/a	
1.2.4	Yes	Yes	NA	Scoring agreed.	n/a	
2.1.1	No (scoring implications unknown)	Yes	NA	I agree that there are no primary species in the bycatch for this fishery, but I question the assessment team's decision not to score the bait species - South African hake - used in the lobster traps. Section 7.4.5 quotes the MSC Interpretation that '*… if bait is purchased from a processing plant, such as fish heads and backbones, no specific assessment is required*.' However this Interpretation was updated in September 2021 and now states that '*Eligible bait also includes products purchased from processing plants - such as fish heads, backbones and similar waste products – where the species and stock are known.*' In this fishery it is known that the bait used is from the South African hake fishery which is assessed in relation to reference points, and therefore the bait should be assessed under primary species in line with the revised MSC Interpretation.	The PR is correct in that the MSC released a new issue of the bait interpretation in Oct 2021 which amended the existing interpretation which told CABs not to score bait sourced from factories (offal), and hence the team's evaluation in this report. On release of the new MSC interpretation the assessment team raised queries with the MSC related to this new interpretation. The key questions were whether the interpretation should be applied retrospectively (noting this reassessment was 'in-assessment' prior to the interpretation being released), and how teams are supposed to implement the requirement of % bait = (eligible bait/total catch of the UoA)*100 when there is no recorded head size / frame size to body weight ratio of the bait known. MSC responded that '*interpretations are not retrospective*' and therefore this justifies why the bait is not scored in this fishery and that '*Your concerns are*	Not accepted (no change)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
					completely valid and have been noted and logged into our system for future work. *The issue with bait weight calculation/conversion needs policy development*'. email 28/10/21 (available on request). The CAB assume this policy development will continue with the new FSR.	
2.1.2	Yes	Yes	NA	Scoring agreed.	n/a	
2.1.3	No (score increase expected)	Yes	NA	For SIb, the rationale states that "there is also no systematic recording of the complete catch record for minor species", yet for SIa the rationale notes that there is 100% observer coverage and a report (Latham, 2013) which provides detailed information on bycatches. Also the background information quotes the 2020 FMP which lists the species which are discarded in the fishery. So some clarification is required to support the statement that there is no systematic recording of minor (primary) species.	Agreed the rationale has been amended to show that there is some quantitative data for minor primary species available and SG100 is met	Accepted (score increased)

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
2.2.1	Yes	Yes	NA	See comment on RBF page.	See RBF comment table below this one	Accepted (no score change, change to rationale)
2.2.2	Yes	Yes	NA	Scoring agreed. (Note that for SIe, it should be 'No' and not 'N/A' for the SG100 based on the rationale given.)	Noted and change made to the N/A	Accepted (no score change, change to rationale)
2.2.3	Yes	Yes	NA	Scoring agreed, but note that the rationale for SIc refers to primary and not secondary species. I agree with the recommendation that better information is required on identification of the two species of octopus.	Typo corrected	Accepted (no score change, change to rationale)
2.3.1	Yes	Yes	NA	Scoring agreed.	n/a	
2.3.2	Yes	Yes	NA	Scoring agreed.	n/a	
2.3.3	Yes	Yes	NA	Scoring agreed.	n/a	
2.4.1	Yes	Yes	NA	Scoring agreed.	n/a	

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
2.4.2	Yes	No (scoring implications unknown)	NA	For SIa, the assessment team notes that the MSC Derogation 5 permits the SG80 to be scored first and therefore the requirement for commonly-accepted move-on rules under SG60 is not necessary if the SG80 is met. Whilst it is clear that the fishery footprint does not really overlap with the distribution of VMEs or pVMEs, the rationale needs strengthening to meet the requirements of SA3.14.2.2a, b for SG80 in the absence of any move-on rules for the fishery, given that there are reports that occasional encounters with VMEs may occur (haul up of sea fans).	Move -on rules and clauses SA3.14.2.2a, b only apply where VMEs are encountered. As noted in section 7.4.8.1. the designation of VMEs is the responsibility of national governments etc and for this fishery there is no overlap with VMEs. On this basis the haul of occasional sea fans would not need to be considered in reference to move -on rules. Seafans alone are not VMEs (although they may be considered VME indicator species), there encounters with the fishery should be recorded and reported to the competent authority (and hence the condition on information PI). Further the team note that at SG80 SIa move on rules are only optional (as opposed to required at SG60) as part of the partial strategy. On this basis the score has not been changed but the team have amended the language to ensure consistency and add clarity.	Accepted (no score change, change to rationale)
2.4.3	Yes	Yes	Yes	Scoring agreed.	n/a	
2.5.1	Yes	Yes	NA	Scoring agreed.	n/a	
2.5.2	Yes	Yes	NA	Scoring agreed.	n/a	
2.5.3	Yes	Yes	NA	Scoring agreed.	n/a	

PI	PI Information	PI Scoring	PI Condition	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
3.1.1	Yes	Yes	NA	Scoring agreed.	n/a	
3.1.2	Yes	Yes	NA	Scoring agreed.	n/a	
3.1.3	No (change to rationale expected, not to scoring)	Yes	NA	The rationale would be strengthened if evidence could be provided to demonstrate that the long-term objectives set out in the Fisheries Management Plan were consistent with the precautionary approach.	Added text to SIa as follows: "The Fisheries Management Plan states explicitly – as the primary fishery-specific objective – the following: 'Maintain good management procedures that utilize a precautionary approach towards the long-term sustainability of the fishery, based on the biological and population characteristics of the species."	Accepted (no score change, change to rationale)
3.2.1	Yes	Yes	NA	Scoring agreed.	n/a	
3.2.2	Yes	Yes	NA	Scoring agreed.	n/a	
3.2.3	Yes	Yes	NA	Scoring agreed. I agree with the recommendation that a record of compliance issues be included in the Fisheries Management Plan.	n/a	
3.2.4	Yes	Yes	NA	Scoring agreed.	n/a	

9.3.3 RBF comments

PI	RBF Scoring	RBF Information	Peer Reviewer Justification (as given at initial Peer Review stage)	CAB Response to Peer Reviewer's comments (as included in the Public Comment Draft Report - PCDR)	CAB Response Code
2.2.1 (RBF)	Yes	Yes	Scoring agreed. I would recommend that tables of both the productivity and susceptibility attributes and scores are included in section 8.9 on the RBF outputs. It looks as though the productivity attributes should have been included as Table 24, but were omitted, and I note that the susceptibility attributes are included in section 8.2.3.1 as part of the instructions to stakeholders, but it would help readers assess the RBF output if the tables of attributes were included alongside the output.	Apologies the table 24 heading was a double up on the table 25 heading and has been removed. The outputs are in the section 8.9 now.	Accepted (no score change, change to rationale)

9.3.4 Peer Review College Response

From: PeerReviewCollege <PeerReviewCollege@msc.org>
Sent: 14 February 2022 14:26
To: Hugh Jones <hjones@controlunion.com>
Subject: RE: 3608 Initial PRC review attached - Tristan_da_Cunha lobster

Hi Hugh,

I would like to inform you that the peer reviewer has reviewed the responses to their comments in the PCDR for the Tristan da Cunha rock lobster Fishery.

I confirm that they have stated they are satisfied with the Team's responses to the issues identified and have no further comments to add.

Best,
Freya

Freya Mohamed
Senior Peer Review College Officer

Marine Stewardship Council
Marine House | 1-3 Snow Hill | London | EC1A 2DH | United Kingdom
Office: + 44 (0) 20 7246 8900 | **www.msc.org**

9.4 Stakeholder Input

RBF - Octopus

Erik Mckenzie – Ovenstone production manager

From: Erik McKenzie [redacted]>

Sent: Monday, 11 October 2021 09:45

To: Janine Nelson [redacted]>

Subject: RE: MSC RBF Octopus

Hi Janine

I don't see a problem on any of the scores given in highlighted section, but think where we could pick up problems is with species identification. Distribution on O.V no problem, but O.M listed as Namibia to Port Elizabeth in SA so not directly relevant in this case. ID of the two types does not take place on the vessel as there is no consensus as to which is which. With loads of practice the guys would pick it up, but we have no idea on current split and how it may vary during the season. Volume caught and value obtained does not warrant separation by species for our purpose as the market accepts it as landed, but I am not sure if this would be of significance to anybody studying the audit.

Regards

Erik

CEFAS

Received via email the Tristan Fisheries Department provided a report by CEFAS (Barrett & Laptikhovsky 2021) which focuses on octopus catches in the UoA and uses a PSA analysis to consider impact. The PSA used in the report is not identical to that required by the MSC but has similar processes and overlapping attributes. Note the scoring system in the CEFAS PSA is reversed to that in the MSC program i.e. 3 = high productivity. The references within this report and the report itself provided similar attribute outcomes as to those agreed at the site visit by stakeholders and have been adopted into the final MSC PSA scores.

Further, the report notes that '*Tristan da Cunha Government are encouraged to collect biological data to inform life history knowledge and decrease uncertainty for future assessments; particularly as some of the scores in this report were based on other octopods of the same genus where data were lacking, and because changes in fisheries management measures may impact upon the vulnerability of these octopods.'*

Table A. Productivity and Susceptibility Analysis for the common octopus (Octopus vulgaris) and southern giant octopus (Enteroctopus magnificus) based on data obtained from literature. NA indicates where no reliable information was found.

Productivity attribute	High productivity (3)	Moderate productivity (2)	Low productivity (1)	*O. vulgaris*	*E. magnificus*	Reference /comments
r, population growth rate	>0.5	0.16-0.5	<0.16	3	3	Roa-Ureta, 2020
Maximum age, yr	<10	10-30	>30	3	3	Mangold, 1983. (for *O. vulgaris*); Robinson, Hartwick, 1986 and Baqueiro-Cárdenas et al., 2012 (for a congenerics of *E.magnificus*)
Maximum size, cm	60	60-150	>150	2	2	Jereb et al., 2014
von Bertalanffy growth coefficient (K)	>0.25	0.15-0.25	<0.15	3	3	Guerra, 1979 (for *O. vulgaris*). Arreguin-Sanchez et al., 2000 and Granados-Alcantar et al., 2020 for *E. magnificus* with a similar size and age).
Natural mortality	>0.4	0.2-0.4	<0.2	3	3	Estimated as 2.30 from Hardyk, Carruthers, 2018
Fecundity	>100,000	10,000-100,000	<10,000	3	2	Kivengea et al., 2014 for *O. vulgaris,* Farías et al., 2011 for *E. megalocyathus;* same genus as *E. magnificus.*
Breeding strategy	0	1 or 2	>3	2.5	2.5	As for octopods and squids (Patrick et al. 2009)
Recruitment pattern	Highly frequent recruitment success - >75% of year classes are successful	Moderately frequent recruitment – 10% to 75% of year classes are successful	Infrequent recruitment success - <10% of year classes are successful	3	3	Cephalopod recruitment is extremely variable, but failures are rare, because for an annual species such a failure means a catastrophe
Age at maturity, yr	<2	2, 3 or 4	>4	3	3	Mangold, 1983. (for *O. vulgaris*); Robinson, Hartwick, 1986 and Baqueiro-Cárdenas et al., 2012 (for a congenerics of *E. magnificus*)
Mean trophic level	<2.5	2.5-3.5	>3.5	2	2	Hounaida et al. 2016 (for. *O. vulgaris*) Kang et al 2021 (for *E. magnificus*)
Susceptibility attribute	**Low susceptibility (3)**	**Moderate susceptibility (2)**	**High susceptibility (1)**	***O. vulgaris***	***E. magnificus***	
Range overlap	<25% of stock occurs in the area fishes	Between 25% and 50% of the stock occurs in the area fishes	>50% of the stock occurs in the area fished	3	3	Based on assumption that availability of fishing grounds to potters are very restricted by ruggedness of bottom surface.
Geographic concentration	Stock is distributed in >50% of its total range	Stock is distributed in 25% to 50% of its total range	Stock is distributed in <25% of its total range	3	3	Based on assumption that octopods are not concentrated in a few relatively small locations targeted by fishermen
Vertical overlap	<25% of stock occurs in the depths fished	Between 25% and 50% of the stock occurs in the depths fished	>50% of stock occurs in the depths fished	1	1	
Seasonal migrations	Seasonal migrations decrease overlap with the fishery	Seasonal migrations do not substantially affect the overlap with the fishery	Seasonal migrations increase overlap with the fishery	2	2	The species are not migratory
Schooling/Aggregation and other behavioural responses	Behavioural responses decrease the catchability of the gear	Behavioural responses do not substantially affect the catchability of the gear	Behavioural responses increase the catchability of the gear	3	3	Octopods are generally solitary animals with rare observed exclusions

Morphology affecting capture	Species shows low selectivity to the fishing gear	Species shows moderate selectivity to the fishing gear	Species shows high selectivity to the fishing gear	3	3	Trap size hardly impacts capacity of an octopus to enter due to high body plasticity
Desirability/value of the fishery	Stock is not highly valued or desired by the fishery	Stock is moderately valued or desired by the fishery	Stock is highly valued or desired by the fishery	1	1	Fishers use this bycatch for home consumption and do not discard
Management strategy	Targeted stocks have catch limits and proactive accountability measures; on-target stocks are closely monitored.	Targeted stocks have catch limits and reactive accountability measures	Targeted stocks do not have catch limits or accountability measures; non-target stocks are not closely monitored	1	1	
Fishing rate (F/M)	<0.5	0.5-1	>1	N/A	N/A	
Biomass of spawners (SSB) or other proxies	B is >40% of B0	B is between 25% and 40% of B0	B is <25% of B0	N/A	N/A	
Fishery impact to EFH or habitat in general for nontargets	Adverse effects absent, minimal or temporary	Adverse effects more than minimal or temporary but are mitigated	Adverse effects more than minimal or temporary and are not mitigated	3	3	
P average				2.75	2.65	
S average				2.2	2.2	
Vulnerability score				1.226	1.250	A score of less than 2 indicates low vulnerability

CAB response

The CAB accept the comments on octopus from all parties above, there is no substantial change here to the perception of the scores suggested by the team in the RBF announcement, but it does highlight the identification issue between the species and the need for more biological information which the CAB has now raised as a recommendation to the fishery.

CAB response code : Accepted (no score change - additional evidence presented)

9.5 Recommendations

1. Identification of the octopus species is confirmed by the client in order to assess what proportion of the catch each species contributes
2. Even though SG100 is met for PI3.2.3, it is recommended that a record of compliance issues be included in the Fisheries Management Plan.

9.6 Conditions

Table 20. Condition 1

Performance Indicator	2.4.3
Score	60
Justification	SIa: Information on habitat type and distribution suitable to allow SGB description is available from independent research such as Caselle et al. (2018; 2017), and (Scott, 2017; BAS, 2013). Previous iterations of this report also identified older surveys which included habitat information such as Darwin Initiative project (DPLUS005) (Gascoigne et al., 2016) which inform on this also. **SG60 can be met**. In relation to VMEs (SA3.15.6) the fishery footprint is available from VMS data and is shown in Figure 25. Closed areas (no overlap with UoA in any case) are known. There are no precautionary trigger levels for VME indicator organisms in place. In relation to SG80 the adequacy of information for the commonly encountered kelp habitat (nominally 0 m to 40 m) is known from dive surveys, and mapping suitable to produce distribution maps and identify key habitat forming species (section 7.4.10 and Figure 27) (Caselle et al., 2018; 2017, and (Scott, 2017; BAS, 2013)). As noted above the UoA footprint is well recorded and overlap between the UoA and the habitat can be matched. Given that the fishery is conducted by a single vessel (FV Edinburgh) only, except for a quarter of Tristan Island, and for only a few limited trips each year the intensity of the fishery can be considered low. With respect to the Tristan Island fleet their footprint is limited to the NE quarter of UoA 1, the number of fishing days is limited by suitable weather (~90 days a year), and the number of boats and pots is restrictive. These aspects mean the intensity of this section of the fishery is equally low. For the commonly encountered kelp habitat (nominally 0 m to 40 m) **SG80 is met for this element.** In relation to SG80 the adequacy of information for the commonly encountered deep boulder rock habitat (between 40 m and 300 m) the scale and intensity of the UoA has the same low attributes detailed for the commonly encountered kelp habitat (nominally 0 m to 40 m) above apply, with the addition that the Tristan fleet do not fish below 40 m so the impact on their section of the Tristan coast is nil for this element. However, the habitat type is only known from the surveys of BAS (2013) and although habitat types and key species are known there are concerns on the paucity of distribution and complexity highlighted by Scott (2017). Presumably this is also partly the rationale for the marine plan objectives shown in PI 2.4.2. Based on this concern the team **do not** consider the distribution and vulnerability (SA3.15.4.2) of this habitat element is known in sufficient detail around all the islands to conclude that SG80 is met at present. **SG80 is not met for this element.** Sib: Information on the fishery footprint is available from VMS data and is shown in Figure 25 suitable to understand spatial overlap with the habitats when compared against bathymetry data, sample sites and projected distribution maps (Figure 20 to Figure 27). Logbooks from the fishery and daily position recording from both the FV *Edinburgh* and the powerboats provides information on the timing and location of use of the fishing gear. Main impacts can be assigned from comparative and stakeholder-based studies show that trap fishing is not particularly damaging to habitats relative to mobile

<table>
<tr><td></td><td>gears (e.g. (Eno et al., 2001; Chuenpagdee et al., 2003)). On this basis the team consider that SG60 is met and the majority of the SG80 requirements are met. However, the lack of any recording system of habitat interactions (e.g video camera or trap recovered dislodged fauna) is viewed as limitation in the fishery against the ability to define spatial extent of interaction as required for SG80 therefore SG80 is not met.
Sic: As per the rationale in rationale in Sia and Sib there is a lack of adequate information for the commonly encountered deep boulder rock habitat (between 40 m and 300 m) and there is no systematic recording of fauna tangled in the pots (however irregularly this occurs) or video surveys of this zone. Although there are objectives within the marine plan to address this (Tristan, 2020a) at present there is no continuing information collection suitable in this habitat, therefore SG80 and SG100 are not met.</td></tr>
<tr><td>Condition</td><td>By the Year 4 surveillance audit the client should provide evidence that further information on the distribution and vulnerability of the commonly-encountered habitat below 40 m is adequate to:
a. Know the spatial extent of the interaction in relation to the fishery
b. Enable the detection of increased risk from the fishery</td></tr>
<tr><td>Milestones</td><td>Year 1: Develop a protocol /sampling strategy suitable to meet the needs of the condition which shows how data will be collected and analysed. Present the evidence to the assessment team. Score 60
Year 2: Provide evidence to the assessment team that the strategy developed in Year 1 has been implemented and has been modified where required to meet the requirements of the condition. Score 60.
Year 3 Provide further evidence of data collection and initial results of the sampling strategy showing the spatial extent of the habitat in relation to the fishery and highlighting any risks. Score:70
Year 4: provide a summary of the sampling strategy undertaken and how it meets the requirements of the condition and the SG80 requirements of SI 2.4.3a-c. Score 80.</td></tr>
<tr><td>Consultation on condition</td><td>
<table>
<tr><th>Condition number</th><th>Entity</th><th>Evidence of support</th><th>Supporting document</th></tr>
<tr><td>1</td><td>TDCFD</td><td>Supporting letter provided by TDCFD</td><td>Word doc: TDCFD letter of support_Client action plan 2022</td></tr>
<tr><td>1</td><td>Ovenstone Agencies</td><td>Supporting letter provided by Ovenstone Agencies</td><td>Word doc: Ovenstone Agencies_letter of support_Client action plan 2022</td></tr>
</table>
</td></tr>
</table>

9.7 Client Action Plan

Milestone	Action	Roles & Responsibilities	Outputs
Year 1: Develop a protocol /sampling strategy suitable to meet the needs of the condition which shows how data will be collected and analysed. Present the evidence to the assessment team. Score 60 Year 2: Provide evidence to the assessment team that the strategy developed in Year 1 has been implemented and has been modified where required to meet the requirements of the condition. Score 60. Year 3: Provide further evidence of data collection and initial results of the sampling strategy showing the spatial extent of the habitat in relation to the fishery and highlighting any risks. Score:70 Year 4: provide a summary of the sampling strategy undertaken and how it meets the requirements of the condition and the SG80 requirements of SI 2.4.3a-c. Score 80.	1. Make it a part of the seasonal survey at the start of the year to undertake camera drops on deep locations which are representative of the fishery at each island. 2. Put in place a recording form for the MV *Edinburgh* that records when VME are caught. 3. Make sure there is a plan to record these and summarise in the annual report. 4. TDCFD to do more camera drops within the fishable area of each island.	1. Ovenstone Agencies will allow time for TDCFD (James Glass) to undertake camera drops on deep locations which are representative of the fishery at each island. 2. Ovenstone fishing crew will retain VME species that are caught in the lobster traps and alert the TDCFD observer. The latter shall record the VME data on a recording form on board the MV *Edinburgh.* TDCFD will provide this data to Ovenstone (Janine Nelson) at the end of each fishing trip. 3. TDCFD to provide Ovenstone with the VME data so that Janine Nelson may summarise these in an annual report. 4. Ovenstone Agencies will allow time for TDCFD (James Glass) to deploy cameras within the fishable area of each island.	1. Photos/Screenshots to be provided by TDCFD. Janine Nelson (Ovenstone Agencies) shall collate photos into a photo library / Photo report, to be presented to the CAB. 2. Summary of VMEs caught and, if possible, distribution maps will be provided (if position data has been recorded). 3. Annual Report 4. Photos/Screenshots to be provided by TDCFD. Janine Nelson (Ovenstone Agencies) will collate photos into a photo library. A photo report shall be presented to the CAB. For each year, each milestone, the reports will be updated to meet the requirements stipulated by the CAB in the assessment.

9.7.1 Supporting letters

DIRECTOR OF FISHERIES
TRISTAN DA CUNHA
SOUTH ATLANTIC OCEAN
TDCU 1ZZ
(via Cape Town, RSA)
TEL: (44) 020 3014 5013
Email: fisheriestdc@gmail.com
fisheries@tdc-gov.com

30th January 2022

To whom it may concern

The Tristan da Cunha Fisheries Department (TDCFD) is committed to carrying out the work schedule in the Client Action Plan dated 31 January 2022. Providing that it has the resources and sufficient funds available to do so.

Camera drops on deep locations in the areas fished by the MV Edinburgh are ongoing, and will continue as long as equipment remains available. The monitoring and data collection of VME's will be made by the Sea Fishery Observers, in cooperation with the Ovenstones crew during the fishing season. All data collect will be made available to Ovenstones

Yours Sincerely,

James Glass

Ovenstone Agencies
OVENSTONE AGENCIES (PTY) LTD Reg.No. 63/05454/07
• UNIT G8, VICTORIA JUNCTION, PRESTWICH ROAD, GREENPOINT, CAPE TOWN, 8001
• P O BOX 727, GREEN POINT 8051 SOUTH AFRICA•
TEL (021) 421-6169 • FAX (021) 421-6177 •
email : fishing@eurex.co.za

31 January 2022

To whom it may concern

Please be advised that Ovenstone Agencies hereby undertakes to collate all data provided by the Tristan da Cunha Fisheries Department and will provide the CAB with the relevant reports stipulated under "roles and responsibilities" and "outputs" for Ovenstone Agencies, in the Client Action Plan, dated 31 January 2022. Please note that the above is only achievable with the cooperation of the Tristan da Cunha Fisheries Department and their timeous delivery of the data.

Kind regards

9.8 Surveillance

Table 21. Fishery surveillance program

Surveillance level	Year 1	Year 2	Year 3	Year 4
3	Off site	Off-site	Off-site	On-site

Table 22. Timing of surveillance audit

Year	Anniversary date of Certificate	Proposed date of surveillance audit	Rationale
2023	14 June each year	June 2023	That's the anniversary.

Table 23. Surveillance level rationale

Year	Surveillance activity	Number of Auditors	Rationale
1	Remote audit	2	There are ample opportunities and mechanisms to engage with clients and stakeholders including electronic forms of communication, such as videoconferencing phone conferencing and email. The mechanisms have been effective to date the particular circumstances of the fishery. Documentation from the client and fishery have been shared electronically for the past 4 years without any known issue.

9.9 Risk-Based Framework outputs

A draft set of scores were provided by the assessment team in the RBF announcement (9.2.3.1) and sought information from stakeholders on all areas of this PSA. Productivity Susceptibility Analysis (PSA)

Table 24. Productivity Susceptibility Analysis for *Octopus vulgaris* and *Enteroctopus (Octopus) magnificus*

a. Productivity				
Attribute	**Rationale** *Octopus vulgaris*	**Score**	**Rationale** *Enteroctopus (Octopus) magnificus*	**Score**
Average age at maturity	<1 year (Hernández-López & Castro-Hernández, 2001)	1	<1 year (Smith et al., 2006)	1
Average maximum age	<2 years (Hernández-López & Castro-Hernández, 2001)	1	1 year (Smith et al., 2006)	1
Fecundity	100,000 - 1,000,000 eggs (Hernández-López & Castro-Hernández, 2001)	1	Mature females produced up to 10,000 medium-to-large (4-9mm maximum length) eggs, and potential fecundity was positively related to female body and ovary weight (Smith et al. 2006)	2
Reproductive strategy	Demersal egg layer https://www.marlin.ac.uk/species/detail/1117	2	Demersal egg layer (Smith et al., 2006)	2
Trophic level	Trophic level estimated at between 2.75 - 3.25 as a generalist predator of crustaceans and evidence from Africa of it being between 3.35 and 2.67 (Hounaida et al., 2016).	2	Like many octopuses, *E. magnificus* is a generalist predator. The chief food source for this octopus is the deep-sea portunid crab *Bathynectes piperitus*. Other major prey items include the Cape hagfish (*Myxine capensis*), the crab species *Pontophilus gracilis*, and hermit crabs in the genus *Parapagurus*. (Villanueva, 1993) Trophic level estimated at between 2.75-3.25	2
Density dependence (to be used when scoring invertebrate species only)	No depensatory or compensatory dynamics demonstrated or likely	2	No depensatory or compensatory dynamics demonstrated or likely	2
b. Susceptibility (from https://www.marlin.ac.uk/species/detail/1175 unless otherwise indicated)				
Attribute	**Rationale**	**Score**		

Areal Overlap	Distributed globally and across the entire Atlantic, the stock boundaries of the species are unknown. The best information is summarised by https://www.frontiersin.org/articles/10.3389/fevo.2014.00055/full below: Eastern Central and Southeast Atlantic Ocean Ranging from the Strait of Gibraltar to the South African coasts, this region sustains one of the most productive O. vulgaris fishery stock, the Sahara Bank, and studies performed here provided substantial contributions to our knowledge of the species' biology (Hatanaka, 1979; Mangold, 1983). Its occurrence along the coasts of this region appears in several expeditions' report (Hoyle, 1886; Adam, 1952, 1962; Voss, 1962) and is confirmed in some recent studies which allowed to define the genetic structure in this area. In north-western Africa, two fishery banks occur and they are genetically distinct (Murphy et al., 2002). Furthermore, the authors also hypothesize the existence of a fine spatial structure in this area because samples collected from a research cruise in the same region did not cluster with any of the two banks. In South Africa the situation is more complex. A first study by Oosthuizen et al. (2004) showed no distinction between the samples collected on the eastern and western coasts using the COIII region. On the other hand, reanalyzing these samples with different molecular markers (16S and COI), Teske et al. (2007) found two different lineages: one containing all the analyzed populations from South Africa and another one characterized by samples from Durban (see Table 1). This divergent lineage is interpreted by the authors either as a recent introduction by ships' ballast water or as a long-established lineage disappearing in most of its southern African distribution, but only a larger sampling plan can resolve this controversy. Based on this information and the lack further insight into the Tristan populations of octopus, a precautionary score of 2 is given as the	2	*E. magnificus* occurs from Namibia to Port Elizabeth, South Africa. It is found primarily on sand and mud flats from shallow subtidal areas to about 1000 m depth. A precautionary score of 2 is given as the distribution of the population is unknown but the fishery footprint is small against the scale of the known species range and depth.	2

	distribution of the population is unknown but the fishery footprint is small against the scale of the known species range and depth.			
Encounterability	Depth range -intertidal to -300 m+. they are commonly found at depths to 200 m. Vertical overlap estimated at less than 50%. However, because of bait being used in pots which would attract the crabs, a more precautionary score of 2 is given. James Glass pers comm. it is believed that vulgaris is the common bycatch in the Tristan fleet in shallower waters with almost no magnificus, whilst the FV Edinburgh is mainly magnificus. Identification can be made based on colour and skin 'tightness' Erik Mckenzie does not believe the identification is that simple	2	0-1000 m overlap is therefore approximately 15% of depth range (fishery = 0 - 150 m). See stakeholder comments to the left for vulgaris as they apply here also.	2
Selectivity of gear type	The open nature of the traps means all octopus individuals can escape from the traps. Stakeholders noted that this attribute makes no sense for octopus and size of maturity is not a concept relevant to an octopus.	1	The open nature of the traps means all octopus individuals can escape from the traps. Stakeholders noted that this attribute makes no sense for octopus and size of maturity is not a concept relevant to an octopus.	1
Post capture mortality	Octopus are kept by the fishery, therefore default score of 3 is required	3	Octopus are kept by the fishery therefore default score of 3 is required	3

					Productivity Scores [1-3]									Susceptibility Scores [1-3]					Cumulative only							
Family name	Scientific name	Common name	Species type	Fishery descriptor	Average age at maturity	Average max age	Fecundity	Average max size	Average size at Maturity	Reproductive strategy	Trophic level	Density Dependance	Total Productivity (average)	Availability	Encounterability	Selectivity	Post-capture mortality	Total (multiplicative)	PSA Score	Catch (tons)	Weighting	Weighted Total	Weighted PSA Score	MSC PSA-derived score	Risk Category Name	MSC scoring guidepost
	octopus vulgaris	octopus common	Invertebrate		1	1	1			2	2	2	1.50	2	2	1	3	1.28	1.97					96	Low	≥80
	Enteroctopus (Oc	magnificus	Invertebrate		1	1	2			2	2	2	1.67	2	2	1	3	1.28	2.10					94	Low	≥80

9.10 Objection Procedure - delete if not applicable

To be added at Public Certification Report stage

The report shall include all written decisions arising from a 'Notice of Objection', if received and accepted by the Independent Adjudicator.

Reference(s): MSC Fisheries Dispute Process v1.0