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ENVIRONMENTAL PROTECTION ORDINANCE 2016

MANAGEMENT PLAN FOR MARINE PROTECTED AREA

By virtue of section 31(7) of the Environmental Protection Ordinance, 2016, and being satisfied that the criteria have been met and steps have been carried out as required under that section, the Governor in Council has adopted the Management Plan for the Marine Protected Area as set out in the Schedule hereto.

Dated this 16th day of September 2016.

Gina M. Benjamin
Clerk of Councils

The Castle, St Helena
16 September 2016

SCHEDULE

St Helena Government

St Helena Marine Management Plan

Environmental Management Division

Saint Helena Government

September 2016

DARWIN INITIATIVE

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EMD
"Our Island. Our Environment. Our Responsibility."

St Helena Government

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Document history

Marine Management Plan

Environmental Management Division

This document has been issued and amended as follows:

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00	01-08-14	First Draft for review	J Brown	E Clingham D Duncan G Benjamin	ENRC
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	13-09-16	Final Version adopted under EPO	I Peters		Adopted by Governor in council

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Foreword

The designation of St. Helena's marine protected area and the adoption of this marine management plan is a significant milestone is St. Helena history.

The island has long been protected by its isolation both through access and geography. This plan recognises that for centuries St Helenians have protected their marine environment. But this plan will ensure that future use of the waters is sustainable. Potential developments will continue to support generations to come, as well as island culture, and allow enterprise to develop. It will ensure that destructive fishing never comes to St Helena and that the fabulous species which the island hosts will be protected.

As the Governor of St Helena I am proud that the island is now a major contributor to the UN's Sustainable Development Goal No 14, which is to 'conserve 10% of the ocean by 2020'. It gives the marine life surrounding St Helena's waters a long term future and it ensures that future generations will have the opportunity to be amazed at the diversity of species...just as I have been.

Lisa Phillips
Governor of St Helena

Executive Summary

The St Helena Marine Protected Area encompasses the entire 200 nm maritime zone (444,916 km^2) to be managed under IUCN Category VI "Protected area with sustainable use of natural resources". This Marine Management Plan identifies the major existing and potential pressures on the marine environment of St Helena. These are pollution (including sewage); aspects of commercial and recreational fishing; introduced species; aspects of marine tourism; construction and mineral extraction.

In support of the above designation, this plan specifies the management strategies for St Helena's marine environment so that its rich biodiversity and unique natural ecosystems can be conserved, protecting in particular rare, endangered, globally significant and endemic species and ensuring that its natural resources are used sustainably.

Management Strategies include:

- Boundary and Zoning
- Management of the Fishery
- Management of Marine Tourism Activities
- Science and Research

1 Introduction

St Helena is an isolated island surrounded by the rich waters of the South Atlantic and its marine environment supports a diverse array of marine life, including many endemics. The surrounding ocean is also important for several charismatic migratory species including humpback whales, whale sharks and turtles as well as resident populations of dolphins. As an island situated in the middle of the South Atlantic, St Helena is dependent in many ways on the waters surrounding it, particularly providing an access route bringing in supplies and people. The marine environment supports a range of both recreational and commercial activities, from dolphin and whale watching trips to inshore pole and line fishing. Tourism currently consists of <800 people per year arriving on the island via the Royal Mail Ship (RMS) St Helena, occasional cruise ship visits (approximately 3000 people per year) and visiting yachts. However, with commercial flights landing at St Helena's airport in the not too distant future and a drive towards economic sustainability there is the aspiration to develop the Island's economy both in tourism and fisheries.

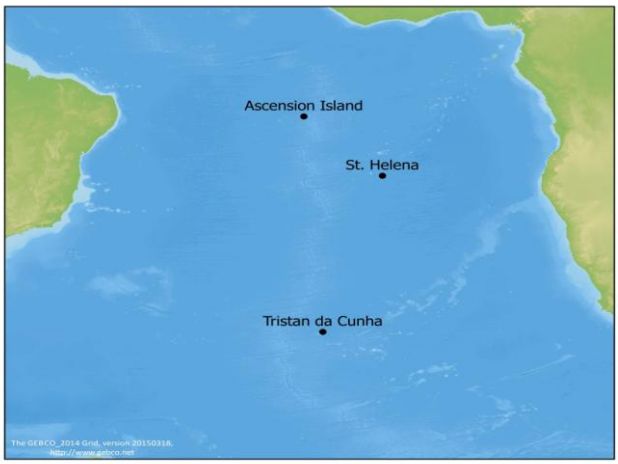

Figure 1. The South Atlantic Ocean showing the location of St Helena in relation to Africa and South America.

St Helena is a UK Overseas Territory (UKOT), administered by the Government of St Helena. Whilst St Helena has not formally declared an Exclusive Economic Zone in the surrounding waters, there is legislation in place to regulate exploitation of living and non-living natural resources. The 200 nm Exclusive Fishing Zone (EFZ) was established by proclamation in 1977 (Legal Notice No. 16, 1977) and fishing within that area is regulated by the Fisheries Limits Ordinance (1977, as amended)[1]. The Minerals Vesting Ordinance (1951) was amended in 2015 to restrict mineral exploitation, excluding sand, within 200 nm of St Helena's baselines. This 200 nm maritime zone comprises of 444,916 km^2 (source http://www.seaaroundus.org/eez/654.aspx).

Worldwide there are increasing pressures on the marine environment both through human intervention and through climate change. Globally, habitats, species abundance and species diversity have been damaged through overexploitation or destructive methods of extracting the natural resources. One of the principal tools for protecting the marine environment is the use of marine

[1] The Fisheries Limits Ordinance is being revised and the new Fisheries Bill is likely to be enacted within six months of the MPA coming into force.

protected areas (MPAs). The IUCN define a Protected Area as “A clearly defined geographic space dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” (Dudley, 2008). IUCN further categorises the different levels of management that such areas can be afforded (Dudley, 2008; Annex 1), ranging from strictly protected or 'no-take' (Category I) areas to those which are managed for sustainable use of natural resources or other multiple uses (Category VI).

Under the Convention on Biological Diversity, there is a commitment to a global target of protecting 10% (Aichi Target 11) of the marine environment through ecologically representative and well-connected systems of protected areas by 2020. As part of this initiative the UK Government has also made a commitment to create a blue-belt around the UKOTs.

St Helena has a relatively pristine marine environment, but there are increasing pressures on the natural resources of that environment and it is thus essential that it is managed sustainably. Marine management and the creation of Marine Protected Areas are key ways to ensure high levels of protection of individual species, habitats and entire ecosystems while allowing a range of reasonable uses to occur within specific areas or within the entire area of an MPA.

This Marine Management Plan for St Helena is designed, through its management strategies and associated legislation, to protect the unique marine ecosystem and the exceptional biodiversity which it supports. It provides details on the topography, oceanography and marine flora and fauna found in St Helena waters as well as current uses of the marine environment, potential areas for growth and development and the proposed actions to mitigate against negative impacts from these.

The plan should not be viewed in isolation, but as an integral part of a number of complementary reforms and management practices that are being established on the Island. These include the fisheries management strategy, environmental impact assessment and national conservation area management.

The key outcomes of the Marine Management Plan are that:

- Management of our marine environment reflects the Government’s support for a multiple-use approach to meet community and government aspirations for biodiversity conservation, sustainable use, nature appreciation, scientific study and public enjoyment.
- There is a collaborative approach to management of St Helena’s marine environment between government agencies, particularly between the various Divisions within the Directorate of Environment and Natural Resources.
- Any exploitation of the natural resources of the marine environment is undertaken in a controlled, sustainable and environmentally sensitive manner.

1.1 Legislative authority for the plan (national and international)

The Environmental Protection Ordinance, 2016 (EPO), makes provision for the Governor in Council to designate Marine Protected Areas where management measures are required:

(i) to protect habitats and ecosystems;

(ii) to protect biodiversity, at any level; or

(iii) to ensure sustainable use of the marine environment.

Any such designation requires that a management plan be adopted and published by notice in the Gazette.

The EPO, which came into force on the 29th February 2016, makes provision for the protection of the environment, including the control of pollution and waste, the protection of biodiversity and natural habitats, the regulation of trade in endangered species, pollution, litter and waste, and for matters connected to these.

The EPO also promotes the conservation of biodiversity through prohibiting certain acts (including hunting, collecting, killing, wounding, pursuing, capturing or molesting) in respect of protected species (as listed in the schedule of the Ordinance) without a licence or other permissions or authorisation.

Other National legislation on St Helena, which relates to the marine environment includes:

The Conservation and Management of Fishery Resources Ordinance, 2003: which implements the Convention on the Conservation and Management of Fishery Resources in the South-East Atlantic Ocean.

The Fishery Limits Ordinance, 1977 (as amended)[2]: which defines the fishery limits of St Helena and regulates sea fishing within those limits.

The Ports Ordinance, 2016: which regulates the management and control of harbours in St Helena, of vessels, and other matters connected to harbour safety.

The High Seas Fishing Ordinance, 2001: which implements the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas adopted by the Conference of the Food and Agricultural Organisation of the United Nations (1993) and the Agreements for the implementation of the provisions of the United Nations Convention on the Law of the Sea (1982) relating to the Conservation of Straddling Fish Stocks and Highly Migratory Fish Stocks.

The Land Planning and Development Control Ordinance, 2013: which provides for the planning and regulation of the development and use of land – it includes a requirement for mandatory Environmental Impact Assessment.

The Merchant Shipping (Oil Pollution) (Overseas Territories) (Amendment) Order 1981 (Commencement) Order, 1995: which brings into operation in St Helena and its Dependencies, Parts I and II of the schedule to the Merchant Shipping (Oil Pollution) (Overseas Territories) (Amendment) Order 1981. The order gives effect to the Protocol of 1976 to the International Convention on Civil Liability for Oil Pollution Damage of 1969 and the protocol of 1976 to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage of 1976).

[2] This piece of legislation is under review and will be repealed and replaced with the Fisheries Ordinance within 6 months of the MPA coming into force.

The Minerals Vesting Ordinance, 1951: which vests in the crown all minerals in St Helena waters. A 2015 amendment extended that to the 200 nm maritime zone.

The Spear Guns Control Order, 2014[3]: which regulates the use of spear guns including a closed season, restrictions to use and closed areas.

The Protection of Wrecks and Marine Archaeological Heritage Ordinance, 2014: which restricts detrimental activities on or around historical wrecks or marine archaeological artefacts including limiting sand extraction, preventing wreck penetration and the removal of any artefacts.

There are many Multilateral Environmental Agreements (MEAs) ratified or extended to St Helena in respect of environmental protection and these include:

- the Convention on the Conservation of Migratory Species of Wild Animals (CMS);
- the Convention on Biological Diversity (CBD);
- the International Convention on International Trade in Endangered Species (CITES) of wild fauna and flora;
- the Convention for the Protection of World Cultural and Natural Heritage;
- the Convention on the Conservation and Management of Fishery Resources in the South East Atlantic Ocean (SEAFO);
- the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (including amendments) (London Convention);
- the United Nations Convention on the Law of the Sea (Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks & Agreement relating to the implementation of Part XI of the United Nations Convention on the Law of the Sea of 10 December 1982);
- the International Convention relating to Intervention on the High Seas in cases of Oil Pollution Casualties (Protocol relating to intervention on the high seas in cases of oil pollution by substances other than oil; Protocol to amend the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage of 18th December 1971; Protocol to amend the International Convention on Civil Liability for Oil Pollution Damage of 29th November 1969);
- the Convention on Fishing and Conservation of the Living Resources of the High Seas;
- the Convention on the Continental Shelf;
- the Convention on the High Seas;
- the Convention on the Territorial Sea and Contiguous Zone;
- the International Convention on the Regulation of Whaling;
- the International Convention for the Conservation of Atlantic Tunas (ICCAT); and
- the Convention on Wetlands of International Importance especially as waterfowl habitat (Ramsar Convention).

[3] This ordinance will be repealed within the next six months and the use of spear guns will be regulated by the new Fisheries Ordinance.

1.2 Topography and oceanography

St Helena is an old (over 14 million years) volcanic island rising to 820 m above sea-level at its highest point (Figures 2 & 3). It has an area of 120 km^2 (17 km by 10 km) and is 930 km east of the mid-Atlantic ridge. The island has a shelf area of 185 km^2 and the 200 mile maritime zone comprises of 444,916 km^2. Within the maritime zone there are seventeen seamounts (independent features rising at least 1000 m above the surrounding seafloor), including two which rise to less than 100 m water depth. The Cardno Seamount (12º 54.00' S, 6º 03.00' W) is approximately 180 nm to the north of St Helena and rises to 77 m below the sea surface and Bonaparte Seamount (15º 38.40' S, 6º 58.20' W) is around 80 nm to the west of St Helena with the seamount plateau being 105 m below the sea surface. Other notable seamounts within St Helena's waters, include the Sysoev Seamount that lies to the east of Bonaparte Seamount and the Akademic Kurchakov Seamount, which lies to the west of Bonaparte and rises 410m below the sea surface. The seamounts which lie within the St Helena maritime zone comprise 0.15% of the world's seamounts.

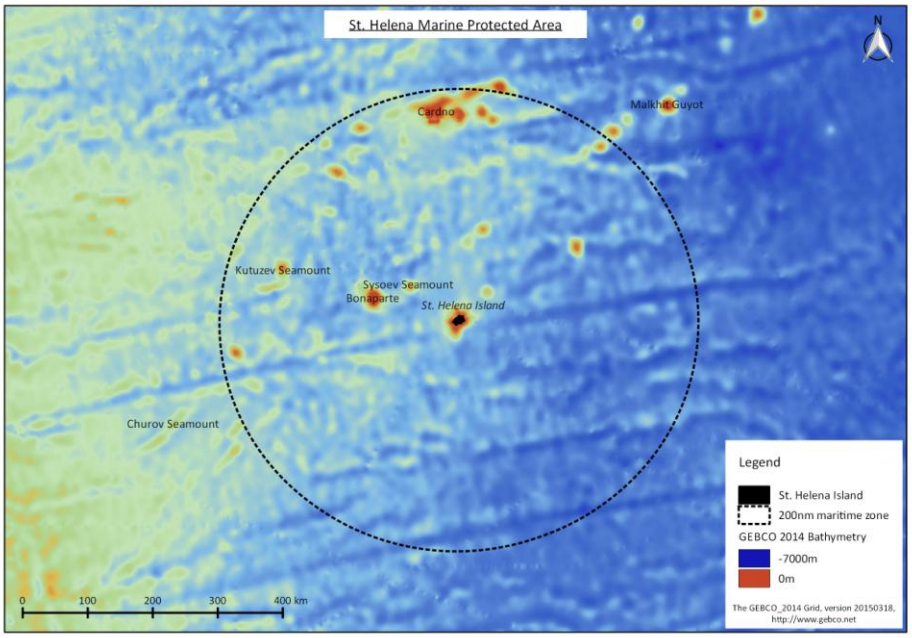

Figure 2. The St Helena 200 nm maritime zone, showing the locations of the important seamounts.

The bathymetry of St Helena has a rapid drop-off in bottom depth resulting in a narrow continental shelf with depths of 100 m occurring within 1-4 km of the shore and 500 m within 2-4 km (Figure 3). This narrow continental shelf also results in oceanic species such as migrating whales and migratory pelagic fish being found very close inshore. At the southern end of St Helena the continental shelf broadens out and around Speery Ledge at 8.2 km from the island there are depths of 100 m and at 13 km there are depths of around 500 m.

Due to the steep nature of the St Helena cliffs as they enter the sea there is limited littoral habitat, with only three areas where people can swim directly off the beach (Sandy Bay, Rupert's Bay and James Bay). The tidal range is also small ranging from 0.5 m during neap tides to 1.25 m during spring tides (Coleman 1946). Large rock pools are present at Lot's Wife's Ponds, with much smaller

pools at Lemon Valley, Sandy Bay, Rupert's Bay, Birddown, Sharks Valley, and some other much less accessible areas.

The Benguela current flows northward from Cape Point, South Africa driven by the Southeast Trade winds. The winds also drive the South Atlantic Gyre which in turn carries these cool waters towards St Helena, resulting in sea surface temperatures of between 19 degrees (winter) and 25 degrees (summer) (Figure 4). The movements of both the surface and subsurface currents over many years has resulted in a mixed marine fauna in the waters of St Helena including western Atlantic, eastern Atlantic and circum-tropical species.

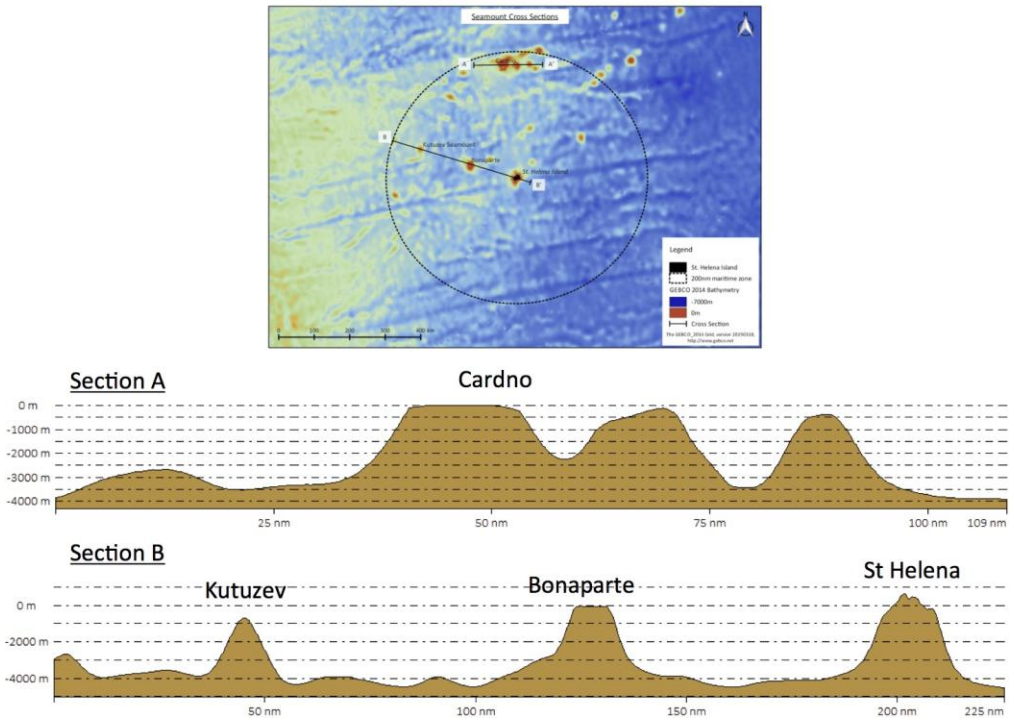

Figure 3. Cross sections of the topography of the St Helena maritime zone. Section A includes the Cardno Seamount in the north of the zone. Section B shows a section that includes the Kutuzev and Bonaparte seamounts and the island of St Helena. The locations are shown on the upper part of the figure.

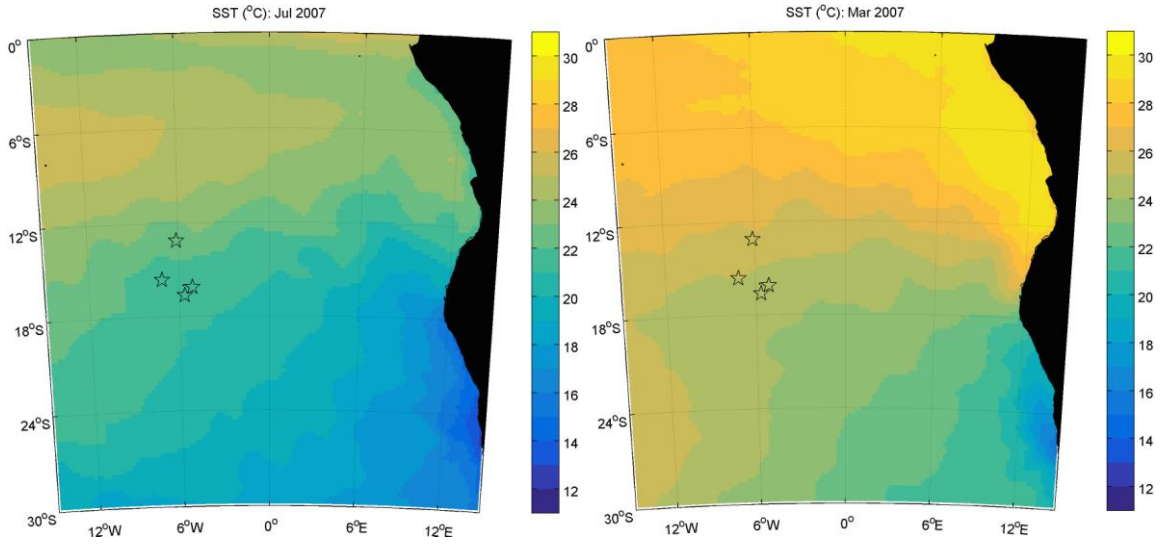

Figure 4. Sea surface temperatures in the waters around St Helena. Asterisks show locations of Cardno and Bonaparte seamounts, with the two to the SE close to the island.

1.3 Marine species

1.3.1 Marine flora and fauna

Nearly seven hundred and eighty marine species have so far been recorded from St Helena waters including 72 species of algae, 223 Mollusca, 44 Echinodermata, 173 Chordata (including 7 Ascidacea), 41 Cnidaria, 33 Bryozoa, 69 Formanifera, 64 Crustacea, 24 Porifera, 31 Annelida and 5 Platyhelminthes. Of these at least fifty are endemic species and work continues to describe species which have recently been discovered. Whilst the nearshore benthic fauna is well described there is less known about the pelagic fauna, although this is likely to be comprised of widespread Atlantic species with low diversity and no endemism. Primary production in the seas around St Helena is reported as 252 $mgC.m^{-2}.day^{-1}$ (Brown, 2014), which is low, but seasonal patterns have not been established.

St Helena's maritime zone can be divided into the pelagic, open ocean habitat and the benthic habitats, which include the narrow shallow coastal fringe, the seamounts and the seafloor of the continental slope and abyssal plain. The open ocean habitat includes planktonic and pelagic species such as tuna and billfish, cetaceans and whale sharks. The benthic fauna of the continental slope and shelf, includes demersal (bottom-living) fish and invertebrates, epi-benthic flora (algae) and fauna (e.g. sponges, bryozoans and soft corals), and infauna (e.g. burrowing bivalves, polychaetes). Inshore habitats include large boulder and bedrock reefs; both white and volcanic sandy areas and regions covered in cobbles and maerl. Although there are no reef-building corals around St Helena there are ten species of octocoral including the beautiful endemic orange cup coral which covers the underside of ledges and roofs of caves.

Rock pool areas are important for larval settlement and growth of juveniles and are often home to species not found elsewhere on the island. The tide pools at Lot's Wife's Ponds have high numbers of the textile blenny (*Entomacrodus textilis*) and the Ascension triplefin (*Helcogramma ascensionis*) both of which are endemic to St Helena and Ascension. This is also one of the few areas with a predominance of the endemic trumpet anemone (*Aiptasia insignis*).

Reaching lengths of over 12 m, whale sharks (*Rhincodon typus*) are the largest fish in the oceans and occur in both tropical and temperate seas. Normally oceanic and solitary in their distribution, whale sharks are recorded in the waters of St Helena from November to May, with large feeding aggregations reported in January (Clingham et al., 2016). They are filter feeders, feeding on plankton (mainly fish eggs), small fish and squid. This aggregation behaviour is only known to occur in a few places in the world.

In offshore waters and along the shelf edge, aggregations of pelagic fish are recorded, with numbers varying seasonally. These aggregations are targeted by local pole and line fishermen. Species include tuna and mackerel (Family: Scombridae), jacks (Family: Carangidae), marlin and sailfish (Family: Istiophoridae).

Little is known about the benthic (bottom dwelling) communities that inhabit the seamounts or deep waters surrounding St Helena. These areas have been subject to some fishing effort, including exploratory fishing with pelagic trawls and pole and line fishing for tuna.

Certain marine species are protected locally under the EPO. Schedule 2 lists protected fish, crustaceans, turtles, cetaceans and seabirds species. Species are protected on the basis of their IUCN status (Threatened or Near Threatened), listing under CITES or CMS or because they are endemic (Tables 1 & 2). The IUCN red-listing identifies species that are threatened (Critically Endangered, Endangered or Vulnerable) and hence in particular need of protection. CITES restricts the trade in certain endangered species under one of three appendices. The CMS lists migratory species that are considered endangered and range states have certain responsibilities to protect the listed species and their habitats.

Table 1. Fish that are protected under the EPO, with their IUCN status[4] and whether they are CITES or CMS listed. *Note that different species of hammerhead are afforded different levels of protection.

Species	Endemic	IUCN Status[5]	CITES Listed[6]	CMS Listed	EPO Protected
Whale shark (*Rhincodon typus*)	No	E	I	Yes	Yes
Devil ray (*Mobula tarapacana*)	No	V	No	I, II	Yes
Oceanic whitetip shark (*Carcharhinus longimanus*)	No	V	No	No	Yes
Blue shark (*Prionace glauca*)	No	NT	No	No	Yes
Crocodile shark (*Pseudocarcharias kamoharai*)	No	NT	No	No	Yes
Galapagos shark (*Carcharhinus galapagensis*)	No	NT	No	No	Yes
Shortfin mako shark (*Isurus oxyrinchus*)	No	V	No	Yes	Yes
Bigeye thresher (*Alopias superciliosus*)	No	V	No	Yes	Yes
Common thresher (*Alopias vulpinus)*	No	V	No	Yes	No
Hammerhead (*Sphyrna sp.*)	No	*	*		Yes
White marlin (*Kajikia albidas*)	No	V	No	No	Yes
Atlantic blue marlin (*Makaira nigricans*)	No	V	No	No	Yes
Longbill spearfish (*Tetrapturus pfluegeri*)	No	LC	No	No	Yes
Bigeye tuna (*Thunnus obesus*)	No	V	No	No	Yes
St Helena damselfish (*Chromis sanctaehelenae*)	Yes	V	No	No	Yes
St Helena Gregory (*Stegastes sanctaehelenae*)	Yes	LC	No	No	Yes
Skulpin (*Physiculus helenaensis*)	Yes	DD	No	No	Yes
St Helena dragonet (*Callionymus sanctaehelenae*)	Yes	CE	No	No	Yes
Deepwater jack (*Pontinus nigropunctatus*)	No	LC	No	No	Yes
Blunthead puffer (*Sphoeroides pachygaster*)	No	LC	No	No	Yes
Lined seahorse (*Hippocampus erectus*)	No	V	Yes	No	Yes
Deepwater greenfish (*Holanthias fronticinctus*)	Yes	DD	No	No	Yes
Deepwater gurnard *(Scorpaena mellissii)*	Yes	E	No	No	Yes
Greenfish *(Thalassoma sanctaehelenae)*	Yes	DD	No	No	Yes
Silver eel *(Ariosoma mellissii)*	Yes	DD	No	No	Yes
Springer's blenny *(Scartella springeri)*	Yes	V	No	No	Yes
Ascension goby *(Priolepis ascensionis)*	Yes	E	No	No	Yes
Ascension triplefin (*Helcogramma ascensionis*)	Yes	LC	No	No	Yes
Hedgehog butterflyfish (*Prognathodes dichrous*)	Yes	LC	No	No	Yes
St Helena puffer (*Canthigaster sanctaehelenae*)	Yes	E	No	No	Yes
St Helena butterflyfish (*Chaetodon sanctaehelenae*)	Yes	LC	No	No	Yes
Deepwater brown mullet (*Serranus sanctaehelenae*)	Yes	LC	No	No	Yes
Hogfish (*Acanthostracion notacanthus*)	Yes	DD	No	No	Yes
Marmalade razorfish (*Xyrichtys blanchardi*)	Yes	LC	No	No	Yes
Yellow razorfish (*Xyrichtys sanctaehelenae*)	Yes	LC	No	No	Yes
Parrotfish (*Bodianus insularis*)	Yes	LC	No	No	Yes
Red mullet (*Apogon axillaris*)	Yes	LC	No	No	Yes
Red scorpionfish (*Scorpaenodes insularis*)	Yes	LC	No	No	Yes
Rockfish (*Sparisoma strigatum*)	Yes	LC	No	No	Yes
Short-maned sand eel (*Phaenomonas longissima*)	Yes	LC	No	No	Yes
Solefish / flounder (*Bothus mellissi*)	Yes	LC	No	No	Yes
Textile blenny (*Entomacrodus textilis*)	Yes	LC	No	No	Yes

[4] Status is subject to review and can change. Status listed here is as at August 2016.

[5] CE = Critically endangered; E = Endangered; V = Vulnerable; NT = Near threatened; LC = Least Concern and DD = Data deficient

[6] Appendix I or II

Table 2. Turtles, marine mammals, seabirds and marine invertebrates that are protected under the EPO, with their IUCN status and whether they are CITES or CMS listed.

Species	Endemic	IUCN Status	CITES Listed	CMS Listed	EPO Protected
Hawksbill turtle (*Eretmochelyes imbricate)*	No	CE	I	Yes	Yes
Green turtle (*Chelonia mydas*)	No	E	I	Yes	Yes
Pantropical spotted dolphin (*Stenella attenuate)*	No	LC	II	Yes	Yes
Bottlenose dolphin *(Tursiops truncates)*	No	LC	II	Yes	Yes
Rough-toothed dolphin (*Steno bredanensis*)	No	LC	II	Yes	Yes
Humpback whale (*Megaptera novaeangliae*)	No	LC	I	Yes	Yes
Sperm whale (*Physeter macrocephalus*)	No	V	I	Yes	Yes
Spinner dolphin (*Stenella longirostris*)	No	DD	II	Yes	Yes
Blainville's beaked whale (*Mesoplodon densirostris*)	No	DD	II	Yes	Yes
Pigmy sperm whale (*Kogia brevicps*)	No	DD	II	Yes	Yes
Dwarf pigmy sperm whale (*Kogia sima*)	No	DD	II	Yes	Yes
Maderian storm petrel (*Oceanodroma castro*)	No	LC	No	No	Yes
Red-billed tropicbird (*Phaethon aethereus*)	No	LC	No	No	Yes
Masked booby (*Sula dactylatra*)	No	LC	No	No	Yes
Brown booby (*Sula leucogaster)*	No	LC	No	No	Yes
Sooty tern (*Onychoprion fuscatus*)	No	LC	No	No	Yes
Brown noddy (*Anous stolidus*)	No	LC	No	No	Yes
Black noddy (*Anous minutus*)	No	LC	No	No	Yes
Fairy tern (*Gygis alba*)	No	LC	No	No	Yes
Bulwers petrel (*Bulweria bulwerii*)	No	LC	No	No	Yes
Brown spiny lobster (*Panulirus echinatus*)	No	LC	No	No	Yes
Slipper lobster (*Scyllarides obtusus*)	Yes	LC	No	No	Yes
Whip coral (*Stichopathes filiformis*)	No	-	Yes	No	Yes
Black fan coral (*Plumapathes pennacea*)	No	-	Yes	No	Yes
Tree coral (*Sclerhelia hirtella*)	No	-	Yes	No	Yes

1.3.2 Cetaceans

St Helena has resident populations of pantropical spotted, rough-toothed and bottlenose dolphins. Seasonally (June to December) humpback whales visit the waters to give birth to their young, but are not thought to forage in St Helena waters. Occasional sightings of other cetacean species have been recorded and a sperm whale was beached at Frightus Bay in 2015.

Pantropical spotted dolphins are recorded on the leeward side of the island all year round in pods of between 5 – 425 individuals at any one time. Rough-toothed dolphins are reported to steal bait from fishermen and scare off the fish. Historically dolphins were taken for food; however, this has been illegal since the 1980's.

1.3.3 Seabirds

Nine species of seabird are recorded to breed on mainland and offshore islands on St Helena which are all listed as of 'Least Concern', under the IUCN Redlist criteria (Table 2). Breeding and nesting habitats will also be protected under the terrestrial NCA's but this section is added for completeness as seabirds are dependent on the MPA for foraging.

Sooty terns (*Sterna fuscata*) appear to have the highest abundance on Speery Island (in 1948 1200-1400 birds were recorded by Rowlands et al. (1998)). They are present all year around with breeding records for George, Shore, Speery and Egg islands as well as potentially on Castle Rock Point.

The cliff areas from James Bay to Rupert's Bay are very important for fairy terns (*Gygis alba*) throughout the year although a large proportion also live and breed inland. Thompson's Valley Island is also very important as a predator free offshore breeding colony. The main egg laying period is from April-December with the peak in July.

Brown noddies (*Anous stolidus*) are most abundant on Egg Island during the peak of their breeding season and on Speery Island during their non-breeding season. The main breeding season from Egg Island data is from November to March. St Helena's population of brown noddies is likely to represent a very small proportion of the global population (<1%) which is estimated to number c.180,000 - 1,100,000 individuals (BirdLife International 2012).

Black noddies (*Anous minutus*) are abundant on Egg Island throughout the year with colonies also on Peaked Island and the mainland cliffs opposite Peaked Island. There is lack of data on the reproductive biology of black noddies on St Helena.

Brown boobies (*Sula leucogaster*) have been recorded in very low numbers on St Helena (<20) with the highest abundance occurring on Shore Island (global population estimated to be 200,000 individuals).

Red-footed boobies (*Sula sula*) have been recorded to breed very rarely on St Helena with also several single sightings of adults seen at Ass's Ears, Lot's Wife and Blue Point.

Masked boobies (*Sula dactylatra*) are most abundant at Lot's Wife and on Speery Island. Masked boobies breed all year around, breeding adults are most abundant from July-February with the main laying period being July-March with a peak in September. Research into their foraging range during the peak 2013 and 2014 breeding season showed that the majority did not travel further then 54 nautical miles (approx. 100km) radius from St Helena. Adults at the incubation stage travelled a maximum of 28 nmile ±22 (approx. 52 km ±41) from the colony whereas adults rearing chicks travelled a maximum of 22 nmile±13 (approx. 41 ±24 km) from the colony. Identification of their non-breeding range commenced in 2015.

Red-billed tropicbirds (*Phaethon aethereus*) are likely to breed all year round with their preferred nesting habitat being on steep slopes and cliffs. Great Stone Top is the most important colony on St Helena, followed by Castle Rock at Blue Point. Estimates from monitoring suggest that St Helena holds approximately 270 pairs of red-billed tropic birds. The global population is estimated to be around 8000 pairs (Lee and Walsh-McGehee 2000); therefore St Helena's population could represent 1.2-2.5% of the global population. This makes the St Helena population of red-billed tropicbirds internationally important under the Ramsar Convention guidelines. Identification of their foraging range during their peak breeding season from 2013-2014 showed that the majority did not travel further than an approximate 200 nmile radius from St Helena. Adults at the incubation stage travelled a maximum of 198 nmiles ± 91 (approx. 366 km±169) from the colony whereas adults rearing chicks travelled a maximum of 83nmiles±67 (approx. 154 km ± 127) from the colony. Their range during the non-breeding season has yet to be defined.

Madeiran storm petrels (*Oceanodroma castro*) are most abundant on Egg Island during their two known annual breeding seasons. On St Helena a "cool" breeding season from March-August and a "hot" breeding season from October-January have been identified. Abundance estimates from mark recapture data highlight that the hot season population may be in decline whereas the cool population seems stable. It is thought that the population of storm petrels on St Helena is probably endemic and therefore likely to be of international conservation importance. Genetic research into the global complex of what is currently known as *Oceanodroma castro* will likely solve the current taxonomic uncertainties and allow reclassification in the near future.

Colonies that have been identified as of high importance:

Speery Island holds the largest abundance of sooty terns and is an important area for non-breeding masked boobies and brown noddies. This island is also an important breeding colony for probably all nine species of seabird on St Helena.

Thompson's Valley Island is an important predator (cat & rat) free island for breeding fairy terns as well as occasional brown noddies, Madeiran storm petrels and probably red-billed tropicbirds.

Peaked Island and the mainland cliffs opposite Peaked Island are arguably the most important area for breeding black noddies. Peaked Island also supports breeding brown noddies and occasionally fairy terns and Madeiran storm petrels.

Egg Island is home to five of the nine breeding seabird species that are recorded on St Helena and it holds the highest abundance of breeding Madeiran storm petrels and brown noddies. It is also an important area for non-breeding black noddies.

Great Stone Top holds the largest abundance of breeding red-billed tropicbirds and is also an important area for breeding fairy terns.

Shore and George islands: Shore Island holds the largest proportion of brown boobies and is a known breeding colony for at least five but probably all eight seabird species. Six seabird species

have been recorded nesting on George Island. The mainland opposite Shore Island at Gill Point was within the last 50 years an established breeding colony until predation from cats caused them to decolonise the area. Predation pressure in this area should be monitored as this could be a future re-colonisation site.

Lot's Wife and Blue Point currently hold the largest known breeding colony of masked boobies. It is the only site where it is known red-footed boobies have nested. Castle Rock at Blue Point holds the second largest colony of red-billed tropicbirds.

James Bay to Rupert's Bay: the cliff areas have the largest abundance of fairy terns and Jamestown is likely to be an important nesting area that has not been quantified yet. Red-billed tropicbirds also breed on the slopes.

1.4 Cultural: archaeological, historical

From historical records at least 24 shipwrecks have occurred in the waters around St Helena (both close inshore and further offshore). The older of these wrecks, which were almost entirely constructed of wood, are likely to have few remains left of them. During a very bad sea in 1846 somewhere between 12 and 27 ships were driven ashore and it is assumed any artefacts were salvaged leaving little evidence left in the sea of their presence. Eight wrecks remain to provide interesting dive sites; several of the more recent of these were sunk by St Helena Government as artificial reefs.

2 Existing uses

2.1 Marine Tourism

The main activities undertaken by tourists are snorkelling and diving, sports fishing, beach recreation and wildlife viewing and wildlife interaction tours. Wildlife interaction tours, which seasonally target whale sharks and wildlife viewing tours, offer opportunities for observing the acrobatics of the resident populations of pan-tropical spotted dolphins as well as the seabird colonies of Egg Island. These tours provide an opportunity for increased awareness and appreciation of some of the more spectacular wildlife of St Helena. In late 2013 huge interest was generated in whale shark tourism and over 50 trips were conducted for viewing and snorkelling with whale sharks in the summer of 2013/14 (compared to only a couple of trips in the summer 2012/2013). It is expected that whale shark tourism will continue to increase with the growing publicity of this unique experience.

Lemon Valley, Sandy Bay, Rupert's Bay and James Bay are four areas used regularly as locations where people meet, socialise and have BBQs by the sea. At Lemon Valley, Rupert's Bay and James Bay wharf steps people also swim/snorkel and enjoy watersports including jet skis, waterskiing and donuts. There are a small number of cruising yachts and a couple of larger cruise liners which visit St Helena each year.

2.2 Diving

Currently there are two active dive businesses on island and a local dive club. Pleasure diving occurs regularly twice per week with both operators taking around 6-12 people per time, with additional training dives occurring at other times during the week. Almost all the diving occurs on the leeward side of the island. The most popular tourist dive sites are Long Ledge, Red Island, Billy Mays, Bennett's Point, Buoys Hole (Cavalley Hole), Cavalley Rock and the wreck sites (in particular Frontier, Bedgellet, Darkdale and Papanui). As there is no recompression facilities on island all diving is restricted to less than 33m (dive club) or 40m (PADI regulations) although all diving is predominantly in 10-20m as this is the best depth to observe the inshore marine life.

2.3 Rock fishing

Rock fishing is a key traditional use of the marine environment with locals following old established trails along the cliff faces and down ropes and ladders to rocky outcrops along the coastline. Here they fish using handlines (including droppers) and rods. Fishing is for domestic consumption only and the species usually targeted are: glasseye snapper, mackerel, moray eel, grouper, squirrelfish, blackbar soldier and octopus. The majority of shoreline fishermen are in the over 40 age bracket. They fish all year round (though different seasons for different species), during the day and at night. Over half of the rock fishermen use the endemic St Helena wrasse as bait and some report also targeting spiny lobster and the galapagos shark (known locally as the mackerel shark). Catches are not quantified but verbal reports are between 1-2 dozen fish per trip or whatever they can carry, although people commented that rock fishing has declined with the ease of purchasing fish from the market. Despite the steep nature of the shoreline around St Helena very few areas of the shoreline are inaccessible (Figure 5), especially as rockfishing parties often get dropped along the coastline by boats.

Figure 5. Traditional rock fisherman's fishing spots. © 2013 TerraServer, DigitalGlobe

2.4 Sports fishing, spearfishing and recreational boat fishing

Sports fishing is currently only a small tourist activity (with around 50 trips per year, mainly in the summer months), with vessels predominately targeting wahoo and tuna. Recreational boat owners also spend evenings and weekends fishing for these species for sport as well as for food. A single

tourist trip so far has occurred for the purpose of spearfishing, but this is likely to increase. There is likely to be an increase in fishing pressure due to increased participation in sports fishing activities with greater numbers of tourists once the airport is open to commercial flights. The fisheries legislation is currently being revised[7] to establish a sports fishing licence and a recreational boat fishing licence, which will contain strict criteria including size restrictions, catch limits and waste disposal.

2.5 Commercial fishing

Commercial fishing has a long history on St Helena (see Edwards, 1990), but despite numerous initiatives, it has struggled to be commercially viable. Currently there are 32 registered commercial fishing vessels (12 full time and 20 part time; although currently only 8 are operating full time). Yellowfin, bigeye, albacore and skipjack tuna and wahoo are the principal target species, but nearshore demersal species such as grouper and lobster are also occasionally targeted. Swordfish has been targeted (with longlines) in the past and other billfish occasionally caught.

Whilst the bigeye, yellowfin and albacore tunas are schooling fish, they are not found in large concentrations around St Helena. Skipjack tuna can be very abundant in some years, congregating in small dense schools, particularly when feeding.

The main type of fishing is pole and line, using live and cut bait to attract tuna. Fishermen typically use pole and line or hand nets to catch *Decapterus* species and *Scomber japonicas* for bait close to the shore before dawn. Fishing vessels then move to traditional tuna fishing grounds (see Appendix C) where they anchor or drift whilst fishing with rod & line or pole & line. The Inshore Fishing Area (IFA) is 122 km^2 with most fishing taking place inshore within only a few miles of the island in water depths of 100 to 200m, usually over hard bottom.

The St Helena fishery tends to exploit a mix of large adult yellowfin (20 kg+) and smaller, immature, yellowfin (10 kg), with some large adult bigeye (20kgs+) also caught, particularly at Cardno Seamount. Catches vary between years (Figure 6). Yellowfin tuna are caught consistently, but the other tunas are more seasonal and variable. For a short season of a few weeks, between July and September, albacore schools may be located between one and twenty miles off the island, which most of the fleet can access. These fish tend to be near-adult fish (10-20kg). The skipjack are also seasonal and are normally caught between March and June.

Four larger vessels are now fishing regularly at Bonaparte and Cardno seamounts, where they catch large bigeye and yellowfin tuna using pole & line methods, although one of the vessels is equipped with short longlines. Tuna and the other highly migratory species (swordfish, marlin) are managed by the International Commission for the Conservation of Atlantic Tunas (ICCAT), of which the UK (on behalf of its Overseas Territories) is a signatory. ICCAT collates catch data from the Atlantic, reviews biological data collected by members, undertakes stock assessments and sets catch limits (Table 3). ICCAT catch limits apply to St Helena flagged vessels, rather than to the St Helena maritime area.

[7] Currently under review, it is expected that the new Fisheries Ordinance will be enacted within six months of the MPA coming into force.

ICCAT also operates a tagging programme. St Helena submits basic catch data to ICCAT and has recently started to participate in the tagging programme.

Commercial fishing for nearshore species, such as grouper and lobster, usually happens when tuna catches are poor. For such non-ICCAT species, management responsibility is entirely the purview of St Helena. On the basis of some preliminary scientific studies a catch limit was set for grouper (Table 3) and restrictions have been placed on the catching of both lobster species. At present bycatch is only reported when it is landed.

Species	**Scientific name**	**Quota per year**
Yellowfin tuna	*Thunnus albacares*	catches from the ICCAT Convention Area must not exceed 110,000 tonnes
Bigeye tuna	*Thunnus obesus*	2100 tonnes
Longfin tuna	*Thunnus alalunga*	100 tonnes
Skipjack	*Katsuwonus pelamis*	Unlimited
Swordfish	*Xiphias gladius*	25 tonnes
Blue marlin	*Makaira nigricans*	10 tonnes
White marlin	*Kajikia albida*	2 tonnes
Wahoo	*Acanthocybium solandri*	Unlimited
Grouper	*Epinephelus adscensionis*	36 tonnes
Spiny lobster	*Panulirus echinatus*	Unlimited (although a maximum sustainable yield of 0.37 t was estimated by Ninnes 1991)
Slipper lobster	*Scyllarides obtusus*	Unlimited (although a maximum sustainable yield of 3 t was estimated by Ninnes 1991)

Table 3. Catch limits for commercial fishing in St Helena waters. Note that the ICCAT limits for big-eye tuna and albacore tuna apply to St Helena flagged vessels, rather than the St Helena maritime zone.

Blue and white marlins are designated by ICCAT as overfished and well below B_{MSY}. Marlins can only be landed on St Helena at sizes less than 45kg, due to high mercury levels in larger fish.

Commercial fishermen report that the grouper catches have decreased over time and they feel that the current quota is too high. The Galapagos Shark (*Carcharhinus galapagensis*) was taken historically for food; however, now it is only landed if caught as bycatch. Mako shark is also sometimes caught as bycatch and is currently sold on local market (£2.13/kg as per December 2015). Historically there have been reports from fishermen of large numbers of sharks particularly around Barn Point and Speery Ledge but these are rarer sightings these days. Appendix C details the main locations targeted by local fishermen for the different commercial species.

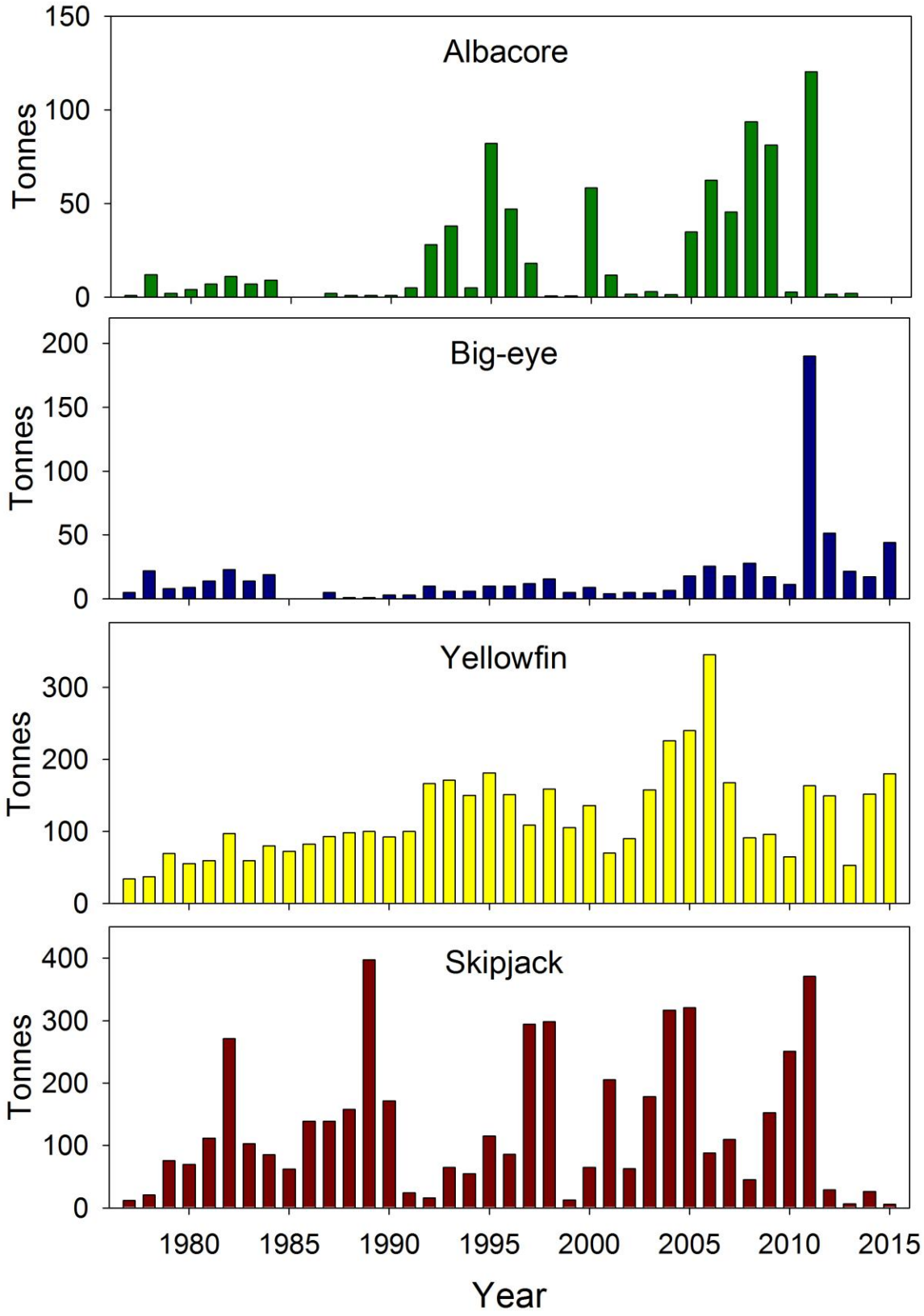

Figure 6. Catches (tonnes) of tuna species per year by St Helana's fishing vessels.

MSC certification of the tuna fisheries was sought in 2010 but the fishery failed on the basis of the stock status (for some species) and the lack of a thorough local management regime or strategy.

Recommended areas from the MSC report where St Helena should look to improve its fisheries include:

- Blue marlin and white marlin stocks are both considered to be over-exploited and in need of re-building – catch and release of these species would address this.
- Improve information on the landings of billfish and wahoo from non-commercial activities – this will be addressed within the new licensing system.
- A management strategy is required to minimise the capture and discarding of vulnerable species, such as sharks.
- A recording system for discards and for sightings and/or capture of Endangered, Threatened and Protected (ETP) species, such as seabirds, cetaceans and turtles is required.

Whilst pole and line fishing is the traditional and main method of fishing other methods, including purse seining, longlining and greensticking have been trialled. Some experimental purse seining was undertaken by the *Westerdam* to catch skipjack (Hoogesteger 1988), but the short, unpredictable season meant it was difficult to justify having a purse seine vessel on the island. The *Westerdam* also trialled longlining, but the main catch was shark, rather than tuna. More recently some longlining was undertaken by the *Argonaut*, predominately targeting bigeye and swordfish. Shark bycatch remains a concern with longlining, but may be reduced by fishing deeper (below the thermocline). Greensticking was also trialled by the *Argonaut*, but this method has not been used by other vessels to date. Issues with high mercury content of the swordfish caught around St Helena have meant it is currently not suitable for the local or EU export market.

Local fishermen occasionally deploy pots overnight targeting slipper lobster and the spiny lobster. The only restrictions on this type of fishing is that catch must first be offered for sale to the St Helena Fisheries Corporation (as per all other commercial fish catches)[8] and no spiny lobster with eggs can be taken. From 1988-2013 the average annual lobster catch was 0.12 tonnes, although there are several reports of people selling spiny lobster illegally on the street and therefore volumes taken will be higher than reported.

In 1998 there was an exploratory fishing trip for alfonsino and boarfish on the seamounts. Licence restrictions meant the vessel could not fish within 30 m of the seabed and although soundings identified potential fish aggregations, no fish were caught. In 2014 there was a proposal for an exploratory bottom trawl fishery on the seamounts, aiming to target orange roughy and alfonsino. This was rejected as bottom trawling is a destructive fishing method and is not compatible with St Helena's commitment to developing sustainable and environmentally sound fisheries.

2.6 Sand extraction

Sand pumping started in James Bay by Solomon & Company in 1979; however, records of volumes pumped are only available from 1986 to 2006. This business then went to another private sector operator and personal communications reveal approximately 2000 cubic yards per annum (40 cubic

[8] The requirement to first offer fish to the Fisheries Corporation is currently under review.

yards a week) have been extracted since. There are reports of a huge demand for sand between 1978/80 (perhaps 100 cubic yards a week at that time) and records also show an increased extraction in 1995/96 when a housing boom resulted in a large demand for sand for concrete. Originally crushed aggregate and sand were used to make concrete but in 1998 a new road was installed to Donkey Plain quarry and a lot of fine dust was then available which is much cheaper to make concrete than sand. Nowadays most of the sand pumped is used for mortar and plastering and all is used for local building and businesses.

Historically sand was also pumped in Rupert's Bay in the late 80s early 90s for about 10 years, probably pumping around 1000 cubic yards per year. People were also reported to take sand off the beach with a shovel at Sandy Bay, James Bay and Rupert's Bay. More recently there have been occasional requests (usually once per year for small quantities) for beetle stones (cobbles) from Rupert's Bay, mostly for use for house features e.g. patios, fireplaces etc.

2.7 Other uses

There have been several minor and some major infrastructure developments to date in the marine environment. These include yacht moorings at the west end of James Bay, improvements to Jamestown wharf and a new wharf and slip way at Rupert's Bay (and several artificial reefs created to attract fish and as dive locations). Currently all grey/storm water and sewage is disposed of directly or indirectly into the marine environment. Visiting yachts/vessels also discharge sewage directly into the marine environment.

2.8 Research and education

The unique nature of St Helena's marine environment and the fact it is one of the key draws for economic development, both through marine tourism and fisheries, has led to a number of research projects being undertaken by the marine section of the Environmental Management Division (EMD) of the St Helena Government (SHG) providing information to feed into management strategies. These include near-shore species abundance, biomass and habitat surveys, seabird population and migration research, whale shark population and migration studies, humpback whale and cetacean studies, and studies into local rockfishing culture. Despite the research that has so far been undertaken, there are still many gaps including limited knowledge of the oceanography of St Helena's waters as well as information about the deep water communities.

Considerable scope exists in the marine environment for research that will lead to an increased understanding of the environment, from both natural and social perspectives, and its effective management. Research programs should, ideally, be designed to fill the key gaps in our current knowledge that are relevant to marine management.

Promoting marine awareness through publicity and education is a priority area for EMD.

Stakeholder engagement is vital when developing policies and legislation. It is imperative to safeguard traditional uses of the environment when making management decisions and working with local businesses also ensures long term viability for any measures brought into force. An

accreditation scheme has been developed and is currently undergoing a one year pilot phase designed to ensure that marine tourism businesses are operating in an environmentally friendly way as well as providing incentive for the operators to achieve high environmental standards and use the accreditation for positive promotion of their business.

3 Existing and potential threats and implications for management including existing legal and management framework

3.1 Pollution

There is a current risk of pollution in the marine environment from contaminants and marine debris arising from fishing, oil/chemical spills from shipping accidents and land based run off including sewage. Any future development of petroleum or mineral exploration and extraction or aquaculture would represent a threat. Marine species could be at risk of mortality from entanglement with or ingestion of marine debris (e.g. plastics, discarded ropes, hooks and fishing line) or from exposure to or ingestion of chemical contaminants.

Commercial shipping passes through St Helena waters to bring cargo to the island and as part of routine trading routes. Commercial shipping has the potential to discharge polluting substances such as fuel and oils, sewage and other wastes. The discharge of substances from shipping is regulated by the Convention on the Prevention of Marine Pollution by Dumping Wastes and Other Matters (ratified by the UK in 1975 and extended to St Helena). This is administered by the Port Authority who enforces restrictions on operational discharges.

Regulation of pollution from fishing vessels including discarding of hooks and fishing gear should be included within all fishing licences (commercial, recreational boat and sports fishing). St Helena Government is currently updating the licensing conditions to include this.

Before 1502 and human presence on St Helena, the island was heavily wooded. However, with overgrazing, deforestation for timber and fuel, alien plant introduction and clearance for cultivations, plantations and pasture, humans and the animals introduced ecologically transformed the island. This has resulted in less than 1% of the island now being covered in native habitat. This lack of natural vegetation binding the soils together has resulted in significant levels of silt laden runoff and contaminants being flushed into streams especially after periods of heavy rainfall. This may lead to a reduction in the water quality in the marine environment which may negatively impact on marine species and communities. This can only be addressed through research into freshwater ecology and the creation of a freshwater ecology restoration plan.

3.2 Sewage and other waste

Currently virtually all sewage on island (including grey water) is untreated and is released raw into the marine environment. Some of the smaller settlements have a septic tank and soak-aways and the sludge is emptied occasionally by tanker and taken to the landfill site. In some areas, for example

in Rupert's Bay at the fish factory, there isn't a soak away and the tank is emptied directly when it is full into the run which goes directly into the sea. Raw sewage and grey water from Jamestown and the Briars enters the run and is discharged straight out into the sea untreated, directly at the shore at West Rocks. Half Tree Hollow untreated sewage and grey water is pumped into a communal tank, the scum is removed occasionally and when the tank is full it discharges untreated effluent onto the embankment and into the gut, eventually reaching the coast and into the sea. Several other areas also have communal tanks (Clay Gut, Sapper Way) however these are also untreated. At Longwood and Bottom Woods there are sceptic tanks and soakaways and a single main sewer system takes waste to oxidation ponds which is the only treatment plant on island. This discharges into Mulberry Gut; however, some of the effluent is used for irrigation at the Millennium Forest.

In 1999 *E. coli* (faecal bacteria) and coliform tests were conducted on the water within James Bay. The acceptable level of coliforms in sea water, stated by the European Community Bathing Water Directive regulations, is 10,000 per 100ml, and for *E. coli* 2,000 per 100ml. During each of 26 weeks the water was tested at 12 sites in James Bay, it exceeded the acceptable level of *E. coli* in 40 tests (13%) and of coliforms in 17 (5%). West Rocks consistently had the highest counts of *E. coli* and coliforms. Water testing was not conducted for a full year and therefore it is not possible to determine if levels of *E. coli* or coliforms varied at different times of year with varying sea conditions (e.g. during the rougher sea months).

Connect St Helena has released plans (2014-2017) to address the sewage issues on island including mapping the sewage system and building treatment plants at Jamestown, Rupert's and Half Tree Hollow and to move and upgrade the treatment tank system at Longwood. It is proposed to use an MBR (membrane bio reactor) tank system which is located below ground and provides treatment and aeration within a high technology unit. The installation of these treatment plants will make a vast improvement on the quality of effluent water being discharged into the marine environment.

Other organic waste disposed of in the marine environment includes fish offal as waste from the fish processing factory in Rupert's Bay. This is currently disposed of at sea at least one mile out. At this distance from the bay the water depth is 82 m and the seabed type is sand. This forms part of the agreement SHG has with the St Helena Fisheries Corporation (SHFC) and as such forms part of an agreement the SHFC has with a local vessel involved in disposal. All commercial fish are currently gutted and gilled at the sites they are caught with offal thrown overboard. Therefore waste from the factory is predominately fish heads and tails from fish processed for local consumption. The amount of waste produced by the factory has recently greatly reduced as overseas buyers are requesting heads and tails to be left on the trunks, so only those processed for the local market will be headed and tailed (local market demand is approximately 60+ tonnes per annum).

3.3 Fishing

Commercial, sports and recreational fishing pose direct and indirect threats to the marine environment. Direct impacts from fishing activities include reduction in population sizes of target and non-target species and impacts of fishing gear on marine habitats. Indirect effects include impact on trophic structure (trophic cascades) that can occur when key, particularly higher trophic level, species are removed.

Direct effects on target species are mitigated through assessing stock status and applying sustainable catch limits. Catch limits for tuna species and other large pelagics are set by ICCAT and any limits set in St Helena waters will have little impact on the overall stock status. ICCAT assessments are limited by data quality and quantity and it is important that St Helena (and the UK) work with ICCAT to improve knowledge of the biology, ecology and population dynamics of tuna species. Although migratory, yellowfin tuna are thought to remain in St Helena waters for extended periods (Hoogesteger, 1988) and so temporary local depletions of the population are possible if fishing effort and catches are high.

Of all the tuna catching methods, pole and line fishing is considered to have the least impact on non-target species, but it is essential that impacts are quantified. With pole and line fishing any non-target species that are caught can, usually, be released alive.

Other methods of catching tuna, such as longlining and purse seining have greater impacts on non-target species. With longlining any non-target species that are caught are usually dead and previous trials of longlining in St Helena waters have had problems with shark bycatch. Purse seining can also have serious impacts on non-target species.

Indirect effects of tuna fisheries include the trophic effects of reducing populations of top-predators, which can have impacts on food-webs. Understanding the diet of tuna species in St Helena is thus important. Tuna also play a role in driving prey to the surface, which can be important for seabird foraging.

Bait species (*Decapterus* sp., *Scomber japonicas* and *Selar crumenophthalamus*) are also at risk of overfishing and reduction in population sizes of these species could have impacts on dependent predators, such as seabirds, tunas and sharks.

Nearshore demersal species (e.g. grouper, glasseye snapper, moray eel, squirrelfish) with closed populations are highly susceptible to over-fishing. For these species it is important to establish population size and determine sustainable catch limits. Impacts can also be mitigated through seasonal closures and size restrictions. Some work has been undertaken on grouper (Choat, 2006), but further work is required to determine current population status.

The two species of lobster are also fished commercially with pots (and by snorkelling). As with the fish species, it is important to determine stock size so that sustainable catch limits can be established. The EPO makes it an offence to take spiny lobster when with eggs and slipper lobster without a licence.

St Helena has received proposals to bottom trawl on the seamounts. Bottom trawling is very unselective in what is caught and can have serious impacts on benthic communities and any such proposals have been rejected.

The Spear Guns Control Ordinance 2014[9] (which repealed an earlier Ordinance of 1994) regulates spearfishing through a closed season from 1st January to 31st March every year, and prohibits spearfishing in Jamestown Harbour, Rupert's Bay, Lemon Valley, all eight historical wrecks, and between (and including) Long Ledge and Billy May's Revenge. No spearfishing is permitted on scuba.

[9] This ordinance will be repealed and spear gun fishing will be regulated under the new Fisheries Ordinance, which is currently under review.

3.4 Introduced species

Wild cats are non-native and are known to prey on the eggs and juveniles of St Helena's ground nesting seabirds which nest on rocky cliffs and ridges. Currently a small amount of cat trapping is conducted especially in areas where research/tracking studies are to be undertaken. The veterinary department on island provides a service of neutering domestic cats in an aim to reduce wild populations in the form of unwanted kittens and cats being abandoned.

St Helena's territorial waters are under threat from unwanted foreign marine organisms, carried on the hulls of vessels, in ballast water tanks and in bilge water. Introduced marine species can potentially pose a threat to natural marine communities either through predation or by out-competing native species for food or habitat. Additionally, these organisms threaten our fishing and tourism industry, our environment and the well-being and livelihood of our people. The main sources of introduced marine pests are released ballast water and invasive species attached to the hull of a visiting vessel or to marine debris (buoys etc) that become detached while in a bay. Visiting yachts and salvageable marine debris i.e. buoys etc. claimed by fishermen for reuse are subsequently cleaned on the pierhead and the scrapings disposed of over the wharf wall into James Bay.

There is a biosecurity protocol for the Marine Environment for cargo ships, cruise ships, visiting yachts and fishing vessels as well as a haul-out procedures for visiting yachts. St Helena's draft Biosecurity Major Incident Plan (March 2016) (pages 104 -122) outlines the response to the introduction of a new pest in the event of an incident.

There are regulations on importing ornamental fish into St Helena and a by-law (under the Animal Diseases Ordinance) means that a licence is required to import live aquarium fish. There are a host of fish diseases which can come with both the fish and the associated water. Some species of fish are endangered but highly collectable, and are poached by unscrupulous traders who then sell into the pet trade. St Helena's biosecurity regulations control the importation of any fish species noting if the fish is fresh water or marine; wild caught or captive bred to ensure the species is from a sustainable source; is not CITES listed; is disease free; and is not likely to pose a threat to the local environment should it be accidentally or deliberately released.

3.5 Tourism

Unless tourism is managed effectively it can have damaging effects on the environment negating the positive influence of increased awareness. To maintain increased tourism (and hence revenue) it is imperative to protect the product people are coming to see. Tourism activities have a potential for negative impacts on the marine ecology through disturbance to roosting seabirds from human presence (management measures will be sited in the NCA management plans); and through disturbance from inappropriate interactions with large marine species (e.g. whale sharks, devil rays, turtles, cetaceans), which may stress the animals. Currently these impacts are minimised by providing guidelines to commercial operators within the "Environmental policy for whale shark (*Rhincodon typus*), devil ray (*Mobula tarapacana*) and cetacean interaction activities on St Helena Island to minimise risk of injury and disturbance". Under the EPO it is an offence to disturb any protected species and hence any tourism interactions with such species will require a licence. This

policy should also reduce the risk of collision of marine mammals with ships as it details minimum approach distances for these species.

Increasing numbers of divers can potentially cause damage to sensitive benthic organisms through careless finning, especially through confined areas such as under arches and in caves. The accreditation of marine tourism business and continued public awareness raising, including leaflets giving guidelines on diving best practice, will help highlight the importance of detailed dive briefings, good buoyancy control and consideration of fragile marine species.

Scuba divers often like to dive in and around wrecks. The Protection of Wrecks and Marine Archaeological Heritage Ordinance enacted in 2014 will protect these areas from people taking artefacts, from damage caused by divers penetrating the wrecks or from damage due to sand extraction. It also protects the groundfish species on the wrecks from spearfishing or fishing.

All of the above is further complimented by the introduction of the marine environment accreditation scheme. The scheme includes training, assessment and monitoring of wildlife and habitat interaction based on environmental best practice guidelines derived from policy, which will facilitate the collection of independent compliance evidence.

3.6 Construction

Construction works in or near the marine environment could potentially harm marine ecosystems through seismic operations e.g. underwater blasting. This is regulated through the "Environmental policy for planning underwater blasting activities on St Helena Island to minimise risk of injury and disturbance to marine life". Damage can also be caused by habitat destruction or loss both during and after the construction process. Construction works are managed through an Environmental Impact Assessment (EIA) which forms part of the planning process and will include determining if the works will have a significant impact on any rare, endemic or threatened species or habitats; suitable mitigation options will also need to be identified and implemented. Any activity that is likely to disturb protected species or habitats will require a licence under the EPO.

3.7 Mineral extraction

Although there are currently no offshore exploration activities for oil or gas production, if this industry was to develop on St Helena it would be a potential threat to the marine environment through pollution risk and habitat modification. Any exploitation of minerals would be regulated under the Minerals Vested Ordinance, 1951. An assessment of environmental impact would need to be undertaken for any such development, this would need to include surveys to establish the substrate type and species abundance and diversity at any potential extraction site to ascertain the nature of the habitat and whether there are any rare or endangered species present that would be impacted detrimentally by the process. Action plans would be required on how any extraction company would mitigate against pollution incidents (e.g. oil spills) to prevent damage to the marine environment as well as a decommissioning plan for post extraction.

Currently private sector operators pump sand from within James Bay usually once per week taking approximately 2000 cubic yards each year. A licensing or permit system for any mineral extraction needs to be developed to regulate current and future mineral extraction including, at a minimum, reporting the quantities of material extracted and location.

3.8 Disturbance of species

Under the EPO it is an offence to pursue, capture, kill or molest any protected species. It is also an offence to disturb any protected species during breeding, incubation or migration within the maritime zone. For example hawksbill and green turtle juveniles and adults are regularly seen within Rupert's and James Bay. With increasing tourism there is the potential for increased disturbance and potential damage to turtles from increased boating traffic – in particular from speed boats partaking in watersports or from jet skis. To date, however there has only been a single report of a turtle struck by a boat in James Bay. Raising public awareness regarding watching out for these species in these locations will help mitigate against incidents with marine species. Monitoring and recording further reports of incidents will help determine if this is becoming an issue. Other species such as whale sharks, dolphins and whales are also sensitive to disturbance.

3.9 Natural pressures

There are potential natural pressures from climate change and natural disasters, such as increased sea water temperatures, changes in oceanic circulation patterns and increased frequency/size of storm events. Continued long-term monitoring of species diversity and abundance, commercial fish catches and sea temperatures will provide important data for future research regarding any effects of climate change on the marine environment and how such effects might be mitigated against.

4 Existing gaps in knowledge

Sustainable management of the marine system requires knowledge of the local oceanography, productivity in the lower trophic levels, coupled with detailed knowledge of the biology and ecology of the target species.

Although basic historical catch data has been collected for the main target species, there is little or no data on catches of bait species (e.g. *Decapterus*) and there are still major knowledge gaps in relation to the commercial fish species. Further information is required regarding:

(i) spatial distribution of effort and catches of target and bait species;
(ii) spatial and temporal patterns in the distribution of migratory tunas, including determining residence times at St Helena and the seamounts;
(iii) size frequency of catches;
(iv) age/growth rates, reproductive biology and diet of primary target species and of bait species;

This additional information will be gained through developing scientific capacity through engagement of a fisheries scientist, scientific observers and/or fisheries consultants. Exploratory

fishing work conducted by offshore vessels will provide data for fisheries management planning and future developments of the fishery.

Information is also lacking on the benthic (bottom dwelling) communities that inhabit the seamounts and deep waters surrounding St Helena.

Determining the foraging patterns of marine predators, including seabirds and cetaceans is important. Seabird data analysis has highlighted many data gaps, notably for sooty terns, red-billed tropicbirds and Madeiran storm petrels, which are difficult to monitor accurately using conventional methods. Species targeted approaches are needed to address these separately including bird ringing, tracking projects and detailed nest monitoring.

Sand extraction will have an impact on the associated fauna, but that impact has not been evaluated. Sand will likely be inhabited by small invertebrates (worms and molluscs) and studies of the fauna and impacts of sand extraction should be undertaken. Sand is explicitly excluded from the Minerals Vested Ordinance (1951), but as sand extraction will disturb a habitat it will require a permit under the EPO.

Climate change, particularly associated changes in ocean currents and sea-surface temperature, represents a threat to the marine environment and studies should be undertaken to evaluate the possible impacts of predicted warming in the region.

5 St Helena Marine Protected Area

The Environmental Protection Ordinance (EPO) gives provision to the Governor in Council, to designate a Marine Protected Area (MPA) within St Helena waters. Any national conservation area (including MPAs) is subject to a management plan. St Helena's MPA encompasses the entire 200nm maritime zone and will be managed as an IUCN Category VI Marine Protected Area (MPA). A Category VI area is one that includes sustainable use of natural resources.

5.1 Goals and objectives

The primary goal of the St Helena Marine Protected Area is to conserve the marine environment and its associated biodiversity, habitats and ecosystems.

The MPA is to be managed under this Marine Management Plan with the following objectives:

- To protect natural ecosystems and use natural resources sustainably;
- To conserve marine biodiversity and ecosystems, protecting in particular rare, endangered, globally significant and endemic species;
- To sustainably manage the marine natural resources of St Helena including fisheries and mineral extraction with minimum impact on species abundance, diversity and habitats;
- To manage marine tourism and construction in or near the marine environment to minimise impacts on the marine environment, especially in the face of increasing pressures with economic development;

- To safeguard benthic flora and fauna from the damaging impacts of bottom trawling;
- To protect the natural species assemblages by preventing the introduction of non- native marine species through management of marine species imports;
- To promote education, nature appreciation and scientific research on the biological, geophysical and cultural values of the marine environment;

5.2 Management Strategies

5.2.1 Boundaries & zoning

St Helena's Marine Protected Area encompasses the 200 nm maritime zone of St Helena as a Category VI Marine Protected Area. This Marine Management Plan does not cover Lot's Wife's Ponds, however Lot's Wife's Ponds will be afforded protection once it is designated under the Land Planning and Development Control Ordinance, 2013 as an NCA. It is recommended that this is afforded Category III (National monument) status. All islands (which are recorded on the 1:10,000 map) around St Helena will be classified as Category Ia under this Management plan.

5.2.2 Restrictions

The following restrictions apply within the St Helena Marine Protected Area:

- Commercial bottom trawling is prohibited within the 200 nm maritime zone (legally enforced through the revised Fisheries Ordinance);
- Tangle/gill nets, drift nets, purse seines and dynamite fishing will be prohibited within the maritime zone (legally enforced through the revised Fisheries Ordinance);
- No dolphin, or spiny or slipper lobster in berry, to be taken within the maritime zone (legally enforced through the Environmental Protection Ordinance, 2016);
- With the exception of traditional rock fishing (for non-commercial purposes); no fishing is permitted without a licence from St Helena Government and fishing activities will be carefully regulated via licensing conditions (legally enforced through the revised Fisheries Ordinance);
- Targeted fishing for all species of shark (including shark finning) is prohibited throughout the maritime zone (legally enforced through the Environmental Protection Ordinance, 2016 and the revised Fisheries Ordinance);
- All recreational (on boats) and commercial (tourism and professional) fishermen must adhere to catch limits and size restrictions as per their fishing licence (issued under the revised Fisheries Ordinance);
- The use of droppers is prohibited during the period from January 1st to March 16th annually for all inshore species of groundfish. This applies to rockfishing and boat fishing. It is permissible to use droppers for bait fishing at any time of year;
- Disposal of plastics, fishing materials including hooks and inorganic waste is prohibited in the maritime zone;
- No taking of guano from seabird nests and habitat of any of the islands or cliff areas (legally enforced through the Environmental Protection Ordinance, 2016);
- It is prohibited to interact with whale sharks, cetaceans or devil rays unless complying with the "Environmental policy for whale shark (*Rhincodon typus*), devil ray (*Mobula tarapacana*) and cetacean interaction activities on St Helena Island to minimise risk of injury and disturbance" see Appendix F;
- It is prohibited to conduct any construction works in or near the marine environment without complying with the "Environmental policy for planning underwater blasting activities on St Helena Island to minimise risk of injury and disturbance to marine life" (Appendix E);

- It is prohibited to create artificial reefs without complying with the Protection of Wrecks and Marine Archaeological Heritage Ordinance 2014, under which the Governor in Council may make provision for scuttling of vessels for the purpose of creating artificial reefs having regard to the potential tourism benefit but subject to implementing steps to avoid damage to sensitive marine habitats. Guidelines for creating any artificial reef are given within the Artificial reef report (EMD-MC-RPT-2014-0002);
- It is prohibited to take any species of fish or invertebrate for the aquarium trade or for marine souvenirs which are endemic, CITES listed or have an IUCN redlist threatened status.
- Marine tourism activities will be regulated via a licence legally enforced through the Environmental Protection Ordinance, 2016 with an accreditation scheme in place for operators;
- Any extraction of sand requires a permit under the EPO and it will be a mandatory requirement to record quantities of sand removed. Closed areas for sand extraction include 100 m around all wreck sites (Protection of Wrecks and Marine Archaeological Heritage Ordinance, 2014) and within 100 m around Egg Island to protect the endemic Melliss's conger (*Arisoma mellissii*) (i.e.no permits will be issued for sand extraction from this area);
- Restricted access to Egg and Speery islands (licence required for access under EPO as any access will cause some disturbance to breeding birds).

5.2.3 *Fisheries management strategy*

A key criterion of the MPA is to ensure that the exploitation of any natural resources, such as fish and invertebrates, is undertaken sustainably.

For the nearshore demersal target species, such as grouper and lobster, the resource is entirely within the maritime zone and can be managed solely by St Helena. For these species it is essential to determine sustainable catch levels or, in the absence of information on stock status, take a highly precautionary approach.

The highly migratory pelagic species, such as the tunas and swordfish, have broad pan-Atlantic distributions and stock assessments, catch limits and other regulations are determined by ICCAT. It is therefore important for St Helena (through the UK government) to work with ICCAT at the scientific and policy levels to ensure stocks are managed sustainably. Where there is evidence that species are resident for extended periods in St Helena's maritime zone, additional domestic regulation should be considered to ensure that the resource is not locally depleted.

A key part of sustainability in any fishery is minimising impacts on non-target species and on habitats. The traditional method of fishing tuna in St Helena's waters is the pole & line method, which is widely recognised as the most environmentally friendly way of catching tuna. Alternative methods, such as purse seining, gill netting and longlining, can cause significant non-target mortality. Given these issues purse seining and gill netting will be prohibited in the maritime zone and the lengths of longlines restricted[10]. Any longlining will be subject to mandatory 100% observer coverage. By focussing exclusively on the pole and line fishing method, St Helena has an opportunity to enhance the environmentally friendly reputation of the fishery and achieve a considerably better export price for tuna.

Bottom trawling, which is indiscriminate in what it catches and causes significant damage to benthic habitats, will be prohibited throughout the maritime zone.

[10] To be reviewed as part of the Fisheries Sector Strategy

The long-term goal for St Helena's fisheries is to have a sustainable, safe, profitable and environmentally friendly fishery that is an asset to the island.

5.2.4 Marine species and habitats of high conservation importance with additional restrictions which will be applied to terrestrial NCA management plans.

- No fishing activity of any kind will be permitted within Lot's Wife's Ponds (proposed NCA Category III National Monument). This applies only to the ponds themselves and does not include the ocean.
- All the small islands are important breeding areas for the seabird populations therefore no development is permitted on these islands.

5.2.5 Summary of marine activities with applicable restrictions and management strategies

Activity	Permitted	Conditions	Management strategy	Responsible body
Recreational				
Traditional rock fishing	Yes	The new Fisheries Ordinance will give power to the Chief Fisheries Officer to issue Notifications about fish that should not be caught specifically to rock fishermen and that fines could apply for breach of those orders. No droppers to be used from January 1st to March 16th. Licence required for rockfishing on Egg Island and Speary Island. Fish for personal consumption only. No lobster in berry to be taken.	Spot checks. Notice boards and information dissemination. Environmental hotline for reporting non-compliance	ENRD
Recreational boat fishing	Yes (licence issued under Fisheries Ordinance [11] by Chief Fisheries	Must have Recreational boat fishing licence under the Fisheries Ordinance. Must adhere to licence conditions.	Recreational boat fishing licence includes catch limits and size restrictions Spot checks Observer monitoring Environmental hotline for reporting non-compliance	ENRD (ANRD)

[11] The Fishery Limits Ordinance will be repealed and replaced with a new Fisheries Ordinance.

Activity	Permitted	Conditions	Management strategy	Responsible body
	Officer)			
Sports fishing	Yes (licence issued under Fisheries Ordinance by Chief Fisheries Officer)	Must have Sports fishing licence under Fisheries Ordinance. Must adhere to licence conditions.	Sports fishing licence, including catch limits and size restrictions Spot checks Observer monitoring Environmental hotline for reporting non-compliance	ENRD (ANRD)
Spearfishing (inshore)	Yes	Must adhere to Spear Guns Control Ordinance and Spear Guns Control Order[12]	Spot checks Environmental hotline for reporting non-compliance	ENRD
Marine tourism	Yes (under licence from Chief Environmental Officer)	Must adhere to Protection of Wrecks and Marine Archaeological Heritage Ordinance. Must adhere to "Environmental policy for whale shark (*Rhincodon typus*), devil ray (*Mobula tarapacana*) and cetacean interaction activities on St Helena Island to minimise risk of injury and disturbance" Must adhere to NCA Island Nature Reserve plan restrictions Licence required for tourist trips landing on Egg Island	Licence system Spot checks Observer monitoring Environmental hotline for reporting non-compliance	ENRD (EMD)
Commercial				
Commercial fishing	Yes (licence issued under Fisheries Ordinance	Must have commercial fishing licence and adhere to licence conditions	Commercial fishing licence should include requirement to record all species of bycatch (including seabirds) and report the fate of the bycatch (released alive, released dead, retained). Licence should also	ENRD (ANRD)

[12] To be replaced with provisions in the new Fisheries Ordinance.

Activity	Permitted	Conditions	Management strategy	Responsible body
	by Chief Fisheries Officer)		include, any catch limits (as set by ICCAT) and size restrictions Observer monitoring Environmental hotline for reporting non-compliance	
Sand/mineral extraction	Yes (with licence from the Chief Environmental Officer under the EPO). New extractions will require an assessment of the environmental impacts	Must adhere to Protection of Wrecks and Marine Archaeological Heritage Ordinance.	Establish licensing system, including reporting of quantities taken	ENRD
Construction/ Developments	Yes (if approved through planning application process which would consider the findings of an EIA) by permission granted by Governor in Council only	Must adhere to "Environmental policy for planning underwater blasting activities on St Helena Island to minimise risk of injury and disturbance to marine life".	Monitored through EIA process	ENRD
Other				
Research	Yes (under licence from Chief Environmental		Must complete application form. Must provide data/report to St Helena Government	ENRD (EMD)

Activity	Permitted	Conditions	Management strategy	Responsible body
	Officer)			
Dumping of fish wastes	Yes (under agreement between SHFC and contractor)	Minimum 1 mile out to sea. Organic waste only.	Spot checks	ENRD
Sewage disposal at sea	Through Planning process		Establish treatment and monitor plants	Connect St Helena ENRD
Disposal of inorganic waste at sea, pollution	Yes – by permit	Must adhere to Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter	Spot checks Environmental hotline for reporting non-compliance	ENRD (EMD)
Silt and contaminants in runoff	No		This will be addressed through the creation of a freshwater ecology restoration plan.	ENRD (EMD)
Creation of artificial reefs	Yes by permission granted by Governor in Council only	Must adhere to Protection of Wrecks and Marine Archaeological Heritage Ordinance. Must adhere to guidelines within the Artificial reef report (EMD-MC-RPT-2014-0002).	Dive surveys and strong scientific evidence required prior to creating artificial reef	ENRD
Aquarium trade	Export – No Import – yes but must have permit	Must adhere to Animal (Diseases) Ordinance and Regulations	Customs/biosecurity search Spot checks Environmental hotline for reporting non-compliance	ENRD (ANRD)

5.3 Surveillance and enforcement

A locally owned commercial fleet provides some opportunity to report illegal, unregulated and unreported (IUU) fishing within St Helena's maritime zone. Local offshore vessels will be utilised by way of contract so that any potential illegal sightings of vessels through the Automatic Identification System (AIS) can be investigated. Other locally operated vessels fishing in St Helena waters will also act as a deterrent. Regular shipping traffic (e.g. the RMS St Helena) and visiting vessels (e.g. naval vessels, cruise ships) are also asked to report any vessels sighted within the maritime zone.

This management plan provides a range of strategies relating to the management of particular human activities in our marine environments, and the effectiveness of these strategies will be dependent on compliance by users. While users typically comply with management regulations when they understand why such controls have been implemented, there is always a need to monitor the level of compliance and take action to stop inappropriate or illegal behaviour. To achieve this, spot checks, observer monitoring, inspection of data/catch records and strict licence conditions will be necessary.

A need has been identified for the appointment of enforcement officers to ensure compliance with legislation, including fisheries and EPO, relevant to the marine environment. There is provision for the appointment of Environment Officers in the EPO and for Fishery Officers in the Fisheries Bill that will replace the current Fisheries Limits Ordinance. This will be pursued.

5.4 Monitoring and evaluation

The marine section of EMD conducts annual monitoring for marine species abundance and diversity. Temperature loggers have been deployed to establish baseline sea temperature data at four locations on the leeside of the island with the hope of further loggers being deployed around the island at a later stage. Local capacity to undertake fisheries science has increased. The level of fisheries science locally has developed sufficiently to support data requirements imposed by ICCAT and the introduction of an observer program to monitor the abundance of fish catches, by catch and assess long term sustainability and sustainable capacity of the fishery independently.

Seabird colonies that have been identified as of high importance for continued monitoring are Speery Island, Thompson Valley Island, Peaked Island and the mainland cliffs opposite Peaked Island, Egg Island, Shore and George Island, Great Stone Top, James Bay to Rupert's Bay, Lots' Wife and Blue Point.

The provisions of the MPA and this Marine Management Plan will be reviewed within 5 years of it coming into force.

5.5 Future research / science priorities

St. Helena's future science and research priorities should include the following:

Fisheries

(i) Work with the UK government (FCO & Defra) to increase St Helena's representation at, and scientific input to, ICCAT.

(ii) Increase tagging efforts to establish typical residence times for yellowfin and bigeye around St Helena and Bonaparte & Cardno seamounts. Also consider tagging at the Akademic Kurchakov Seamount.

(iii) With increased tagging effort, the detailed analysis of tagging data, including PSAT tags, will be essential and time-consuming. This could be done by a PhD student, but funding would be needed to engage such a student.

(iv) Maintain and improve the existing Darwin Plus science programme. In particular data is required on fishing effort and location of fishing. Further work is required on sustainability of bait species, plus diet studies to understand trophic impacts associated with exploitation.

(v) Investigate links between environmental factors (SST, fronts) and catches of tuna in St Helena waters. Develop oceanographic sampling programme with new CTD.

(vi) Analyse by-catch data from any longline fishing that is permitted and use such data to inform future management decisions.

Biosecurity

(i) Establish routine monitoring of invasive species through the introduction of settlement plate in high-risk areas (yacht moorings, Jamestown and Rupert's ports).

Bio-diversity

(i) Continued monitoring of inshore biodiversity through bi-annual dive surveys.

(ii) Baseline evaluation of benthic biodiversity in deeper waters and on the seamounts.

(iii) Baseline evaluation of pelagic biodiversity (zooplankton and nekton).

(iv) Species specific studies on glasseye snapper, grouper, squirrelfish, moray eel, longleg and slipper lobster.

Oceanography

(i) Establish regular CTD surveys to monitor seasonal and inter-annual patterns in sea surface temperature (SST), depth of the mixed layer.

Seabirds

(i) Demography, tacking and trophic ecology studies of key seabird species as indicators of the status of the marine ecosystem.

(ii) Determine pressure and potential impacts of human interaction from tourism & fishing.

Cetaceans

(i) Monitor seasonal and spatial distribution patterns.

(ii) Determine pressure and potential impacts of human interaction from tourism & fishing.

Whale Shark

(i) Establish seasonal and spatial distribution patterns.

(ii) Establish small scale habitat usage patterns around the island.

(iii) Determine regional movement patterns.

(iv) Determine pressure and potential impacts of human interaction from tourism & fishing.

Sand resource

(i) Establish a baseline and a means of continuous monitoring of the existing sand resource around the island as a means to establish sustainable sand extraction quotas which can form the basis of issuing permits/ licences.

5.6 Reporting

General public awareness raising and ad hoc reporting will be conducted by EMD. As per the requirement of the EPO, a State of the Environment Report will be produced no less than once every two years. This will include summary data regarding marine resource use and biodiversity updates, including compliance with licensing/MPA restrictions.

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Appendix A. Definitions and abbreviations

AIS: Automatic Identification System.

B_{MSY} :Biomass at maximum sustainable yield.

Bottom trawling: towing a trawl or fishing net along (and in contact with) the sea floor.

CE: Critically endangered (IUCN status).

Commercial fishing: the activity of catching fish for commercial profit.

Droppers: a line that consists of two or more hooks dressed with florescent materials which mimic a small school of fry; droppers are also known as “flasher rainbow rigs”, “teaser rigs” etc.

EMD: Environmental Management Division.

EN: Endangered (IUCN status).

CITES: The Convention on International Trade in Endangered Species of wild flora and fauna.

Gill netting: fishing with a vertical net designed to trap fish behind the gills.

ICCAT: International Commission for the Conservation of Atlantic Tunas.

IUCN: International Union for the Conservation of Nature.

LC: Least Concern (IUCN status).

Longlining: the setting of lines of baited hooks, to which fish are attracted and caught on the hooks. Longline gear consists of a main line, with hooks attached by short connecting lines called snoods or leaders.

MSC: Marine Stewardship Council.

NEMP: National Environment Management Plan (St Helena’s target for the environment).

NT: Near threatened (IUCN status).

Pole-and-line: rod and line fishing in which fish are attracted to the surface with bait fish, in a process called “chumming” and are caught individually on rods or poles.

Purse seining: fishing with a net that hangs vertically in the water that can be closed or drawn around the bottom, to trap the enclosed fish.

Recreational fishing: the activity of catching fish for pleasure and for personal consumption only.

Sport fishing: the activity of catching fish for sport.

SST: Sea surface temperature.

VU: Vulnerable (IUCN status).

Appendix B. IUCN protected areas categories

IUCN Protected Areas Categories System

IUCN protected area management categories classify protected areas according to their management objectives. The categories are recognised by international bodies such as the United Nations and by many national governments as the global standard for defining and recording protected areas and as such are increasingly being incorporated into government legislation.

Ia Strict Nature Reserve

Category Ia are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphical features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values. Such protected areas can serve as indispensable reference areas for scientific research and monitoring.

Ib Wilderness Area

Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

II National Park

Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

III Natural Monument or Feature

Category III protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.

IV Habitat/Species Management Area

Category IV protected areas aim to protect particular species or habitats and management reflects this priority. Many Category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

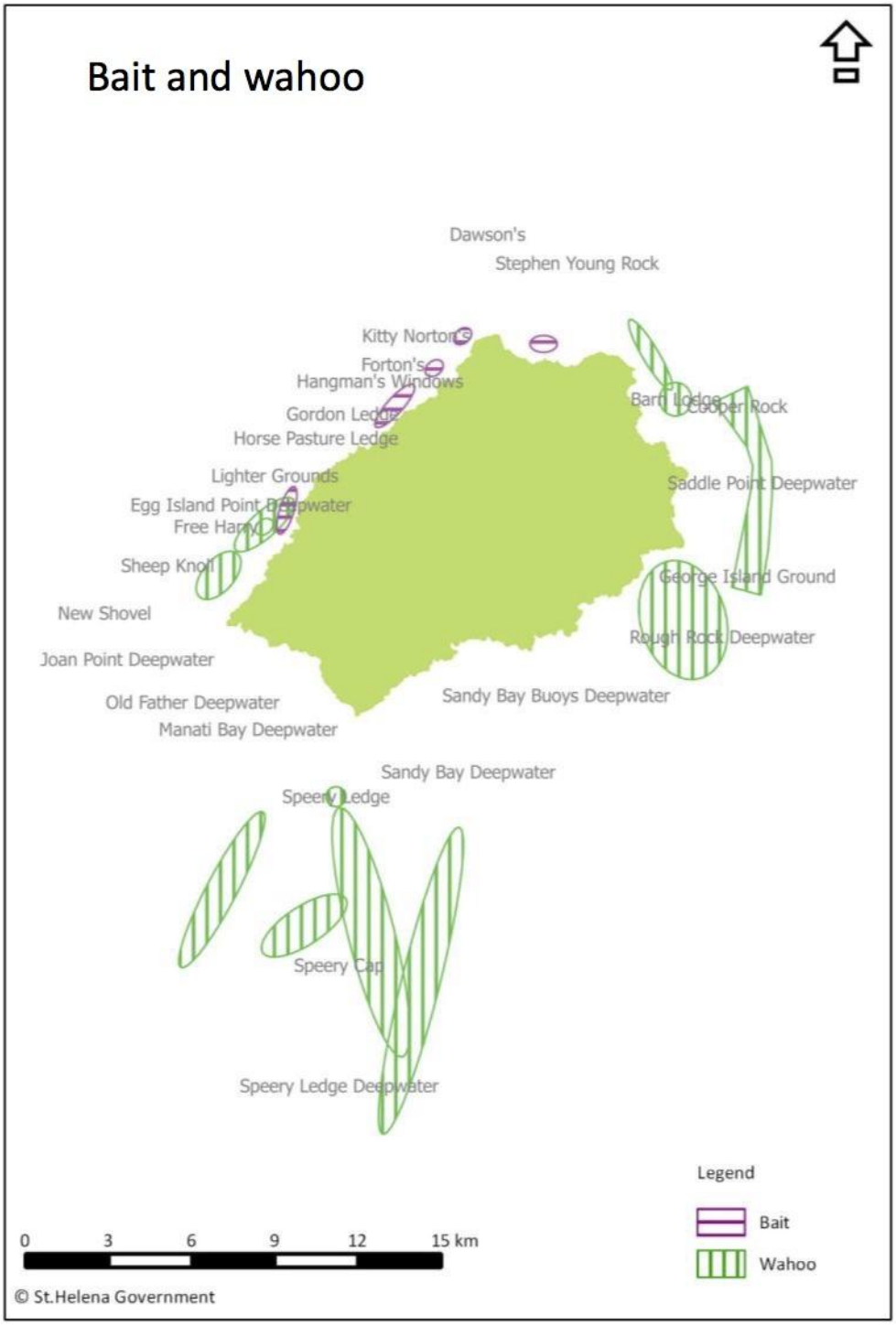
V Protected Landscape/ Seascape

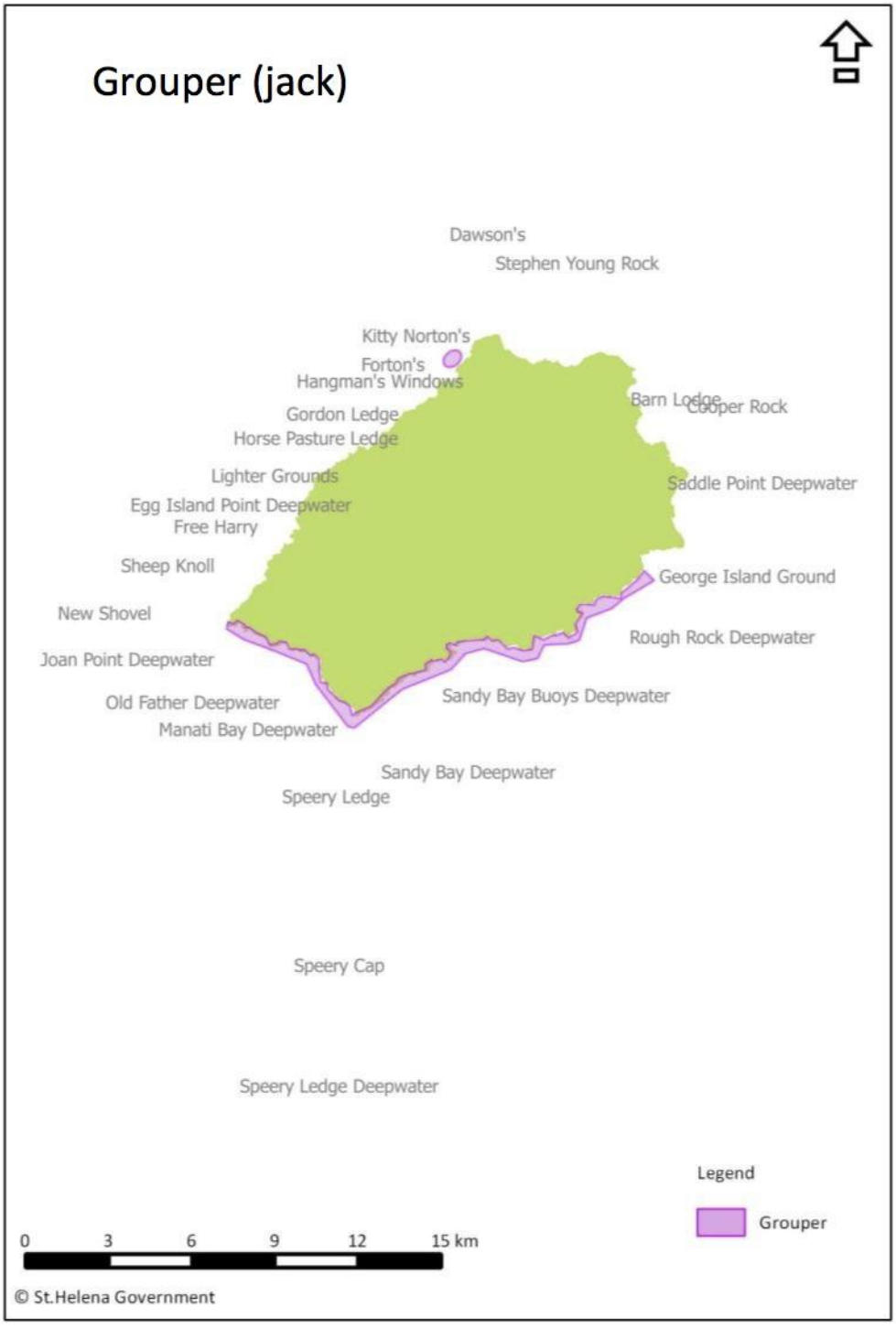
A protected area where the interaction of people and nature over time has produced an area of distinct character with significant, ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

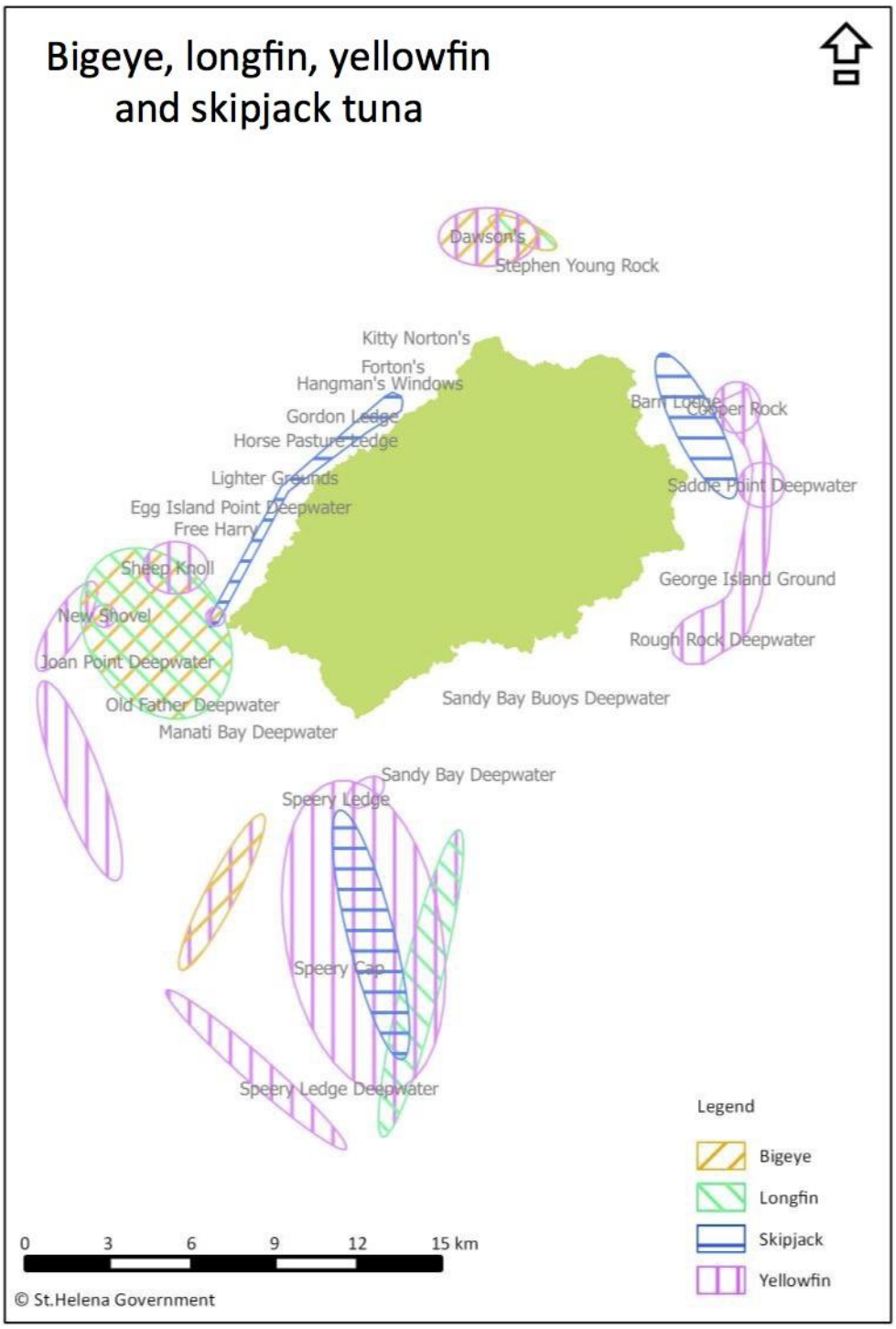
VI Protected area with sustainable use of natural resources

Category VI protected areas conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems. They are generally large, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

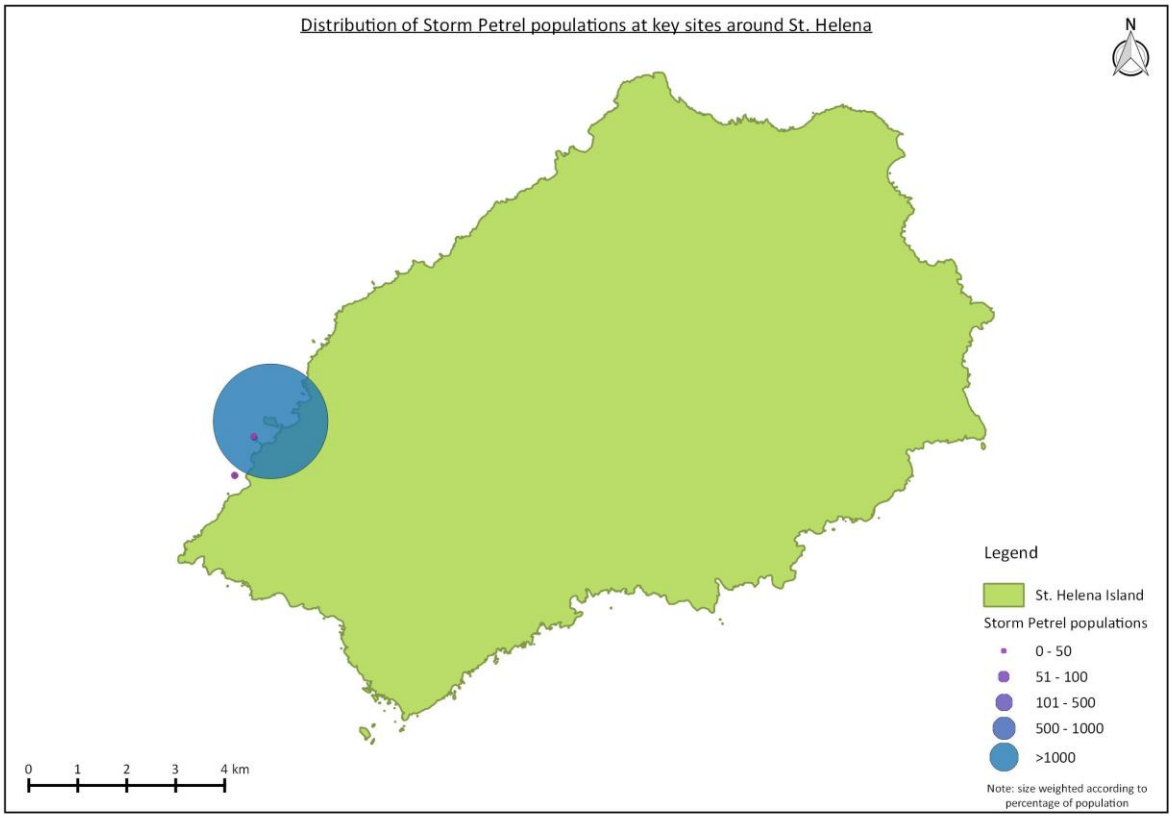
Appendix C. Maps based on fishermen's knowledge of main fishing areas per species for commercial species and bait

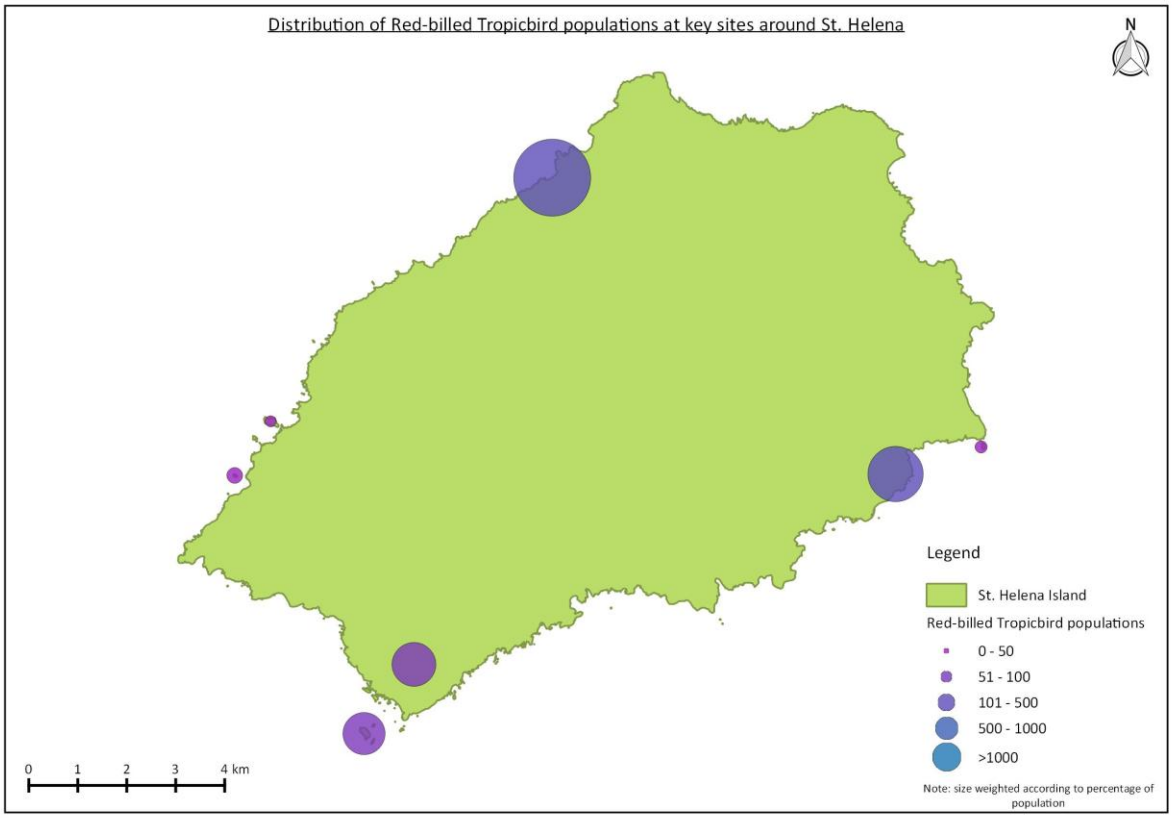

Bait and wahoo
Dawson's
Stephen Young Rock
Kitty Norton's
Forton's
Hangman's Windows
Gordon Ledge
Horse Pasture Ledge
Lighter Grounds
Egg Island Point Deepwater
Free Harry
Sheep Knoll
New Shovel
Joan Point Deepwater
Old Father Deepwater
Manati Bay Deepwater
Barn Ledge
Cooper Rock
Saddle Point Deepwater
George Island Ground
Rough Rock Deepwater
Sandy Bay Buoys Deepwater
Sandy Bay Deepwater
Speery Ledge
Speery Cap
Speery Ledge Deepwater
Legend
Bait
Wahoo
0
3
6
9
12
15 km
© St.Helena Government

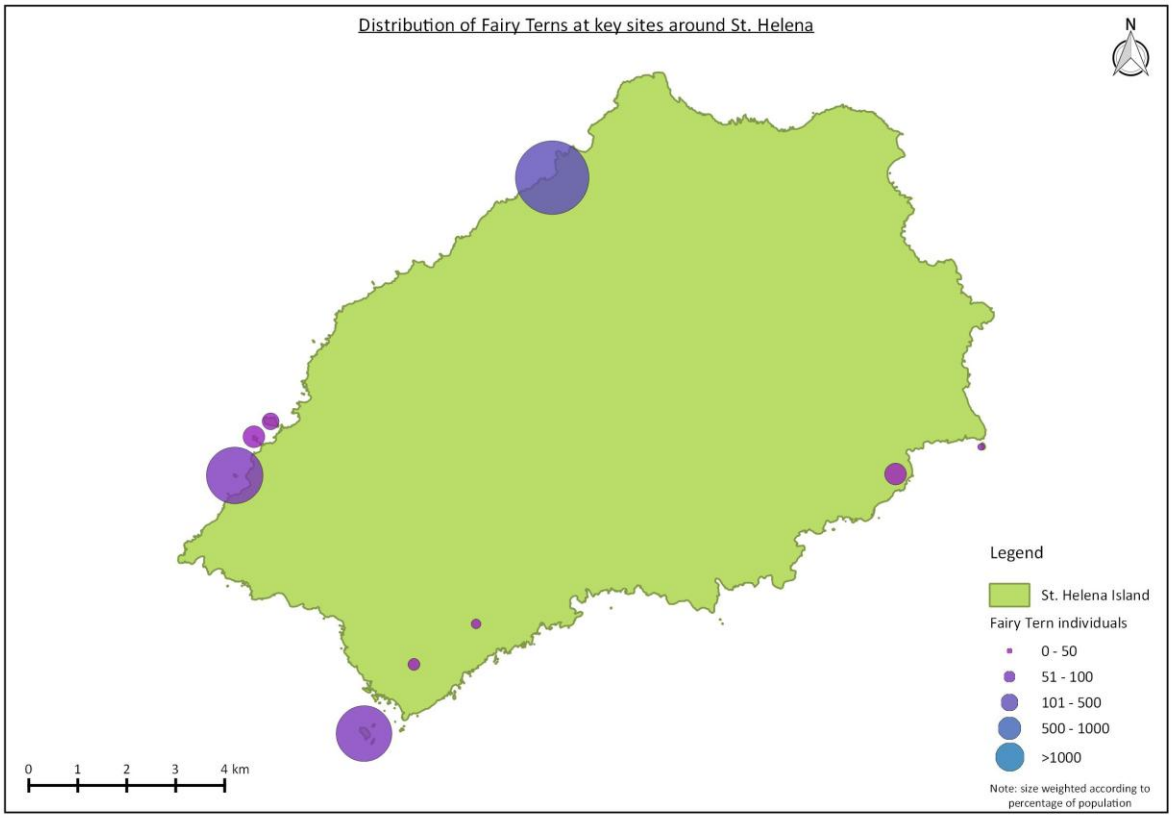

Grouper (jack)
Dawson's
Stephen Young Rock
Kitty Norton's
Forton's
Hangman's Windows
Barn Lodge
Cooper Rock
Gordon Ledge
Horse Pasture Ledge
Lighter Grounds
Saddle Point Deepwater
Egg Island Point Deepwater
Free Harry
Sheep Knoll
George Island Ground
New Shovel
Rough Rock Deepwater
Joan Point Deepwater
Sandy Bay Buoys Deepwater
Old Father Deepwater
Manati Bay Deepwater
Sandy Bay Deepwater
Speery Ledge
Speery Cap
Speery Ledge Deepwater
Legend
Grouper
0
3
6
9
12
15 km
© St.Helena Government

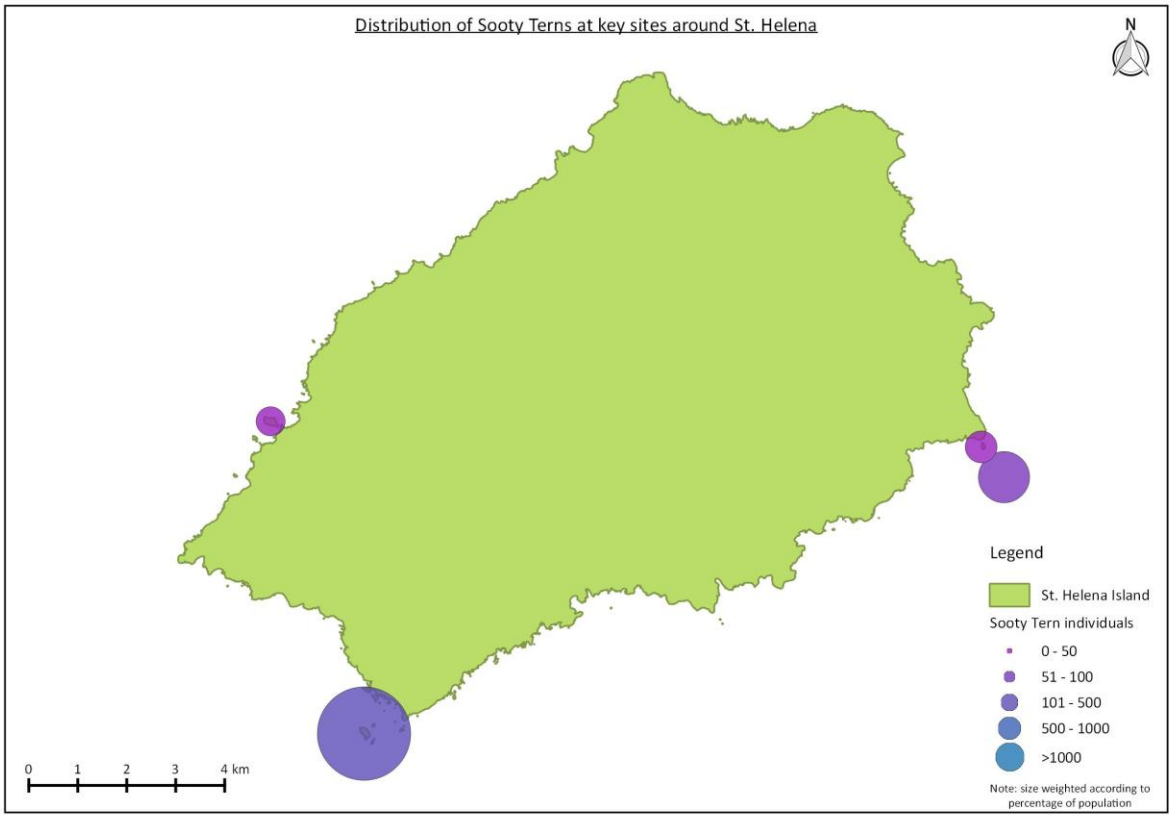

Bigeye, longfin, yellowfin and skipjack tuna
Dawson's
Stephen Young Rock
Kitty Norton's
Forton's
Hangman's Windows
Gordon Ledge
Horse Pasture Ledge
Lighter Grounds
Egg Island Point Deepwater
Free Harry
Sheep Knoll
New Shovel
Joan Point Deepwater
Old Father Deepwater
Manati Bay Deepwater
Barn Ledge
Cooper Rock
Saddle Point Deepwater
George Island Ground
Rough Rock Deepwater
Sandy Bay Buoys Deepwater
Sandy Bay Deepwater
Speery Ledge
Speery Cap
Speery Ledge Deepwater
Legend
Bigeye
Longfin
Skipjack
Yellowfin
0
3
6
9
12
15 km
© St.Helena Government

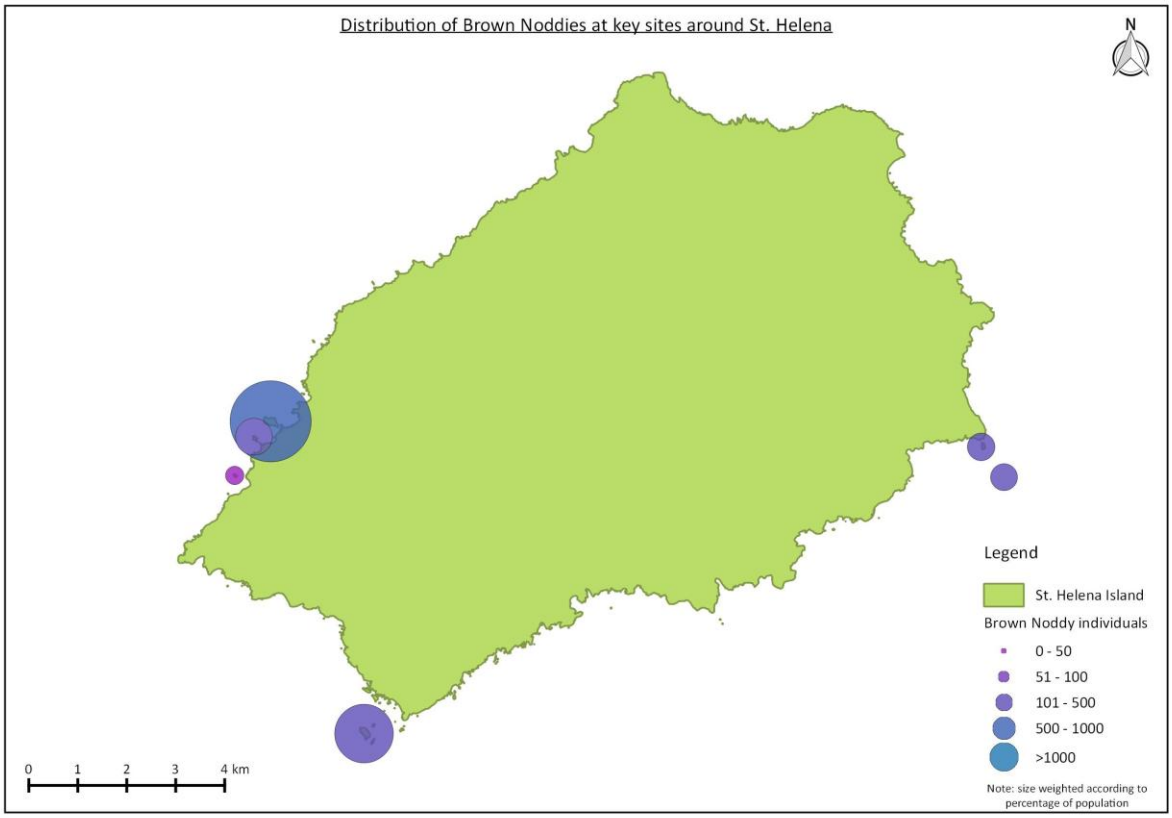
Appendix D. Distribution of seabird breeding areas around St Helena






Distribution of Fairy Terns at key sites around St. Helena
N
Legend
St. Helena Island
Fairy Tern individuals
0 - 50
51 - 100
101 - 500
500 - 1000
>1000
Note: size weighted according to percentage of population
0 1 2 3 4 km


Distribution of Sooty Terns at key sites around St. Helena
N
Legend
St. Helena Island
Sooty Tern individuals
0 - 50
51 - 100
101 - 500
500 - 1000
>1000
Note: size weighted according to percentage of population
0 1 2 3 4 km


Distribution of Brown Noddies at key sites around St. Helena
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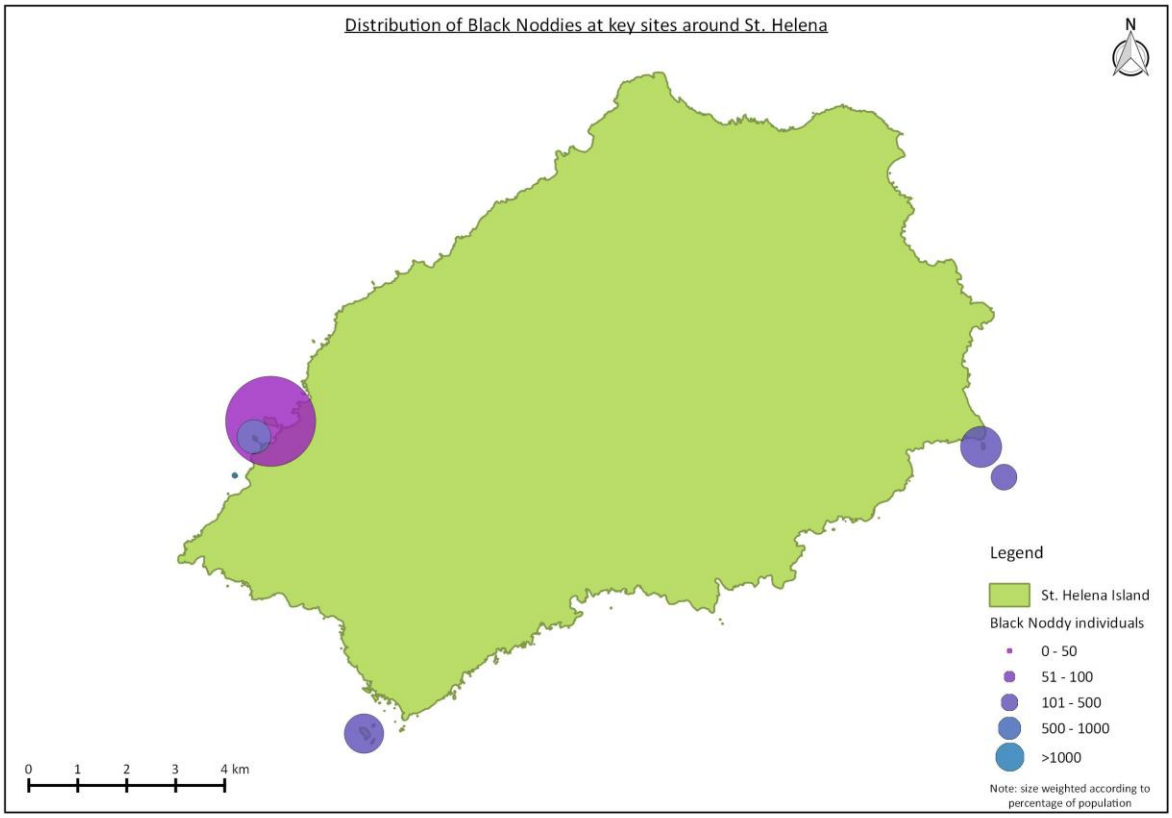
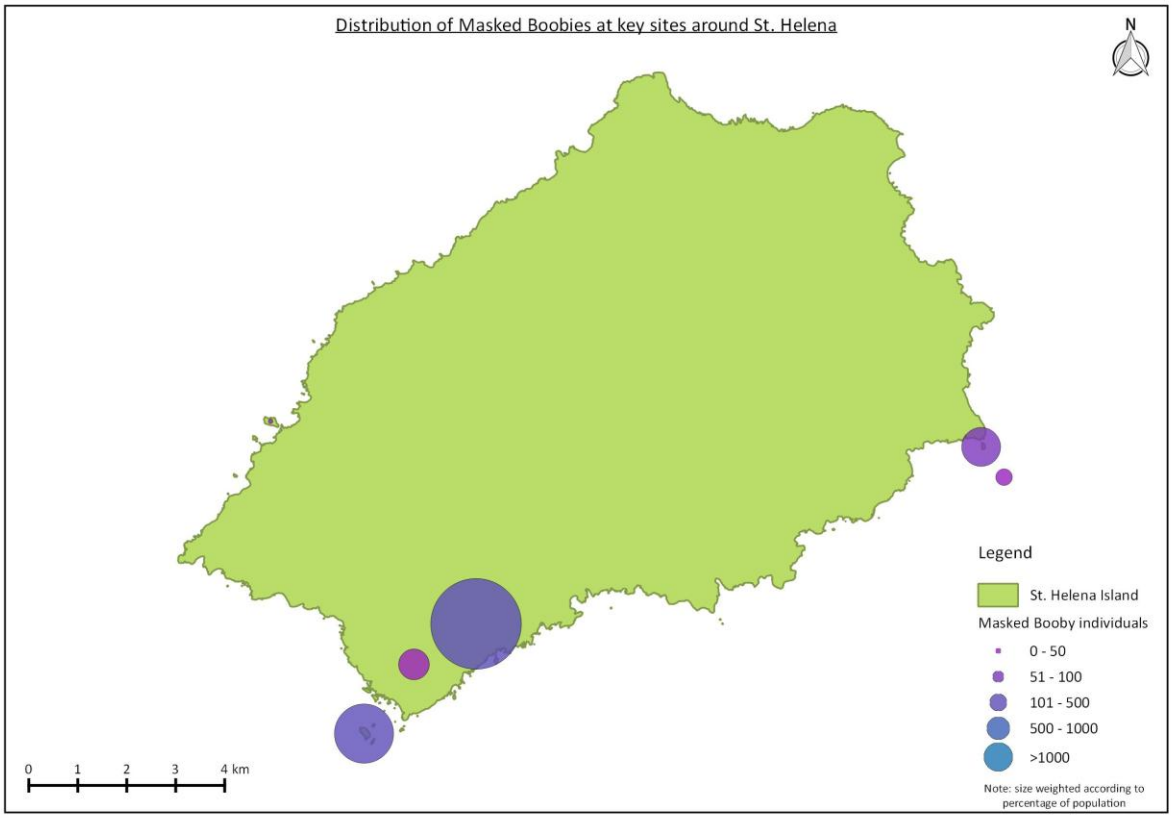
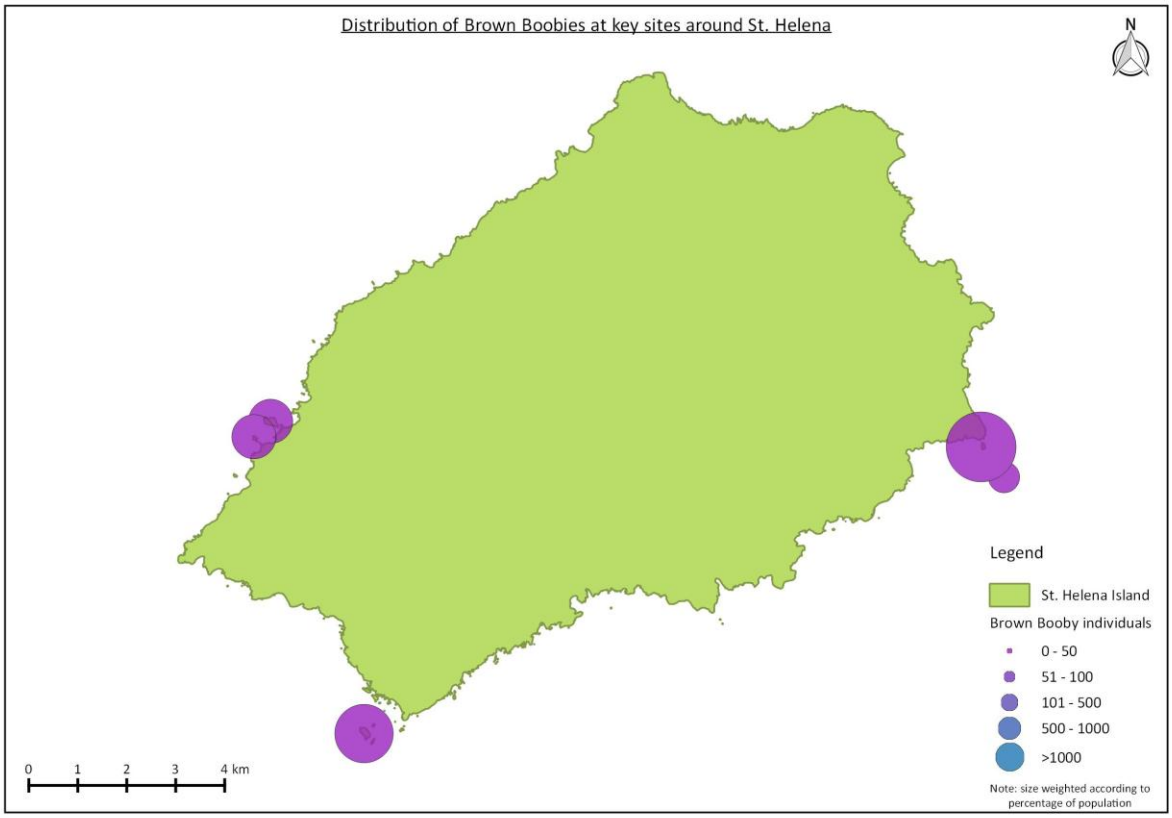
Legend
St. Helena Island
Brown Noddy individuals
0 - 50
51 - 100
101 - 500
500 - 1000
>1000
Note: size weighted according to percentage of population
0 1 2 3 4 km


Distribution of Black Noddies at key sites around St. Helena
N
Legend
St. Helena Island
Black Noddy individuals
0 - 50
51 - 100
101 - 500
500 - 1000
>1000
Note: size weighted according to percentage of population
0 1 2 3 4 km


Distribution of Masked Boobies at key sites around St. Helena
N
Legend
St. Helena Island
Masked Booby individuals
0 - 50
51 - 100
101 - 500
500 - 1000
>1000
Note: size weighted according to percentage of population
0 1 2 3 4 km


Distribution of Brown Boobies at key sites around St. Helena
N
Legend
St. Helena Island
Brown Booby individuals
0 - 50
51 - 100
101 - 500
500 - 1000
>1000
Note: size weighted according to percentage of population
0 1 2 3 4 km

Appendix E. Underwater blasting policy

- **POLICY TITLE: ENVIRONMENTAL POLICY FOR PLANNING UNDERWATER BLASTING ACTIVITIES ON ST. HELENA ISLAND TO MINIMISE RISK OF INJURY AND DISTURBANCE TO MARINE LIFE**

Note: Procedures attached as an annex.

Policy written by Environment Management Division, St Helena Government and formally adopted by SHG committee

Date approved:

Date for policy review:

Lead officer:

CONTENTS

• BACKGROUND

- Effective management of the environment is National Goal 3 under the Sustainable Development Plan. Strategic Objective 6.2 states. : St Helena's environment, both terrestrial and marine, safeguarded for future generations through effective environmental management. Strategic Objectives 1.2 and 7.4 will also be addressed.
- The National Environmental Management Plan (NEMP) has been created to implement this national goal.
- This (draft) policy will provide a procedure for any blasting work to take place in or near the marine environment. It will also directly address sections 10 and 16.2 of the NEMP plan specifically the clause 'Ensuring the marine and terrestrial resources are sustainably managed through works, studies, assessment, monitoring, policies and programmes.'
- A key asset of St Helena's marine environment is resident and migratory cetacean populations. There are three resident, one seasonal and four species seen on rare occasions of cetaceans which utilise St Helena waters.
- There are a growing number of potential coastal developments which have the potential to impact the marine environment during construction. Currently contactors contact the Marine team for advice but no policy is currently in place.
- This policy and associated procedures and guidelines reflect best practise for operators on island, taking into account local limitations, and sets regulations for the planning, managing, operating and reporting of underwater blasting activities.
- The responsibility of EMD is to ensure that the relevant procedures are available to all users of the marine environment with the overall aim to preserve and protect it for future generations.
- To ensure effective management of the marine environment a proactive rather than reactive approach is required.
- This policy provides these parameters.

• LEGISLATIVE BACKGROUND

- To date there is no specific legislation or policy that protects the Island's marine environment from such activities. The Endangered Species Protection Ordinance 2003 states that it is an offence to damage or kill various marine species (which includes turtles, dolphins and seabirds) and it is recognised that underwater blasting can potentially cause injury or death to these animals. This policy and the accompanying procedures aim to reduce this risk to negligible levels.
- This policy forms part of the St Helena's Marine Management Plan (in draft).

• POLICY AIM:

This policy aims to:

- Minimize the negative impact on marine life through underwater blasting.

• POLICY STATEMENTS:

1. No blasting activities will be undertaken between 1 July and 31 December of any year. Under exceptional circumstance special permission may be sought for blasting during November and December.
2. The maximum size of the charge per blast at any one time cannot be larger than 25kg.
3. Blasting operations can only be undertaken during daylight hours. Observation accuracy deteriorates due to glare therefore on sunny days blasting should be conducted before 1.30pm.
4. Any site identified for blasting, if not previously surveyed, will require a general assessment to ascertain all species present, approximate abundance etc by the Marine Section of EMD or an organisation or person deemed suitability qualified/experienced by EMD. This will include dive surveys and seabird surveys and may form part of the main EIA. The cost of the surveys will be borne by the developer.
5. Any cost associated with observing and administering blasting mitigation procedures will be borne by the developer. This will include compensation to SHG for the use of Marine Section staff as observers. Other approved observers have the right to request a service fee that they agree with the developer/organisation.
6. Following these procedures does not preclude the developer from needing a full EIA for works. Requirement for an EIA is determined through the planning process.
7. This policy does not cover any other aspects of blasting procedures other than reducing risk to marine life (all other areas of blasting are the responsibility of the developer).

• POLICY IMPLEMENTATION

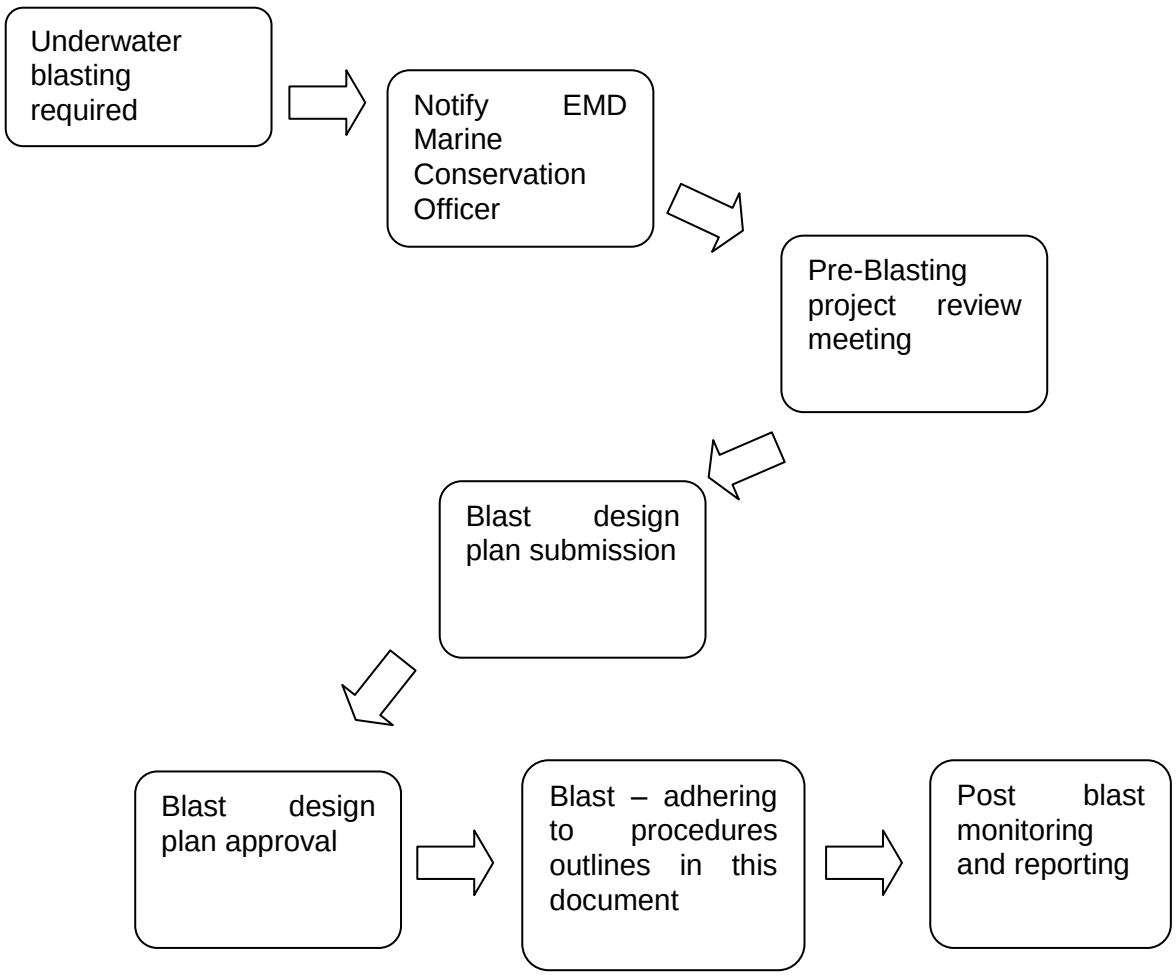
This policy will be implemented through the procedures outlined in Annex 1.

• POLICY DISTRIBUTION

This policy and procedures are to be issued by SHG explosives personnel or customs when applications for explosives are requested. This policy and procedures will also be available online on the SHG website (link) or on request from EMD.

• ANNEX 1: ENVIRONMENTAL MITIGATION PROCEDURES FOR UNDERWATER BLASTING

Process chart



RESPONSIBILITY & PLANNING

THE DEVELOPER MUST ENSURE THAT:

- As soon as underwater blasting work has been identified as required notification is given to the Marine Conservation Officer of EMD including a point of contact for liaison purposes. The developer must notify Customs of the intended importation of explosives.
- A pre-blasting project review meeting is held with representatives of the Marine Section of EMD at least two weeks prior to the planned date of blasting.
- A completed blast design plan is completed and submitted to the Marine Conservation Officer of EMD for review three days after the review meeting.
  The blast design plan must include:
    - **The name of the developer undertaking works,**
    - **Details of point of contact/ liaison officer both prior to and during on-site blasting operations,**
    - **The exact location of the blast – description and GPS location,**
    - **The dates of and estimated times of the planned blasting,**
    - **The size of charges to be used for blast,**
    - **The detonation method/s and protocol to include communication with marine officers,**
    - **The list of species likely to be affected by the explosion,**
    - **Information regarding why blasting is necessary (provide evidence that other methods are not suitable). List all mitigation measures (Annex 3) being taken to minimise impacts on marine environment and an overview of how they will be administered, and**
    - **The GIS exclusion zone map.**

Note that the importation of explosives is classed as a “Restricted item” and a permit to import will be required from the Police before importation. HM Customs will be advised and explosives will not be permitted to be imported by Customs without the Permit. There are specific procedures for importing explosives and on arrival, once examined and cleared by Customs, the goods must be immediately removed from the wharf as this is a major Health and Safety hazard. Storage and removal of the explosives must be approved and agreed before importation.

- EMD (MARINE SECTION) MUST ENSURE THAT:

  - A response to the developer's request is given within seven working days and the company or organisation is notified of the designated Marine Officer with whom they are to liaise and who will attend the pre blasting project meeting.

  - Upon receipt of the blast design plan, that this is reviewed within three working days ensuring that all queries are addressed during this time unless agreed otherwise with the developer.

  - A written response is sent to the developer outlining agreement or alternatives.

When the blasting plan has been agreed by both parties the developer will take full responsibility for the logistics of blasting and deployment of the mitigation measures agreed. The designated lead Marine Officer will be responsible for co-ordinating and monitoring the blast exclusion zone.

Any blasting will require the sea users and Port Authority to be informed of the details of the blast activity (time, location). If within Port limits then the Harbour Master will be required to advise Port users and have the necessary notices and signs displayed. Around the island a notice to mariners will be required.

PROCEDURE DURING THE BLASTING OPERATION

General Communication

- The developer is to ensure that the designated lead Marine Officer is briefed upon their arrival and that open communication via VHF exists throughout the operation. During this time the Marine Officer will regularly update the developer/organisation of known marine mammal or turtle presence.

- 15 minutes before detonation the company/organisation is to ensure that the designated Marine Officer is advised of this and updated thereafter if necessary.

- Immediately before the blast the developer must sound the siren having checked with the lead Marine Officer for all clear. The blast cannot be detonated until the all clear has been confirmed by the Marine Officer (see stop/delay work measures below).

EXCLUSION (SHUT-DOWN)/OBSERVATION ZONE

MONITORING OF THE BLAST EXCLUSION (SHUT-DOWN)/OBSERVATION ZONE

1. Visual monitoring for the presence of marine mammals within the agreed radius of the exclusion (shut down)/observation zone of the blasting area must be undertaken by a member or an approved member of the Marine Section of EMD. Visual monitoring must commence at least three hours prior to each blast using binoculars and the naked eye from a survey vessel positioned within 500 m from the blast area and from suitable aerial positions on land. Visual monitoring must continue until the blast has been detonated. The lead designated Marine Officer will co-ordinate via radio contact and

request half hourly updates from other observers. Standard cetacean survey forms will be used to record observations.

2. During blasting, visual observations within the observation zone will be maintained continuously by the marine observers to identify if there are any marine fauna present.

3. Following the blast or blasts, the shut-down/exclusion and observation zone must be checked by the designated lead Marine Officer for any injured or dead marine fauna.

4. Removal of surface fish killed from the blast site will be undertaken following each blast, to minimise attraction of scavenging fish or birds (this is the responsibility of the developer).

5. All sightings, observed responses, injuries and mortalities of marine fauna will be recorded by the designated lead Marine Officer.

- STOP/DELAY WORK MEASURES WHEN MARINE FAUNA ENTER THE EXCLUSION ZONE

1. If marine fauna (cetaceans and/or marine turtles) are observed within the observation/exclusion zone of the blast areas by the marine officers, blasting operations must cease immediately. Blasting operations may only resume when no marine fauna is observed within the zone from the blast area, or not less than 30 minutes have passed since the last sighting.

2. If the lead Marine Officer is uncertain whether marine animals are present within the exclusion zone then they will advise that there will be a delay until they are certain that no animals are present.

3. Blasting operations will not be allowed or will cease:

- during periods of low visibility, where the observation/exclusion zone cannot be clearly viewed. This includes when the glare on the sea is deemed too high to accurately monitor;
- when the sea state is rated on the Beaufort scale as 3 or greater or
- between nautical dusk and nautical dawn.

- **Contact**

Marine Conservation Officer

Environmental Management Division (EMD)

Mrs Elizabeth Clingham

Tel no. 2270 Ext 213

elizabeth-clingham@enrd.gov.sh

ANNEX 3 BLASTING MITIGATION MEASURES

All mitigation measures listed are to be used unless unreasonable to do so. Any measure not used must be discussed with the Marine Conservation Officer before any final plans are agreed.

THE BLAST EXCLUSION (SHUT-DOWN)/OBSERVATION ZONE AND ITS DETERMINATION

A blast exclusion (shut-down)/observation zone is an area directly out from the intended point of blast (area of zone determined by blast size) which will be marked and in which area if marine mammals are sighted prior to arranged blast time no blasting will be allowed. The purpose of the blast exclusion (shut-down)/observation zone is to prevent death or injury to marine mammals or turtles. This is a mandatory mitigation component for underwater blasting.

1. Exclusion (Shutdown)/Observation zones are detailed below based on the amount of charge being used:

1-10kg charge– 1000m exclusion zone

10-25kg charge – 3000m exclusion zone

2. At least three hours prior to the planned time of the blast, a temporary blast exclusion (shut down)/observation zone must be demarcated with three marker buoys (or as agreed with the Marine Conservation Officer) along the perimeter and within this area Marine Observers will observe the marine fauna. Approval for installation of the buoys must be obtained by the developer from the harbour master.

BLASTING METHODS TO MINIMISE BLAST SOUND PRESSURES

The following measures to reduce sound exposure levels must be applied to all underwater blasts, to ensure that sound exposure levels are kept to a minimum.

CRUSHED ROCK STEMMING

Crushed angular rock must be used as stemming material. The sizing of the aggregate should be approximately 10% of the blast hole diameter. The use of an angular crushed rock in the stemming column instead of water can have the effect of forcing the explosive gas energy to do more work on the rock mass thereby releasing a slightly lower pressure impulse into the water when the work is completed.

DECKING/SOFT STARTING

When there are multiple blasts on the same day the developer is to plan a sequence of multiple explosive charges ensuring that smaller charges are detonated first.

AIR CURTAINS

Air curtains must be used as a sound pressure mitigation measure. The peak pressures produced by blasting can be significantly reduced by the use of an “air curtain”. The theory of the “‘air curtain” is that a “curtain” of compressed air bubbles can absorb the pressure impulse from blasting, thereby protecting life and structures outside of the “air curtain”. The “air curtain” is produced by placing at least two 50mm diameter air pipes on the sea floor which have 2-3mm diameter holes at 25mm to 50mm spacing surrounding the blast site.

SCARE TECHNIQUES

To minimise the effect on marine animals every effort must be made by the developer to deploy scare techniques to frighten away as many marine animals from the blast site as possible usually by means of a warning devise or a sudden noise. Methods could include:

- Detonation of small scare charges 30- 60 minutes before blast
- Acoustic deterrent devises ADD’s

REFERENCES

JNCC guidelines for minimising the risk of injury to marine mammals from using explosives

The Underwater effects of underwater explosions with methods to mitigate impacts

Clingham, E. Henry, L, Beard A. Monitoring population size of St Helena Cetaceans 2013. EMD report.

Appendix F. Environmental policy for whale shark (*Rhincodon typus*), devil ray (*Mobula tarapacana*) and cetacean interaction activities on St Helena Island to minimise risk of injury and disturbance

- **POLICY TITLE: ENVIRONMENTAL POLICY FOR WHALE SHARK (RHINCODON TYPUS), DEVIL RAY (MOBULA TARAPACANA) AND CETACEAN INTERACTION ACTIVITIES ON ST HELENA ISLAND TO MINIMISE RISK OF INJURY AND DISTURBANCE**

Policy written by Environment Management Division, St Helena Government and formally adopted by SHG committee

Date approved:

Date for policy review:

Lead officer:

- **CONTENTS**

BACKGROUND

- Effective management of the environment is National Goal 3 under the Sustainable Development Plan. Strategic Objective 6.2 states: St Helena's environment, both terrestrial and marine, safeguarded for future generations through effective environmental management. Strategic Objectives 1.2 and 7.4 will also be addressed;
- The National Environmental Management Plan (NEMP) has been created to implement this national goal;
- This policy will provide a procedure for any operator or persons that intends to interact with whale sharks, devil rays or cetaceans. It will also directly address sections 10 and 16.2 of the NEMP specifically the clause 'Ensuring the marine and terrestrial resources are sustainably managed through works, studies, assessment, monitoring, policies and programmes';
- Key assets of St Helena's marine environment are its resident populations of dolphins and the seasonal migration of whale sharks (present in the waters between November to May each year) and humpback whales (present in the waters between June to December each year). There are three resident, one seasonal and four species seen on rare occasions of cetaceans which utilise St Helena waters;
- Whale sharks are IUCN red listed as vulnerable;
- The whale shark is the largest fish in the world. These gentle marine giants roam the oceans around the globe, generally alone. However, large numbers of whale sharks often gather in areas with abundant plankton food—making them prime tourist attractions;
- Whale sharks are relatively slow moving and docile animals. On St Helena whale sharks will readily approach boats, and snorkelers if they do not feel threatened. They will often remain close if not chased or harassed;
- There is substantial growth anticipated in the tourism industry upon completion of the island's airport. To date human interaction with whale sharks has not been regulated as from a tourism perspective operators have not offered commercial whale shark tours;
- Cetacean tours are currently offered, with informal basic guidelines on interactions; however, this policy will formalise these recommendations;
- This policy and associated procedures and guidelines reflect best practise for tour operators and recreational boat owners on island;
- The responsibility of ENRD is to ensure that the relevant procedures are available to all users of the marine environment with the overall aim to preserve and protect it for future generations;
- To ensure effective management of the marine environment, a proactive rather than reactive approach is required;

- The welfare of whale sharks, cetaceans and devil rays is paramount; and
- This policy provides these parameters.

• LEGISLATIVE BACKGROUND

- To date there is no specific legislation or policy that protects whale sharks, devil rays or cetaceans from the disturbance that can be caused by human interaction. The Endangered Species Protection Ordinance 2003 states that it is an offence to damage or kill various marine species and it is recognised internationally that over exploitation of these species by humans, both tourists and boat operators, can potentially cause injury, death or significant disturbance to these animals. This policy and the accompanying procedures aim to reduce this risk to negligible levels;
- This policy forms part of the St Helena's Marine Management Plan (in draft); and
- This policy is supported by the Environmental Protection Ordinance.

• POLICY AIM:

This policy aims to:

- Minimize the negative impacts associated with human activity towards whale sharks, devil rays and cetaceans through guided interaction;
- Ensure that whale sharks, devil rays and cetaceans are not harmed by tourism or boating activities; and
- Work with accredited tour operators and local boat owners to collect valuable scientific data and to support the development of the eco-tourism industry.

• POLICY STATEMENTS:

The following policy statements are recognised as good practise and should be adhered to on St Helena:

All tour operators wishing to interact with whale sharks and/or cetaceans must obtain accreditation from the Environment and Natural Resources Directorate (ENRD) of St Helena Government. Accreditation will be attained if the operator attends the course provided and demonstrates the competencies expected through assessment. In granting access for these activities, vessels must adhere to licensing criteria including holding public liability insurance and having a qualified emergency first aid responder on board

1 Whale sharks

1.1 Whale sharks: Tour guides, boatmen and fishermen

- Local recreational boat owners who wish to interact with whale sharks (not for money or reward) must first attend a briefing by ENRD on interaction guidelines and will be responsible for providing interaction information to ENRD post interaction. ENRD will provide leaflets containing interaction guidelines and will offer a training session at the start of each whale shark season for local recreational boat owners who may wish to interact with whale sharks during that season;
- Non local/ visiting vessels e.g. yachts etc are prohibited to interact with whale sharks unless they are accompanied by a locally accredited tour operator;
- Only **TWO** vessels are allowed within the proximity of the one/aggregation of whale sharks on first come basis (this includes commercial and recreational vessels). Vessels need to cooperate to ensure maximum number of snorkelers (8 people) in the water is adhered to;
- To avoid harassing the sharks and to maximize safety of the snorkelers, boats should keep a distance of 30m away from each other during a whale shark tour. Further vessels must maintain a distance of 500m from other vessels interacting with whale sharks;
- A full interaction briefing must be given prior to anyone entering the water. This is to include all safety aspects and permitted interaction information;
- All persons are to remain at the side of the whale shark – do not deliberately block the whale shark's path;
- All boats should approach whale sharks at idle speed or no more than 2 knots/hour, and remain at least 15m away from the animal(s). Vessels should not block the path of the whale shark. Snorkelers should be dropped into water 15m from the whale shark/s;
- A total interaction time of 45 minutes is permitted with an individual/aggregation of whale sharks;
- When snorkelers have returned to the boat, leave the area to give other tour guides and guests an opportunity with a whale shark;
- At any one time only 8 snorkelers are permitted in the water with one whale shark/aggregation of whale sharks;
- Deliberate scuba diving with whale sharks is prohibited unless for scientific purposes and in receipt of a valid research permit (in draft);
- Feeding of whales sharks is strictly prohibited;
- Propeller guards are advised for all vessels conducting commercial whale shark tours both for protection of the whale sharks and for human safety. This will become a mandatory requirement within one year of approval of this policy for vessels with outboard motors;
- Tour vessels must display an A (Alpha) flag (internationally recognised "I have people in the water; keep well clear at slow speed." whilst snorkelers are in the water;

- Tour and recreational vessels must avoid commercial fishing vessels whilst they are fishing (even if whale sharks are in the vicinity of the fishing vessel);

- ENRD reserve the right to complete random spot checks with boat owners for the purposes of checking accreditation compliance.

1.2 Whale sharks: Snorkelers

- Snorkelers are to ensure that they receive a whale shark interaction briefing from their accredited whale shark tour operator and adhere to the guidelines given;

- Deliberately touching or riding whale sharks is strictly prohibited (this is an offence that attracts a maximum fine of £50,000 or imprisonment for 12 months or both under section 20 of the Environmental Protection Ordinance);

- The use of flash for underwater photography is strictly prohibited;

- All persons are to remain a minimum of 3m swimming distance away from the whale sharks, and a minimum of 4m away from the whale shark tail, and must remain at the side of the whale shark only;

- Do not chase after a whale shark with a motorised propulsion device. Keep disturbance to a minimum i.e. no screaming, shouting; and

- Snorkelers must follow the instructions of the tour operator, including all safety instructions and must return to the vessel when instructed.

2 Devil rays:

- Whilst scuba diving or snorkelling deliberate touching, riding or feeding of devil rays is strictly prohibited.

3 Cetaceans (whales and dolphins): Tour guides, boatmen and fishermen

- All cetacean tour guides must hold a valid St Helena whale shark and cetacean tour operator's license after attending a course and becoming certified by ENRD;

- All vessels are to remain a minimum of 100m distance away from the whale/s and should not approach the whale/s from the front or rear;

- If a vessel comes closer than 100m to the whale, it must place its motor in neutral or move the vessel, at less than 5 knots, away from the whale until the vessel is outside the contact zone. At the skipper's discretion and with due regard to the safety of the vessel it is advisable to switch off the vessel engine whilst viewing whales;

- Only two vessels are allowed within the proximity of the cetaceans and should keep a distance of 60m away from each other;

- A full briefing must be given prior to departing the wharf. This is to include all safety aspects of the trip;

- A vessel must not cause a whale to alter its direction or speed of travel;
- A vessel must not disperse a group of whales;
- Touching, riding or feeding dolphins or whales is strictly prohibited;
- Snorkelling with whales is prohibited unless for scientific purposes and in receipt of a valid research permit;
- Tour vessels must avoid commercial fishing vessels whilst they are fishing; and
- When a whale is with a calf, a vessel is only to approach so that the mother is always between the calf and the vessel.

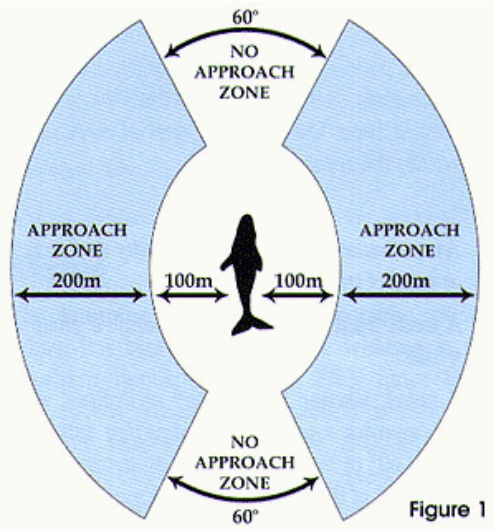


Figure 1: Approach zone for whales

• POLICY DISTRIBUTION

This policy and its procedures are to be issued to all local marine tour operators, recreational boat owners and fishermen. This policy and procedures will also be available online on the SHG website (link) or on request from ENRD or at the Tourism Office or at Customs and Immigration or at the Customer Service Centre.

• RESPONSIBILITY

• THE TOUR OPERATOR/ VESSEL OWNER OR OPERATOR IS:

- Responsible for ensuring the welfare of the whale shark/s, cetacean/s and/or devil ray/s;
- Responsible for the safety of the snorkelers interacting with the whale shark/s, cetacean/s or devil ray/s;
- Responsible for ensuring that all personnel adhere to interaction guidelines;

- Responsible for ensuring that all personnel are fully briefed before interacting with whale sharks or cetaceans;
- Responsible for mandatory recording of whale shark information (number of whale sharks, number of people in the water, time spent in the water, time in, time out, location, date); and
- Is encouraged to collect data to support marine conservation of whale sharks both photographic (left side flank, right side flank) and information (sex of whale shark, approximate size). Also to report marine sightings of whale sharks, cetaceans, devil rays and turtles in the log books provided (location, date, species, aggregation size).

- ENRD (MARINE SECTION):

- Must on request provide whale shark and cetacean interaction training to support accreditation for tour operators;
- Must on request provide briefing guidelines on whale shark and cetacean interaction;
- Will collate scientific, sighting, anecdotal and photographic data and report this information as part of annual environmental reporting;
- Will once per year provide a training session for local recreational boat owners who may wish to interact with whale sharks or cetaceans;
- Will monitor the accredited tour operators to ensure they are correctly following the interaction guidelines; and
- Will provide leaflets and other information for visiting vessels, tour operators and recreational vessels.

- **CONTACT**

Marine Conservation Section
Environmental Natural Resources Directorate
Environmental Management Division (EMD)
Tel no. 22270 Ext 213
elizabeth-clingham@enrd.gov.sh

• REFERENCES

Advice given from Georgia Aquarium Research Centre and Mote Marine Laboratory

Clingham, E. Henry, L, Beard A. Monitoring population size of St Helena Cetaceans 2013. EMD report.

Arnold, H. The development and assessment of an accreditation scheme for dolphin watching boats in the Moray Firth, 1997. Report for Scottish Wildlife Trust, Scottish Natural Heritage and the EU LIFE Programme

Department of Parks and Wildlife, 2013. Whale shark management with particular reference to Ningaloo Marine Park. Wildlife management program No. 57