

Ascension



Beau W. Rowlands (updated by Sarah Sanders)



Ascension Frigatebird chick on Boatswainbird Island

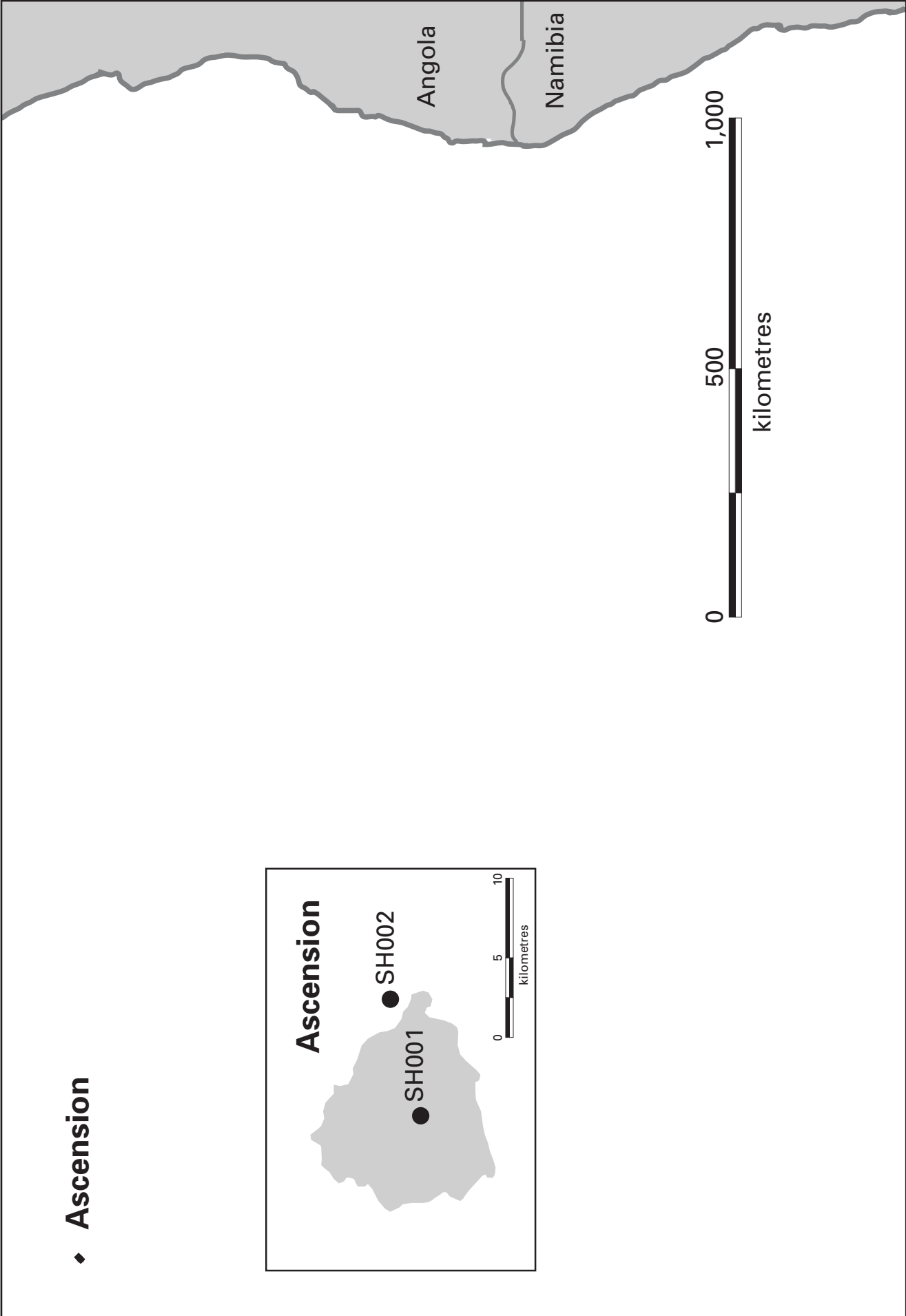
General introduction

Ascension Island and Tristan da Cunha, including Gough Island, are administered as dependencies of St Helena, which is an Overseas Territory of the United Kingdom. Given, however, the islands' mutual remoteness and different avifaunas, each is treated in a separate chapter.

Ascension is an isolated and relatively young oceanic island, lying some 62 miles (100 km) west of the mid-Atlantic Ridge, 935 miles (1,504 km) south-south-west of Liberia (Cape Palmas) and 1,387 miles (2,232 km) from Brazil (Recife). The nearest land is St Helena, 805 miles (1,296 km) to the south-east. Apart from a few beach deposits (shell-sand), the island is entirely volcanic in origin and has a rugged terrain. The relatively low and dry western part is dominated by scoria cones and basaltic lava flows, mantled in many places with fine pyroclastic deposits. A broad mass of higher ground in the east, with many trachytic domes and flows, culminates in the narrow ridge of Green Mountain, the highest point at 859 m. To the north and west of Green Mountain the land forms a gently

sloping plain. There are 44 volcanic vents in total. Ascension is geologically active, and the last onshore eruption may have occurred within the last millennium. The island is roughly triangular in plan, about 8 miles (13 km) across, with an area of 37.5 square miles (97 square km), and has about 62 miles (100 km) of coastline. While the west and north-west coasts have sandy beaches, the south and south-east coasts form steep cliffs. Inshore waters are deep and there are no reef-forming corals, but many shoreline rock surfaces are dominated by encrusting calcareous algae and sponges; the fish fauna here are diverse.

At the time of its discovery in 1501 Ascension Island was almost entirely barren, with vegetation essentially restricted to Green Mountain. The indigenous flora was minimal, with only about 25 vascular plants (12 of them ferns), together with mosses, liverworts and lichens. Nowadays, the lowland zone, about 67% of the surface, which in the past formed a desert, is being extensively colonised by a variety of introduced plants, which in the settlements



◆ Ascension

include *Bougainvillea*, *Casuarina*, *Hibiscus*, *Opuntia* and *Tecoma*. The middle zone, 330 m to 600 m, has extensive vegetation cover of shrubs and grasses, but also some open ground. The humid zone, above 600 m, has a luxuriant plant cover that, in places, amounts to a cloud forest, where introduced vegetation flourishes. This includes *Acacia*, *Alpinia*, *Araucaria*, *Bambusa*, *Buddleia*, *Erythrina*, *Eucalyptus*, *Ficus*, *Grevillia*, *Juniperus*, *Mangifera*, *Musa*, *Olea*, *Pinus*, *Podocarpus* and *Psidium*.

The population of Ascension is about 1,000, made up of civilians working for contractors to the RAF and USAF and a small number of military personnel. The personnel are mainly from the UK, USA and St Helena, and none is permanently resident. User organisations include the BBC World Service, Cable & Wireless Communications plc, the RAF and USAF with their support staff. In recent years there have been significant changes to the way Ascension is governed. From 1 April 2001, the Ascension Island Government assumed responsibility for the delivery of all public services, previously provided by a consortium of the British Broadcasting Corporation (BBC) and Cable and Wireless plc. In 2002, the first democratic elections were held on Ascension and an Island Council with seven members was established to be responsible for island affairs. Georgetown is the capital and largest settlement.

There is only a small amount of tourism, plus shore excursions for transit passengers off the RMS *St Helena*, which sails regularly from Cape Town. The island is also served by cargo ships. Cruise ships en route to and from the Antarctic call at Ascension about six times per year. There is a US military airport, Wideawake Airfield, in the south-west, which was recently opened up to civilian flights. Linked to the UK by regular RAF flights, the island serves as a staging post for the Falkland Islands. Green Mountain Farm, which formerly produced fresh meat, milk and vegetables, is now abandoned. Philately is an important income and information generator.

Boatswainbird Island, the principal seabird breeding site, lies 305 m north of the eastern part of the island. Inshore, in addition, are 14 stacks (identified by number) inhabited by breeding seabirds, plus a number of smaller rocks on which birds can rest. Stacks 1 to 8 lie off the north-west and northern parts of the island, the other six between the eastern and central part of the south coast. Stacks 13 (43 m) and 14 (33 m), namely the Pillar Rocks in Pillar Bay in the south, are the highest.

The beaches are important breeding grounds for the Green Turtle *Chelonia mydas*; Hawksbill Turtle *Eretmochelys imbricata* is also found, but is believed not to breed at Ascension. Land Crabs *Gecarcinus lagostoma* occur throughout the main island. Other than some invertebrates, all land animals are introduced: donkeys *Equus asinus*, rabbits *Oryctolagus cuniculus*, rats *Rattus rattus*, mice *Mus musculus*, cats *Felis catus*, lizards *Liolaemus wiegmannii*, geckos *Hemidactylus mercatorius* and clawed toads *Xenopus laevis* (the last has not been seen for some years). The large number of invertebrates includes five endemic pseudoscorpions. Dolphins *Steno bredanensis* and *Tursiops truncatus* occur offshore.

Ascension has a tropical but oceanic climate, with little seasonal change. It lies in the path of the south-east trade winds, and south-easterly and easterly winds blow for more than half of every month. The trade wind inversion at a height of about 1,000–1,500 m acts as a strong cap, inhibiting vertical cloud development, and thus ensures generally low rainfall. Nevertheless, as the winds rise over the eastern end of the island they bring cool and misty conditions to the ridge of Green Mountain where, at an altitude of 660 m, there is a mean annual rainfall of about 680 mm. At Two Boats, north-west of Green Mountain at an altitude of 290 m, rainfall is approximately half as much, and on the western coast it averages only some 100–200 mm annually. There is, however, much variation from year to year. Very heavy and destructive rains occur occasionally, mainly from March to May, leading to temporary changes in the vegetation. Such events affect the insect populations and doubtless also those of the introduced rodents. The temperature is strikingly constant throughout the year. Monthly average maximum temperatures at sea level vary only between about 27°C and 31°C. At 660 m on Green Mountain maximum temperatures are typically about 13°C lower and minimum temperatures about 7°C lower than at sea level. The relative humidity at sea level is around 70%.

The tidal range is less than 1 m. The north-east and, especially, the south coasts of the island are exposed to fairly heavy wave action under the influence of the south-east trade winds. The west coast is sheltered but is subject to the effects of the long-distance oceanic swell waves, or 'rollers', from the south-west or north-west that occur without warning at any time of the year. Generated by distant storms, they persist for a few days, often causing breeding failures of seabirds on the stacks, especially in the north and north-west.

The surrounding seas are tropical or equatorial, with a permanent thermocline preventing vertical enrichment of the euphotic zone. Surface temperatures are always in excess of 23°C. The island lies in the path of generally westward surface currents throughout the year. As the cold Benguela Current from the west coast of southern Africa flows north-westwards, it generally warms up and loses its nutrients, before turning westwards. Around Ascension Island this becomes the South Subtropical Current, which has a general westward flow of 0.1–2 knots. The submerged slopes of the submarine pedestal of Ascension are steep, with deep water close inshore. The 200 m depth contour lies between 0.3 miles (0.5 km) and 3 miles (5 km) of the coast, and the shelf area, at about 42 square miles (108 square km), is a little larger than the land surface. The submerged slope area is strikingly barren, with low habitat diversity and a complete lack of reef-building corals, as reflected in extremely low fish species diversity. As pelagic foragers, many of the seabirds depend mainly on fish and squid forced to the surface by schools of predators such as tuna or cetaceans, and often forage in mixed-species flocks.

Ornithological importance

The main island of Ascension, along with Boatswainbird Island and the stacks, currently support 11 species of seabird, of which the Ascension Frigatebird (CR) is endemic to the island and has a world population of fewer than 10,000 individuals. Ascension is the type-locality for three other species of seabirds: the Red-billed Tropicbird, Masked Booby and Common White-tern (known locally as the Fairy Tern). The numbers of breeding seabirds and the proportions of the various species have changed drastically since the arrival of man and his commensal mammals. Most species now breed only on Boatswainbird Island or on the stacks, and numbers of many of them are now probably only a tiny fraction of those originally present. Except perhaps for one species of shearwater, the Audubon's Shearwater, there is no indication, unlike St Helena, that additional species bred in the past. Populations may now be fairly stable, but the Red-footed

Booby barely survives as a breeding species, and the Sooty Tern, though remaining numerous, has for nearly two centuries suffered heavy predation by feral cats and may still be decreasing. The Ascension Frigatebird, which was once abundant in many parts of the main island, breeds only on Boatswainbird Island, where its numbers may be lower than they were in the 1950s. Cats, introduced in 1815 and now feral, were the principal cause of the elimination of most of the birds from the main island. A feral cat eradication programme is already showing significant results in a short space of time. No feral cats have been detected on the island since February 2004. Over 400 pairs of seabirds from five species have returned to the mainland to breed. The feral cats' eradication should lead to a substantial restoration of the original seabird community.

Conservation infrastructure and Protected Area system

Conservation legislation is provided for under the Wildlife (Protection) (Ascension) Ordinance of 1944, Wildlife (Protection) (Ascension) Regulation of 1948, and Endangered Species Control Ordinance of 1976. Other legislation is provided by the Fish and Fish Products (Export) Ordinance of 1928, Crayfish Export Ordinance of 1933, the Green Mountain (Natural Resources) Protection Ordinance of 1955 and the Ascension Land Ordinance of 1967. The St Helena Government has declared an Ascension Island Exclusive Fishing Zone (EFZ), extending 200 nautical miles (370 km) around the island. A National Protected Areas Ordinance was enacted in 2003. In 2005, Green Mountain was designated a National Park, the first on the Ascension mainland. In 1989, Boatswainbird Island

was declared a Site of Special Scientific Interest and Bird Sanctuary, but there is no enforcing legislation. Initial restrictions on access to the islet were instituted in 1977. Vehicular access to the breeding sites of Sooty Terns in the south-west is strictly controlled.

International measures relevant for the conservation of sites

As a dependency of St Helena, Ascension Island is included under the ratification by the UK of the Convention of Biological Diversity, CITES, the Ramsar Convention, the Convention on Migratory Species, the Convention on Climate Change, the Convention to Combat Desertification, and the World Heritage Convention.

Overview of the inventory

Two Important Bird Areas (IBAs) are included, covering the entire island (9,705 ha) with all its natural habitats. These are the mainland and all offshore stacks and rocks (SH001), and

Boatswainbird Island (SH002). The latter site, which supports the entire breeding population of the Ascension Frigatebird, is recognised separately.

Sites of global conservation importance

IBA code	Site name	A1	A4i	A4ii	A4iii
SH001	Ascension Island: mainland and stacks	X	X	X	X
SH002	Boatswainbird Island	X	X	X	X

Site accounts

SH001: Ascension Island: mainland and stacks

Ref number	SH001
Admin region	Ascension Island
Coordinates	07°57'S 14°22'W
Area	9,700 ha
Altitude	0–859 m
IBA categories (details below)	A1, A4i, A4ii, A4iii
Status	Unprotected

Site description

The site comprises the whole of Ascension Island and the 14 inshore stacks, as well as the marine habitat out to 3 nautical miles, and is described in the 'General introduction'.

Birds

See the accompanying table for details of key species. At least 30 bird taxa are known. There are 11 resident seabird species: Madeiran Storm-petrels, Red-billed Tropicbirds, White-tailed Tropicbirds, Masked Boobies, Red-footed Boobies, Brown Boobies, Ascension Frigatebirds, Sooty Terns, Brown Noddies, Black Noddies and Common White-terns. Of these, Madeiran Storm-petrels and Ascension Frigatebirds now breed only on Boatswainbird Island (SH002), but the latter species occurs regularly on the main island and both are expected to return as breeders once feral cats have been eradicated. In addition, Audubon's Shearwaters are thought to have once bred. The main colonies of Sooty Terns, by far the most numerous breeding species, are in the south-west of the island and occupied 9.14 ha in 1997.

Although now deserted, many former seabird breeding sites are likely to be reoccupied following the removal of the cats. Already, successful recolonisation attempts by Masked Boobies have been noted (e.g. 35 pairs with eggs and chicks at Letterbox in June 2005). Both Red-billed Tropicbirds and White-tailed Tropicbirds nest on cliffs opposite Boatswainbird Island and along the south-east coast. Black Noddies breed at Spire Beach, Letterbox,

South-east Bay and Cocomat Bay, while Common White-terns breed on cliffs inland at Green Mountain and Weatherpost, as well as at South-east Head and opposite Boatswainbird Island. The stacks are important for Brown Noddies (500 pairs), which do not breed on Boatswainbird Island, and also Brown Boobies and Black Noddies.

There are five resident landbird species, all introduced: the Red-necked Francolin (introduced 1851), Common Myna (introduced 1879 and 1880), House Sparrow (introduced 1985 onwards, Georgetown only), Common Waxbill (introduced 1860) and Yellow Canary (introduced 1890). There are also records of non-breeding visitors and vagrants with fewer than five records. The former include Cattle Egrets, Common Moorhens, Ruddy Turnstones, Common Swifts, Barn Swallows and Northern House Martins. In the fossil record two species are known: the extinct Night Heron and the extinct Flightless Rail.

Other threatened/endemic wildlife

The beaches of Ascension are important breeding grounds for Green Turtles *Chelonia mydas* (EN), protected locally since 1926. Hatchlings were taken by feral cats. There is a long list of invertebrates, including two endemic pseudoscorpions *Apocheiridium cavicola* and *Allowithius ascensionis*. Yellow and Purple Land Crabs *Gecarcinus lagostoma* occur throughout the main island, returning to the sea to breed, laying in shell-sand or soft ash. A shrimp *Procaris ascensionis*, found in coastal rock pools, is endemic.

Key species

Criteria	Key species	Number of breeding pairs (if known)
A1	Ascension Frigatebird <i>Fregata aquila</i>	
A4i	Sooty Tern <i>Sterna fuscata</i>	194,000 (1997)
A4i	Black Noddy <i>Anous minutus</i>	5,000 (1990)
A4ii	Red-billed Tropicbird <i>Phaethon aethereus</i>	55 (1959)
A4iii	More than 20,000 waterbirds occur regularly at this site	

Conservation issues/threats

The management plan for the island includes the recommendation that the UK Government designate the whole island (i.e. covering SH001 and SH002) a 'Protected Natural Area'. Apart from the eradication of cats and proposed eradication of rats, the plan provides for a substantial programme of conservation education, maintenance of strict and consistent control of access to seabird and turtle breeding sites, strict control of refuse disposal, and vigilance regarding further alien introductions. Funding by the Foreign and Commonwealth Office was announced on 26 March 2001 to support a two-year project by the Ascension Island Government and the RSPB to restore the seabird breeding colonies, including measures to remove the feral cats and reduce the spread of invasive plants like the Mexican Thorn, which provides food and cover for rats. Other threats include disturbance to breeding colonies of Sooty Terns, hence controls on vehicular access, and accidental hooking of seabirds by sports fishermen. Significant quantities of polychlorinated biphenyls (PCBs) in Sooty Terns are indicated to have come from squid or fish caught within the foraging range of the IBA. By the 1960s, Japanese longline fishing had spread

throughout the Atlantic, with a fleet of up to 50 boats operating under licence in the EFZ from 1988. The threat of over-exploitation of fish stocks, as a result of longline, purse seine and other forms of fishing in the area, has important implications for seabirds. The airport in the south-west is near the principal breeding sites of Sooty Terns, but air strikes are considered unlikely as disturbed birds fly low as they move out to sea.

References/further reading

See full details at end of chapter.

Allan (1962), Ashmole (1962, 1963a, 1963b), Ashmole and Ashmole (1997, 2000), Ashmole *et al.* (1994), Bell and Ashmole (1995), Blair (1989), Chapin (1954), Cronk (2000), Dorward (1962a, 1962b, 1963), Dorward and Ashmole (1963), Duffey (1964), Hughes (1991, 1992a, 1992b, 1994, 1997), Hughes *et al.* (1994), Nash *et al.* (1991, 1992), Olson (1973, 1977), Osborn (1994), Packer (1983), Ratcliffe (1997), Ratcliffe and Roberts (1997, 1998), Rowlands (1992), Simmons (1967, 1968, 1970, 1990), Stonehouse (1960, 1962a, 1962b), Stonehouse and Stonehouse (1963), Walmsley (1991, 1992, 1994).



Ascension Frigatebird (male)

Site accounts

SH002: Boatswainbird Island

Ref number	SH002
Admin region	Ascension Island
Coordinates	07°56'S 14°18'W
Area	5 ha
Altitude	0–104 m
IBA categories (details below)	A1, A4i, A4ii, A4iii
Status	Site of Special Scientific Interest, bird sanctuary

Site description

The site is a barren, steep-sided trachytic rock, about 340 m by 220 m in size, rising to 104 m, with a relatively flat basaltic top nearly 3 ha in extent, located 305 m north of the eastern part of Ascension Island (SH001). Also included is a small, isolated rock 670 m east of the southern end. The site is heavily overlaid with guano and there are traces of a guano industry that operated in the 1920s.

Birds

See the accompanying table for details of key species. Of the 11 resident species of seabirds, one (the Brown Noddy) does not breed, breeding instead on the main island and stacks (SH001). Breeding species are Madeiran Storm-petrels, Red-billed Tropicbirds, White-tailed Tropicbirds, Masked Boobies, Red-footed Boobies, Brown Boobies, Ascension Frigatebirds, Sooty Terns, Black Noddies and Common White-terns. The Audubon's Shearwater is thought to have once bred. The world population of Ascension Frigatebirds breed at this site.

Other threatened/endemic wildlife

The dolphins *Steno bredanensis* (DD) and *Tursiops truncatus* (DD) occur, the former common around the island. There are several invertebrates, including the endemic pseudoscorpions *Garypus titanius*, *Neocheiridium* sp. and *Stenowitzius duffeyi*.

Conservation issues/threats

Initial restrictions on access were instituted in 1977, and permits to visit can only be granted by the Administrator, now seldom given. Besides the accidental introduction of mammalian predators such as cats and rats, the main threat is disturbance. Supervision is poor due to the location of



Richard White

Boatswainbird Island

Key species

Criteria	Key species	Number of breeding pairs (if known)
A1, A4ii	Ascension Frigatebird <i>Fregata aquila</i>	6,000 approx (1997)
A4i	Black Noddy <i>Anous minutus</i>	5,000 (1990)
A4ii	Madeiran Storm-petrel <i>Oceanodroma castro</i>	1,500 approx (1959)
A4ii	Red-billed Tropicbird <i>Phaethon aethereus</i>	500 approx (1959)
A4ii	White-tailed Tropicbird <i>Phaethon lepturus</i>	1,000 approx (1959)
A4ii	Masked Booby <i>Sula dactylatra</i>	1,300 approx (1990)
A4iii	More than 10,000 pairs of seabirds occur regularly at this site	

the site at the opposite end of Ascension, away from the authorities at Georgetown. The adjacent mainland, from where the site can be monitored, is seldom visited due to a lack of vehicular access (tracks are poor). Boatloads of visitors have landed illegally, and captains of passing vessels have been known to blow the ship's whistle to put up the birds as a 'spectacle' for passengers and crew. This displaces eggs and chicks, which are lost due to exposure to the sun and predation. A further threat is commercial fishing; there is potential for over-exploitation of fish stocks.

Further reading

See full details at end of chapter.

Allan (1962), Ashmole (1962, 1963a, 1963b), Ashmole and Ashmole (1997, 2000), Ashmole *et al.* (1994), Blair (1989), Dorward (1962a, 1962b, 1963), Dorward and Ashmole (1963), Duffey (1964), Hughes (1992b), Hughes *et al.* (1994), Nash *et al.* (1991, 1992), Osborn (1994), Packer (1983), Ratcliffe (1997), Simmons (1967, 1968, 1970, 1990), Stonehouse (1960, 1962a, 1962b), Stonehouse and Stonehouse (1963).

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Masked Boobies

International, Cambridge, in particular Christine Alder. Lincoln Fishpool reviewed the first draft of the inventory. Geoff Fairhurst and Jim Stevenson also commented upon the inventory and provided additional information. Selection of IBAs was made in consultation with Ken Simmons, who has undertaken several research visits to the island and was partly instrumental in having access to Boatswainbird Island controlled.

St Helena



Beau W. Rowlands (updated by Sarah Sanders, 2006)



The St Helena plover is endemic to St Helena and is endangered.

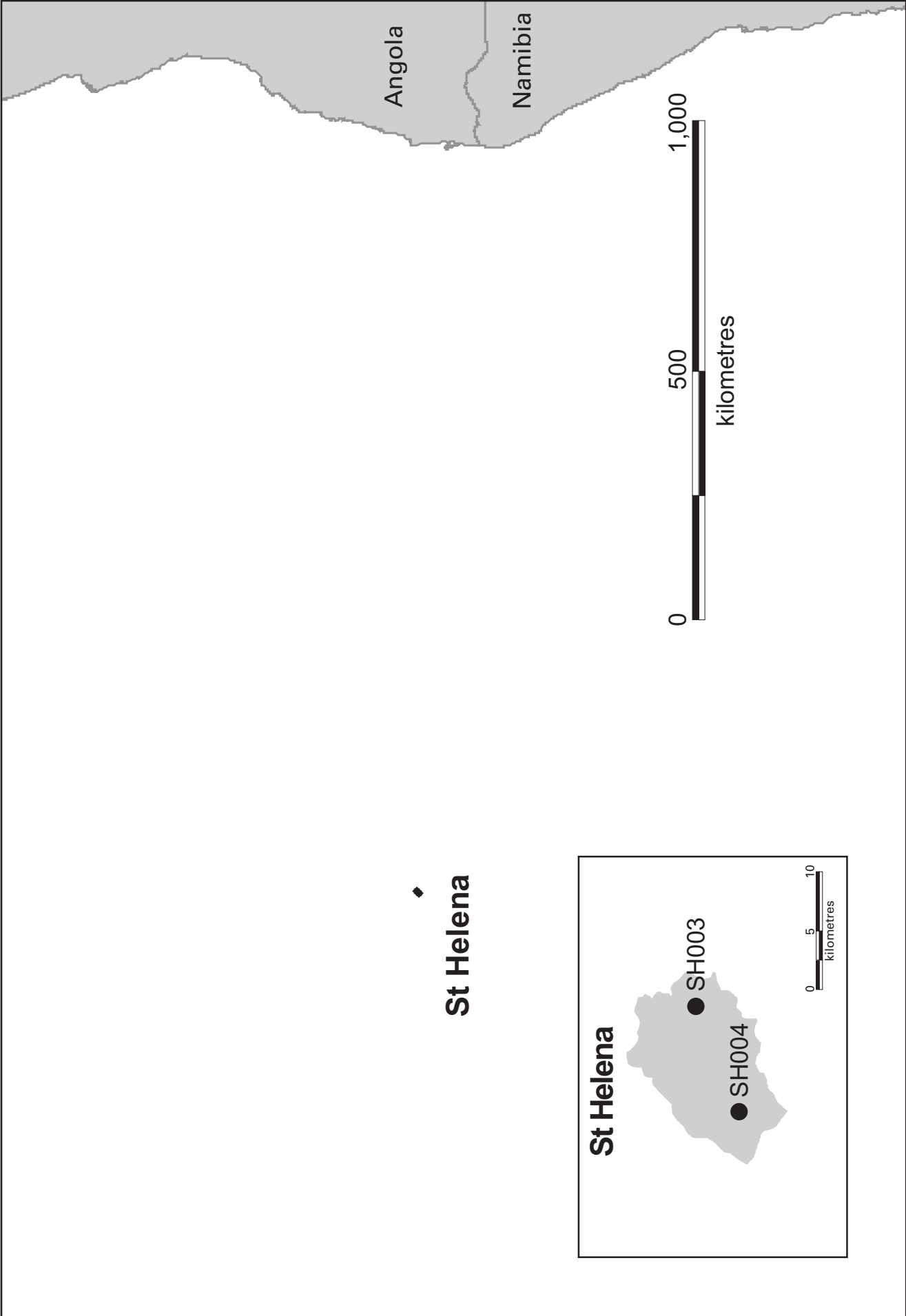
General introduction

St Helena is an Overseas Territory of the United Kingdom; Ascension Island and Tristan da Cunha, including Gough Island, are administered as dependencies of St Helena. Given, however, their mutual remoteness and different avifaunas, each is treated in a separate chapter.

St Helena is an isolated mountainous island covering 47 square miles (121.7 square km). An Overseas Territory of the United Kingdom, it lies in the South Atlantic Ocean, east of the mid-Atlantic Ridge, 1,187 miles (1,913 km) west of Angola and 2,041 miles (3,284 km) east to south-east of Brazil. The nearest islands are Ascension, 805 miles (1,296 km) north-west, the Martin Vas Rocks, about 1,497 miles (2,410 km) west-south-west, and Tristan da Cunha, 1,513 miles (2,435 km) south-west. Its longest axis, from South-west Point to Barn Long Point in the north-east, is 11 miles (17.7 km), and its maximum width is 6.5 miles (10.4 km). Only four plains extend for any distance.

More or less rectangular in plan, the island is an extinct composite volcano system, largely made up of basalt and associated extrusive rocks. It was formed 14.5 to 7.5 million

years ago by the coalescence of two broad shield volcanoes, with centres of activity in the north-east in the Flagstaff Hill/Knotty Ridge area and in the Sandy Bay area to the south-west. A third, and more recent, minor centre is located in the east. Now geologically extinct (6.8 million years ago), the island rises from a depth of 4,224 m to 823 m above sea level at Diana's Peak. Mount Actaeon at 818 m is the second highest point. The topography is dominated by a high central ridge, occupying the major axis. Radiating out from the ridge, gorge-like valleys, or 'guts', many deep and precipitous, are incised to depths of up to 300 m, providing a dramatic landscape. These valleys commonly drop 700 m in 1.9–2.5 miles (3–4 km). They are narrow, steep-sided and generally drained by intermittent streams in ephemeral channels that meander across poorly developed flood plains. There are five perennial streams: James, Lemon, Sharks, Fisher's and Sandy Bay Valleys. Natural standing water is rare, due to the porosity of the rocks, pyroclastic deposits and high rates of evapotranspiration. The coast is dominated by imposing sea cliffs. These range from 80 m to 570 m in height, but



most are 300 m or more. Access to the sea by vehicle is possible only in three places: James Bay, Rupert's Bay and Sandy Bay. Some of the bays have pebble or boulder beaches that are generally narrow. Only Rupert's Bay has a small strip of truly littoral sand. Offshore are at least 24 islets, stacks and rocks, of which the outermost is George Island, lying 0.8 miles (1.3 km) from Gill Point in the north-east. Clockwise from Jamestown, those supporting breeding seabirds, with heights, are Shore Island (68 m), George Island (32 m), Salt Rock (40 m), Speery Island (tallest, 120 m), The Needle (78 m), Lower Black Rock (67 m), Upper Black Rock (88 m), Thompson's Valley Island (21 m), Peaked Island (32 m), Egg Island (79 m), and Lighter Rock (13 m). An inshore swell is felt severely on all coasts except for the north-west.

Out of a total flora of about 320 species, some 240 are introduced. The native flora consists of about 70 species, 49 of which are endemic (10 genera). Of the endemic species known to have existed, seven are now extinct, 23 are classified as Endangered and 17 as Rare.

There are no indigenous or endemic terrestrial mammals, reptiles, amphibians or freshwater fish. The one introduced amphibian is the Grass Frog *Rana grayi*, brought in some time in the late 19th century. Besides tortoises (*Dipsochelys elephantina*, *Asterochelys radiata*, *Chersina angulata*, *Geochelone pardalis babcocki* and *Kinixys belliana*), brought in between 1776 and 1988, the one alien terrestrial reptile is an Asian gecko *Hemidactylus frenatus*. Other than livestock, the introduced mammals include cats, rats *Rattus rattus* and *R. norvegicus*, House Mice *Mus musculus* and rabbits *Oryctolagus cuniculus*. Two marine turtles are known, *Chelonia mydas* and *Eretmochelys imbricata*, neither of which is common. The Elephant Seal *Mirounga leonina* that once occurred occasionally may return following a substantial recovery at South Georgia and other southern breeding grounds. Two whales, *Megaptera novaeangliae* and *Physeter macrocephalus*, are known to occur offshore, but information remains sketchy. There are at least three species of dolphin (*Stenella attenuata*, *S. longirostris* and *Tursiops truncatus*). Ten endemic species of shore fish are known.

The precise number of endemic invertebrates that can be considered extant is uncertain. In 2000, some 430 species included 18+ hymenoptera, two neuroptera, two thysanoptera, five psocoptera, around 20 mollusca, one annelid, three turbellaria, five pseudoscorpions and around 42 species of mite. By then, over 200 endemic terrestrial species had been described, approximately 70% of which are insects. Many species may be facing extinction. The best known are the Giant Earwig *Labidura herculeana* and Giant Ground Beetle *Aplothorax burchelli*, last seen in the north-east in the mid-1960s. There are many introduced species, including cockroaches, flies, spiders, scorpions and centipedes. A variety of endemic marine invertebrates requires intensive further study. An endemic shore crab, *Platypodiella georgei*, was discovered only in 1983.

St Helena has a Governor appointed by the UK Foreign & Commonwealth Office, supported by an elected Legislative Council of 12 members, and an advisory Executive Council.

The St Helena dependencies of Ascension Island and Tristan da Cunha, the latter including also Gough Island, are each under an administrator appointed by the Foreign & Commonwealth Office and accountable to the Governor of St Helena.

St Helena is accessible only by sea, the regular ship being the RMS *St Helena*, operating from Cape Town. Calls are also made by cruise ships en route to and from the Antarctic and other destinations. The UK Government has agreed to fund an airport, due to open in 2010. St Helena has about 60 miles (97 km) of narrow winding roads, most covered with a bitumen surface, many with steep gradients and hairpin bends. Taxis provide the only public transport.

In 2005, the human population was about 3,500. The main centres of population are the capital Jamestown, Longwood and Half Tree Hollow. The remainder is settled mainly in areas receiving rainfall adequate for agriculture, a large proportion living in scattered cottages and smallholdings. Built-up areas account for less than 2% of the land surface. The island, lacking in substantial manufacturing industries, now relies on British development aid. The local economy is centred mainly on agriculture and fishing. The largest income is received from fishing licences sold to foreign fleets. Rupert's Bay is the principal industrial site, with bulk fuel installation, fisheries corporation, canning company, cold-storage facility and animal quarantine station. Cottage industry products, which include lace, decorative woodwork and beadwork, are exported. Philately is a major income and information generator.

The majority of the original vegetation has been almost entirely destroyed, with over 60% of the island now made up of eroded, degraded land. Semi-natural forest covers less than 1% and is found in isolated patches on the central ridge and on steep, inaccessible cliffs at lower altitudes. These remnants are of immense biological value as they harbour the relict fragments of the island's endemic biota.

Eight recognised plant communities are here simplified into four altitudinal-climatic zones. From sea level to 350 m is an arid zone (annual rainfall 200–500 mm), known as the 'Crown Wastes', which covers 25% of the surface. There is large-scale erosion. On the eastern (windward) side is a semi-desert, where the dominant shrub is *Suaeda helena* and large tracts of 'creeper' *Carpobrotus edulis* occur. In the west is a scrub in which *Lantana camara* or *Opuntia vulgare* dominate. Between 350 m and 500 m (annual rainfall 400–600 mm), there is pastureland and non-indigenous woodland. The main pasture grasses are *Pennisetum clandestinum*, *Cynodon dactylon* and *Digitaria ciliaris*. The woods are predominantly of *Acacia longifolia*, *A. melanoxylon* and *Pinus pinaster*. On the steeper slopes above 500 m (annual rainfall 600–1,000 mm), 'moist' and 'semi-moist' grassland types are recognised. The former, where the rainfall exceeds 900 mm, is dominated by *Agrostis tenuis* and *Pennisetum clandestinum*, while in the latter *Stenotaphrum secundatum* is co-dominant with *Pennisetum clandestinum*. This zone includes higher-altitude plantations, where *Podocarpus elongata* is a major tree species; other important trees are *Acacia melanoxylon* and

Important Bird Areas in the United Kingdom Overseas Territories

Pinus pinaster. Between the central ridge and cliffs, the intervening downland pastures are interspersed with remnant tracts of flax *Phormium tenax* and mixed-species woodland. In the upper zone, around Diana's Peak and on the east side of High Peak (annual rainfall 1,200 mm), several endemic trees occur, the dominants being *Dicksonia arborescens* and *Melanodendron integrifolium*. During the 20th century this zone was heavily invaded by *Phormium tenax*.

The climate is controlled by the South Atlantic High Pressure Cell and the Equatorial Trough. Although St Helena lies north of the Tropic of Capricorn, the climate is sub-tropical, with temperatures influenced by the south-east trade winds and ocean currents from the Antarctic. At Jamestown, the average maximum and minimum temperatures in summer (March, warmest) are 29.2°C and 24.5°C respectively, and the corresponding winter temperatures (September, coolest) are 23.8°C and 19.6°C. Inland temperatures are 7–8°C cooler than at the coast, with an average drop of about 1.3°C per 100 m rise in elevation. Rainfall is caused principally by orographic disturbance of the flow of the trade winds, but is also influenced by

frontal activity in high southern latitudes. In the 1980s, total annual rainfall in Jamestown averaged 209 mm and in the central hills ranged between 477 mm (in 1984) and 1,130 mm (1982), with over 900 mm in the vicinity of the peaks. Dominated by the south-east trades (blowing 70–80% of days in all months), wind direction is uniform, almost entirely within the 90–150° range. The winds are usually strong, Force 4–5. Gales and calms are virtually absent. Orographic cloud cover at higher altitudes averages over 80% (Hutt's Gate), and at Jamestown 46–74%. Relative humidity is typically 75–85%, but below 600 m (900 mm isohyet) evapotranspiration generally exceeds rainfall.

In the surrounding seas, surface waters cool to 19.5–21.5°C by the end of winter (September–October) and warm to 24.5–25.0°C by the end of summer (March). The 23°C isotherm lies south of St Helena only during part of the summer, December–May. The arrival of the warm water brings flying fish to the inshore waters. One, *Exocoetus volitans*, is a principal prey of boobies, Ascension Frigatebirds and Sooty Terns.

Ornithological importance

The avifauna of St Helena includes eight species of resident breeding seabird (two of which are known as breeders only from the late 1980s, and are possibly recolonisations) and two other naturally occurring species, the endemic St Helena Plover (wirebird) and the Common Moorhen, which reached the island, of its own accord, after the arrival of man. In addition, at least 41 species have been recorded as vagrants, summer visitors and passage migrants, some probably ship-assisted. The south-east trade winds create favourable conditions for a crossing from southern Africa, which would explain the occurrence on St Helena of non-breeding Afrotropical landbirds.

The St Helena Plover is classified as Endangered and is also a species of restricted range, whose distribution defines the St Helena Secondary Area (s038). Studies in 1988–89 showed the population to number some 450 birds of all ages, with densities highest in relatively dry, flat pasture, and that the principal threat appeared to be potential changes in land use. A recent survey has shown that since 2001 there has been a significant decline (43%) in the wirebird's population and suggests a current population of 200–220 individuals. The main causes appear to be habitat degradation due to reduced grazing, the proliferation of invasive plants and predation, especially by feral cats.

There are also a number of non-native species, introduced mainly as sources of food, but later used in agriculture to control insect pests, as well as for ornamental purposes. Of

these, only the following nine survive as residents: the Chukar (introduced around 1531), the Common Pheasant (introduced around 1531), the Rock Pigeon (introduced before 1578), the Zebra Dove (introduced before 1775), the Common Myna (introduced around 1815 and again in 1885), the Madagascar Red Fody (introduced by 1776, possibly in 1765), the Java Sparrow (introduced before 1775), the Common Waxbill (introduced probably in the 1770s, certainly by 1813) and the Yellow Canary (introduced probably in 1776).

In addition, the fossil record is well represented. This includes evidence of at least four endemic landbirds (two flightless rails, a cuckoo and a hoopoe), and two endemic seabirds (petrels), which were probably present when the island was discovered in 1502, after which they quickly succumbed to the effects of predation by man and his commensal animals, and deforestation. Three other species are found only in Pleistocene deposits.

Also lost from the island were five other breeding seabirds: a shearwater, a storm-petrel and a booby, now known only as vagrants, and two frigatebirds. A Pacific petrel has since occurred, at Hooper's Ridge in the south of the island, and it is possible that with effective conservation management of the island's endemic habitats, and controls of feral cats and rats, former breeding seabirds could be induced to recolonise.

Conservation infrastructure and Protected Area system

Conservation on St Helena is provided for under the Endangered, Endemic and Indigenous Species Protection Ordinance of 1996, and the Birds Protection Ordinance of 1996, both of which were enacted on 29 March 1996, repealing previous Ordinances. Provision is made under Section 5 of the latter for the collection of eggs and specimens under licence for reputable scientific purposes.

Under the Forestry Ordinance No 9 of 25 October 1954, the Forestry Advisory Committee, and subsequently its successor, the Agricultural and Natural Resources Committee, has been empowered to declare three areas of protected forest. These are National Forest (i.e. any area of Crown land), Dedicated Forest (i.e. any area of privately owned land under the control of the Agricultural and Forestry Officer) and Protected Private Forest. In all three

categories, strict controls govern disturbance and removal of soil and forest produce, the entry of livestock and the lighting of fires. There are four principal nature reserves (see the site accounts, below).

International measures relevant to the conservation of sites

St Helena is included under the ratification by the UK of the Convention of Biological Diversity, CITES, the Ramsar Convention, the Convention on Migratory Species, the Convention on Climate Change, the Convention to Combat Desertification and the World Heritage Convention. The island and its surrounding waters have, with the support of the UK Overseas Territories Conservation Forum, been promoted as an internationally recognised site of natural and cultural heritage.

Overview of the inventory

Two Important Bird Areas (IBAs) are identified in this inventory, covering about 58 square miles (93 square km) or some 76.4% of St Helena (see the table below). These are the north-east, with Shore Island and George Island (SH003), and the south-west, with Egg Island and Speery Island (SH004). The two sites – a small proportion only of both of which are legally protected as reserves – include all the important St Helena Plover breeding areas, as well as all the known fossil sites. All other offshore islets, stacks

and rocks are included, together with the marine habitat out to 3 nautical miles. The sites provide for all resident landbirds and seabirds. The central part of the island, which includes the peaks and the more settled areas, including Jamestown, is omitted, for although this area includes almost all of Diana's Peak National Park, the uplands are poorer in bird species and are not important for the St Helena Plover.

Sites of global conservation importance

IBA code	Site name	A1	A2	A4i	A4ii
SH003	North-east St Helena	X	X	X	X
SH004	South-west St Helena	X	X	X	X

Site accounts

SH003: North-east St Helena

Ref number	SH003
Admin region	St Helena
Coordinates	15°57'S 05°40'W
Area	4,800 ha (approx)
Altitude	0–616 m
IBA categories (details below)	A1, A2, A4i, A4ii
Status	National Park; unprotected

Site description

The site covers the north-eastern part of the island, north of a line linking Long Point in the south-east and Banks Point in the north-west, via Hutt's Gate in the interior, together with Shore Island (68 m), George Island (32 m) and all other offshore rocks. There are three vegetation zones. Below 350 m, around 25% of the area, the landscape is arid, with large-scale erosion, dominated by *Suaeda*, *Lantana* and *Carpobrotus*. This gives way, up to 500 m, to pasture and non-indigenous woodland dominated by *Pennisetum*, *Cynodon* and *Digitaria*, with *Acacia* and *Pinus*. Above 500 m lies 'moist' and 'semi-moist' grassland, woodland (dominants include *Agrostis*, *Pennisetum* and *Stenotaphrum*, with *Podocarpus*, *Acacia* and *Pinus*), and flax *Phormium tenax* plantations. The coast is dominated by imposing sea cliffs, rising mainly to between 300 m and 570 m. The Barn (616 m), in the far north-east, is the highest point, but the elevation is almost the same at Hutt's Gate (609 m). Shore Island is a large, steep basaltic stack, whereas George Island, also basaltic, is shoe-shaped and less steep, its 'toe' pointing into the south-easterly swell. Encircled by breakers, with landing difficult, both islets are barren, with heavy guano deposits at upper levels. Included are eight important breeding sites for the St Helena Plover: Sane Valley, Deadwood Plain (the main site), Longwood Farm, Bottomwoods, Horse Point Plain, Prosperous Bay North, Prosperous Bay Plain and Upper Prosperous Bay. Important fossil sites are at Sugarloaf, Flagstaff Hill, Prosperous Bay and Dry Gut.

Birds

See the accompanying table for details of key species. Although as many as 48 bird taxa have been recorded, there are now only eight known species of breeding seabirds and 11 species of resident landbirds: the Madeiran Storm-petrel, Red-billed Tropicbird, Masked Booby, Brown Booby, Chukar, Common Pheasant, Common Moorhen, St Helena Plover, Sooty Tern, Brown

Noddy, Black Noddy, Common White-tern, Rock Pigeon, Zebra Dove, Common Myna, Madagascar Red Fody, Java Sparrow, Common Waxbill and the Yellow Canary. Bulwer's Petrels may also breed. Shore Island has the highest seabird breeding diversity in St Helena, with at least seven species, possibly eight. There are also records from the site of non-breeding visitors, and vagrants with fewer than five records. The former include the Wandering Albatross, Soft-plumaged Petrel, Wilson's Storm-petrel, White-bellied Storm-petrel, Grey Heron, Cattle Egret, White Stork, Sanderling, Parasitic Jaeger and Arctic Tern. The site requires further study.

Other threatened/endemic wildlife

Of particular importance are the endemic invertebrates, of which the best known are *Labidura herculeana* (CR) and *Aplothorax burchelli* (CR), known alive only from the area of Horse Point Plain, and last seen in the mid-1960s. Both may well be extinct. This highlights the extreme importance of habitat protection for the northern plains areas.

Conservation issues/threats

Within the IBA is the eastern end (63 ha) of Diana's Peak National Park, proclaimed in 1995, which contains the largest area of what remains of the native tree-fern thicket and cabbage-tree woodland, but which is poor in birds. Also included is Prosperous Bay Plain, which is protected as a 'national forest' (approx 300 ha), and the new Millennium Forest of endemic gumwoods *Commidendrum robustum* (approx 4,000 trees), planted on Horse Point Plain in 2000 and to be extended. Strict protection of all bird species, with the possible exception of the Common Myna, is provided for under the St Helena Birds Protection Ordinance of 1996. Species regarded as 'game' (e.g. the Chukar and the Common Pheasant) are subject to the appropriate game laws. With the fall in numbers of St Helena Plovers further conservation measures are needed.

Key species

Criteria	Key species	Number of breeding pairs (if known)
A1, A2, A4i	St Helena Plover <i>Charadrius sanctaehelenae</i>	168 individual adults (approx) (2006)
A4ii	Red-billed Tropicbird <i>Phaethon aethereus</i>	43 (approx) (1992)

Further reading

See full details at end of chapter.

Ashmole (1963), Ashmole and Ashmole (2000), Benson (1950), Chapin (1954), Cronk (2000), Drucker and Pearce-Kelly (1992), Hartog (1984), Haydock (1954), McCulloch

(1991, 1992, 1999), McCulloch (2006), McCulloch and Norris (2001), Maunder *et al.* (1993), Melliss (1875), Olson (1973, 1975), Pearce-Kelly and Cronk (1990), Rowlands (1992, 1995, 2001), Rowlands *et al.* (1998), Wetmore (1963).

Site accounts

SH004: South-west St Helena

Ref number	SH004
Admin region	St Helena
Coordinates	15°59'S 05°45'W
Area	4,500 ha (approx)
Altitude	0–798 m
IBA categories (details below)	A1, A2, A4i, A4ii
Status	National reserve; unprotected

Site description

The site covers the south-western part of the island, south of a line linking Powell Point and 'The Buoys' in the south-east and Horse Pasture Point in the north-west, via Clifford Arboretum in the interior, together with Egg Island (79 m), Speery Island (120 m) and all other offshore islets, stacks and rocks. All four vegetation zones on the island are represented. Below 350 m, around 25% of the area, the landscape is arid with large-scale erosion, dominated by *Suaeda*, *Lantana* and *Carpobrotus*. This gives way to pasture and non-indigenous woodland, up to 500 m, dominated by *Pennisetum*, *Cynodon* and *Digitaria*, with *Acacia* and *Pinus*. Above 500 m lies 'moist' and 'semi-moist' grassland, woodland (dominants include *Agrostis*, *Pennisetum* and *Stenotaphrum*, with *Podocarpus*, *Acacia* and *Pinus*) and flax *Phormium tenax* plantations. At High Peak is a small remnant native thicket of endemic *Dicksonia* ferns and *Melanodendron* cabbage trees. The coast is dominated by imposing sea cliffs, rising mainly to between 300 m and 570 m. High Peak (798 m), in the far north-east, is the highest point. Egg Island, off the north-west lee side, is a mass of pale bedded lavas with an apparent dip towards the south-west, while nearby Peaked Island (32 m) is a sharp pyramid of scoriaceous slag. Speery Island is a spectacular steep-sided jointed monolithic pipe of paler alkaline trachyte, while neighbouring Salt Rock (40 m) is a remnant of a wide basaltic dyke. The remaining islets and stacks are basaltic. Vegetation (shrubs, grasses, weeds) has been noted only on Lighter Rock, Ladies Chair, Egg Island, Peaked Island and Thompson's Valley Island, all in the lee. Lichens have been found at the summit of Egg Island. The heaviest guano deposits are on Egg, Peaked and Speery Islands. In the south, the Speery Island group of outliers is much more exposed and, but for Speery Island itself, has not been visited by ornithologists and may therefore harbour unrecorded seabirds. Included in the IBA are three important breeding sites for the St Helena Plover: Broad Bottom, Southern Pastures, and Man and Horse. There is an important fossil site at Sandy Bay.

Birds

See the accompanying table for details of key species. Although as many as 45 bird taxa have been recorded, there are now only seven known species of breeding seabirds and 11 species of resident landbirds: the Madeiran Storm-petrel, Red-billed Tropicbird, Masked Booby, Chukar, Common Pheasant, Common Moorhen, St Helena Plover, Sooty Tern, Brown Noddy, Black Noddy, Common White-tern, Rock Pigeon, Zebra Dove, Common Myna, Madagascar Red Fody, Java Sparrow, Common Waxbill and the Yellow Canary. Brown Boobies may also breed. Speery Island has the highest seabird breeding diversity in the IBA with, probably, seven species. There are also records of non-breeding visitors and vagrants with fewer than five records. The former include the Wandering Albatross, Soft-plumaged Petrel, Wilson's Storm-petrel, White-bellied Storm-petrel *sp.*, Grey Heron, Cattle Egret, White Stork, Sanderling, Parasitic Jaeger, Pomarine Jaeger and the Arctic Tern. The site requires further study.

Other threatened/endemic wildlife

As with North-east St Helena (SH003), the endemic invertebrates are of particular importance.

Conservation issues/threats

The site includes three nature reserves. The Norman Williams Nature Reserve (Horse Ridge, 7.2 ha) was proclaimed in 1982. The Old Joan Point National Forest (south-west coast, 560 ha), proclaimed in 1994, is an area of steep cliffs that supports remnant populations of endemic and indigenous plants. The High Peak–Peak Dale Forest Reserve (in the south, 6.4 ha), proclaimed in 1995, includes not only the native tree-fern thicket, but also the largest remaining population of gumwoods. Strict protection of all bird species, with the possible exception of the Common Myna, is provided for under the St Helena Birds Protection Ordinance of 1996. Species regarded as 'game' (e.g. the Chukar and the Common Pheasant) are subject to the appropriate game laws.

Key species

Criteria	Key species	Number of breeding pairs (if known)
A1, A2, A4i	St Helena Plover <i>Charadrius sanctaehelenae</i>	52 individual adults (approx) (2001)
A4ii	Red-billed Tropicbird <i>Phaethon aethereus</i>	43 (approx) (1988)

St Helena

With the fall in numbers of St Helena Plovers, further conservation measures are needed. Seabird eggs and guano continue to be taken at intervals from the stacks off the lee-side north-west coast by fishermen.

Further reading

See full details at end of chapter.

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(1954), Cronk (2000), Drucker and Pearce-Kelly (1992), Hartog (1984), Haydock (1954), McCulloch (1991, 1992, 1999), McCulloch (2006), McCulloch and Norris (2001), Maunder *et al.* (1993), Melliss (1875), Olson (1973, 1975), Pearce-Kelly and Cronk (1990), Rowlands (1992, 1995, 2001), Rowlands and Trueman (1999), Rowlands *et al.* (1998).

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Tristan da Cunha (including Gough Island)



Beau W. Rowlands (updated by Geoff Hilton, 2004)



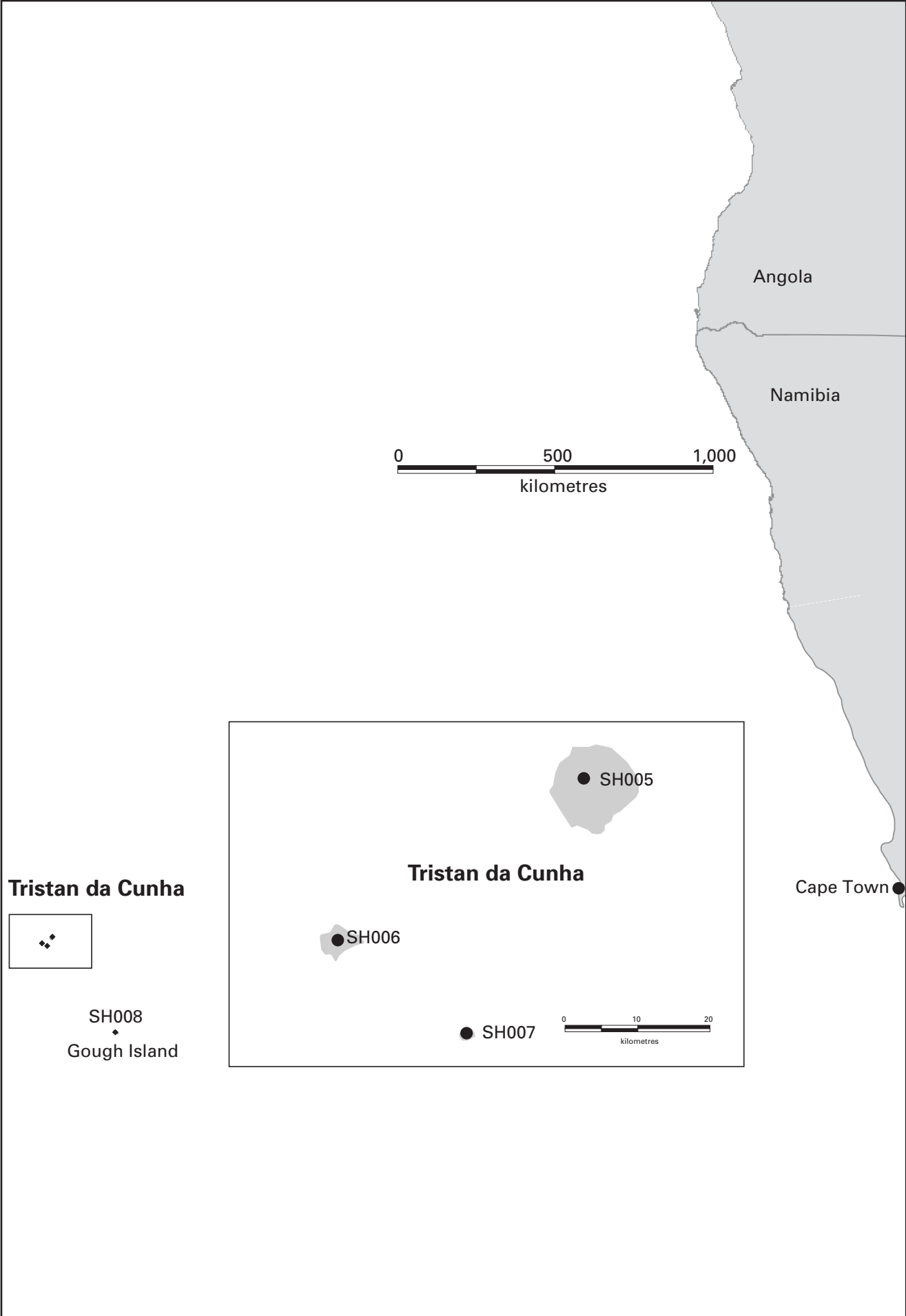
Tristan from Nightingale, with a pair of Yellow-nosed Albatrosses

General introduction

The Dependency of Tristan da Cunha, which covers both the Tristan group (Tristan, Inaccessible, Nightingale, Middle and Stoltenhoff Islands) and Gough Island, has a total land area of 69 square miles (179 square km). The islands are of volcanic origin, of varying geological age and stage of erosion, the oldest rocks dating back 18 million years. However, the three largest islands all show evidence of recent activity, and therefore cannot be regarded as volcanically extinct. Isolated, the five islands of the Tristan group lie within 25 miles (40 km) of each other in the mid-South Atlantic Ocean, on similar latitudes 1,729 miles (2,782 km) from South Africa (Cape Town) and 2,453 miles (3,947 km) from South America (Mar del Plata). Gough Island lies

217 miles (350 km) to the south-south-east. Lying somewhat east of the crest of the mid-Atlantic Ridge, near its junction with the aseismic Walvis Ridge, the islands rise from a sea depth of about 3,500 m. At least 212 plant taxa have been recorded, including 35 native ferns and 58 native flowering plants. Of these, 20 fern and 34 flowering plant taxa are considered to be endemic. There are no reptiles, amphibians or freshwater fish, and there are no records, other than poultry, of introduced birds. An invertebrate fauna includes weevils and snails of particular interest, but with a relatively low number of native species. The only native breeding mammals are seals, which have been exploited in the past. Five whales – *Eubalaena glacialis*

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Tristan da Cunha

australis, *Physeter macrocephalus*, *Megaptera novaeangliae*, *Globicephala melas* and *Tasmacetus shepherdi* – occur relatively frequently, the last with regular strandings. Various species of dolphin, including *Lagenorhynchus obscurus*, are common.

The islands are a dependency of St Helena, itself a UK Overseas Territory, 1,513 miles (2,435 km) to the north-north-east. There is no air link. None is on any regular shipping lane, but there is a shipping link with Cape Town and cruise ships occasionally call. The islands are governed by an administrator appointed by the UK Foreign & Commonwealth Office, who is advised by an Island Council of eight elected and three appointed members, of whom one is chosen as Chief Islander by popular ballot. The administrator is accountable to the Governor of St Helena. One of the most isolated communities in the world, the human population in 2006 was 273 (seven family names), all on the largest and main island of Tristan but for the six non-resident members of a South African meteorological team on Gough. The Tristan settlement, Edinburgh, in the north, has some 75 homes (100 families). The community is self-sufficient in food due to the surrounding seas and to the management of the grasslands around the village and the Potato Patches (about 1.8 miles/3 km south-west) where the staple potato crop is grown. The economy is based on crayfish *Jasus tristani* (the frozen product is exported), philately (worldwide sales) and handicrafts (mainly woollen goods). The other islands are uninhabited, but there are traditional longboat trips to Nightingale Island to collect penguin and shearwater eggs, shearwater chicks and guano. About 30 wooden huts and shacks, as well as pathways, have been constructed on Nightingale for this purpose. Inaccessible Island has been visited less often since 1938 but, before then, was much more visited than Nightingale. A single research hut built on Inaccessible by the Denstone Expedition in 1982 was both demolished and replaced in January 2000. The only settlement on Gough is the meteorological station, about 10 buildings, at Transvaal Bay in the south-east of the island.

The climate of the dependency is cool temperate oceanic, but can vary locally from island to island. Lying on the edge of the West Wind Belt, the islands are under the influence of both maritime tropical (mT) and maritime polar (mP) air masses from the western South Atlantic. The pattern is dominated by the passage of often severe cyclonic storms, generated by outbursts of mP air on the Polar Front. (A storm in May 2001, with 118 mph/190 kmph winds, caused considerable disruption and damage in the Tristan settlement.) At Tristan, the prevailing winds are north-westerly to south-westerly, occasionally from the north and south, and only rarely from the east. Since the mP air is cooler than the ocean, and many fronts are occluded by the time they arrive, the weather is mostly cloudy with frontal rain. The islands also induce much orographic rainfall. In summer (October to March), the Tristan group may be influenced by the sub-tropical high-pressure cell bringing mT air with orographic cloud, fewer storms and less rain than in the winter (April to September), though summer droughts seldom exceed a few weeks. Frontal rainfall occurs throughout the year at

Gough, where the mean monthly rainfall in summer is 230 mm; in winter it is 289 mm. The mean annual temperature at the Tristan settlement is 14.5°C while, near sea level on the south-east coast of Gough, it is 11.3°C. Tristan (settlement) has a recorded mean annual rainfall of 1,676 mm, with rain on 250 days of the year, and Gough 3,397 mm with rain on 296 days. Rainfall on the uplands of Tristan and Gough may be at least twice as heavy as that at sea level. Snow lies intermittently during the winter above about 600 m on Tristan and above about 300 m on Gough, but frosts at sea level are almost unknown on either island. The cloud base at Tristan usually lies above 600 m, but frequently descends below the Base plateau. Nightingale Island is usually cloud free, being warmer and drier than Tristan. On Inaccessible Island, orographic cloud is a common feature. At Gough the cloud base is typically between 300 m and 500 m. At all the islands it occasionally descends virtually to sea level.

The islands lie within the West Wind Drift, where the prevailing winds in the Southern Ocean impart an easterly set to the surface waters of some 8 miles (13 km) per day. The Subtropical Convergence usually lies between the Tristan group and Gough, but occasionally south of Gough. The dependency is therefore affected by both sub-Antarctic and cold temperate mixed water types. Mean sea temperatures are around 18°C and 13°C in summer and 13°C and 11°C in winter at Tristan and Gough Island, respectively.

The six islands of the dependency each have distinct topographical, floral and faunistic characteristics.

Tristan Island

Roughly circular in plan, covering 37 square miles (96 square km), with an average diameter of some 7.5 miles (12 km), Tristan is a strato-volcano made up of interbedded lavas (mainly basaltic) and pyroclastic deposits, with a central cone, the Peak, rising to 2,060 m. It is geologically the youngest in the group, about 500,000 years old. At the summit it is an unbreached crater, containing a shallow lake that is frozen in winter. The flanks are steepest near the summit, and gradients slacken to a more gently inclined area known as the Base plateau, lying between 600 m and 900 m. To seaward, the Base is truncated by precipices and cliffs, but there are discontinuous lowlands between the cliffs and the sea, the three most prominent being the Settlement Plain (5 miles by 0.6 miles/8 km by 1 km) in the north-west, Sandy Point in the east, and Stony Hill and Cave Point in the south. Numerous parasitic cones, resulting from secondary eruptions, protrude from the flanks of the Peak, the Base plateau and coastal strips. At least eight on the Base plateau are considered less than 25,000 years old. The last eruption was that of October 1961, at the eastern end of the Settlement Plain, when about 0.3 square miles (0.5 square km) of land, mostly as lava flows, was added. Seaward erosion of both the main flows and the coastal strips has produced a precipitous cliffed coastline fringed by narrow boulder beaches and rocky headlands. Two stacks – The Hardies, the higher 37m – lie about 1.8 miles (3 km) south-west of Herald Point in the

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north-west. The island retains a youthful drainage system, with radially arranged flat-bottomed gorges, or 'gulches', deeply incised into the main sequence of lava flows on the Base plateau. Permanent running water is found only on the Settlement Plain, although small water bodies, including three crater lakes, exist just above 600 m.

There are five native vegetation types, clearly zoned according to altitude and topography. On the coast and up to 600 m the vegetation consists of grassland (remnants of native *Spartina arundinacea* tussock and dominant imported pasture grasses), with fern-bush (including tree-ferns *Blechnum palmiforme*) and scattered thickets of island trees *Phyllica arborea*. The *Phyllica* is recovering on cliffs above the Settlement Plain, following an Island Council ban on cutting. *Blechnum palmiforme* and *P. arborea* dominate the zone above, between 600 m and 750 m. Above 750 m, to about 900 m, around the lower part of the Peak, the ground is generally boggy, the tree-ferns giving way to mats of *Blechnum penna-marina* and the aliens *Rumex acetosella* and *Holcus lanatus*. Above 900 m lies a wet heath comprising extensive mats of *Empetrum rubrum* and *Rhacomitrium lanuginosum*, together with *Acaena stangii* and scattered sedges, followed by moor and feldmark vegetation (an assemblage of dwarf, cushion-forming and crevice plants) on higher slopes. Above 1,500 m, on loose cinders, is an alpine tundra of very sparse vegetation. However, *Empetrum* and bryophytes can be found in the main crater at some 2,000 m. Encircling the island is a sub-littoral zone of *Macrocystis* kelp.

The Settlement Plain has been overgrazed by sheep and cattle, the original cover virtually replaced by the imported pastures. Stony Beach is badly eroded by feral cattle, likewise Sandy Point where there is also an orchard and a conifer plantation. However, goats, pigs and possibly rabbits did not build up large, destructive feral populations, as on St Helena, the reasons for which remain obscure. Introduced rats and mice are present but feral cats have been extirpated.

Inaccessible Island

Inaccessible Island lies 25 miles (40 km) south-west of Tristan. Roughly rhomboidal in plan, it is 5.4 square miles (14 square km) in size, 3.5 miles (5.7 km) from west to east, and 2.8 miles (4.6 km) north to south. The highest part, Swales Fell, in the west, rises to 511 m. Geologically, it is the second youngest in the Tristan group, around three million years, and it is a volcanic remnant dominated by interbedded basalt flows and pyroclastic deposits that gently dip towards the north-east. Cliffs rise sheer from sea level round most of the coastline, to 300 m at South Hill. The inland plateau comprises three principal drainage systems, with numerous additional ravines and 'gulches', a shallow central basin and a few small, conical hills. Narrow boulder beaches are present at the base of most cliffs, but are wider at Salt Beach and Waterfall Beach in the north-east. Landslide material at West Point forms the only extensive, relatively flat land area at sea level. A recent bog, about 400 years old, incorporates the only area of open standing fresh water on the island. The vegetation

comprises three main types. The lower slopes are blanketed with dense, uniform *Spartina* tussock-grassland, up to 2.5 m high. The western part of the plateau comprises largely *Blechnum* tree-ferns, interspersed with stunted thickets (about 1 m) of *Phyllica* trees. Dense stands of taller *Phyllica* (3 m or more) occur in the lower, eastern part of the plateau and at sea level at Skua Bog in the west. Scattered *Phyllica* occurs elsewhere over much of the island, particularly in sheltered 'gulches'. Up to 22 species of alien flowering plants have been recorded, largely at the landing sites at Salt Beach and Blenden Hall, but seven alien species have been found on the plateau. There are no introduced mammals; pigs and goats were brought to the island in the 19th century, but no longer occur, while Inaccessible has remained free of rats and cats. Offshore are a number of stacks, of which the largest is Cave Rock on the south-east coast, reaching to about 150 m and well vegetated. The outermost, Pyramid Rock, 18 m, lies 440 m to the south-west of South Hill. Encircling the island is a sub-littoral zone of *Macrocystis* kelp. Inaccessible Island has the largest submarine plateau of all the islands.

Nightingale Island

Nightingale Island lies 24 miles (38 km) south-west of Tristan and 14 miles (22 km) south-east of Inaccessible Island. It measures 1.5 miles (2.5 km) from west to east, 1 mile (1.5 km) north to south, and covers 1.5 square miles (4 square km). It has the shape, in plan, of a squat dumb-bell, with two hill masses separated by a broad waist. High Ridge, in the east, rugged and precipitous, rises to 337 m, appearing conical when seen from the north-east or south-west. The other, 293 m, slopes gently on all but its south side. With the exception of the north-east, the coasts are precipitous and cut into deep recesses and caves. A volcanic skeleton, the island retains no trace of its original form, but a wide, shallow submerged platform to the north may mark its former extent. Much of Nightingale is composed of intrusive trachyte lavas, and these extend northwards to Middle and Stoltenhoff Islands, which are part of the same complex. A secondary centre in the south (Ned's Cave and Seahen Rocks) may have produced lavas and tuff that overlie peaty deposits, tentatively dated at 400,000 years. There are no streams or 'gulches', but in the centre are four marshy areas known as 'The Ponds', in two of which are pools of open water. The flora of the site is poor in species, due to the small size and narrow range of environments. A total of 19 species of vascular plants and 15 pteridophytes are native, and by 1968 only six alien vascular plants had been recorded. The predominant vegetation is dense *Spartina* tussock-grassland, forming almost pure stands 2–3 m in height, usually on hard fibrous peat. There are some 20 ha of *Phyllica*, in small groves, which have few epiphytes, other than lichens, and a sparse understorey. Around the central swamps, and on some of adjoining gently sloping ground, meadows of hummock-forming *Scirpus bicolor* replace the *Spartina*. Kelp extends offshore in the east but there is less to the south and west. There are no introduced mammals.

Middle Island

Known also as Alex Island, Middle Island lies 100 m north to north-west of Nightingale Island. Containing the oldest rocks, it has an area of 0.2 square miles (0.5 square km) and rises to 46 m. The island is covered in *Spartina* tussock and has a few boggy areas. Pin Rock, 9 m high, lies off the north-western extremity.

Stoltenhoff Island

Known also as Stoffenberg Island, Stoltenhoff Island lies 1 mile (1.5 km) north of Nightingale Island. It is 0.08 square miles (0.2 square km) in size, and rises gradually to 99 m at its southerly point. On its westerly (windward) side, low cliffs give way to bare rock where brackish water collects. The island is otherwise covered with short *Spartina* tussock below 1 m in height, through which many rocky outcrops protrude. Only one stunted tree (*Phyllica*) has been recorded. To the east, separated from the island and each other by narrow chasms, are a high narrow pinnacle and a large, vegetated stack.

Gough Island

Politically a part of the territory, Gough Island is the most complex in both terrain and structure. Gough is a basaltic shield volcano with a complex structure resulting from four main periods of volcanic activity, the last of which ceased at least 0.2 to 0.1 million years ago. More or less rectangular and 25 square miles (65 square km), it is 8 miles (13 km) in length from north-west to south-east, and over 3 miles (5 km) from south-west to north-east at its widest point. The summit, Edinburgh Peak, reaches 910 m, and the second highest point, Expedition or Gonçalo Alvarez Peak, 894 m. Both rise from a central upland of rounded hills and broad boggy plateaux, in the north-western half of the island. The northern and eastern sides of the island form a deeply dissected landscape of narrow ridges and steep-sided valleys or 'glens'. There are seven main valleys, ranging from 0.7–1.5 miles (1.2–2.5 km) in length and the ridges between them attain a rather uniform elevation of around 600 m. On the western side, the upland plateaux slope more gently down to precipices 450 m to 170 m in height. Towards the south is an undulating but thickly wooded lowland, the only area below 200 m, much of which is drained by a meandering stream behind Transvaal Bay in the south-east. The entire coastline is cliffed; of the numerous streams, only those draining The Glen (the largest of the eastern valleys), its neighbour Sophora Glen, and the southern slopes, discharge their water close to sea level. The other valleys are truncated by cliffs, over which their streams form picturesque cascades, or into which they have incised deep gullies. Boulder beaches lie beneath the cliffs. Offshore are some 20 islets, stacks and rocks, the largest of which support vascular plants and breeding birds. Most lie within 100 m of the main island, none at a distance greater than 0.6 miles (1 km). The tallest is Tristania Rock, 164 m, in the north-west, and the outermost is Penguin Island, off the north-east coast.

The vegetation exhibits marked changes with altitude in relation to climatic differences, and five types are described. At the coast it consists of tussock-grassland on

the offshore stacks, sea cliffs and adjacent slopes where salt spray is regular. This is up to 300 m on the exposed west side of the island, below 100 m on the east, with *Spartina arundinacea* and *Poa* (= *Parodiocloa*) *flabellata* dominant. The endemic *Cotula goughensis* is restricted to the upper beach and coastal cliffs. Scattered *Phyllica* trees also occur. Sites disturbed by marine erosion (landslips, slumps and rockslides) and trampling by seals and penguins support the greatest diversity of introduced species, including *Agrostis stolonifera*, *Holcus lanatus*, *Poa annua*, *Plantago lanceolata*, *Rumex obtusifolius*, *Stellaria media* and *Sonchus* spp. Native species found in these disturbed habitats include *Scirpus bicolor*, *Cotula goughensis*, *Apium australe* and *Callitriche christensenii*.

Fern bush occurs above the coastal grassland, up to about 500 m. It is better developed on the more sheltered eastern side and is most extensive on the southern coastal lowlands. The deciduous fern *Histiopteris incisa* forms the dominant climax assemblage. Fern bush is also characterised by *Phyllica arborea* (canopy 2–3 m high) and *Blechnum palmiforme* (0–1 m high, up to 2 m in sheltered spots). *Sophora microphylla*, the only other woody tree on the island, is restricted to a few individuals in Sophora Glen.

Fern bush, a dynamic community, is dependent on peat slips to maintain plant diversity. Fresh slip faces are first colonised by mosses and *Scirpus bicolor*, followed by *Nertera depressa*, *Empetrum rubrum*, *Lycopodium diaphanum* and various grasses and sedges, as well as *Phyllica* and *Blechnum* seedlings. As the slip site ages, *Histiopteris incisa* and *Acaena sarmentosa* appear, the former eventually dominating the area. The fern bush is a mosaic of recent and old slips, each supporting different plant assemblages. These are more open on steeper slopes, where slips are more frequent, whereas on flatter ground where slips occur less frequently, there is a preponderance of *Histiopteris*-dominated assemblages.

Wet heath occurs from the upper limit of fern bush to above 800 m in sheltered locations. It is a transitional vegetation type, with fairly short plants, less than 1 m high. Diverse, it contains species found in virtually all other vegetation types. Three assemblages are recognised, dominated by *Blechnum*, *Empetrum* and grasses and sedges respectively. Feldmark, a community of dwarf, cushion-forming or crevice plants, is found on exposed areas such as ridges, above 600 m. Dwarf *Empetrum rubrum*, *Lycopodium magellanicum*, *Huperzia insularis*, *Acaena stangii*, *Agrostis media*, *A. carmichaelii* and several sedges, mosses and lichens characterise this alpine community. Peatbogs are widespread on the level uplands above 600 m. The bogs are sodden, and are dominated by *Sphagnum* mosses and a number of hepatics. The only abundant vascular plants are *Tetronicum magellanicum* and *Scirpus* spp. However, a wider diversity occurs along bog margins, including *Empetrum rubrum* and various grasses.

Offshore, 40 species of algae are recorded, of which two are endemic. From sea level to 5 m depth, the principal species is the Bull Kelp *Durvillea antarctica*. Beyond 20 m the dominants are *Laminaria pallida* and the Giant Kelp *Macrocystis pyrifera*.

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Gough was once described as the largest relatively unmodified cool temperate island ecosystem in the South Atlantic. Recent evidence suggests that the island has been colonised by many non-native species, which may be having a profound effect on the island's ecology. Of 99 pterygote insect species recorded on the island, 71 are non-native, of which 56 are established in the wild. A total of 25 out of 88 vascular plant species recorded on Gough are non-native, and several are now widespread; most are transient, requiring some form of disturbance to penetrate native vegetation. An invasive weed, *Sagina procumbens*, survived an eradication attempt in 2000 and remains a threat requiring urgent action. House Mice *Mus musculus* are the only introduced mammals, and are extremely abundant. Based on research on other sub-Antarctic

islands, they are likely to have a profound effect on some native invertebrates, and consequently on nutrient recycling; they may affect recruitment of native plants. They may compete with the Gough Bunting for food. Most importantly, they appear to have evolved a predatory behaviour on Gough, and are having a major impact on the reproductive output of at least some seabird populations, and possibly also that of the Gough Bunting. There is no record of them on the offshore islets and stacks. Goats and sheep have been introduced in the past, but are no longer present. Longline fishing mortality in Tristan/Gough waters, and more widely in the Southern Oceans is a major threat to many of the seabird populations

Ornithological importance

A total of 14 species of global conservation concern occur in the territory (see the table overleaf), six of which are endemic landbirds of restricted range, whose distributions define two Endemic Bird Areas (EBAs). These are the Inaccessible Rail (VU), Tristan Thrush (NT), Grosbeak Bunting (VU) and the Tristan Bunting (VU), all confined to the Tristan group and comprising the Tristan Islands EBA (EBA 079). The Gough Moorhen (VU) and the Gough Bunting (VU) are endemic to Gough Island EBA (EBA 080).

Among the breeding seabirds, the Tristan Albatross (EN), Atlantic Yellow-nosed Albatross (EN), Spectacled Petrel (CR) and the Atlantic Petrel (VU) are endemic to the Territory, while the Rockhopper Penguin (VU), Sooty Albatross (EN), Southern Giant-petrel (VU) and the Grey Petrel (NT) are all present. The Southern Giant-petrel is now found only on Gough (extirpated on Tristan da Cunha), where it is currently the subject of a phylogenetic investigation because the population is phenotypically distinctive and may represent an endemic taxon.

The Tristan group is exceptional in having three endemic genera: rails, buntings and thrushes. The buntings are of particular interest because, as with the famous Darwin's Finches of the Galapagos Islands, they have undergone remarkable speciation, with the two species (Tristan and Grosbeak Buntings) differing markedly in size and, on Nightingale Island, co-occurring without inter-breeding. On Inaccessible Island, where they also co-occur, there are two altitudinally segregated colour-morphs of Tristan Bunting, as well as a hybrid complex involving Tristan and Grosbeak Buntings. Distinct sub-species of the Thrush are recognised from each of the three main islands.

On Tristan Island, the modification of vegetation by grazing livestock may have contributed to the extinction of the Tristan Moorhen and, locally, of the Tristan Bunting, although introduced predators (cats and rats) are expected to have had a more significant role. The Tristan Thrush is the only native landbird surviving on the island, although the population has decreased markedly since the arrival of man and his commensals. The Gough Moorhen has been introduced to

Tristan from Gough (see site account, below).

On Inaccessible and Nightingale Islands, habitat destruction (by fire and the possible introduction of livestock) is a threat, but a far greater one is the accidental introduction of alien species, especially predatory mammals. The presence of rats on nearby Tristan da Cunha is a particular concern in this regard. The Inaccessible Rail is arguably the most vulnerable, being flightless (indeed, the world's smallest flightless bird), even though it occurs at high density (probably at carrying capacity) and numbers an estimated 8,400 birds. On both islands, invasive alien plants are present and have the capacity to radically alter vegetation communities; control and eradication measures for some of these are under way.

All the Tristan group's restricted-range species are found in a variety of habitats. The Grosbeak Bunting is rather rare and restricted in distribution, and tends to be associated with *Phyllica* trees, but not exclusively so. The Inaccessible Rail is most common in coastal tussock-grassland away from the cliffs. On Inaccessible Island all the extant species occur, and the Inaccessible Rail is confined to the island. On Gough Island, the Gough Bunting occurs at much lower densities than Grosbeak Buntings on nearby Inaccessible, for reasons that are not clear, and are not obviously related to habitat quality. A 2000 population estimate of 400–500 pairs is substantially lower than the 1,000 pairs estimated in 1990, though the apparent decrease may well be due to differences in methodology, rather than a genuine deterioration in status. Nevertheless, introduced House Mice appear to be major nest predators of (and possibly competitors with) the Gough Bunting. The bunting is found mainly in the uplands of Gough, although the lowlands apparently provide more favourable habitat. This may be a consequence of heavy nest predation in the lowlands, possibly by mice, but perhaps by the Gough Moorhen. The Gough Moorhen appears to be fairly abundant, with a population estimate in 2000 of around 3,500–4,250 pairs.

Both of Gough's endemic landbirds are at risk from the threat of new alien predators (especially cats and rats) being introduced.

The occurrence of globally threatened and restricted-range species at Important Bird Areas on Tristan da Cunha

Important Bird Area	SH005	SH006	SH007	SH008
Species of Global Conservation Concern (A1)				
Spectacled Petrel (CR) <i>Procellaria conspicillata</i>		X		
Tristan Albatross (EN) <i>Diomedea dabbenena</i>		X		X
Atlantic Yellow-nosed Albatross (EN) <i>Thalassarche chlororhynchos</i>	X	X	X	X
Sooty Albatross (EN) <i>Phoebastria fusca</i>	X	X	X	X
Rockhopper Penguin (VU) <i>Eudyptes chrysocome</i>	X	X	X	X
Southern Giant-petrel (VU) <i>Macronectes giganteus</i>				X
Atlantic Petrel (VU) <i>Pterodroma incerta</i>	X			X
Inaccessible Rail (VU) (A2) <i>Atlantisia rogersi</i>		X		
Gough Moorhen (VU) (A2) <i>Gallinula comeri</i>	X			X
Gough Bunting (VU) (A2) <i>Rowettia goughensis</i>				X
Tristan Bunting (VU) (A2) <i>Nesospiza acunhae</i>		X	X	
Grosbeak Bunting (VU) (A2) <i>Nesospiza wilkinsi</i>		X	X	
Grey Petrel (NT) <i>Procellaria cinerea</i>	X			
Tristan Thrush (NT) (A2) <i>Nesocichla eremita</i>	X	X	X	

In addition to the endemic and globally threatened seabird populations mentioned above, both the Tristan da Cunha group and Gough are internationally important for their breeding populations of some 20 species. The seabird community comprises mainly *Procellariiformes* with sub-

Antarctic affinities, although the Brown Noddy, a largely tropical species, is also present. Numbers of burrow-nesting petrels are vast, but poorly documented. The great majority of the world population of Great Shearwaters is found in the Territory, with perhaps five million breeding pairs.

Conservation infrastructure and Protected Area system

The first Protection Ordinance was passed at Tristan in 1950, with several subsequent additions. Under the Tristan da Cunha Conservation Ordinance of 1976, Gough Island and its territorial waters out to 3 nautical miles was proclaimed a wildlife reserve. This was modified by the Tristan da Cunha Conservation Ordinance (Amendment) of 1997, such that Gough Island was renamed a nature reserve and the

boundary was extended to 12 nautical miles. A new Tristan da Cunha Conservation Ordinance was enacted in 2006, which declares all Rockhopper Penguin breeding colonies on Tristan as Nature Reserves. The Tristan da Cunha Fisheries Limits Ordinance of 1983, as amended in 1991, 1992 and 1997, defines the fisheries limit around Gough Island as 200 nautical miles, and makes provision for fishing

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within these limits. The objectives of this comprehensive legislation are the maintenance of fauna, flora, geological, scenic and historical features of the island. Gough Island is divided into a logistic zone (6 ha for support of the meteorological station), marine zone, scientific research zones, and the conservation zone that encompasses the vast majority of the island. The Management Plan for the Gough Island Nature Reserve took effect in 1993 and was due to be amended in 2004.

Inaccessible Island was declared a nature reserve under the Tristan da Cunha Conservation Ordinance (Amendment) of 1997, including the surrounding waters up to 12 nautical miles. Under this legislation, although Tristan islanders still retain the right to collect driftwood and guano, other access is restricted and all living resources are protected. The Inaccessible Island Nature Reserve Management Plan was published by the Government of Tristan da Cunha in 2001.

While Tristan Island and the Nightingale Island group are not protected as nature reserves, they are subject to the

Tristan da Cunha Conservation Ordinance as given above. During 2003–2006, a Darwin Initiative project will develop a 'Biodiversity Action Plan' for Tristan da Cunha and Nightingale.

In total, some 44% of the land area of the Tristan da Cunha dependency has been set aside for conservation.

International measures relevant for the conservation of sites

As a dependency of St Helena, Tristan da Cunha and Gough Island are included under the ratification by the UK of the Convention of Biological Diversity, CITES, the Ramsar Convention, the Convention on Migratory Species, the Convention on Climate Change, the Convention to Combat Desertification, and the World Heritage Convention. Gough Island was granted World Heritage status in December 1995, only the third British site to be so recognised for its biological value. In 2004, the World Heritage designation was extended to cover Inaccessible Island.

Overview of the inventory

A total of four Important Bird Areas (IBAs) have been included in this inventory (see the table below), covering the entire dependency and all its natural habitats (69 square miles/179 square km). The sites are Tristan Island (SH005), Inaccessible Island (SH006), Nightingale Island, together with Middle and Stoltenhoff Islands (SH007), and Gough Island (SH008). All include their offshore islets, stacks and

rocks, and the marine habitat, out to 3 nautical miles in the case of Tristan and the Nightingale group, in line with the Tristan da Cunha Conservation Ordinance as given above, and 12 nautical miles for Inaccessible and Gough, following the Tristan da Cunha Conservation Ordinance (Amendment) of 1997. The sizes given in the site accounts refer, however, to land areas only.

Sites of global conservation importance

IBA code	Site name	A1	A2	A4i	A4ii	A4iii
SH005	Tristan Island	X	X	X	X	X
SH006	Inaccessible Island	X	X	X	X	X
SH007	Nightingale Island (with Middle and Stoltenhoff Islands)	X	X	X	X	X
SH008	Gough Island	X	X	X	X	X

Site accounts

SH005: Tristan Island

Ref number	SH005
Admin region	Tristan da Cunha
Coordinates	37°06'S 12°18'W
Area	9,600 ha
Altitude	0–2,060 m
IBA categories (details below)	A1, A2, A4i, A4ii, A4iii
Status	Unprotected

Site description

The site comprises the whole of Tristan Island and is described in the 'General introduction' to this chapter.

Birds

See the accompanying table for details of key species. Although as many as 56 bird taxa have been recorded, there are now only 13 known species of breeding seabirds and two species of resident landbirds. The seabirds include Rockhopper Penguins of the northern sub-species *moseleyi*, Atlantic Yellow-nosed Albatrosses, Sooty Albatrosses, Atlantic Petrels, Great-winged Petrels, Soft-plumaged Petrels, Broad-billed Prions, Grey Petrels, Great Shearwaters, Sooty Shearwaters, Southern (Antarctic) Skuas, Antarctic Terns and Brown Noddies. Tristan is the only known breeding site within the group of Atlantic Petrels and of Sooty Shearwaters, while numbers of Atlantic Yellow-nosed Albatrosses are the highest for any island in the Territory. Kerguelen Petrels and Little Shearwaters may also breed; there is a remote possibility that the Critically Endangered Spectacled Petrel breeds, and this requires investigation. Great-winged Petrels, Atlantic Petrels and Grey Petrels have not been proven to breed elsewhere in the Tristan group, possibly because they are winter breeders and very few ornithologists have visited the uninhabited islands during winter. There are currently an estimated 40,000 breeding pairs of seabirds, most known from the south-eastern quadrant, which has suffered least from human disturbance. The estimated breeding density is only 500 pairs per square kilometre. The terrestrial species include the restricted-range Gough Moorhen, introduced from Gough Island (SH008) in 1956 (3,000 pairs, 1993 estimate), and the Tristan Thrush, confined to this island and numbering 80 pairs in 2004.

There are more records of non-breeding visitors and vagrants on Tristan than from the other islands of the group. This is probably due to the island's larger size and permanent human presence. Also, due to persecution, there are fewer Southern Skuas to prey upon them as they arrive. Most records are from the settlement area. Seabirds include Tristan Albatrosses, Black-browed Albatrosses, Southern Giant-petrels, Northern Giant-petrels, Southern Fulmars, Cape Petrels, White-chinned Petrels, Spectacled Petrels, Great Shearwaters, Wilson's Storm-petrels, White-faced Storm-petrels and Kelp Gulls. Shorebirds and landbirds include Great Egrets, Snowy Egrets, Cattle Egrets, Purple Gallinules, White-rumped Sandpipers and

Barn Swallows. The strong westerlies create favourable conditions for a crossing from South America, and this would explain the presence of gallinules and other non-breeding landbirds that have reached Tristan from that continent. The site requires much further field study, especially the southern side.

Other threatened/endemic wildlife

There are no endemic mammals. The only breeding native mammal is the sub-Antarctic Fur Seal *Arctocephalus tropicalis*, of which there is a small colony at Cave Point on the south side of the island. Elephant Seals *Mirounga leonina* haul out regularly on Tristan beaches and breed sporadically. *Eubalaena glacialis* (EN) occurs in offshore waters between September and November, but in very low numbers. Of 62 native terrestrial invertebrates recorded, only four are endemic, but further investigation of the invertebrate fauna is required. The plant *Atriplex plebeja* (*Chenopodiaceae*) (CR) is known only from Tristan da Cunha and Nightingale.

Conservation issues/threats

Protection of the birds of the Tristan group is provided for by the Tristan da Cunha Conservation Ordinance of 2006. Tristan itself, as the only inhabited island, has incurred the greatest effects of human activity. These include overgrazing by sheep, tree felling, fire and, in particular, predation by introduced mammals.

Before the arrival of man, the island may have supported 19 seabird species and four landbird species. The Tristan Albatross became extinct as a breeder between 1880 and 1907 due to excessive culling, and the Southern Giant-petrel probably became similarly extinct around 1870 due to disturbance and a decrease in its food supply, and is now only a non-breeding visitor to the Tristan group. The Southern Skua may soon also disappear as a breeding species due to persecution. The Tristan Bunting became extinct on Tristan between 1852 and 1873, probably due to the destruction of the low-lying tussock. The Tristan Moorhen is thought to have become extinct between 1873 and 1906.

Seabird populations are likely to have been massively reduced since human occupation, as a result primarily of cat and rat predation, the latter of which is ongoing. Many of the seabird populations on Tristan, such as the Atlantic Petrel, are now reduced to tiny remnants. The current status of seabird populations on Tristan da Cunha is very poorly understood. For the majority of species, there has

Key species

Criteria	Key species	Number of breeding pairs (if known)
A1	Rockhopper Penguin <i>Eudyptes chrysocome moseleyi</i>	3,860 (2004)
A1	Grey Petrel <i>Procellaria cinerea</i>	50–100 (1974)
A1, A2	Tristan Thrush <i>Nesocichla eremita</i>	50–80 (2004)
A1, A4i	Gough Moorhen (introduced) <i>Gallinula comeri</i>	2,000 (1993)
A1, A4ii	Atlantic Yellow-nosed Albatross <i>Thalassarche chlororhynchos</i>	16,000–30,000 (1974)
A1, A4ii	Sooty Albatross <i>Phoebastria fusca</i>	2,000–3,000 (1974)
A1, A4ii	Atlantic Petrel <i>Pterodroma incerta</i>	100–200 (1974)
A4i	Antarctic Tern <i>Sterna vittata</i>	50–70 (1974)
A4ii	Great-winged Petrel <i>Pterodroma macroptera</i>	1,000–3,000 (1974)
A4ii	Soft-plumaged Petrel <i>Pterodroma mollis</i>	100–500 (1974)
A4ii	Broad-billed Prion <i>Pachyptila vittata</i>	1,000–10,000 (1974)
A4iii	More than 10,000 pairs of seabirds occur regularly at this site	

been no assessment of numbers since the early 1970s. As a result, it is unclear whether declines are ongoing. Given the continued presence of rats, this seems plausible.

The south-eastern sector, which remains the largest refuge for the Tristan Thrush and seabirds, and is rarely visited, should remain a wilderness area. However, introduced mammals are likely to have as profound an effect here as elsewhere.

On Tristan, the Tristan Thrush has decreased markedly, due to overgrazing, introductions of alien plants, predation by cats and nest predation by rats. The current population is restricted largely to 'gulches' on the Base plateau. There are no accurate data on population trends, but a decrease is suggested by reports that the species no longer inhabits gulches near the Hillpiece (Settlement Plain), nor visits the settlement itself, even though in the last 25 years birds have been seen in *Phylica* above the new volcano. The genetic identity of the population is threatened by introgression from birds (other sub-species) brought over from

Inaccessible and Nightingale Islands.

It is unclear whether invasive alien plants or invertebrates are having a significant effect on the native biota of Tristan da Cunha, although this is certainly a significant risk.

Overall, the current status of and threats to Tristan's biota are very poorly known, and new information is needed before effective conservation management can take place.

Further reading

See full details at end of chapter.

Broekhuysen and Macnae (1949), Brooke (1979), Christophersen (1947), Cooper *et al.* (1995), Crawford (1941, 1982, 1999), Elliott (1953, 1957), Fraser *et al.* (1994), Glass *et al.* (2000), Hagen (1952), Helyer and Swales (1998), Holdgate (1958, 1965), Richardson (1984), Rowan (1951), Rowlands (1992, 1994), Ryan *et al.* (1990), Stattersfield *et al.* (1998), Swales (1996), Swales *et al.* (1993), Tristan Natural Resources Department and RSPB (2006), Wace and Holdgate (1976).

Site accounts

SH006: Inaccessible Island

Ref number	SH006
Admin region	Tristan da Cunha
Coordinates	37°18'S 12°41'W
Area	1,400 ha
Altitude	0–511 m
IBA categories (details below)	A1, A2, A4i, A4ii, A4iii
Status	Nature Reserve, World Heritage Site

Site description

The site comprises the whole of Inaccessible Island and is described in the 'General introduction' to this chapter.

Birds

See the accompanying table for details of key species. At least 33 bird taxa are known. A total of 16 species of breeding seabirds and four of native landbirds occur. The seabirds include the Rockhopper Penguin, Tristan Albatross, Atlantic Yellow-nosed Albatross, Sooty Albatross, Kerguelen Petrel, Soft-plumaged Petrel, Broad-billed Prion, Spectacled Petrel, Great Shearwater, Little Shearwater, White-faced Storm-petrel, White-bellied Storm-petrel, Common Diving-petrel, Southern Skua, Antarctic Tern and the Brown Noddy. It is possible that the three Tristan Island winter breeders, the Great-winged Petrel, Atlantic Petrel and the Grey Petrel, also breed here.

The critically endangered Spectacled Petrel is, so far as is currently known, entirely restricted to Inaccessible Island when breeding. A census in 1999 estimated 3,000–4,000 pairs; they are likely to be declining because there is very high mortality on longlines. However, a census in 2004 estimated 10,000 pairs, which indicates that the population is increasing rather than declining as previously thought. The island is one of only two breeding localities for the Tristan Albatross, although the Inaccessible population has been reduced to two or three pairs.

The terrestrial species comprise the Inaccessible Rail, Tristan Thrush, Tristan Bunting and the Grosbeak Bunting.

Non-breeding visitors include the Black-browed Albatross, Southern Giant-petrel, Northern Giant-petrel, Southern Fulmar, Cape Petrel, Antarctic Prion, Sooty Shearwater, Wilson's Storm-petrel, Purple Gallinule, White-rumped Sandpiper, Kelp Gull, Arctic Tern and the Barn Swallow.

Other threatened/endemic wildlife

Almost 20% of animal taxa recorded on Inaccessible are endemic to the island, and over half are endemic to the Tristan group. The only breeding native mammal is *Arctocephalus tropicalis*. At least 39 species of native terrestrial invertebrates are known, although there are likely to be many more. Levels of endemism are not known, but the island is particularly rich in the listroderine weevils endemic to the Tristan group as a whole. Eight

plant species are recorded only from Inaccessible (including three lichens, three mosses and one liverwort), but being from little-studied taxa, these may not be true endemics. Inaccessible does support populations of 60 of the 136 plant species that are confined to the Tristan group. Two globally threatened plant species *Cotula moseleyi* (*Compositae*) (VU), and *Agrostis trachylaena* (*Gramineae*) (EN) are recorded from the island.

Conservation issues/threats

The island, including the surrounding waters up to 12 nautical miles, was declared a Nature Reserve in 1997. The Gough Island World Heritage Site was extended to cover Inaccessible Island in 2004. Perhaps its greatest value is its virtually unspoiled state. The greatest and most immediate threats are the introduction of alien predators, most notably rats, and the accidental firing of the tussock.

A number of invasive alien plants already occur. New Zealand Flax *Phormium tenax*, which has the potential to exclude native vegetation communities, was spreading around the cliff north-west of the waterfall until control efforts in 2004 removed almost all plants. The introduced grass *Holcus lanatus* and dock *Rumex obtusifolius* are both widespread on the plateau, with the former apparently having the ability to exclude native species. Other localised alien plants may cause problems in the future. There are at least 12 alien invertebrate species. Earthworms, slugs and woodlice, all formerly absent, are now widespread and abundant, with unknown effects on the ecology of the island.

Longline fishing is a major threat to some of the *Procellariiform* seabirds on the island, especially the Spectacled Petrel, Tristan Albatross, Atlantic Yellow-nosed Albatross and the Sooty Albatross. Large-scale mortality of the former two species has been recorded off the South American continental shelf near southern Brazil. Illegal fishing in the Tristan EEZ may also contribute significant mortality.

Further reading

See full details at end of chapter.

Cooper *et al.* (1995), Fraser (1983, 1989), Fraser and Briggs (1992), Fraser *et al.* (1983, 1988, 1992, 1994), Olson (1973), Richardson (1984), Rowan (1951), Rowan *et al.* (1951), Ryan (1998), Ryan and Moloney (2000), Ryan *et al.* (1990, 1994, 2001), Swales (1996), Wace and Holdgate (1976).

Important Bird Areas in the United Kingdom Overseas Territories

Key species

Criteria	Key species	Number of breeding pairs (if known)
A1	Rockhopper Penguin <i>Eudyptes chrysocome moseleyi</i>	16,000–20,000 (2004)
A1	Tristan Albatross <i>Diomedea dabbenena</i>	0–2 (2004)
A1, A2	Inaccessible Rail <i>Nesocichla eremita</i>	4,200 individuals (1982)
A1, A2	Tristan Thrush <i>Nesocichla eremita</i>	850 pairs (1990)
A1, A2	Tristan Bunting <i>Nesospiza acunhae</i>	10,000 pairs (approx), plus 1,900 hybrid pairs (approx) with <i>N. wilkinsi</i> , 1990 estimate
A1, A2	Grosbeak Bunting <i>Nesospiza wilkinsi</i>	2,000 pairs, 1990 estimate
A1, A4ii	Spectacled Petrel <i>Procellaria conspicillata</i>	10,000 (2004)
A1, A4ii	Atlantic Yellow-nosed Albatross <i>Thalassarche chlororhynchos</i>	2,000 (2004)
A1, A4ii	Sooty Albatross <i>Phoebastria fusca</i>	500 (2004)
A4i	Antarctic Tern <i>Sterna vittata</i>	100 (1999)
A4ii	Soft-plumaged Petrel <i>Pterodroma mollis</i>	10,000–100,000 (1999)
A4ii	Broad-billed Prion <i>Pachyptila vittata</i>	50,000–500,000 (1987)
A4ii	Great Shearwater <i>Puffinus gravis</i>	2,000,000 (1999)
	Little Shearwater <i>Puffinus assimilis</i>	5,000–50,000 (1987)
	White-faced Storm-petrel <i>Pelagodroma marina</i>	5,000–50,000 (1987)
	White-bellied Storm-petrel <i>Fregetta grallaria</i>	50,000–500,000 (1999)
A4iii	More than 10,000 pairs of seabirds occur regularly at this site	

Site accounts

SH007: Nightingale Island group

Ref number	SH007
Admin region	Tristan da Cunha
Coordinates	37°24'S 12°29'W
Area	390 ha
Altitude	0–337 m
IBA categories (details below)	A1, A2, A4i, A4ii, A4iii
Status	Unprotected

Site description

The site comprises the whole of Nightingale Island as well as Middle and Stoltenhoff Islands and the offshore islets and stacks, which are as described in the 'General introduction' to this chapter.

Birds

See the accompanying table for details of key species. At least 30 bird taxa are known. A total of 13 species of breeding seabird and three of the native landbird occur. The seabirds comprise Rockhopper Penguins, Atlantic Yellow-nosed Albatrosses, Sooty Albatrosses, Soft-plumaged Petrels, Broad-billed Prions, Great Shearwaters, Little Shearwaters, White-faced Storm-petrels, White-bellied Storm-petrels, Common Diving-petrels, Southern Skuas, Antarctic Terns and Brown Noddies. The breeding population of Great Shearwaters is the largest known and at the highest density in the world, with an estimated one million pairs per square kilometre. Kerguelen Petrels may also breed. The terrestrial species include the Tristan Thrush, the Tristan Bunting and the Grosbeak Bunting.

Non-breeding visitors include Black-browed Albatrosses, Southern Giant-petrels, Northern Giant-petrels, Southern Fulmars, Cape Petrels, White-chinned Petrels, Spectacled Petrels and Kelp Gulls.

Other threatened/endemic wildlife

The only breeding native mammal is *Arctocephalus tropicalis*. At least 31 species of native terrestrial invertebrates are known. These include five endemic listroderine weevils

and seven of endemic drosophilid *Scaptomyza*. Two globally threatened plants *Cotula moseleyi* (*Compositae*) (VU) and *Agrostis trachylaena* (*Gramineae*) (EN) are recorded.

Conservation issues/threats

The site has been less affected by alien animals than the other sites, and no alien vertebrates have become established. Besides the annual harvest by Tristan islanders of the eggs of Rockhopper Penguins and the eggs and chicks of Great Shearwaters, of which the annual toll is not high, the remaining seabirds are little affected. The introduction of mammalian predators and tussock fires are the principal threats, while the recent die-back of trees, possibly caused by an introduced fungal pathogen, is being investigated but is, potentially, serious for the Grosbeak Bunting.

The presence of several alien plants, including *Phormium tenax*, gives some cause for concern, although actions to reduce this threat have commenced. The presence and impact of introduced invertebrates is not known.

As with all sites in the Territory, longline fishing, both in the EEZ and in other marine areas, is a major threat to several *Procellariiform* seabirds.

Further reading

See full details at end of chapter.

Broekhuysen (1948), Cooper *et al.* (1995), Fraser *et al.* (1994), Hydrographer of the Navy (1977), Richardson (1984), Rowan (1951, 1952), Ryan *et al.* (1990), Wace and Holdgate (1976).

Important Bird Areas in the United Kingdom Overseas Territories

Key species

Criteria	Key species	Number of breeding pairs (if known)
A1, A4ii	Rockhopper Penguin <i>Eudyptes chrysocome moseleyi</i>	125,000 (approx) (1974)
A1, A2	Tristan Thrush <i>Nesocichla eremita</i>	300–500 pairs, 1974 estimate
A1, A2	Tristan Bunting <i>Nesospiza acunhae</i>	5,000 pairs, 1990 estimate
A1, A2	Grosbeak Bunting <i>Nesospiza wilkinsi</i>	50 pairs, 1990 estimate
A1, A4ii	Atlantic Yellow-nosed Albatross <i>Thalassarche chlororhynchos</i>	4,500 (approx) (1974)
A1, A4ii	Sooty Albatross <i>Phoebastria fusca</i>	100–200 (1974)
A4i	Antarctic Tern <i>Sterna vittata</i>	100–300 (1974)
A4ii	Soft-plumaged Petrel <i>Pterodroma mollis</i>	100–1,000 (1974)
A4ii	Broad-billed Prion <i>Pachyptila vittata</i>	10,000–100,000 (1974)
A4ii	Great Shearwater <i>Puffinus gravis</i>	3,000,000 (approx) (1990)
	White-faced Storm-petrel <i>Pelagodroma marina</i>	1,000–10,000 (1974)
	White-bellied Storm-petrel <i>Fregetta grallaria</i>	100–1,000 (1974)
A4ii	Southern Skua <i>Catharacta antarctica</i>	100–500 (1974)
A4iii	More than 10,000 pairs of seabirds occur regularly at this site	

Site accounts

SH008: Gough Island

Ref number	SH008
Admin region	Tristan da Cunha
Coordinates	40°21'S 09°53'W
Area	6,500 ha
Altitude	0–910 m
IBA categories (details below)	A1, A2, A4i, A4ii, A4iii
Status	Nature Reserve, World Heritage Site

Site description

The site comprises the whole of Gough Island as well as the offshore islets and stacks, and is described in the 'General introduction' to this chapter.

Birds

See the accompanying table for details of key species. The site has been described as 'a strong contender for the title most important seabird colony in the world'. As many as 54 bird taxa are recorded, of which 20 are non-breeding seabirds and two are endemic landbirds. The breeding seabirds include Rockhopper Penguins (about 48% of the world population), Tristan Albatrosses, Atlantic Yellow-nosed Albatrosses, Sooty Albatrosses, Southern Giant-petrels, Kerguelen Petrels, Great-winged Petrels, Soft-plumaged Petrels, Atlantic Petrels, Broad-billed Prions, Grey Petrels, Great Shearwaters, Little Shearwaters, Grey-backed Storm-petrels, White-faced Storm-petrels, White-bellied Storm-petrels, Common Diving-petrels (>20,000 pairs), Southern Skuas, Antarctic Terns and Brown Noddies. The island holds well over 90% of the world population of Tristan Albatrosses and Atlantic Petrels. The terrestrial species are the Gough Moorhen and the Gough Bunting.

Non-breeding visitors include the Black-browed Albatross, Northern Giant-petrel, Southern Fulmar, Cape Petrel, Antarctic Prion, White-chinned Petrel, Sooty Shearwater, Wilson's Storm-petrel, Black-bellied Storm-petrel, Cattle Egret and the Kelp Gull.

Other threatened/endemic wildlife

Arctocephalus tropicalis (200,000 individuals and increasing) and *Mirounga leonina* (about 100 individuals) are the only two native breeding mammals. Several hundred freshwater and terrestrial invertebrates have been recorded. Among winged insects, only 28 species out of 99 recorded are thought to be native, of which at least eight are endemic, while 14 are native to the territory as a whole. Of 63 recorded vascular plant species, three grasses *Agrostis goughensis*, *Deschampsia robusta* and *D. wacei* and one dicot, *Cotula goughensis*, are endemic. A further 25 vascular plant species are endemic to the Tristan group.

Conservation issues/threats

In 1976 Gough Island was declared a Wildlife Reserve, and in 1997 it was renamed a Nature Reserve and its boundaries were extended to 12 nautical miles. It was listed as a World Heritage Site in 1995.

The only introduced vertebrate is the House Mouse *Mus musculus*. Recent evidence from other islands suggests that this species can have profound effects on invertebrate populations, plant population dynamics and nutrient cycling in sub-Antarctic ecosystems. Perhaps even more importantly, new evidence from Gough shows that the species has evolved to become a major predator of *Procellariiform* seabird chicks. Predation on the Tristan Albatross, Great Shearwater and Atlantic Petrel has been confirmed to date, but probably extends much more widely. There may also be substantial predation on and competition with the Gough Bunting. Mice are therefore thought to be having a major impact on Gough's terrestrial biota.

Introduction of other vertebrates, most notably rats, would be catastrophic.

There are numerous introduced invertebrate species, which may be having a profound effect on the island's ecology. Relatively few invasive alien plants are known, but *Sagina procumbens*, having survived an eradication attempt in 1999, has the potential to spread and cause substantial damage.

As with other islands in the group, longline fishing is a major threat to several of the *Procellariiform* seabirds.

New evidence suggests that the population of Rockhopper Penguins has declined substantially since the 1950s, in common with populations elsewhere in the range. The causes of this are unknown.

Further reading

See full details at end of chapter.

Broekhuysen and Macnae (1949), Cooper and Ryan (1994, 1995), Cuthbert *et al.* (2004), Cuthbert and Sommer (2004), Glass *et al.* (2000), Holdgate (1958), Hydrographer of the Navy (1977), Olson (1973), Richardson (1984), Ryan *et al.* (2001), Stattersfield *et al.* (1998), Swales (1965), Wace and Holdgate (1976), Watkins and Furness (1986).

Important Bird Areas in the United Kingdom Overseas Territories

Key species

Criteria	Key species	Number of breeding pairs (if known)
A1	Southern Giant-petrel <i>Macronectes giganteus</i>	222–236 (2005)
A1, A4ii	Rockhopper Penguin <i>Eudyptes chrysocome moseleyi</i>	30,000 (2004)
A1, A4ii	Tristan Albatross <i>Diomedea dabbenena</i>	1,500–2,400* (2001)
A1, A4ii	Atlantic Yellow-nosed Albatross <i>Thalassarche chlororhynchos</i>	5,250 (2001)
A1, A4ii	Sooty Albatross <i>Phoebastria fusca</i>	5,000 (2001)
A1, A4ii	Atlantic Petrel <i>Pterodroma incerta</i>	1,800,000 (2001)
A1, A2	Gough Bunting <i>Rowettia goughensis</i>	700–1,000, 2000/01 estimate
A1, A2, A4i	Gough Moorhen <i>Gallinula comeri</i>	3,500–4,250 (2001)
A4i	Antarctic Tern <i>Sterna vittata</i>	500 (2001)
A4ii	Kerguelen Petrel <i>Pterodroma brevirostris</i>	>50,000 (2001)
A4ii	Great-winged Petrel <i>Pterodroma macroptera</i>	>10,000 (2001)
A4ii	Soft-plumaged Petrel <i>Pterodroma mollis</i>	400,000 (2001)
A4ii	Broad-billed Prion <i>Pachyptila vittata</i>	1,750,000 (2001)
A4ii	Grey Petrel <i>Procellaria cinerea</i>	>10,000 (2001)
A4ii	Great Shearwater <i>Puffinus gravis</i>	980,000 (2001)
A4ii	Little Shearwater <i>Puffinus assimilis</i>	>5,000 (2001)
A4ii	Grey-backed Storm-petrel <i>Garrodia nereis</i>	1,000–10,000 (1974)
A4ii	White-faced Storm-petrel <i>Pelagodroma marina</i>	>10,000 (1994)
A4ii	White-bellied Storm-petrel <i>Fregetta grallaria</i>	>10,000 (1994)
A4ii	Southern Skua <i>Catharacta antarctica</i>	1,000 (2001)
A4iii	More than 10,000 pairs of seabirds occur regularly at this site	

* Represents number of pairs breeding each year in this biennially breeding species.

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