

16: The Tristan da Cunha Islands



Introduction

The Tristan da Cunha Islands consist of four islands. Three are grouped together, namely Tristan da Cunha (9,600 ha), Inaccessible (1,300 ha) and Nightingale (400 ha, including offshore islets Middle and Stoltenhoff), which lie in the South Atlantic about 2,800 km from South Africa and some 3,200 km from the nearest point of South America. The fourth, Gough Island (6,500 ha), lies about 350 km south-south-east of Tristan da Cunha. The total land area of the islands is 178 km². The resident population of the Tristan da Cunha Islands is around 300, all resident on Tristan da Cunha, plus six non-permanent residents on Gough Island. The inshore lobster fishing concession provides the main source of revenue. Tristan da Cunha is a UK Overseas Territory and constitutionally it is also a dependency of St Helena. St Helena, Tristan da Cunha and Ascension together form a single group of associated territories referred to as St Helena and its Dependencies.

International obligations relevant to nature conservation

- Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention)
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention)
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)
- Convention on Biological Diversity (CBD)
- International Convention on the Regulation of Whaling

Implementation

World Heritage: Gough Island became a World Heritage Site in December 1995. A comprehensive management plan (Cooper & Ryan 1994) for Gough Island, prepared on behalf of the Tristan Government and funded by the Foreign and Commonwealth Office and the World Wide Fund for Nature came into effect in October 1993.

Protected areas

- **The Tristan da Cunha Conservation Ordinance 1976 (as amended):** This Ordinance applies to all the islands and islets in the group and the territorial waters. It makes provision for the designation of protected areas, as well as placing general restrictions on certain activities throughout the islands. Gough Island and Inaccessible Island have been listed by the Tristan da Cunha Council as Wildlife Reserves. In total some 44% of the land area of the Tristan da Cunha Islands is considered protected.

Designations under the Ordinance include:

Wildlife Reserve: activities prohibited include killing, capture, or molestation of native birds and mammals; interference with native vegetation; introduction of non-native fauna and flora; construction of buildings, roads, and structures without a permit.

Sanctuary: activities prohibited include wilful killing, capture or molestation of any native bird or native mammal.

One sanctuary, a rockhopper penguin *Eudyptes chrysocome* colony at Jews Point, has so far been created on Tristan da Cunha Island.

- **The Tristan da Cunha Fisheries Limits Ordinance of 1968 as amended by Ordinance No.3 of 1977:** this Ordinance specifically protects an area of 200 nautical miles around the Tristan Islands (Ryan & Cooper 1991). Fishing within this area is allowed only by permit.

Habitats of major significance

The volcanic island of Tristan da Cunha consists of a conical central peak rising to 2060 m above sea level. A shallow crater lake occurs at the summit. The island has a discontinuous ring of lowlands, the most important of which are Settlement Plain in the north-west, Sandy Point at the east, and Stony Hill and Cave Point in the south. The coastline has steep cliffs fringed by narrow boulder beaches and rocky headlands.

The native vegetation of Tristan is zoned altitudinally and topographically into five vegetation types. The lower areas were originally covered by tussock grass *Spartina arundinacea*, or thickets of island tree *Phyllica arborea* growing amongst a mass of ferns. Most of this lowland vegetation has been cleared by livestock grazing. Relatively undisturbed fern bush remains on the Base above Sandy Point, in the southern half of the island and in most of the gulches (Wace & Holdgate 1976). Between 600 and 750 m, the dwarf tree fern *Blechnum palmiforme* is dominant and, from 750–900 m, the tree ferns are replaced by low herbaceous vegetation which has been modified by grazing. Above this zone extensive mats of the crowberry *Empetrum rubrum* and the moss *Rhacomitrium lanuginosum* occur. Above 1,500 m the vegetation becomes very sparse.

Nightingale has two hill masses, the highest point in the east reaching about 400 m. The vegetation of Nightingale Island consists primarily of tussock grass *Spartina spp.*, with small groves of island tree *Phyllica arborea* in some of the inland gullies. There are patches of swampy vegetation and open water in the centre of the island. The vegetation has been little modified. Middle and Stoltenhoff Islands have similar tussock grass vegetation.

Inaccessible Island is thought to represent a fragment of a massive volcanic cone whose summit lay to the west of the present island. The highest point of the island rises to about 600 m above the western cliffs. Vegetation consists mainly of tussock grass on the coast and up to the steep sea

cliffs to the edge of the plateau (200–500 m). Fern bush with island tree thickets covers most of the wet peaty plateau and there are a few areas of crowberry *Empetrum* and mossy deergrass *Scirpus sp.* heaths at the highest altitudes to the west of the plateau (Roux *et al.* 1992).

Gough Island is the eroded summit of a Tertiary volcanic mass separated from the volcanic formations of the Tristan group. The island is mountainous, with steep cliffs forming much of the coastline and an undulating plateau rising to 910 m above sea level. The eastern side of the island is dissected by a series of deep, steep-sided valleys known as glens, which are separated by narrow, serrated ridges. The western side of the island consists of rounded slopes, extending from the central plateau to western sea cliffs. The southern part of the island has the only land below 200 m. Boulder beaches are found beneath the cliffs, and there are numerous offshore islets, stacks and rocks. The largest stacks support vascular plants and breeding birds.

Vegetation on Gough exhibits marked changes with altitude in relation to climatic differences (Wace 1961). Tussock grassland, dominated by *Spartina arundinacea* and tussock grass *Parodiocloa flabellata*, is restricted to areas where salt spray is regular, and can be found on offshore stacks, sea cliffs and adjacent slopes. Tussock grassland extends 300 m up seaward facing slopes on the exposed western side of the island, and to approximately 100 m on the more sheltered eastern side. Extending above the tussock grassland to approximately 500 m is fern bush. Fern bush is dominated by bat's wing fern *Histiopteris incisa*, characterised by the hard fern *Blechnum palmiforme*, and is more extensive on the eastern side of the island and in southern downland areas. This vegetation type reaches heights of approximately 1 m, occasionally interrupted by the island tree. From the upper limits of fern bush communities, wet heath becomes the dominant vegetation type, up to 800 m altitude. This is a diverse vegetation type, characterised by fern species, sedges, grasses, angiosperms and mosses. Wet heath is dominated by *B. palmiforme*, *Empetrum rubrum*, grasses and sedges.

Above 600 m, peat bogs are widespread. These sodden bogs reach depths of up to 5 m in deep valleys and are dominated by *Sphagnum mosses*. Fuegian arrow-grass *Tetroncium magellanicum* and *Scirpus spp.* are the only abundant vascular plants found in bogs, although bog margins show a wider diversity, including various grasses. From 600 m, feldmark and montane rock communities are found. These consist of an assemblage of cushion-forming or crevice plants, found on exposed areas such as ridges.

In the report on Ramsar implementation in the UK Dependent Territories, seven wetland sites which may be of international importance are identified (Hepburn *et al.* 1992). These are:

Sphagnum bogs, Gough Island
 Skua Bog, Inaccessible Island
 Ringeye Valley, Inaccessible Island
 The Ponds, Nightingale Island
 Soggy Plain, Tristan da Cunha
 The Ponds up the East'Ard, Tristan da Cunha
 Jenny's Watron, Tristan da Cunha

Species of major significance

The components of the flora and fauna of the islands of the Tristan da Cunha group are essentially similar to one another although some sub-Antarctic plants occur on Gough Island. The islands have significant numbers of endemic species and are particularly noteworthy for their endemic plants and landbirds.

Biodiversity assessment

A bibliography of scientific research at the Tristan da Cunha islands is provided by Watkins *et al.* (1984).

A Norwegian scientific expedition spent six months, during 1937–1938 investigating the geology and biology of the Tristan da Cunha Islands. The first detailed biological research on Gough Island was undertaken by members of the 1955 Gough Island Scientific Survey. Following the Royal Society expedition in 1962 and conservation

survey in 1968, research at Gough has been mainly by staff of the Percy FitzPatrick Institute of African Ornithology, University of Cape Town, South Africa, as part of the South African National Antarctic Research Programme (SANARP). Thirteen expeditions to Gough have been undertaken by the FitzPatrick Institute between 1979 and 1990. Most of the work on the island has been ornithological, but recently research activities have broadened to cover other aspects of the biota with special attention paid to conservation aspects (Cooper & Ryan 1992b).

Although Inaccessible is the second largest island of the Tristan group, it remained, until recently, the least well known. The Denstone Expedition to Inaccessible Island took place from October 1982 to February 1983. The island was previously largely unexplored and unmapped from ashore with only six short visits by scientists having taken place (Fraser *et al.* 1983). Following the Denstone Expedition, research, mainly by scientists from the FitzPatrick Institute, has made been made possible by the Expedition's provision of a field hut. The landbirds, seabirds, vegetation and invertebrates have all been studied in the past ten years. It is now considered that Nightingale Island needs a similar level of study.

Plants

The native flora of Tristan comprises about 40 species of flowering plant and 30 pteridophytes, with less on Nightingale and Inaccessible (Clark & Dingwall, 1985; Wace & Holdgate, 1976; R.Headland, *pers. comm.*, 1992; Roux *et al.* 1992). A number of endemic plants are considered to be rare but few, if any, of the taxa are immediately threatened (Davis *et al.* 1986).

The plant species endemic to Tristan da Cunha are:

- Acaena stangii* (Rosaceae): endemic to Gough, Inaccessible, Tristan da Cunha
- Agrostis carmichaelii*: a bent-grass restricted to Inaccessible and Tristan da Cunha

- Agrostis holdgateana* (I): a bent-grass restricted to Inaccessible and Tristan da Cunha
- Agrostis magellanica ssp. laeviuscula*: an endemic subspecies of bent-grass.
- Agrostis media*: a bent-grass found on Gough, Inaccessible and Tristan da Cunha
- Agrostis wacei* (I): a bent-grass restricted to Inaccessible and Tristan da Cunha
- Asplenium alvarezense*: a fern found on Gough, Inaccessible and Tristan da Cunha
- Atriplex plebeja*: a rare saltbush found on Nightingale and Tristan da Cunha
- Calamagrostis deschampsiiiformis* (I): a small-reed found on Gough, Inaccessible and Tristan da Cunha
- Carex thourarsii var. recurvata*: a sedge found on Gough, Inaccessible and Tristan da Cunha
- Deschampsia christophersenii* (I): a hair-grass species restricted to Inaccessible and Tristan da Cunha
- Deschampsia mejlandii* (I): a hair-grass species restricted to Inaccessible and Tristan da Cunha
- Deschampsia ribusta* (I): a hair-grass restricted to Tristan da Cunha.
- Elaphoglossum campylolepium*: a fern restricted to Inaccessible and Tristan da Cunha
- Elaphoglossum obtusatum*: a fern restricted to Inaccessible and Tristan da Cunha
- Glyceria insularis* (I): a sweet-grass species found on Gough, Inaccessible and Tristan da Cunha
- Lycopodium diaphanum*: a clubmoss found on Gough, Inaccessible and Tristan da Cunha
- Nertera assurgens* (R): a rare bead plant restricted to Inaccessible and Tristan da Cunha
- Nertera holmboei* (R): a rare bead plant restricted to Inaccessible and Nightingale.
- Polypogon mollis* (I): a grass species restricted to Inaccessible and Tristan da Cunha

Forty species of algae have been recorded (Chamberlain *et al.* 1985), of which two species are endemic to Gough.

Invertebrates

Terrestrial invertebrates have been poorly studied, although c. 100 free-living species have been recorded. An additional 24 parasitic

invertebrate species have also been recorded from vertebrate hosts on the island. At least eight free-living invertebrate species are endemic to Gough, and an additional 14 species are restricted to Gough and the Tristan group of isles (Holdgate 1965). Only eight species of freshwater invertebrate are known (Holdgate 1965).

Most littoral species found at Gough are widespread on other Southern Ocean islands, and 79 invertebrate species have been recorded (Chamberlain *et al.* 1985). The absence of limpets and bivalves in the littoral and subtidal zones is noted. Sea urchins *Arbacia dufresnii* are abundant in the marine area, as are whelks *Argobuccinum* sp., chitons, starfishes, sea anemones, bryozoans, barnacles, slipper limpets, nudibranchs and sponges. Twenty coastal fish species have been recorded (Andrew *et al.* 1994) and other important marine species include Tristan rock lobster *Jasus tristani* (from close inshore to 400 m depth around Gough), and octopus. Both are economically exploited by fishermen under close regulation.

Birds

The avifauna of Tristan da Cunha are relatively well studied. The endemic landbirds are all considered to be rare with the exception of the Tristan thrush *Nesocichla eremita*, and are included in the *Threatened birds of Africa and related islands* (Collar & Stuart 1985), and *Birds to watch 2*: (Collar *et al.* 1994). The Tristan Islands and Gough are considered as two separate Endemic Bird Areas (EBA) by BirdLife International (Stattersfield *et al.* 1998).

The endemic land birds are:

Inaccessible rail *Atlantisia rogersi* (VU): the smallest flightless bird in the world, it is confined to Inaccessible. An estimated 8,400 birds live at high density (probably at carrying capacity) amidst the dense grassy vegetation of the island. There is a permanent risk that the island will be colonised by mammalian predators, particularly rats (Collar & Stuart 1985; Fraser 1989; Fraser *et al.* 1992).

Gough moorhen *Gallinula comeri* (VU): is found in tussock grassland and fern bush vegetation areas, and estimates of population size vary from 300–500 pairs (Richardson 1984) to 2,000–3,000 pairs (Watkins & Furness 1986).

Tristan thrush *Nesocichla eremita* (LRnt): has different subspecies recognised on the three main islands of the Tristan group. Habitats of the species are boulder beaches, tussock grassland, fern-bush and tree thickets (Fraser *et al.* 1994).

Gough bunting (or Gough finch) *Rowettia goughensis* (VU): is endemic to Gough Island where its 200 pairs are considered to be permanently at risk from the introduction of mammalian predators (Collar & Stuart 1985). The habitats of this species are wet heath, mires and feldmark.

Tristan bunting *Nesospiza acunhae* (VU): occurs widely on Inaccessible and Nightingale and also on Middle and Stoltenhoff islands. Populations, although totalling several thousands, remain at risk from the introduction of mammalian predators. Formerly, the Tristan bunting also occurred on Tristan itself (Collar & Stuart 1985). Analysis of work done in 1983 indicates some 5,000 birds (nominat *acunhae*) on Inaccessible, divided into two (upland and lowland) forms (Fraser & Briggs 1992; Ryan *et al.* 1994). Numbers of the race *questi* on Nightingale are unknown, but assumed to be smaller (see Collar & Stuart 1985).

Grosbeak bunting *Nesospiza wilkinsi* (VU) is restricted to *Phylica* woodland on Inaccessible and Nightingale Islands. The total population is in the low hundreds. The main threat is considered to be the introduction of mammalian predators (also seed predators) and the loss of its habitat (Collar & Stuart 1985). Analysis of work done in 1983 indicates some 500 birds (race *dunnei*) on Inaccessible, fewer (nominat *wilkinsi*) on Nightingale (Fraser & Briggs 1992).

Gough Island has been described as a strong

contender for the title “most important seabird colony in the world” (Bourne 1981), with 54 bird species recorded in total, of which 22 species breed on the island and 20 species are seabirds. About 48% of the world’s population of northern rockhopper penguin *Eudyptes chrysocome moseleyi* breed at Gough. Atlantic petrel *Pterodroma incerta* (VU) is endemic to Gough and the Tristan group of islands. Gough is also a major breeding site of the great shearwater *Puffinus gravis*, with up to three million pairs breeding on the island. The main southern ocean breeding sites of little shearwater *Puffinus assimilis* are Tristan da Cunha and Gough Island, with breeding pairs numbering several million (Richardson 1984). Tristan albatross *Diomedea dabbenena* is endemic and virtually restricted to Gough, with up to 2,000 breeding pairs (J.Cooper *in litt.* 1993). This represents about 4,000 mature individuals and 6,500 birds in total. The Atlantic yellow-nosed albatross *Thalassarche melanophrys* is also restricted to the islands, occurring in the main archipelago and on Gough Island, with an estimated global population of 36,800 pairs. The majority of the world population (15,600 pairs) of sooty albatross *Phoebastria fusca* (LRnt) occurs on Tristan and Gough Island. The only survivors in the Tristan group of the southern giant petrel *Macronectes giganteus* also breed on Gough, with a few hundred pairs recorded (J. Cooper *in litt.* 1998).

Tristan da Cunha Island has 15 breeding bird species. Inaccessible has 20 breeding birds including the Inaccessible rail and endemic subspecies of three other landbirds. It is the only breeding site for the spectacled petrel *Procellaria conspicillata* and an important site for the great shearwater. A few pairs of Tristan albatross *Diomedea dabbeana* breed on Inaccessible, the northernmost breeding station for this taxon. Nightingale has 16 breeding birds, including endemic subspecies of three landbirds. Nightingale has the largest breeding population of great shearwaters and significant numbers of northern rockhopper penguins.

Marine mammals

Two species of seal are native. They have been exploited in the past but are now protected, and are increasing in numbers once more (Wace & Holdgate 1976; Clark & Dingwall 1985; Bester 1990). They are:

Subantarctic fur seal *Arctocephalus tropicalis*. The Tristan de Cunha population, one of three distinct groups, is estimated at 200,000 accounting for approximately 65% of the world population (Reijnders *et al.* 1993). On Gough, breeding occurs at beaches all round the island. Subantarctic fur seals also breed on Nightingale and Inaccessible.

Southern elephant seal *Mirounga leonina*. within the Antarctic Treaty area (south of 60°S) this species is protected by the Convention for the Conservation of Antarctic Seals. The small population of the Tristan da Cunha Islands is one of five possible distinct groups. About 100 individuals of this species breed on Gough’s sheltered east coast (Bester 1990).

The southern right whale *Eubalaena glacialis australis* (LRcd) and dusky dolphin *Lagenorhynchus obscurus* (DD) occur offshore.

Species protection

• The Tristan da Cunha Conservation

Ordinance 1976: this Ordinance gives protection to native plants on Inaccessible and Gough. Such plants cannot be picked, cut down, uprooted or destroyed by non-residents of Tristan, without a permit. The Ordinance protects listed birds and mammals on the main island of Tristan da Cunha, and specifies under a second schedule those species which can be taken. On the other islands, all native birds and mammals are protected from capture, molestation and killing by non-residents of Tristan, except under permit. The taking of seals for commercial purposes by the concessionaire is also controlled under the Ordinance.

Amendments in 1984 and 1986 have modified the list of protected bird species under the Ordinance. Breeding birds on Tristan that remain unprotected are the sub-Antarctic skua *Catharacta antarctica*, the introduced Gough moorhen *Gallinula comeri*, the great shearwater and the sooty shearwater *Puffinus griseus*. The two shearwaters have since been confirmed as breeding on Tristan and may be included by amendment to the Ordinance. Species remaining legally unprotected on Nightingale are rockhopper penguins and great shearwaters, which are permitted to be taken by Tristan islanders under the terms of the Ordinance (Cooper & Ryan 1992a). Exploitation of all wildlife on Gough is forbidden under the Ordinance.

- **Tristan da Cunha Fisheries Limits Ordinance 1968 as amended:** defines the fishery limits of Tristan da Cunha and makes provision for the regulation of fishing within those limits.

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Mark Tasker, JNCC.

Key names and addresses

South Atlantic and Antarctic Department, Foreign and Commonwealth Office, King Charles St., London SW1A 2AH. Tel: 0171 270 3000.

The Administrator, Edinburgh, Tristan da Cunha. Tel: 874 144 5434; fax: 874 144 5413.

Dr Peter Ryan (Secretary of the Gough Island Wildlife Reserve Advisory Committee) Percy FitzPatrick Institute of African Ornithology, University of Cape Town, Rondebosch 7701, South Africa. Tel: 2721 650 2966; fax: 2721 650 3295; e-mail pryan@bottzoo.uct.ac.za.

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