

# Information Sheet on Ramsar Wetlands (RIS) – 2006-2008 version

Available for download from [http://www.ramsar.org/ris/key\\_ris\\_index.htm](http://www.ramsar.org/ris/key_ris_index.htm).

*Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8<sup>th</sup> Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9<sup>th</sup> Conference of the Contracting Parties (2005).*

## Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2<sup>nd</sup> edition, as amended by COP9 Resolution IX.1 Annex B). A 3<sup>rd</sup> edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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### 1. Name and address of the compiler of this form:

John Cooper  
Honorary Tristan Conservation Officer  
Conservation & Restoration Initiatives  
9 Weltevreden Avenue  
Rondebosch 7700  
South Africa

Tel +27-21-685-1357; Fax +27-21-650-3434  
[John.Cooper@uct.ac.za](mailto:John.Cooper@uct.ac.za)

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Designation date

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Site Reference Number

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### 2. Date this sheet was completed/updated:

1 July 2008

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### 3. Country:

United Kingdom (Overseas Territory of Tristan da Cunha)

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### 4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

**Gough Island**

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**5. Designation of new Ramsar site or update of existing site:**

This RIS is for (tick one box only):

- a) Designation of a new Ramsar site ; or  
b) Updated information on an existing Ramsar site

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**6. For RIS updates only, changes to the site since its designation or earlier update:**

**a) Site boundary and area**

The Ramsar site boundary and site area are unchanged:

or

**If the site boundary has changed:**

- i) the boundary has been delineated more accurately ; or  
ii) the boundary has been extended ; or  
iii) the boundary has been restricted\*\*

and/or

**If the site area has changed:**

- i) the area has been measured more accurately ; or  
ii) the area has been extended ; or  
iii) the area has been reduced\*\*

**\*\* Important note:** If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

**b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:**

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**7. Map of site:**

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

**a) A map of the site, with clearly delineated boundaries, is included as:**

- i) a hard copy (required for inclusion of site in the Ramsar List): ;  
ii) an electronic format (e.g. a JPEG or ArcView image) ; X  
iii) a GIS file providing geo-referenced site boundary vectors and attribute tables .

**b) Describe briefly the type of boundary delineation applied:**

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The boundary of the site is set at 12 nautical miles offshore (extent of territorial waters), which coincides with the boundaries of both the Gough Island Nature Reserve and the relevant sector of the Gough and Inaccessible Islands World Heritage Site.

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**8. Geographical coordinates** (latitude/longitude, in degrees and minutes):

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

40° 19'S, 09° 56'W

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**9. General location:**

Include in which part of the country and which large administrative region(s) the site lies and the location of the nearest large town.

Gough Island lies *c.* 350 km south-south-east from the main island of Tristan da Cunha in the mid South Atlantic Ocean, *c.* 4000 km from South America (Mar del Plata, Argentina) and *c.* 2300 km from Africa (Cape Town, South Africa). It forms part of the United Kingdom Overseas Territory of Tristan da Cunha (resident population 264 on 3 March 2009), which itself is part of the United Kingdom Overseas Territory of St Helena.

Gough Island is not permanently inhabited but it supports a meteorological station run by South Africa under lease, staffed by six persons who are relieved annually.

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**10. Elevation:** (in metres: average and/or maximum & minimum)

Minimum: 0 (sea level)

Maximum: 910 m (Edinburgh Peak)

Average: No information available

**11. Area:** (in hectares)

Terrestrial area: 6111 ha

Marine area 223 700 ha

Total area 229 811 ha

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**12. General overview of the site:**

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Gough Island is one of the largest relatively unmodified cool temperate island ecosystems in the southern hemisphere. The island has been described as “a strong contender for the title of the most important seabird colony in the world”. A total of 22 species of birds (several endemic to the island group) and two species of seals breed, some in very large numbers. The House Mouse *Mus musculus* is the only introduced mammal, although there are a number of introduced invertebrates and plants. Several bird species that breed on Gough are considered threatened by the World Conservation Union.

The marine component is relatively little known but supports an intertidal and subtidal zone dominated by kelp beds, a commercially-exploited population of Tristan Rock Lobster *Jasus tristani*, demersal and pelagic fish, and from time to time at least nine species of cetaceans.

Important wetland types include Non-forested peatlands (that cover much of the island), Permanent freshwater pools, Permanent streams, Marine subtidal aquatic beds and Rocky marine shores.

**13. Ramsar Criteria:**

Tick the box under each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1 • 2 • 3 • 4 • 5 • 6 • 7 8 • 9

**14. Justification for the application of each Criterion listed in 13 above:**

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

**Criterion 1**

Gough Island is one of the largest relatively unmodified cool temperate island ecosystems in the southern hemisphere; it falls biogeographically within the southern cool temperate zone, although aspects of its upland habitats and several animal (e.g. penguins, albatrosses and seals) and plant species show strong affinities to the sub-Antarctic region.

Inland Wetlands include Permanent and Intermittent streams (including many small waterfalls) [M]; Permanent freshwater pools [Tp]; and Non-forested peatlands [U].

Marine/Coastal Wetlands include Rocky marine shores, including a number of rocky offshore islets and sea cliffs [D], Marine subtidal aquatic beds, characterized by three species of kelp [B], and Permanent shallow marine waters [A].

Examples of each of the above wetland types are given below. Note that names in parentheses used for selected wetlands are descriptive and/or are in common usage on Gough Island, and are not yet officially adopted.

*Permanent streams [Wetland type M]*

The “Gony” and The Glen streams draining Gonydale and Tarn Moss, respectively.

*Permanent freshwater pools [Wetland type Tp]*

Numerous small pools in the “Lake District” and on Tarn Moss in the centre of the island near Edinburgh Peak.

*Non-forested peatlands [Wetland Type U]*

Albatross Plain, Tarn Moss and Mildred Mire in the island's uplands.

*Rocky marine shores [Wetland type D]*

The narrow boulder beaches of Long Beach and Capsize Sands backed by high cliffs on the island's south-east coast and the offshore islets of Penguin Island, Church Rock, Lot's Wife, Cone Island and Saddle Island.

*Marine subtidal aquatic beds [Wetland type B]*

The east-coast kelp beds stretching from North East Point to South East Point, including those in Hawkins, Milford and Quest Bays and around Penguin Island.

*Permanent shallow marine waters [Wetland Type A]*

Representative bays around the island's coastline, including Sea Elephant and Battle Bays on the exposed western side of the island and Hawkins, Milford, Quest and Transvaal Bays on the more sheltered east coast.

## Criterion 2

The following IUCN-categorized globally threatened and near-threatened species (2008 listings and taxonomic treatments) breed on Gough Island or occur regularly within its territorial waters.

Southern Right Whale *Eubalaena glacialis* Endangered  
Northern Rockhopper Penguin *Eudyptes moseleyi* Endangered  
\*Tristan Albatross *Diomedea dabbenena* Critically Endangered  
\*Atlantic Yellow-nosed Albatross *Thalassarche chlororhynchos* Endangered  
\*Sooty Albatross *Phoebastria fusca* Endangered  
\*Southern Giant Petrel *Macronectes giganteus* Near Threatened  
\*Grey Petrel *Procellaria cinerea* Near Threatened  
Atlantic Petrel *Pterodroma incerta* Endangered  
Gough Moorhen *Gallinula comeri* Vulnerable  
Gough Bunting *Rowettia goughensis* Critically Endangered

The Southern Right Whale is listed on CITES Appendix I and has been protected since 1935 by the International Whaling Commission. Five of the above avian species (asterisked) are listed within the Agreement on the Conservation of Albatrosses and Petrels (ACAP), to which the United Kingdom is a Party, its ratification having been extended to include the Overseas Territory of Tristan da Cunha. Several other species of IUCN-threatened and ACAP-listed procellariiform seabirds (albatrosses and petrels) have been recorded visiting Gough territorial waters as non-breeders.

Of the significant wetland types identified as occurring on Gough Island, Non-forested peatlands and Rocky marine shores (including sea cliffs and mouse-free offshore vegetated islets) are critical to the survival of Tristan Albatrosses and Gough Buntings, and Northern Rockhopper Penguins, Sooty Albatrosses and Gough Buntings, respectively. All these species breed wholly or primarily within the designated wetland types.

All the above threatened species are fully protected by the Conservation of Native Organisms and Natural Habitats (Tristan da Cunha) Ordinance, 2006. No domestic category-of-threat classification currently exists under Tristan da Cunha legislation.

### **Criterion 3**

Gough Island is one of the most pristine oceanic islands in the southern hemisphere. It currently supports only one introduced mammal, the House Mouse *Mus musculus*. Away from the South African-run meteorological station in Transvaal Bay there is a near-complete absence of permanent man-made objects, such as fences, field huts or sign posts, giving the island a complete wilderness nature. Exceptions are the remains of the old base at The Glen and four crosses marking the sites of persons who died of exposure or by drowning. Although introduced plants and invertebrates do occur, they have not visibly altered the natural appearance of the island's wetlands.

The following threatened avian species are endemic: (or are practically endemic, with only relict populations; asterisked) remaining on the other Tristan islands:

\*Tristan Albatross

\*Atlantic Petrel

Gough Moorhen (an introduced population exists on the main island of Tristan da Cunha)  
Gough Bunting.

Atlantic Yellow-nosed Albatrosses are endemic to the Tristan da Cunha group. Numbers of plants and invertebrates are either endemic to the island, or to the island group. Preliminary taxonomic work on the littoral flora and fauna (Chamberlain *et al.* 1985) suggest several species are endemic to Gough, and to the Gough/Tristan group. There is little information from the subtidal; however, there are significant differences between Gough and the northern Tristan islands because of the colder sea temperatures at Gough.

Gough Island supports in unaltered conditions all the natural terrestrial vegetation types found within the Tristan da Cunha group, including upland peatlands (bogs), wet heath and feldmark (alpine habitat), and lowland fern bush and tussock grassland, as well as intertidal and subtidal habitats, including kelp beds.

### **Criterion 4**

Gough Island provides annual refuge and breeding habitats to many species (22 birds, two seals) that range and forage across the South Atlantic and farther afield, both during and outside of their breeding seasons. For example, Tristan and Atlantic Yellow-nosed Albatrosses regularly visit the South American and southern African coasts. The former species has been recorded in Australian waters. The Antarctic Tern *Sterna vittata* over-winters in South Africa.

### **Criterion 5**

Gough Island regularly supports more than 20 000 waterbirds. Recent (>2000) population estimates (breeding pairs) exist for the following species:

Northern Rockhopper Penguin 65 000  
Tristan Albatross 2500 (biennial breeder)  
Atlantic Yellow-nosed Albatross 5300  
Sooty Albatross 5000 (biennial breeder)  
Southern Giant Petrel 250  
Atlantic Petrel 1 800 000  
Great Shearwater *Puffinus gravis* 980 000  
Soft-plumaged Petrel *Pterodroma mollis* 400 000  
Broad-billed Prion *Pachyptila vittata* 1 750 000

Seven other seabird species are thought to have populations that exceed 10 000 annually breeding pairs each.

Large numbers of seabirds regularly occur within Gough territorial waters (including of species that do not breed on Gough). Notably, large rafts of Great Shearwaters *Puffinus gravis* and flocks of Broad-billed prions *Pachyptila vittata* are regularly seen from the Gough shore in summer months, in numbers that at times far exceed 20 000 birds of each species.

### **Criterion 6**

Gough Island supports more than 1% of the global population of many of the waterbird species and subspecies that breed on the island. Notable examples for which sufficient data exist include:

- \*Northern Rockhopper Penguin: *c.* 28%
- \*Tristan Albatross: >99%
- \*Atlantic Yellow-nosed Albatross: *c.* 17%
- \*Sooty Albatross: *c.* 32%
- \*Atlantic Petrel: >99%
- Great Shearwater: *c.* 17%
- Tristan Skua *Catharacta antarctica hamiltoni* *c.* 83%
- \*Gough Moorhen 100% (non-introduced population only).

Note: six species (asterisked) of the above seven taxa are globally threatened (see Criterion 2 above).

Sources: Cuthbert 2004, Cuthbert & Sommer 2004, Ryan 2007, Wanless 2007, Cooper 2008, Cuthbert *et al.* in press.

### **Criterion 7**

The territorial waters of Gough support significant populations of pelagic and demersal fish, with over 50 species recorded from the Tristan Group. Although little is known about their population sizes, it is considered, due to the absence of a commercial finfish fishery and near-total lack of exploitation historically, that their stocks around Gough remain in a pristine

condition. The Klipfish *Bovichtus diacanthus* is endemic to the Tristan group. Additionally, the island's waters support a substantial part of the global population of the Tristan Rock Lobster, which is endemic to the Tristan da Cunha islands and Vema Seamount.

Andrew *et al.* (1995) consider that local populations of the Broad-nosed Seven-gilled Shark or Rock Shark *Notorynchus cepedianus*, a key predator in the marine environment, are probably self-sustaining.

### **Criterion 8**

Gough Island's territorial waters support the inshore populations of a number of fish species and of the Tristan Rock Lobster. Examples of inshore-breeding fish species include the Klipfish, Tristan Wrasse *Nelabrichthys ornatus*, Five-finger *Acantholatris monodactylus* and False Jacopever *Sebastes capensis*.

### **Criterion 9**

Gough Island is considered to support as much as 50% of the global breeding population (and is the largest island population) of the Subantarctic Fur Seal *Arctocephalus tropicalis*.

The island's Tristan Rock Lobster population also represents far more than 1% of the species' global population, as shown by island-specific quotas and catches by the commercial fishery. The waters around Gough undoubtedly contain more than 1% of the populations of shallow-water invertebrate species endemic to the Tristan Islands, for instance the urchin *Arbacia crassispina*. More taxonomic work is required on marine invertebrate groups.

Sources: Bester 2006; Ryan 2007, Tristan Agriculture & Natural Resources Department *in litt*.

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**15. Biogeography** (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

**a) biogeographic region:**

Gough Island, as part of the UK Overseas Territory of Tristan da Cunha, falls within the Cool Temperate subdivision of the Biogeographic Province of Insulantarctica.

**b) biogeographic regionalisation scheme** (include reference citation):

Insulantarctica forms one of the four provinces of the Antarctic Realm (Udvardy 1975). In this scheme, Insulantarctica is defined as containing both southern temperate and sub-Antarctic islands. Following Clark & Dingwall (1985), Insulantarctica is further divided into three subdivisions: "Cool temperate" (which contains Gough Island), "Subantarctic" and "Maritime Antarctic". Cool-temperate islands are identified by having woody plants, including trees, annual mean temperatures generally higher than 5°C, and by lying between the Subtropical and Subantarctic Fronts (Clark & Dingwall 1985).

- Clark, M.R. & Dingwall, P.R. 1985. *Conservation of Islands in the Southern Ocean*. Gland & Cambridge: International Union for the Conservation of Nature and Natural Resources. 193 pp.
- Udvardy, M.D.F. 1975. A classification of the biogeographical provinces of the world. *IUCN Occasional Paper* No. 18. 48 pp.
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#### **16. Physical features of the site:**

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

Gough Island is a mountainous oceanic island of 61 km<sup>2</sup>, approximately 13 x 5 km, with steep coastal cliffs around most of its coastline. The inland plateau rises to 910 m above sea level. The western side of the island especially is dissected by deep, steep-sided valleys known as glens, separated by narrow ridges. Spectacular erosion-resistant plugs and dykes are a feature of the interior. The coastal cliffs have narrow boulder beaches at their bases. There are also bedrock shores, and there is a temporary sand beach in Milford Bay. A number of offshore islets situated in shallow bays are surrounded by sub-tidal kelp beds, indicating a seabed at least partly of bedrock or boulders.

Gough is a volcanic island, with an estimated age of 3-5 million years. Four main periods of volcanic activity have been identified, leading to a complex geology and geomorphology, formed by both fluvial and marine erosion. The last volcanic activity occurred 0.2 to 0.1 million years ago. The erosion of the early basalt flows and later extrusive trachyte plugs have led to such features as Edinburgh Peak, Hag's Tooth and Pummel Crag. Soils are poorly developed, with a deep peat mantle covering most of the island. Peat slips are frequent on steep slopes following heavy rainfall events and appear to be a driving force in vegetation succession and in maintaining plant diversity.

Frontal rain at all times of the year (annual average rainfall is of the order of 3000-3500 mm; but sometimes less in recent years) results in generally waterlogged ground, including peatlands, bogs and pools scattered over the island, and fast-flowing streams in the incised valleys. These streams may rise dramatically in spate after heavy rain, subsiding once more in a matter of hours. Spectacular waterfalls exist in many of the glens, as well on the coastal cliffs (where strong onshore winds at times may cause the falling water to turn to spray and be blown back inland). Little is known of the chemistry of the island's pools and streams, but water clarity is generally high, except where streams are biotically influenced (e.g. by guano from penguin colonies).

The tidal range at Gough is small (less than 0.5 m). Prevailing oceanic currents are generally from the west, associated with prevailing westerly winds. Sea surface temperatures range from 11-13°C.

Gough has a cool temperate climate: Mean annual air temperature at sea level is 11.5°C, with little annual variation. Extremes of -3 to 25°C have been recorded. Snow falls regularly inland in winter but rarely at sea level. Because of a combination of altitude, high winds and rain, the uplands of the island have a more sub-Antarctic-type climate, with wind chill often a significant factor for visitors. Mist, especially in the mountains, including at times of strong winds, is a common feature, and the interior is often shrouded by low cloud.

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**17. Physical features of the catchment area:**

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

The catchment area includes the whole of Gough Island. See 16 above for a description.

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**18. Hydrological values:**

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Rainfall is an ultimate driving force of the island's ecology, supporting a rich vegetation, which in turn leads to the formation of deep peat from decomposing plants, in which huge numbers of burrowing seabirds breed.

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**19. Wetland Types**

**a) presence:**

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory notes & Guidelines*.

**Marine/coastal:** A • B • C • D • E • F • G • H • I • J • K • Zk(a)

**Inland:** L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va • Vt • W • Xf • Xp • Y • Zg • Zk(b)

**Human-made:** 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • Zk(c)

**b) dominance:**

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

A, U, B, D, Tp, M

Note: Inadequate mapping (the only topographical survey of the island was undertaken in the mid 1950s without the aid of aerial photography) makes it difficult to assess the area covered by such hydrological features as pools, many of which are too small to have been depicted at the only available scale of 1: 40 000. Detailed information on subtidal areas is not yet available.

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**20. General ecological features:**

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

Gough Island and its territorial waters form the largest relatively unmodified cool temperate island ecosystem in the South Atlantic. Probably the most significant wetland types are Non-forested peatlands and Marine subtidal aquatic beds (see Sections 14, Criterion 1 and 19 above), which support a dense (but low) vegetation cover of mainly grasses, sedges and mosses and huge numbers of both surface- and burrow-nesting seabirds, and dense inshore kelp beds with an

attendant demersal and pelagic fauna, including the commercially exploited and near-endemic Tristan Rock lobster, respectively.

Twenty-two species of birds (20 seabirds and two land birds) and two species of seals breed on the island. Although hardly studied, it is likely that the biotic influence of guano-rich run-off water is significant in the maintenance of the inshore environment, especially the shallow seaweed and kelp bed ecosystems.

Vegetation types are altitudinally zoned, with Non-forested peatlands occurring in the mountainous interior, and the lower slopes closer to sea level being dominated by fern bush and coastal tussock.

Because of the difficulties of working in the marine environment around Gough, only preliminary work has been done describing marine habitats and communities. In general littoral species and zonation is typical of other sub-Antarctic islands, but is markedly impoverished, lacking some of the common zone-forming species found elsewhere. The littoral seaweed flora of Gough is markedly different from that of the northern Tristan islands, and includes a low-water band of the large brown Bull Kelp *Durvillaea antarctica*, which is absent from Tristan. Little is known of subtidal communities and species; the results of a diving survey in the 1980s are currently being written up as part of the Darwin post-project (see section 29)

## 21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Several plant species are noteworthy on Gough Island. In the lowlands, the Island Tree *Phyllica arborea*, Bog Fern *Blechnum palmiforme* and the annual Bracken *Histiopteris incisa* dominate much of the ground, forming a dense vegetation cover up to three metres high, known as fern bush, through which it is difficult to walk, especially in summer when the Bracken emerges. Fern bush is a dynamic community, dependent on a mosaic of peat slips caused by heavy rainfall events to maintain plant diversity and to allow the germination of the Island Tree (whose seedlings do not emerge through the smothering Bracken which grows as much as two metres high in thick stands in summer, but which are commonly found on the unshaded rock and soil exposed by peat slips). Fern Bush supports large numbers of burrowing seabirds, notably those of the genus *Pterodroma* (gadfly petrels), including the near-endemic and Endangered (from attacks by alien mice) Atlantic Petrel

Along the tops and upper slopes of the coastal cliffs, and on the vegetated offshore islets, two large grass species, Gough Tussock *Parodiochloa flabellata* and Tussock Grass *Spartina arundinacea*, form dense stands in which large numbers of Great Shearwaters breed, especially in the south-east of the island. The only other tree on the island, the Sophora Tree *Sophora microphylla*, occurs at one locality only, Sophora Glen on the island's east coast, and is of uncertain origin.

In the uplands the vegetation, described as wet heath, is much lower (<1-m high) and is mainly made up of grasses, sedges and creeping forbs (including Dogcatcher *Acaena sarmentosa* with its hooked inflorescences that get caught on clothing and Berry Bush *Empetrum rubrum* with its bright red edible berries), with mosses predominating in the more water-logged areas. In some

areas, such as Gonydale, dwarf Bog Ferns do not grow higher than the rest of the vegetation. Exposed ridges have a less lush vegetation, known as feldmark, with stunted grasses, sedges and mosses predominating, as well as lichens on exposed rock surfaces.

The very wet bogs which are poorly drained (such as are found on Albatross Plain, Tarn Moss and Mildred Mire) in the uplands are dominated by *Sphagnum* mosses and hepatics (liverworts). These localities will not always support the weight of human visitors and are best skirted whenever possible – both for comfort and to avoid leaving long-lasting footprints. Slightly dryer bogs, notably in the north of the island, may be covered by dense stands of the small sedge-like plant *Tetroncium magellanicum*, which seems to grow only vegetatively (no female flowers have ever been observed on the island), forming distinctive rings and circles as it spreads.

Twelve plant species are considered to be endemic to Gough Island, and a further 49 species occurring are restricted to the Tristan Islands. Endemic species of interest include Gough Brass Buttons *Cotula goughensis*, which adds splashes of yellow in summer on biotically-influenced (by manuring and moderate trampling) sites around penguin and seal colonies on the boulder beaches and on the coastal cliffs. An intriguing Tristan endemic is Scurvy Grass *Cardamine glacialis*, which is actually a perennial herb in the family Brassicaceae and not a grass at all. It is quite rare, but may be found in damp, shaded sites, such as on stream banks.

A number of introduced plants occurs, but few have as yet led to large changes in the vegetation. Thus vegetation types on Gough are among the most botanically pristine in Insulantarctica. Thistles *Sonchus* spp., Broad-leafed Dock *Rumex obtusifolius*, Farm Grass *Holcus lanatus*, Creeping Bent *Agrostis stolonifera* and Annual Blue-grass *Poa annua* are among the most widespread alien plant taxa, so that their eradication seems currently unfeasible. However, ongoing eradication efforts have led to the successful removal of at least four alien plants with restricted distributions in the last 30 years, and efforts continue to eradicate several other species that have not spread widely, including the Potato *Solanum tuberosum*. The Procumbent Pearlwort *Sagina procumbens*, first reported in 1998, is regarded as having the potential to be highly invasive, and a long-term programme is currently working to eradicate it from the coastal cliffs in Transvaal Bay before it spreads farther afield.

Forty species of marine algae have been recorded from within Gough's territorial waters, of which at least two are thought to be endemic. From sea level to a depth of five metres, the most obvious species is the Bull Kelp, a large brown seaweed (not a true kelp) which is typical of sub-Antarctic waters and absent from the more northerly Tristan islands which lie north of the Subtropical Front, so is at the northern edge of its range at Gough. In deeper waters the Pale Kelp *Laminaria pallida* and Giant Kelp *Macrocystis pyrifera* predominate, forming a distinct zone of calmer water. Work on the Gough subtidal flora is ongoing; the position of the island and preliminary work suggests that it will be extremely important in biogeographical and distributional terms for marine algae in the South Atlantic Ocean.

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## 22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Information on endemism and on threatened species of vertebrate fauna has been given above.

Perhaps the most noteworthy aspect of the vertebrate fauna of Gough is the sheer numbers of individuals. Bird species that occur up into their millions, and a fur seal that occurs in its hundreds of thousands (and whose population is still growing from near-extinction by human exploitation) make for spectacular sights indeed, hardly duplicated anywhere else in the world. Although much less obvious to the human eye, the marine fauna of Gough's territorial waters exists in a largely pristine state, with only the (well-managed by a quota system) fishery for Tristan Rock Lobster having any impact.

Gough's position has led to an intriguing mix of vertebrates of both tropical and sub-Antarctic affinities. The island is the most northerly breeding locality for several species, such as the Southern Elephant Seal *Mirounga leonina* and the Southern Giant Petrel *Macronectes giganteus* (now extinct at Tristan). Its penguins and albatrosses are also from essentially sub-Antarctic stock. Yet it also supports the most southerly known breeding population of the Brown Noddy *Anous stolidus*, a seabird of the tern family with a tropical distribution elsewhere. This mix of species with affinities with very different biogeographical regions is hardly repeated elsewhere in the southern hemisphere and gives Gough a very special status.

Among the terrestrial invertebrates, a high level of flightlessness occurs (e.g. of moths and flies), which is characteristic of many southern oceanic islands. Beetles (including weevils, rove beetles and water beetles) are notably common, with a number of endemic species known to the island, or to the island group.

In the past century several mammal species have been deliberately introduced to the island, largely made up of domestic stock (chickens, sheep, goats). However, the only alien mammal currently remaining, and the only one that was most probably accidentally introduced, is the House Mouse, whose impacts are discussed below. Feral cats *Felis catus* and rats *Rattus* sp. have never definitely been recorded from Gough. A large number of alien invertebrates has been introduced and become established, many of which have spread all over the island (e.g. flies, millipedes, beetles, wasps, snails and slugs).

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### 23. Social and cultural values:

a) Describe if the site has any general social and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

As is to be expected from its near-pristine state, and lack of any permanent habitation, both past or present, Gough does not contain much of cultural significance. Nevertheless, there are a few sites where the remains of sealing activity (such as enlarged caves and engraved rocks with the names of ships and dates from the 19th Century) exist. These have never been properly studied.

In terms of the island's management plan, commercial tourism is not allowed (unless an environmental impact assessment has first been carried out). This has helped to retain the island's wilderness nature, with no development of infrastructure and a near-absence of littering. Away from the meteorological station, there are no permanent structures, and so a camping/hiking trip takes place in a completely natural and unaltered environment – from the visual aspect at least.

Apart from the operation of the meteorological station, the “wise use” of the island is restricted to those closely-linked activities related to scientific research and conservation management. Examples include study of threatened species, research conducted on introduced species, and alien plant eradication campaigns.

In the marine environment, the commercial fishery for Tristan Rock Lobster is tightly managed: by way of allowing only a single licensee, setting an annual quota, a minimum size limit and a closed fishing season, and by conducting regular surveys to ascertain the size of the stock, which information is used to set the quotas. Whereas poaching of rock lobster is thought to have occurred in the past, no recent cases have been reported. However, the current inability of the Tristan Government to patrol Gough waters (due to the lack of a suitable vessel) makes it difficult to confirm the absence of poaching.

The above values and activities are all considered to be consistent with the maintenance of the natural wetland processes and ecological character of the island.

Lastly, as a natural site registered with the World Heritage Convention, Gough Island has a globally significant status as one of the world’s most special places.

**b)** Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning?

If Yes, tick the box  and describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

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**24. Land tenure/ownership:**

a) within the Ramsar site:

Gough Island forms part of the United Kingdom’s Overseas Territory of Tristan da Cunha and may be regarded as wholly “state-owned”. As a proclaimed nature reserve (which includes all the surrounding territorial waters), its management is the responsibility of the Conservation and Agriculture & Natural Resources Departments of the Tristan Government.

South Africa leases (since the 1960s) a small area of land in Transvaal Bay, on which it has built and operates its meteorological station. This lease is usually renegotiated and renewed at about 10-year intervals

b) in the surrounding area:

The surrounding seas from 12 out to 200 nautical miles form part of Tristan's Exclusive Economic Zone (EEZ).

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**25. Current land (including water) use:**

a) within the Ramsar site:

There is not (and never has been) a permanent human population. The South African meteorological station is currently run by a team of six, which is replaced annually, usually in September. Up to 40 persons may be based ashore during the three-week relief period, conducting maintenance and resupply-related activities, as well as pursuing research and conservation-management exercises. From time to time, and more commonly in the last 10 years, small numbers of researchers and conservation management teams (maximum size to date six) have stayed and worked from the station outside the relief period for up to a year at a time.

The meteorological station obtains its water supply from a nearby stream by way of a gravity-fed plastic pipe. No other exploitive activities take place ashore (i.e.. cultivation of plants or keeping of domestic stock).

A commercial fishery for Tristan Rock Lobster takes place in Gough territorial waters. Limited recreational fishing under license is allowed from the shore and from the South African relief and rock lobster fishing vessels.

b) in the surroundings/catchment:

Small numbers of pelagic fishing vessels have from time to time been licensed by the Tristan Government to fish (e.g. for tuna and others species occurring in relatively shallow waters, including on sea mounts) within the EEZ surrounding Gough.

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**26. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:**

a) within the Ramsar site:

The most detrimental factor affecting the ecological character of Gough Island is the continued presence of introduced species, both of plants and of animals. Of the suite recorded, the two causing the greatest harm or considered to have such potential, are the House Mouse and the Procumbent Pearlwort. For both species, eradication exercises are underway (the pearlwort) or are being actively planned (the mouse).

The mouse has been shown to reduce greatly the breeding success of several seabird species, most notably the near-endemic Tristan Albatross (Critically Endangered) and Atlantic Petrel (Endangered). This occurs by attacks leading to mortality of unattended chicks in winter months when the mouse's other more usual food sources (primarily from seeds, fruits and invertebrates) are greatly reduced. It is considered most likely that a number of other small and/or winter breeding bird species are also adversely affected by mice, especially the Critically Endangered Gough Bunting and the small burrowing petrels. Mice are also thought to have had adverse effects on the indigenous invertebrate fauna, especially the flightless moths. Modelling of the Tristan Albatross population, based on recent trends, suggests the species faces a high risk of

extinction unless the mice are eradicated, as current breeding success is far lower than can sustain the population. The same scenario undoubtedly applies to the Atlantic Petrel and Gough Bunting, and probably to several other bird species, as yet inadequately studied.

Introduced plants and invertebrates have the capacity to “outcompete” indigenous species, which could lead to changes in the ecological character of the island. A reduction in native invertebrate fauna could lead to changes in the rates of peat formation (by altering the rates of decomposition). Given that the larger part of the island’s avifauna is made up of burrowing birds, any changes to the peat layers of the island could eventually affect bird populations.

Pollution is not considered a significant problem. Incineration of waste materials no longer occurs at the South African meteorological station, and the small amounts of untreated sewage and grey water it produces are rapidly diluted at sea. Nutrients from this source are trivial by comparison with nutrient inputs to the sea from the island’s vertebrate wildlife. All other waste materials (save for non-poultry, soft food scraps) are returned to South Africa for recycling or disposal in land fills. Light pollution at the station is reduced to a minimum by the regular use of black-out blinds – to avoid bird strikes on foggy and moonless nights. Seabirds do import plastic fragments to the island, swallowed at sea in error for food items, which are then passed onto their chicks, who may regurgitate them later. Although such fragments are occasionally visible on the ground, they do not affect ecological processes.

Episodic events, such as heavy rainfall leading to peat slips, and the ongoing erosion of sea cliffs and stacks are part of the natural system of the island, and are necessary to maintain plant diversity and succession. Peat slips and cliff falls do lead to the mortality of breeding birds, but only in small numbers. Such events help shape the ecological character of the island, rather than altering it in any adverse way.

Climate change may conceivably result in as yet unpredictable changes, either or both on the island (such as changes in distribution of plants) or within territorial waters (such as changes in the food supply of inshore-foraging seabirds).

b) in the surrounding area:

None known

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## **27. Conservation measures taken:**

**a)** List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

Gough Island and its territorial waters are designated a nature reserve in terms of Tristan’s Conservation Ordinance of 2006. It was previously designated as a wildlife reserve (including territorial waters out to three nautical miles) in 1976; increased in 1997 to 12 nautical miles, when the name change was also made.

In December 1995, Gough Island and its territorial waters were granted World Heritage status as natural site. In 2004 the World Heritage Site was expanded to include Inaccessible Island in the Tristan group under the name “Gough and Inaccessible Islands World Heritage Site”.

Tristan da Cunha adheres to the international Agreement on the Conservation of Albatrosses and Petrels, to which the United Kingdom is a Party.

Gough Island has been recognized as an “Important Bird Area” by BirdLife International (Rowlands & Hilton 2006).

**b)** If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate):

Ia ; Ib ; II ; III ; IV ; V ; VI

**c)** Does an officially approved management plan exist; and is it being implemented?:

Yes. A management plan was formally adopted in October 1993 (Cooper & Ryan 1994).

All human activities ashore on the island, including those by South Africa at its meteorological station, are carried out in terms of the management plan, with permits issued by the Tristan Government as required (e.g. for collecting scientific specimens). Tristan appoints an Environmental Inspector each year to accompany the South African annual relief and monitor the relief activities occurring and to report back with recommendations for action and improvement to procedures. The inspector’s duties include reducing the risks of new alien species arriving on the island, by instituting and monitoring various quarantine procedures, commencing in the ship’s home port in South Africa, and by educating shore personnel.

In terms of the management plan and the 2006 Conservation Ordinance, such exploitative activities as tourism and collecting or killing animals and plants without permit are not allowed.

Fishing is carried out under license in terms of Tristan fishery ordinances and their amendments. Long-line fishing is not allowed within 50 nautical miles of the island.

**d)** Describe any other current management practices:

In terms of the South African lease, permission needs to be obtained to erect any new buildings and associated structures (e.g. aerials), and these may only be erected within the leased area.

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**28. Conservation measures proposed but not yet implemented:**

e.g. management plan in preparation; official proposal as a legally protected area, etc.

The island’s management plan is under revision.

Eradication of the introduced House Mouse has been proposed and a feasibility study conducted in September 2007 has been completed.

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**29. Current scientific research and facilities:** e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Recent and current research activities are closely linked to those directed at the island’s conservation management. The following research projects are noteworthy:

An assessment of the potential for rodent eradication in the Tristan da Cunha Island Group

This project, funded by OTEP (UK's Overseas Territories Environment Programme) operated from April 2005 to March 2008. An on-site feasibility study was undertaken at Gough in September 2007 (Parkes 2008). Consideration will now be given to the production of an operational plan to eradicate mice by dropping poison bait from helicopters. Research into the effects of the introduced House Mouse on breeding birds has led to the award of a PhD thesis (Wanless 2007). Research has commenced on assessing the risk of the two endemic land birds to both primary and secondary poisoning and what mitigating actions should be taken, as well continuing to assess aspects of mouse biology deemed necessary to design a successful eradication exercise.

#### Managing alien plants on the outer islands of Tristan da Cunha

This OTEP-funded project runs from August 2007 to March 2009. It concentrates on eradicating the Procumbent Pearlwort on Gough and developing improved quarantine procedures to reduce the risks of new species of alien plants reaching the island. A survey of the presence and distribution of alien plants over accessible parts of the island, with the collection of herbarium specimens, has commenced.

#### Control of alien mice and plants at the Gough Island World Heritage Site

This project, to run from July 2008 to March 2010, has been funded by OTEP. It aims to follow and build on the objectives of the above two projects, leading to the eventual eradication of both the mice and the pearlwort.

#### Monitoring and demography of threatened birds breeding at Gough Island

Ongoing research, some of which dates back to the mid-1980s, aims to assess population trends and reasons for change in a selected suite of threatened and near-threatened species on Gough. These include the Northern Rockhopper Penguin, Tristan and Atlantic Yellow-nosed Albatrosses, Southern Giant Petrel, Atlantic Petrel and Gough Bunting. Methodologies adopted include island-wide censuses and following colour-banded birds in study colonies through their breeding seasons on an annual basis (Cuthbert & Sommer 2004). This project is supported by the Royal Society for the Protection of Birds and the University of Cape Town.

#### Enabling the people of Tristan da Cunha to implement the CBD in the marine environment

As part of this Darwin Initiative post-project, existing information on the Gough marine environment is being collated into an accessible form. This includes the write-up of a subtidal diving survey carried out in the 1980s. Completion of this work will enable an assessment to be made of further work required to establish baseline information for the Gough intertidal and subtidal zones.

#### Other research activities

1. Remote tracking of albatrosses has been conducted to determine at-sea distribution and to assess interactions with fisheries.
2. Counts of fur and elephant seals on selected shoreline lengths and localities are undertaken from time to time to assess population trends.

3. Near-annual surveys of Tristan Rock Lobster are undertaken in summer months to assess stock size for quota-setting purposes.

#### Research facilities

A small laboratory housed within the South African meteorological station is made available for research and conservation management activities. Since most of the above research is conducted in the field, often from tented camps, the basic facilities available are considered adequate.

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### **30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:**

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

No such facilities exist ashore on Gough. TCD and TANRD staff have joined research and conservation management projects for limited periods from time to time, thereby gaining appropriate skills and experience.

The TANRD has co-published with the Agreement on the Conservation of Albatrosses and Petrels a wall poster on the conservation of the Tristan Albatross. Copies of this poster were given to all the school children attending St Mary's School on Tristan da Cunha in 2007.

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### **31. Current recreation and tourism:**

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Currently, tourism does not take place ashore in terms of the island's management plan, although from time to time, usually in summer months, cruise ships and yachts visit inshore waters without effecting landings.

No plans exist for offering land-based tourism, or providing facilities for such an activity.

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### **32. Jurisdiction:**

Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept of Agriculture/Dept. of Environment, etc.

#### Territorial jurisdiction

The Administrator  
Government of Tristan da Cunha  
Edinburgh of the Seven Seas  
Tristan da Cunha  
South Atlantic Ocean TDCU 1ZZ  
tristandcadmin@gmail.com

#### Functional jurisdiction

Head of Department (Trevor Glass)  
Tristan Conservation Department  
Government of Tristan da Cunha

Edinburgh of the Seven Seas  
Tristan da Cunha  
South Atlantic Ocean TDCU 1ZZ  
[tg.conservation@gmail.com](mailto:tg.conservation@gmail.com)

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**33. Management authority:**

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

Head of Department (Mr Trevor Glass)  
Tristan Conservation Department  
Government of Tristan da Cunha  
Edinburgh of the Seven Seas  
Tristan da Cunha  
South Atlantic Ocean TDCU 1ZZ  
[tg.conservation@gmail.com](mailto:tg.conservation@gmail.com)

Because of the distance of Gough Island from the main island of Tristan da Cunha (350 km) and the lack of an ocean-going patrol boat stationed at Tristan, the opportunities for staff of the Tristan Departments of Conservation and of Agriculture & Natural Resources (TCD and TANRD) to visit Gough are severely limited (to twice a year at the very most). For this reason, the Tristan Government has appointed two South African-based honorary Conservation Officers (in terms of the 2006 Conservation Ordinance) who advise on the conservation management of the island and arrange for the annual environmental inspections at the time of the South African reliefs on behalf of the TDC and TANRD. A member of the meteorological team is appointed each year by the South African authorities to be responsible for conservation issues within the South African leased area, such as monitoring waste disposal, recycling and bird strikes, and reporting unusual events, such as the presence of oiled and entangled birds and seals, etc.

Additionally, a small group of experts with direct knowledge of conservation issues at the Tristan Islands (the Tristan Biodiversity Advisory Group, or T-BAG) gives advice on request to the TCD and the Tristan Administrator on conservation issues at Gough and the other Tristan Islands.

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Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

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Please return to: **Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**

Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • e-mail: [ramsar@ramsar.org](mailto:ramsar@ramsar.org)