

Area Size

#### Qualifying Species and Criteria

Subantarctic fur seal – *Arctocephalus tropicalis* Criterion C1 Southern elephant seal – *Mirounga leonina* Criteria C1, C2

#### Marine Mammal Diversity

Mirounga leonina , Arctocephalus tropicalis, Tasmacetus shepherdi, Eubalaena australis, Megaptera novaeangliae, Globicephala melas, Orcinus orca, Balaenoptera physalus, Balaenoptera borealis, Balaenoptera bonaerensis, Physeter macrocephalus, Mesoplodon mirus, Mesoplodon bowdoini, Lissodelphis peronii, Caperea marginata, Lagenorhynchus obscurus, Arctocephalus gazella, Hydrurga leptonyx

#### Summary

This IMMA encompasses the four remote volcanic South Atlantic Ocean islands of the Tristan da Cunha Archipelago including Inaccessible and Gough Islands, both of which are UNESCO World Heritage sites. Gough Island hosts the world's largest population of subantarctic fur seals (*Arctocephalus tropicalis*), (comprising around 63% of the global pup production) as well as the smallest and northernmost breeding population of southern elephant seals (*Mirounga leonina*). This population has an estimated pup production of only 18 pups annually. Recent tracking data elucidated the importance of the subtropical front

# Gough Island and Adjacent Waters IMMA

#### Summary, continued.

south of Gough Island, as a primary foraging region for the fur seals, while the area between and around the archipelago appears to be important for male elephant seal foraging during summer.

The waters of the Tristan da Cunha archipelago are also known to host a diverse range of cetacean species, including southern right whales (*Eubalaena australis*), humpback whales (*Megaptera novaeangliae*), southern long-finned pilot whales (*Globicephala melas edwardii*) and killer whales (*Orcinus orca*). Records include several sightings and strandings of Shepherd's beaked whales (*Tasmacetus shepherdi*) one of the world's least known cetacean species.

# Description

Gough Island (40°17′ - 40°22′ S, 9°52′- 10°01′W) is one of the small, isolated peaks rising up from the mid-Atlantic Ridge, a submarine mountain range stretching 12,000 km from Iceland to the meeting point for the South American, African and Antarctic plates. Gough Island rises more than 3,000 m above the seafloor, with Edinburgh peak rising to 910 m above sea level. Gough Island is the southernmost of four islands that constitute the Tristan da Cunha Archipelago and is situated at the Subtropical Front, experiencing a temperate oceanic climate with prevailing westerly winds. Two islands in the Tristan Archipelago, Inaccessible and Gough, are UNESCO world heritage sites (https://whc.unesco.org/ en/list/740).

Gough Island hosts the world's largest population of subantarctic fur seals, *Arctocephalus tropicalis* (Bester, 1987, Bester et al., 2006) and the world's northernmost breeding population of southern elephant seals, *Mirounga leonina* (Bester, 1990). Several encounters (sightings and strandings) of Shepherd's beaked whales *Tasmacetus shepherdi*, have been recorded for the Tristan da Cunha Archipelago (Best et al., 2009; Thompson et al., 2019). Aside from the importance as core habitat for subantarctic fur seals and southern elephant seals, several other marine mammal species (at least 16) have been recorded (at times foraging) within the regional waters of the Tristan da Cunha archipelago (Best et al., 2009).

### Criterion B: Distribution and Abundance Sub-criterion B2: Aggregations

Gough Island hosts the world's largest population of subantarctic fur seals, *Arctocephalus* tropicalis (Bester 1987). Globally, the total population was estimated to be greater than 400,000 animals in the early 2000s (SCAR-EGS, 2008). Nearly all subantarctic fur seals (99%) breed at three sites: Gough Island, Prince Edward Islands and Amsterdam Island. About 63% of global pup production takes place at Gough Island (Bester et al., 2006), 25% at the Prince Edward Islands (SCAR-EGS 2008; Bester et al., 2009; Wege et al., 2016) and a further 11% at Amsterdam Island (Guinet et al., 1994). Pup weaning masses here are significantly lower than those at the second largest population globally, the Prince Edward Islands, suggesting some density dependence in their demography (Oosthuizen et al.,

## Criterion C: Key Life Cycle Activities Sub-criterion C1: Reproductive Areas

Gough Island is an important breeding (pupping and lactation) site for subantarctic fur seals, with more than 63% of global pup production at this island Bester, 1987; Bester et al., 2006). Although Gough Island supports the largest population of subantarctic fur seals globally (Bester, 1990), a complete assessment of this population has never been accomplished (Bester, 1987) due to the rough and inaccessible nature of the island coastline. Estimating changes in the population at this site must therefore be inferred by comparisons of timeseries counts at more accessible beaches (Bester et al., 2006). Globally, the total population of subantarctic fur seals was estimated to be greater than 400,000 animals in the early 2000s and indications are that it has been steadily growing since that time (SCAR-EGS, 2008). However, recent evidence suggests stabilisation or decline in at least some large populations, such as at the Prince Edward Islands (Wege et al., 2016). Comparison of pup weights with those at the Prince Edward Islands show significantly lower weaning masses for Gough Island pups (Oosthuizen et al., 2016).



Figure 1: An elephant seal on Gough Island. Photo: Nico de Bruyn

Southern elephant seals are distributed in the Southern Ocean between around 35°S and 70°S (Laws 1994). They haul-out onto subantarctic islands and some mainland sites on the coasts of Argentina and Antarctica to breed, moult and overwinter (Laws 1994; McMahon et al., 2005). Ninety-eight percent of the global stock of southern elephant seals breed at South Georgia, the Heard and Kerguelen islands, Macquarie Island and Peninsula Valdés (McMahon et al., 2005). The remaining 2% occur on islands throughout the subantarctic and adjoining regions (Laws 1994), including the smallest breeding population at the most northerly limit of the species distribution at Gough Island (Bester, 1990). A thorough understanding of the demography and ecology of small, peripheral populations is becoming increasingly important in the face of environmental change that may exert the greatest adaptive strain on such groups, or conversely allow for range extension depending on the direction of change.

## Criterion C: Key Life Cycle Activities Sub-criterion C2: Feeding Areas

Recent preliminary data from lactating subantarctic fur seal females tracked from Gough and Tristan da Cunha Islands, demonstrate the importance of the subtropical front for summer foraging (~October to February) (Mammal Research Institute/Tristan da Cunha Government, unpublished data). The region between Gough and Tristan da Cunha Islands (~350 km separation) seems to be an important foraging and migratory zone for these fur seals, and also for adult male southern elephant seals (tracked during the post-breeding foraging phase – Mammal Research Institute, unpublished data).

#### Supporting Information

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Figure 2: A tagged southern elephant seal resting on Gough Island Photo: Nico de Bruyn

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# Acknowledgements

We would like to thank the participants of the 2018 IMMA Regional Expert Workshop held in Brest, France for the identification of IMMAs in the Extended Southern Ocean. Funding for the workshop was provided by the French Biodiversity Agency, IUCN Global Marine and Polar Programme, the Fondation Prince Albert II de Monaco, OceanCare, Animal Welfare Institute (AWI) and the Natural Resources Defense Council (NRDC). Support was also provided by Whale and Dolphin Conservation and the Tethys Research Institute.



Suggested Citation: IUCN-Marine Mammal Protected Areas Task Force, 2021. Gough Island and Surrounding Waters IMMA Factsheet. https://www.marinemammalhabitat.org/wpcontent/uploads/imma-factsheets/

ExtendedSouthernOcean/gough-island-surrounding-waters-ExtendedSouthernOcean.pdf. Downloaded on (day month year).

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