

Place Details

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Heard and McDonald Islands, Heard and McDonald Islands, EXT, Australia

Photographs



List World Heritage List

Class Natural

Legal Status [Declared property](#) (06/12/1997)

Place ID 105142

Place File No 9/02/001/0001

Statement of Significance

For the official statement of Outstanding Universal Value see the UNESCO site <http://whc.unesco.org/en/list/577>

Official Values Not Available

Description

Physical features

Heard Island and the McDonald Islands are limestone and volcanic accumulations located on the Kerguelen Plateau, a submarine plateau which rises some 3,700m above the adjacent deep sea floor. The islands are two of three areas (with Iles Kerguelen) which are the only aerial expressions of the Kerguelen Plateau or the broader Gaussberg-Kerguelen Ridge. Heard Island is notable among oceanic islands because its basement is middle Eocene to early Oligocene limestone of marine origin, and the volcanic piles that form the island sit on this.

The main body of Heard Island is roughly circular, with a diameter of about 25km. Topography is dominated by Big

Ben massif, with the volcanically active Mawson Peak (the only active volcano in Australia territory). Both karst and volcanic features occur. A mountainous headland, Laurens Peninsula, extends approximately 10km to the north-west connected to the main island by a ridge little more than 100m wide. The peninsula is also volcanic in origin, and features extensive areas of lava tunnels. To the east, a narrow sand and shingle spit extends approximately 10km out into the southern ocean. This spit is now being breached. There are numerous outlying islets, rocks and reefs, the largest, Shag Island, lying some 10km north of Heard Island.

About 80% of Heard Island is glaciated, with ice up to 150m deep and glaciers extending from 2,745m to sea level. Ice cliffs form a high percentage of the coastline. The glaciers appear to be fast-flowing as a result of the steep slope and high precipitation, and are likely to be particularly sensitive to climatic fluctuations. Measurements between 1947 and 1980 suggest that glacial retreat has been marked on Heard Island, particularly on the eastern flanks. This has been associated by Allison and Keage (1986) with changes in weather patterns. There is little soil development, and ice-free areas available for terrestrial life are widely separated and mostly confined to low-lying coastal areas.

The McDonald Island group comprises McDonald Island (100ha), with several small rocky islets (notably Flat Island and Meyer Rock). The islands, all of which are ice-free, are composed of basaltic lava and tuffaceous material, resulting from eruptions of volcanic vents near sea level. The rocks are compositionally distinct from those of Heard Island. McDonald Island consists of two sections; a northern sloping plateau and a southern steep-sided hill (Maxwell Hill), both bounded by steep cliffs, and joined by a narrow isthmus. There is little soil.

Climate

The islands lie to the south of the Antarctic Convergence and have a cool maritime climate with strong westerly winds prevailing. Climatic observations have only been made on Heard Island (at Atlas Cove). Records show a mean annual temperature of 1 degrees C, with a summer mean of 3.2 degrees C and a winter mean of 0.1 degrees C. Precipitation is about 1400mm/yr with snow or rain on 75% of days, and frequent extensive cloud cover. Snowfall occur throughout the year with a maximum frequency in winter and spring.

Vegetation

The principal vegetation communities on Heard Island are tussock grassland, herbfield, and feldmark, with smaller areas of meadow, pool complex and cushion carpet. Short tussock grass *Poa cookii*, with cushions of the herb *Colobanthus kerguelensis* are present in coastal areas, with Kerguelen cabbage *Pringlea antiscorbutica* and *Azorella selago* cushions in established moraines and valleys up to 200m. Dwarf shrub *Acaena magellanica* occurs in sheltered areas. Above 200m, mosses and lichens dominate ice-free regions and are also important components of the flora at lower regions. Kelp (principally *Macrocystis antarctica*) is abundant along the coastline. The isolation of plant communities, in combination with increasing habitat availability resulting from glacial retreat, makes Heard Island significant for the study of plant colonisation.

On the McDonald Islands, tussock grass *Poa cookii* is common on eastern slopes and lower parts of the plateau, while cushions of *Azorella selago* cover higher areas, with Kerguelen cabbage *Pringlea antiscorbutica*, and dwarf shrub *Acaena magellanica*.

Eleven species of vascular plant occur on Heard Island (seven herbs, four grasses), forty-two species of moss have been identified so far, and there are likely to be as many as 50 lichen species. Five species of vascular plant, at least six of moss and an as yet as undetermined number of lichens occur on the McDonald Islands (all also found on Heard Island). There are no trees. The grass *Poa annua* appears to be newly introduced to Heard Island (first seen 1986/87), although its introduction by human activity seems unlikely.

Fauna

Five species of true seals (Phocidae) and two species of eared seals (Otariidae) occur on the islands. Large populations of southern elephant seal *Mirounga leonina* occur on Heard Island, principally on the eastern spit, although numbers have decreased significantly in recent years. Winter, non-breeding population of Leopard seal *Hydrurga leptonyx* is estimated to be at around 1,000 individuals. HIMI is an important breeding location for Antarctic fur seal *Arctocephalus gazella*. Numbers of this species are rising significantly. Weddell seal *Leptonychotes weddelli*, Ross seal *Ommatophoca rossi* and crabeater seal *Lobodon carcinophagus* are occasionally present on Heard Island (at the extreme northern limit of their pelagic ranges), while subantarctic fur seal *A. tropicalis* was first recorded on Heard Island in 1987/88. On the McDonald Islands southern elephant seal and Antarctic fur seal breed, while leopard seal occurs. Fur seal from the McDonald Islands has probably recolonised Heard Island after severe exploitation of the latter populations in the 1800s.

Thirty-four bird species have been recorded at HIMI, of which 19 species breed on Heard Island and 11 of these also breed on the McDonald Islands. Penguins are by far the most abundant of all bird species present, with populations of macaroni penguin *Eudyptes chrysolophus* (by far the commonest species) reaching two million pairs within the islands, 16% of the total world totals. Gentoo penguin *Pygoscelis papua* is present year round on the islands, and its breeding population at Heard Island represents about six percent of the world population. Other breeding bird species are: black-browed albatross *Diomedea melanophris* (600-700 breeding pairs), light-mantled albatross *Phoebastria palpebrata* (200-500), southern giant petrel *Macronectes giganteus* (3,000 pairs on Heard Island and an estimated 1,400 to 1,600 pairs on McDonald Island), cape petrel *Daption capense*, Antarctic prion *Pachyptila desolata*, fulmar prion *P. crassirostris*, Wilson's storm petrel *Oceanites oceanicus*, South Georgian diving petrel *Pelecanoides georgicus*, common diving petrel *P. urinatrix*, Heard Island cormorant *Phalacrocorax atriceps nivalis* (an endemic subspecies with a population of less than 100 pairs), Antarctic tern *Sterna vittata*, subantarctic skua *Catharacta*

lonnbergi, kelp gull *Larus dominicanus* and lesser sheathbill *Chionis minor nasicornis* (an endemic subspecies). Wandering albatross *Diomedea exulans* was reported breeding for the first time in 1980. Most bird populations are reported as stable, with those of king penguin and black-browed albatross increasing. Woehler (1991) summarises published and unpublished data on the status and conservation of the 19 breeding species. The number of terrestrial invertebrate species recorded from HIMI stands at 127. Some of these are endemic and others are restricted to the Heard-Kerguelen region. In one study, four species previously unknown to science were described, along with several sub-species endemic to the Island. On Heard Island, nearly all non-parasitic insects are associated with *Azorella selago*, *Poa cookii* and *Pringlea antiscorbutica*, the most common vascular plant species. The fish fauna around Heard Island and the McDonald Islands is virtually identical to that around Iles Kerguelen. Frequently occurring fish around Heard Island are icefish *Champscephalus gunnari* and *Channichthys rhinoceratus*, Antarctic cods *Notothenia squamifrons* and *Dissostichus eleginoides*, and rays *Bathyraja* spp. Fifteen species of fish have been recorded from trawls at depths of greater than 170m and nine species from inshore waters.

History

The first sighting of Heard Island is attributed to the British captain, Peter Kemp, in 1833, although discovery is also attributed to the American captain Heard of the *Oriental* in 1853, who first published information on the island's geography and location. The McDonald Islands were discovered in 1854 by Captain McDonald of the British sealing vessel *Samarang*. Sealing gangs occupied Heard Island almost continuously for 20 years following the first landing in 1855, thereafter sporadically until 1929. Elephant seal, fur seal, and penguin (particularly king penguin) were exploited on Heard Island, and to a lesser extent on the McDonald Islands. The sealers' sites on Heard Island are the best preserved in the region.

Heard Island was annexed to Australia from Britain in 1947, when the Australian government also assumed sovereignty of the McDonald Islands. A research station on Heard Island was operated from 1947 to 1954 by Australian National Antarctic Research Expedition (ANARE), later shifting activities to bases on the Antarctic mainland. The building remains are significant, representing constructions spanning 50 years. The first comprehensive survey of historic sites on Heard Island was carried out 1986-87 after an initial survey in 1985.

Condition and Integrity Not Available

Location

About 500 000ha, in the southern Indian Ocean, on the Kerguelen Plateau, 4,100km south-west of the Australian continent and 1,500km north of Antarctica, comprising Heard Island and McDonald Islands, adjacent offshore rocks and shoals, and all territorial waters to a distance of 12 nautical miles.

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