

# World Heritage Places - Heard and McDonald Islands



Australian Territory of Heard Island and McDonald Islands was inscribed on the World Heritage List in 1997.

Australian Territory of Heard Island and McDonald Islands was one of 15 World Heritage places included in the National Heritage List on 21 May 2007.

The Australian Territory of Heard Island and McDonald Islands (HIMI) is one of the wildest places on earth - a smoking volcano under snow and glacial ice that rises above the world's stormiest waters.

HIMI is the only sub-Antarctic island group that has an intact ecosystem, to which no known species has been introduced directly by humans, and where the ongoing evolution of plants and animals occurs in a natural state. The vast numbers of penguins and seals that occupy the beaches are considered one of the great wildlife sights of the world.

## Gallery

Click an image for a larger view.





- [More images of the Heard and McDonald Islands \(HIMI\) from the Australian Heritage Photographic Library.](https://www.environment.gov.au/cgi-bin/heritage/photodb/imagesearch.pl?proc=search_results;placeid=105142)  
([https://www.environment.gov.au/cgi-bin/heritage/photodb/imagesearch.pl?proc=search\\_results;placeid=105142](https://www.environment.gov.au/cgi-bin/heritage/photodb/imagesearch.pl?proc=search_results;placeid=105142))

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#### More information (#a1)

## Location

The Australian Territory of Heard Island and McDonald Islands lies in a remote and stormy part of the globe, near the meeting-point of Antarctic and temperate ocean waters. The islands, which were unknown to humanity until the 19th century, are located in the Indian Ocean sector of the Southern Ocean at around 53° 05' S and 73° 30' E. They lie about 1,500 kilometres north of Antarctica and over 4,000 kilometres south-west of Australia.

## Description of place

The Heard Island and McDonald Islands group was formed by the plume type of volcanism, a process that is poorly understood in comparison with the earth's other two main volcanic types - subduction and seafloor spreading. This feature of the group offers an extraordinary view into the earth's deep interior and its interactions with the lithospheric plates that resulted in the formation of the ocean basins and continents. They are the only sub-Antarctic islands that are volcanically active.

The last recorded major eruption on Big Ben, which soars to an altitude of 2,745 metres, was in 1992. However, continuous activity is evident from other observations of minor steam and smoke emissions.

Permanent snow and ice cover 70 per cent of Heard Island. Its steepness, combined with significant snow fall at high altitudes, makes the glaciers fast-flowing – in the order of 250 metres a year. As a result, the ice and snow in the glaciers have a relatively short turnover period of around 100 years, and the glaciers respond quickly to changes in climate by advancing or retreating.

McDonald Island lies 43.5 kilometres due west of Heard Island, and is the major island in the McDonald Islands group. Satellite images taken in 2004 give evidence of significant volcanic activity over the last decade, which has seen the island increase in size from 1km<sup>2</sup> to 2.5 km<sup>2</sup>. The previously separate Flat Island and McDonald Island are now joined by a low-lying isthmus. At its highest point, McDonald Island rises to about 230 metres.

Extraordinary landforms on the islands include the flutes of Cape Pillar on Heard Island and the lonely pinnacle of Meyer Rock; the caves and other lava formations of the northern Heard Island peninsulas; the smoking caldera of Mawson Peak above the older caldera of Big Ben; the shifting sands of the Nullarbor Plain; and the extensive, dynamically changing Elephant Spit.

The Heard Island and McDonald Islands group can be described as the wildest place on earth – a smoking volcano under a mantle of snow and glacial ice rising above the world's stormiest waters. On the horizon to the west, smaller volcanic fragments rise precipitously and defiantly out of huge Southern Ocean swells. Verdant vegetation and multicoloured bird colonies contrast in sharp relief against the dazzling white of snow and ice and the grey-black of volcanic rock. The driving westerly winds above the Southern Ocean in these latitudes create unique weather patterns when they come up against the enormous bulk of Big Ben, including spectacular cloud formations around the summit and unbelievably rapid changes in winds, cloud cover and precipitation.

It is the only sub-Antarctic island group believed to contain no known species directly introduced by humans. This makes it invaluable for having within one site an intact set of interrelated ecosystems – terrestrial, freshwater, coastal and marine – in which the ongoing evolution of plants and animals occurs in a natural state. The islands host a range of seabirds, and are an excellent location for investigating the effects of geographic isolation and climate on the evolution of species. Active speciation is clearly present. The beetle populations on Heard Island and McDonald Islands group show unique evolutionary adaptations to the

environment, and several other invertebrate groups provide opportunities to study evolutionary processes in undisturbed populations at the southern limits of their distribution.

The vast numbers of penguins (including the world's largest macaroni penguin colony), seals and flying birds that occupy the islands are one of the great wildlife sights of the world. When the wind has died and the skies have cleared, these congregations create an incomparable cacophony of natural sound.

The seal and penguin populations provide excellent opportunities to monitor the health and stability of the larger Southern Ocean ecosystem. The Heard Island and McDonald Island group is one of the best sites in the world to study the ecological and biological processes of recolonisation of the Antarctic fur seal and the king penguin populations. It is also one of the best land-based sites in the world to study the leopard seal and its role in the sub-Antarctic ecosystem.

The World Heritage property is contained within the 65,000 km<sup>2</sup> HIMI Marine Reserve, declared under the *Environment Protection and Biodiversity Conservation Act 1999* in 2002. The Reserve is managed by the Antarctic Division of the Australian Government Department of the Environment, Water, Heritage and the Arts.

### Outstanding Universal Value (#a2)

[World Heritage Committee information for Heard and McDonald Islands](http://whc.unesco.org/en/list/577) (<http://whc.unesco.org/en/list/577>)

## Brief synthesis

Heard and McDonald Islands are remote sub-Antarctic volcanic islands located in the southern Indian Ocean about half-way between Australia and South Africa, and just over 1,600 kilometres from Antarctica. The property covers a total area of 658,903 hectares of which about 37,000 hectares is terrestrial, and the remainder marine. The islands are a unique wilderness, containing outstanding examples of biological and physical processes continuing in an environment essentially undisturbed by humans.

Heard Island is dominated by Big Ben (an active volcano rising to a height of 2,745 metres), and is largely covered by snow and glaciers. McDonald Island is much smaller, covering only 100 hectares at the time of inscription, and is surrounded by several smaller rocks and islands. The only active sub-Antarctic volcanos are found on these islands, with the volcano on McDonald Island erupting after inscription and doubling the size of the island. The island group's physical processes provide valuable indicators of the role of crustal plates in the formation of ocean basins and continents, of dynamic glacial changes in the coastal and submarine environment, and of atmospheric and oceanic warming. The large populations of marine birds and mammals, combined with a virtual absence of introduced species, provide a unique arena for the maintenance of biological and evolutionary processes.

**Criterion (viii):** The islands contain outstanding examples of significant on-going geological processes occurring in an essentially undisturbed environment, particularly physical processes which provide an understanding of the role of crustal plates in the formation of ocean basins and continents, and of atmospheric and oceanic warming. The islands are distinctive among oceanic islands in being founded upon a major submarine plateau which in this case deflects Antarctic circumpolar waters northwards, with striking consequences for geomorphological processes. They also offer an active example of plume volcanism, providing direct geological evidence of the action of the longest operational plume system known in the world. This includes information about plume interaction with overlying crustal plates, as well as insights into mantle plume composition due to the widest range of isotopic compositions of strontium, neodymium, lead and helium known from any oceanic island volcano system. Big Ben on Heard Island is the only known continuously active volcano on a sub-Antarctic island, whereas the volcano on MacDonal Island recently became active again after a 75,000 year period of dormancy, increasing significantly in size since inscription.

Heard Island's relatively shallow and fast-flowing glaciers respond quickly to climate change, faster than any glaciers elsewhere, making them particularly important in monitoring climate change. They have fluctuated dramatically in recent decades and have retreated significantly.

**Criterion (ix):** Heard Island and McDonald Islands are outstanding examples representing significant on-going ecological, biological, and evolutionary processes. As the only sub-Antarctic islands virtually free of introduced species and with negligible modification by humans, they are a classic example of a sub-Antarctic island group with large populations of marine birds and mammals numbering in the millions, but low species diversity. These intact ecosystems provide opportunities for ecological research

investigating population dynamics and interactions of plant and animal species, as well as monitoring the health and stability of the larger southern oceans ecosystem. Areas of newly deglaciated land as well as areas isolated from each other by glaciers provide unparalleled opportunities for the study of the dispersal and establishment of plants and animals.

The islands also furnish crucial, alien-free habitat for large populations of marine birds and mammals, including major breeding populations of seals, petrels, albatrosses and penguins. Endemic species demonstrating ongoing evolutionary processes include the Heard Island cormorant, the endemic subspecies of the Heard Island sheathbill, and a number of endemic invertebrates (some endemic to Heard and McDonald Islands, and some endemic to the Heard and McDonald Islands-Kerguelen region).

## Integrity

The islands form a discrete entity of sufficient size to fulfil the conditions of integrity, plus are of very high wilderness quality and are the least disturbed of all sub-Antarctic islands. They are subject to low anthropogenic pressures except for the largely unknown impact of commercial fisheries on the marine ecosystem. However, commercial fishing is not permitted within the World Heritage property, or in the Marine Reserve within which it is located. Heard Island's remoteness and harsh climate have ensured that human occupation, notably 19th century sealing, and research activity from 1947 to 1955, has been very restricted. The McDonald Islands have only had two brief visits, and there has been no protracted stay ashore on Heard Island since a winter research programme in 1992, the first winter occupation of the island since 1954.

## Protection and management requirements

The area is managed as a strict nature reserve (IUCN Category 1a) by the Australian Antarctic Division through the Australian Government's *Heard Island and McDonald Islands Marine Reserve Management Plan* that covers marine reserves in the same region as well as the World Heritage Area.

The main management requirements are the maintenance of strict visitation and quarantine controls to maintain natural conditions and ecological integrity, and to prevent the introduction of pathogens and non-native species. Human activity in the reserve is expected to continue to slowly increase in line with interest in the region for science, tourism and fisheries. The management goal must be to prevent the introduction of alien species by minimising the risk of introductions occurring. Fisheries in the region require careful management to minimise the potential of adverse impacts on the marine-dependent fauna of the islands.

All World Heritage properties in Australia are 'matters of national environmental significance' protected and managed under national legislation, the *Environment Protection and Biodiversity Conservation Act 1999*. This Act is the statutory instrument for implementing Australia's obligations under a number of multilateral environmental agreements including the World Heritage Convention. By law, any action that has, will have or is likely to have a significant impact on the World Heritage values of a World Heritage property must be referred to the responsible Minister for consideration. Substantial penalties apply for taking such an action without approval. Once a heritage place is listed, the Act provides for the preparation of management plans which set out the significant heritage aspects of the place and how the values of the site will be managed.

Importantly, this Act also aims to protect matters of national environmental significance, such as World Heritage properties, from impacts even if they originate outside the property or if the values of the property are mobile (as in fauna). It thus forms an additional layer of protection designed to protect values of World Heritage properties from external impacts. In 2007 the Heard and McDonald Islands World Heritage Area was added to the National Heritage List in recognition of its national heritage significance.

### Resources (#a3)

- [Location/Boundary plan \(PDF - 222.33 KB\)](#)  
(/sites/default/files/env/pages/df7265f3-a6c7-415f-8cb1-5419c95a56e1/files/105707.pdf)
- [Gazettal notice \(PDF - 67.56 KB\)](#)  
(/sites/default/files/env/pages/df7265f3-a6c7-415f-8cb1-5419c95a56e1/files/10570701.pdf)
- [Australian Heritage Database record for this place](#)  
(https://www.environment.gov.au/cgi-bin/ahdb/search.pl?mode=place\_detail;place\_id=105142)

- [Heard McDonald factsheet \(PDF - 922.41 KB\)](#)  
(/sites/default/files/env/pages/df7265f3-a6c7-415f-8cb1-5419c95a56e1/files/heard-mcdonald-factsheet.pdf)
- [Map \(PDF - 215.48 KB\)](#)  
(/sites/default/files/env/pages/df7265f3-a6c7-415f-8cb1-5419c95a56e1/files/heard-mcdonald-map.pdf)
- [Protected Planet Database - Heard and McDonald Islands World Heritage Site](#)  
(http://www.protectedplanet.net/sites/Heard\_And\_Mc\_Donald\_Islands\_World\_Heritage\_Site)
- [Heard Island and McDonald Islands](#) (http://www.heardisland.aq/protection-and-management/world-heritage)
- [World Heritage Committee information for Heard and McDonald Islands](#) (http://whc.unesco.org/en/list/577)

## Contact

Australian Antarctic Division  
Channel Highway  
Kingston TAS 7050  
Australia