IUCN Conservation Outlook Assessment 2017 **(archived)**
Finalised on 10 November 2017

Please note: this is an archived Conservation Outlook Assessment for Heard and McDonald Islands. To access the most up-to-date Conservation Outlook Assessment for this site, please visit https://www.worldheritageoutlook.iucn.org.

Heard and McDonald Islands

SITE INFORMATION

Country:
Australia
Inscribed in: 1997
Criteria:
(viii) (ix)

Site description:

Heard Island and McDonald Islands are located in the Southern Ocean, approximately 1,700 km from the Antarctic continent and 4,100 km south-west of Perth. As the only volcanically active subantarctic islands they ‘open a window into the earth’, thus providing the opportunity to observe ongoing geomorphic processes and glacial dynamics. The distinctive conservation value of Heard and McDonald – one of the world’s rare pristine island ecosystems – lies in the complete absence of alien plants and animals, as well as human impact. © UNESCO

SUMMARY

2017 Conservation Outlook

Good

The values for which the site was inscribed remain well preserved, largely as a result of its isolation and challenging logistic needs to access the islands. The site's extreme geographical remoteness and funding constraints, however, also limit the ability to undertake regular on-site monitoring management operations and research activities. Management efforts are largely, though not exclusively, based on scientific data collected over a decade ago and given the rapid changes occurring on the islands, the lack of contemporary research data and interpretation also hinders on-ground management of the site. The findings of the most recent (2016) research voyage will provide valuable new information on the marine environment. Overall, the site's isolation assists in reducing the opportunities for human impacts to the site's values and it is considered unlikely that threats to the values will increase in the near future.

Current state and trend of VALUES

Good
Trend: Stable

Current status of WH values is good. Low levels of visitation aid in the low potential risks to biosecurity. There is no evidence of an increased rate of visitation to the Reserve, or of increased threats to its values; however, there is a risk is of biosecurity breaches from unauthorised visitation, with introduction of invasive and non-native biota.
Ongoing climate change poses an increasing risk to fundamental alterations in biodiversity.
Geological processes (primarily volcanism and glacial retreat) continue undisturbed.

Overall THREATS

Low Threat

The overall assessment is a low threat to the World Heritage values of Heard Island and the McDonald Islands. Climate change, non-native species incursions and the presence of P. annua are the greatest threats to the natural values on the islands. To mitigate the effects of climate change will be challenging. However, some threats can currently still be effectively addressed.
The isolation of Heard Island and the McDonald Islands has contributed somewhat to the maintenance of their high conservation value but with significant non-native species on Iles Kerguelen to the north west of the island, natural processes, such as bird migration, may impact on the values through transportation of these non-native elements. Global processes such as climate change, plastic production and off-shore fishing can impact on the local biota. Current regulations and conservation measures for the Territory’s management are able to protect the values appropriately. Ongoing biosecurity efforts are required to ensure no further introductions to the island, particularly of vertebrates. Further consideration may need to be given to the removal (or containment) of Poa annua in light of accelerating glacial retreat.

Overall PROTECTION and MANAGEMENT

Mostly Effective

Management responsibility for the site lies with the Australian Antarctic Division of the Australian Government Department of the Environment and Energy. The site’s extreme geographical remoteness and funding constraints limit the ability to undertake regular on-site management operations. Given the rapid changes occurring on the islands, the lack of contemporary research data and data interpretation, on-ground management of the site is hindered. However, the site’s isolation assists in reducing the opportunities for human impacts to the site’s values.

FULL ASSESSMENT

Description of values

Values

World Heritage values

► **Outstanding examples of significant on-going geological processes occurring in an essentially undisturbed environment**
Criterion:(viii)

The Territory of Heard Island and the McDonald Islands contains outstanding examples of active geological processes continuing in an essentially undisturbed environment, free of local anthropogenic impacts. The physical processes provide an understanding of hotspot magmatism in an intraplate setting and of atmospheric and oceanic warming. They also offer an active example of active hotspot volcanism, providing direct geological evidence of the current activity of the longest-lived mantle hotspot known in the world. This includes information about plume interaction with lithospheric plates, in addition to insights into mantle hotspot 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 volcanism on McDonald Island recently became active again after a period of dormancy, increasing the island's size significantly since inscription (SoOUV 2012).

► **Evolution and development of island ecosystems**
Criterion:(ix)

The Territory of Heard Island and the McDonald Islands demonstrates 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, the Territory is 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 Ocean ecosystems. Areas of newly deglaciated land (Donoghue 2016) as well as areas isolated from each other by glaciers provide opportunities for the study of the dispersal and establishment of plants and animals (SoOUV 2012). Heard Island possesses the largest cushion plants and the most extensive continuous cushion carpets in the world.

Other important biodiversity values

► Migratory species, seabirds and marine mammals

The Territory provides important habitat for a number of resident breeding and transitory populations of seabirds, seals, and the distribution –restricted black-faced sheathbill.

► Wetlands

Significant wetland features and processes are present in some areas, and provide habitat for a number of wetland species. These are the moist, low-elevation terrestrial, freshwater areas and shallow near-shore marine environments that provide habitat for a number of wetland species. Glacial retreat has increased the number and size of waterways and thus wetland features (Donoghue 2016; Klekociuk and Wienecke 2017).

Assessment information

Threats

Current Threats

Low Threat

The isolation of Heard Island and the McDonald Islands has contributed significantly to the maintenance of their high conservation value. The biggest and current threat to the island is sustained global climate change.
The retreat of glaciers has now cut off the permanent supply of freshwater to the ice-cored moraine that annually melts to support the pool complex vegetation (wetlands) at Spit Bay.
The weed P. annua is spreading into native vegetation on Heard Island and colonising newly deglaciated landscapes. Data demonstrates that it displaces native species. Climate change will also increase this invasion.
Potential biosecurity breaches (coupled with climate change) are significant threats to the natural values biodiversity and ecosystems on the islands; efforts to prevent the introduction of rats and mice have been successful to date. Authorised visits apply strict biosecurity practices. The threat from unauthorised visits is not accurately measured but a log book entry shows that unauthorised visits do occur. These visits represent an uncontrolled risk as further introductions of plants and invertebrates could occur during unauthorised human visits where biosecurity protocols are not able to be imposed.
Plastic debris is present on the shores of Heard Island. Research demonstrates odour-oriented birds, such as most petrels and possibly penguins, are susceptible to plastic ingestion at sea.

▶ Other Activities

Very Low Threat
Inside site, localised(<5%)

Low levels of disturbance to non-breeding seabirds and marine mammals; potential higher disturbance to breeding seabird populations associated with tourism, research, fisheries/customs enforcement activities.

▶ Tourism/ visitors/ recreation

High Threat

Inside site

Biosecurity guidelines are in place for authorised visitation, but the level of their adoption can vary among commercial tourist operators, research expeditions, fisheries/customs enforcement staff and private visitors. Potential exists for introduction of alien/invasive plant and invertebrate species; worst-case scenario would be the introduction of rodents or invasive plants.

► Solid Waste

Data Deficient
Inside site, widespread(15-50%)

Presence of plastics and microplastics in the Southern Ocean has been confirmed (Isobe et al 2017) and plastics wash up on Heard Island beaches (Schmeider, 2016). Documented reports of wildlife entanglement, plastic ingestion by, and of oiling of seabirds. Smaller petrels feed by capturing prey at the surface and can mistake plastic particles as prey (Auman et al. 2004). Plastic debris common on foreshores in Reserve (Eriksson et al 2012). Three reports of seabirds ashore with oil on feathers, evidence indicates oiling at sea rather than onshore (Woehler 2006).

► Tourism/ visitors/ recreation

Very Low Threat
Inside site, extent of threat not known

Low levels of disturbance to seabirds and marine mammals associated with commercial tourism efforts, research expeditions and fisheries/customs enforcement staff while ashore.

► Other Activities

Very Low Threat
Inside site, extent of threat not known

Small wind generators were used to support research expeditions in 1990s and 2000s, resulting in low number of seabird strikes and deaths; future use may pose similar risk to seabirds (Woehler 2006).

► Fishing / Harvesting Aquatic Resources

Data Deficient

Inside site, extent of threat not known
Outside site

Australian regulated fisheries are sustainable (AFMA 2017) but IUU fisheries operate within foraging range of many species of albatrosses and petrels that breed on Heard Island. IUU fisheries elsewhere kill seabirds by striking gear, entanglement and drowning on long-lines. IUU fisheries around Heard Island and McDonald Islands likely to kill seabirds, but extent and species composition are unknown. IUU fishing is being addressed by the Department of Agriculture and Water Resources (DAWR 2017). Unmanaged fishing may decrease the population numbers of prey species (toothfish) for Southern Elephant Seals (IUCN Consultation, 2017).

► Housing/ Urban Areas

Low Threat
Inside site, localised(<5%)

Research station was occupied 1947 – 1954, then abandoned; during subsequent short-term periods of occupation other structures were erected (primarily accommodation). Almost all materials were left in situ and have deteriorated from lack of maintenance and exposure to the elements (Green 2006; Munro 2006). Majority of infrastructure has been removed, some materials remain scattered over landscape downwind of Atlas Cove (NW Heard Island). Flying debris can impact wildlife such as penguins and seals if debris is large enough (IUCN Consultation, 2017).

► Invasive Non-Native/ Alien Species

High Threat
Inside site, extent of threat not known

Poa annua is an invasive/alien species established, and now expanding, on ice-free areas on the eastern side of Heard Island (where there is a significantly milder climate than western areas). Competition with native vegetation and potential interference with natural processes of colonisation by native plant species is occurring (Scott & Kirkpatrick 2005; Schortemeyer et al., 2015).

► Temperature extremes

High Threat
Inside site, throughout(>50%)

Outside site

Climate change and sea level rise poses a significant threat to World Heritage values of the site. Glacial retreat is leading to the formation of new waterways (specifically lagoons and pro-glacial lakes) and is exposing new land for flora and fauna colonisation. Eastern part of island (Spit Bay) has been isolated from its feeding glacier and thus water supply to support ice-cored moraines that melt to irrigate vegetation, especially the cushion plants and the pool complex wetland, has now been cut. Coupled with known föhn winds that generate high temperatures, drought conditions are likely to occur. Keystone species such as the cushion plant, Azorella selago, are potentially highly susceptible to restricted water conditions (Bergstrom et al, 2015).

▶ Pollution

Low Threat
Inside site, localised(<5%)

Some clean-up efforts were undertaken in the 1980s and 2000s to remove hazardous materials, such as asbestos, old fuel drums, building materials, broken glass etc. Asbestos is still present locally. Asbestos can cause cancers in animals (as well as humans). Contamination of soils by fuel can impact local biota. Glass and rubbish previously buried in situ has been exposed by storm surges, posing a physical risk to local wildlife traversing the area.

▶ **Data Deficient**
Inside site, extent of threat not known

Leptinella plumosa is a regionally native species but was found on the island in 2003 in areas that had been frequently by visitorsvisited three years previously. Current status of the species is unknown; however, the life history of the species allows for rapid expansion once established in favourable conditions (IUCN Consultation, 2017).

Potential Threats

Data Deficient

Eruptions on McDonald Island and on Heard Island are natural events but in the past have most likely impacted substantial numbers of seabirds and to some

extent, marine mammals, depending on intensity, frequency and timing of events. High numbers of seabirds and mammals breed on the islands and eruptions could result in the complete loss of a breeding season’s chick/pup production or of breeding adults.
The level of IUU fisheries and their bycatch within the foraging ranges of seabirds and marine mammals from Heard Island are presently unknown but likely to be low.
Pronounced climate change is likely to increase the introduction and/or spread of non-native species, including disease causing organisms.

► Volcanoes

Low Threat
Inside site, localised(<5%)

Lava from episodic/irregular eruptions of Big Ben (Heard Island) appears to flow downhill on the predominantly glaciated southwest face of the mountain. Some wildlife habitat is present (ice-free areas used by seabirds) but these small areas are likely to support small breeding populations of seabirds and limited vegetation (Green and Woehler 2006 and references therein). Satellite imagery and photography suggests that penguin colonies were reduced, if not disappeared, from McDonald Island with the major eruption prior to 2002.

► Avalanches/ Landslides

Data Deficient
Inside site, localised(<5%)

Some breeding colonies of seabirds (Black-browed Thalassarche melanophrys and Light-mantled Sooty Albatrosses Phoebetria palpebrata) on cliffs; birds may be injured or killed by avalanches/landslides. Avalanches and landslides at least partly attributable to glacial retreats from global climate change (other component from lava flows).

► Ocean acidification, Temperature extremes

High Threat
Inside site

Climate change is artificially accelerating ecological processes and interaction in terrestrial and marine ecosystems. Pronounced climate change

will also increase the likelihood of the introduction and/or spread of non-native species (IUCN Consultation, 2017). The dominant, keystone plant species, cushion plant Azorella selago is drought intolerant. Climate warming, changes in rainfall patterns and changes in glacial meltwater threaten the structure of the terrestrial ecosystem. Climate change threatens the extensive cushion carpets. Wetlands at Spit Bay may also be threatened by reduced moisture availability when meltwater from Dover's Moraine permanently disappears (IUCN Consultation, 2017).

► Ocean acidification

High Threat
Inside site, widespread(15-50%)
Outside site

cean acidification is likely to adversely affect marine ecosystems more directly than terrestrial (Kawaguchi et al., 2013). Indirectly, ocean acidification may alter food sources for bird and marine mammal species on the islands.

► Solid Waste

Data Deficient
Inside site, extent of threat not known
Outside site

Containers, such as fuel drums and gas cylinders that have washed up on the island as marine debris, may rust and leak contents causing local contamination (IUCN Consultation, 2017).

Protection and management

Assessing Protection and Management

► Relationships with local people

Highly Effective

Not applicable as there are no native or permanent residents in the site.

▶ Legal framework

Highly Effective

The site has a comprehensive legal framework based on Australian legislation and regulations, and management and enforcement by Australian Government agencies. Management responsibility lies with the Australian Antarctic Division (www.aad.gov.au) of the Australian Government Department of the Environment. All proposed activities within the site must meet the requirements of the Environment Protection and Biodiversity Conservation Act 1999; Environment Protection and Biodiversity Conservation Regulations 2000; and Environment Protection Management Ordinance (1987). The principal responsibility lies with the Australian Antarctic Division of the Department of the Environment and Energy.

▶ Enforcement

Mostly Effective

There is no pre-positioned Australian enforcement presence on or around Heard Island. For the purposes of fisheries enforcement in EEZs, partnerships with French Government authorities are achieved through the Treaty between the Government of Australian and the Government of the French Republic on Cooperation in the Maritime Areas adjacent to the French Southern and Antarctic Territories, Heard Island and the McDonald Islands (2003) and the Agreement on Cooperative Enforcement of Fisheries Laws between the Government of Australia and the Government of the French Republic in the Maritime Areas adjacent to the French Southern and Antarctic Territories, Heard Island and the McDonald Islands (2007) (AFMA 2017).

▶ Integration into regional and national planning systems

Highly Effective

The Territory is managed under Australian legislation and its World Heritage values are primarily protected under Environmental Protection and Biodiversity Act 1999 (EPBC Act).

▶ Management system

Mostly Effective

The site forms part of the Heard Island and McDonald Islands (HIMI) Marine Reserve, an IUCN category 1A Strict Nature Reserve declared in October 2002. The current Heard Island and McDonald Islands Marine Reserve Management Plan is for 2014–2024. The Heard Island and McDonald Islands (HIMI) Marine Reserve was declared as a Commonwealth Reserve under the EPBC Act and assigned to the IUCN category 1A Strict Nature Reserve. The 65,000 km2 Marine Reserve was declared in October 2002. In 2014, the total area of the Heard Island and McDonald Islands Marine Reserve was increased by about 6,200 km2 to incorporate additional marine areas with high conservation values. The new Plan reflects these changes. It is largely ineffective against IUU fisheries, and of unknown value for infrequent private yacht visits. Some terrestrial areas are set aside specifically for commercial and private tourists to Heard Island; McDonald Island is off limits to all visits but this is virtually impossible to enforce for unauthorised private visits.

► Management effectiveness

Mostly Effective

The site's extreme geographical remoteness and funding constraints limit Australia's ability to undertake regular on-site management operations. This has impeded the Australian Antarctic Division's (AAD's) ability to fulfil all of the management objectives of the Management Plan. The Territory continues to be managed as an IUCN 1A reserve. It is likely that in light of the relatively few visitors, the measures to manage the reserve under the new management plan will be sufficient to conserve the values.

► Implementation of Committee decisions and recommendations

Highly Effective

There was one request from the Committee at the time of the inscription, requesting documentation of the state of the marine resources around Heard Island and the McDonald Islands (Decision 21COM.VII.A, 1997). A federal government funded research project collated all available information, including (the then) contemporary data and analyses from marine science research cruise to the Territory. The results of the study were published by Meyer et al. (2000).

▶ Boundaries

Mostly Effective

The boundaries for the site are marine; there are no signs or other evidence of the boundaries on the island, consistent with preserving the Territory's wilderness values.

▶ Sustainable finance

Mostly Effective

Funding for AAD is secured from the Federal budget.

▶ Staff training and development

Some Concern

Very few AAD staff have been ashore on the site; opportunities for training and skills development are constrained.

▶ Sustainable use

Highly Effective

NA on land; commercial fishing is prohibited in the reserve.

▶ Education and interpretation programs

Mostly Effective

Some interpretive and educational materials are available on the web (see for example www.heardisland.aq; http://heardisland.antarctica.gov.au/about).

▶ Tourism and visitation management

Mostly Effective

All visits to HIMI must comply with legislation and the Management Plan and strict biosecurity conditions apply (AAD 2017).

▶ Monitoring

Some Concern

Scientific monitoring of biota and physical environmental parameters (e.g.

glaciers) occurs opportunistically. The last research voyage to the islands was in 2016 (CSIRO 2017). Ongoing monitoring of glacial retreat and the subsequent formation of ice free areas and new waterways also needs to be established (IUCN Consultation, 2017).

► Research

Mostly Effective

Despite isolation and relatively few scientific visits, considerable scientific literature has been published from the site. The most complete (but not the most current) compilation and review is Green & Woehler (2006) that drew on most recent scientific visit in 2003/04. All research in the Territory and its surrounding marine reserve must be approved by the Australian Government. New publications are expected in 2017 and beyond from the 2016 voyage.

Overall assessment of protection and management

Mostly Effective

Management responsibility for the site lies with the Australian Antarctic Division of the Australian Government Department of the Environment and Energy. The site’s extreme geographical remoteness and funding constraints limit the ability to undertake regular on-site management operations. Given the rapid changes occurring on the islands, the lack of contemporary research data and data interpretation, on-ground management of the site is hindered. However, the site’s isolation assists in reducing the opportunities for human impacts to the site’s values.

► Assessment of the effectiveness of protection and management in addressing threats outside the site

Mostly Effective

For the purposes of fisheries enforcement in EEZs, partnerships with French Government authorities are achieved through the Treaty between the Government of Australian and the Government of the French Republic on Cooperation in the Maritime Areas adjacent to the French Southern and Antarctic Territories, Heard Island and the McDonald Islands (2003) and the Agreement on Cooperative Enforcement of Fisheries Laws between the

Government of Australia and the Government of the French Republic in the Maritime Areas adjacent to the French Southern and Antarctic Territories, Heard Island and the McDonald Islands (2007) (AFMA 2017).

► **Best practice examples**

There is a 100% observer coverage on all fishing vessels operating in the region and strict permit conditions enforced by AFMA and CCAMLR.

State and trend of values

Assessing the current state and trend of values

World Heritage values

► **Outstanding examples of significant on-going geological processes occurring in an essentially undisturbed environment**
Good
Trend:Stable

Geological processes (primarily volcanism and glacial retreat) continue undisturbed (IUCN Consultation, 2017).

► **Evolution and development of island ecosystems**
Low Concern
Trend:Data Deficient

Overall, the key values of the site associated with criterion (ix) remain well preserved (IUCN Consultation, 2017). However, the potential impact of the introduced grass Poa annua on the terrestrial ecosystem of Heard Island needs to be assessed. The species is cosmopolitan and capable of spreading on the ice-free areas of Heard Island, which are increasing as glaciers retreat. The extent to which the presence of the grass on the island will influence the island’s ecosystems is unknown as there are native grasses on the island and the evolution and development of ecosystems on Heard Island may be adversely affected. Climate change threatens the dominant and keystone plant species on the island as well as wetlands at Spit Bay.
The island is home to many species of bird that have been identified to be

susceptible to plastic ingestion.
Data is deficient on the current status and trends of seabird and seal populations.

Summary of the Values

► **Assessment of the current state and trend of World Heritage values**

Good

Trend: Stable

Current status of WH values is good. Low levels of visitation aid in the low potential risks to biosecurity. There is no evidence of an increased rate of visitation to the Reserve, or of increased threats to its values; however, there is a risk is of biosecurity breaches from unauthorised visitation, with introduction of invasive and non-native biota.
Ongoing climate change poses an increasing risk to fundamental alterations in biodiversity.
Geological processes (primarily volcanism and glacial retreat) continue undisturbed.

► **Assessment of the current state and trend of other important biodiversity values**

Data Deficient

Trend: Data Deficient

Contemporary data on the state of wetlands, and breeding populations of seabirds and marine mammals are lacking. There was seabird and marine mammal research undertaken in 2000/01 and 2003/04 (Green and Woehler, 2006) and more is expected following the 2016 research voyage. There is some re-analysis from old data (eg. McMahon et al., 2015) and also some invertebrate research being undertaken (eg. Allen and Cavicchioli 2017).

Additional information

Benefits

Understanding Benefits

► Importance for research

The site that has the potential to yield sentinel climate change data and improve our understanding of climate change. Its glaciers and largely unmodified flora and fauna communities are important markers of climate change (IUCN Consultation, 2017).

► History and tradition

Relics from 19th and early 20th Century sealing industries remain on the island.

Storm surges and sea-level rise may threaten some areas.

► Outdoor recreation and tourism

Nature-based eco-tourism, limited opportunity for mountaineering.

Very limited opportunities for authorised eco-tourism due to remoteness.

Summary of benefits

The islands are wilderness icons with several unique characteristics that contribute to their national and global importance. It is the only sub-Antarctic island group with an intact ecosystem and the lowest level of non-native species. Furthermore, the islands' 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 Ocean ecosystem. Finally, the islands can yield sentinel data on changing environmental conditions that will add to our store of knowledge and improve our understanding of climate change.

Projects

Compilation of active conservation projects

№	Organization/ individuals	Project duration	Brief description of Active Projects
1	Australian Fisheries Management Authority	From: 2017 To: 2017	Observer program on commercial fishing vessels within EEZ to document wildlife interactions with fisheries activities.
2	Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)	From: 2017 To: 2017	Regional conservation and fisheries management authority for legal commercial fisheries

Compilation of potential site needs

№	Site need title	Brief description of potential site needs	Support needed for following years
1	Australian Antarctic Division	Continued scientific research and monitoring of these remote islands will enable future management plans to be revised as necessary, as outlined in the current Management Plan 2014 – 2024.	From: 2017 To: 2017

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