

Protecting Icy Islands – The Territory of Heard and McDonald Islands

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At 53°S and 73°E, Heard Island and the McDonald Islands are Australia's most remote and least-visited World Heritage Area. In the period since their inscription in 1997 – for their outstanding natural heritage values – these icy sub-Antarctic outposts have been observed by satellite more often than by people on the ground.

The Territory of Heard Island and McDonald Islands (HIMI), and its surrounding marine reserve of 65 000 km², are an IUCN Category 1a Protected Area (Strict Nature Reserve) managed by the Australian Antarctic Division (AAD) of the Department of Sustainability, Environment, Water, Population and Communities.

HIMI was inscribed on the World Heritage list for both its geological and biological processes. The nomination notes that Heard Island is a place of spectacular beauty that contains outstanding examples of physical processes – providing valuable indicators of the role of crustal plates in the formation of ocean basins and continents and of atmospheric and oceanic warming. It is the only subantarctic island with a continuously active volcano. Heard Island is also considered to be one of the largest 'biologically pristine' islands in the world. Therefore the prevention of introductions through human activity is a major consideration in the planning and authorisation of visits. The Territory also provides crucial habitat for large breeding populations of marine birds and mammals including Southern Elephant Seals, Fur Seals, Petrels, Albatrosses, Prions, an endemic Sheathbill and Cormorant, and King, Gentoo, Macaroni and Rock Hopper Penguins.

Visitors

HIMI is some 4000 km south-west of the Australian mainland, 4700 km south-east of Africa and 1000 km north of Antarctica. HIMI is therefore afforded a degree of natural protection through its very remote location with the Territory is distant from large human population centres and shipping lanes. The maritime setting of the islands leads to low seasonal and daily temperature ranges, persistent and generally low cloud cover, frequent precipitation and strong winds and is a challenging environment in which to work and recreate.



Macaroni penguin rookery at Corinth Head, Heard Island. Photo © Kato Kiefer/Australian Antarctic Division

It has been little occupied since the conduct of sealing in the 19th century and the operation of an Australian Government research station between 1947 and 1955.

Relatively few privately-organised visits and in the order of twenty public-sector visits have been made to HIMI since the 1980s. The first and last winter occupation of Heard Island since 1955 was in 1992. The most recent scientific expedition was in 2003/04.

In 2002 the AAD commissioned an independent (external) study of the probability of introduction of non-indigenous species. The threats posed by scientific expeditions were assessed as greater than those arising from tourism – on account of the considerably larger volumes of material taken ashore, assumptions about the greater potential for unobserved/unreported breaches of conduct, and the often fewer restrictions placed on researchers' intra-island travel (Chown, 2003).

Biosecurity

As is the case for other remote sites, by the time an introduction is discovered and identified as an issue, control or eradication may be difficult if not impossible to achieve. Excepting behaviours by those with a deep ethical commitment, the practical attention given to cleaning footwear and other gear of seeds and soil is influenced by the degree of convenience attached to taking the action and the degree to which individuals are compelled to act (Barr, 2004; and the author's observations). It is therefore highly desirable – perhaps essential – to have inspectors verify the compliance of companies and individuals with the suite of quarantine requirements detailed in recent and forthcoming management plans for the area. In turn, the compliance of AAD activities as an operator and regulator is determined through the contracted assistance of Quarantine Tasmania.

Unlike most other sub-Antarctic islands for which numerous introduced species are recorded, only four 'aliens' are known to have established on Heard Island – thrips, mites, earthworms and annual meadow grass – none directly as a result of human activity (AAD and Director of National Parks, 2005).

Change

The steepness of HIMI's dominant mountain – Big Ben, reaching 2745 m over a horizontal distance of about 10 km – and high snow precipitation at high altitudes mean that Heard Island's glaciers are fast-flowing and sensitive reactors to climate change. Glaciers that once terminated at sea level now terminate more than a kilometre from the coast; between 1947 and 1988 the

area occupied by glaciers has decreased by more than 10% (Ruddell, 2006). Such recent and dramatic retreat has created new potential habitat for plants and other biota, while ameliorating temperatures will likely provide scope for the spread of species, with or without direct human aid.

McDonald Island, while not glaciated, has undergone its own massive change. Volcanic activity in the 1990s resulted in it doubling in size.

It is these features, and HIMI's high level of freedom from human disturbance, that make this World Heritage Area an outstanding location for researching climate change and plant colonisation processes.

Remote technologies

Whereas expedition members documented some thirty eruptions of Heard Island's volcano between 1947 and 1955, satellite imagery now records these events, and an automated camera installed at Atlas Cove records expedition members as they move about the site.

Remote sensing, image analysis and GIS techniques are proving invaluable aids to mapping and monitoring. Such techniques cause few or no environmental impacts, can provide information that is not visible with the naked eye or in aerial photographs, cost less than field surveys, and offer methods that are robust, objective and repeatable (Lucier et al., 2009). These techniques are also assisting in presenting HIMI to the global community.

The outlook

The outstanding universal value of the area appears to have been little-impacted since the Territory's inscription. The presence of humans is evidenced only by scattered sealing industry artefacts, the foundations and localised detritus of the old station buildings (currently undergoing assessment for the possible presence of asbestos prior to future clean-up actions), and field huts and equipment used to support Australian research activities. Today, a system of management zones establishes wilderness and heritage areas; visitor access and main use areas to concentrate scientific and non-government activity; and areas in which access is only allowed for monitoring and other compelling purposes. Although extractive industries are banned outright, the fundamental determinant of whether activities may be undertaken in HIMI is the potential of the activity to detract from the Territory's values, rather than the activity's purpose.

The administration of the Heard Island and McDonald Islands World Heritage Area is funded from within the Australian Government's appropriation to the AAD. Most



Big Ben viewed from Sealers Corner, Heard Island. The blubber pots are evidence of the sealing days. Photo © Karl Rollings/Australian Antarctic Division

protection obligations will continue to be implemented through biosecurity and other conditions attached to the permits that are needed to enter the Territory. Future management activities – research to support conservation, and the clean-up of debris associated with the old station – will most likely be supported by patrols undertaking surveillance for illegal fishing, and the diversion of government-chartered vessels travelling to and from Australia’s Antarctic stations.

References

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Links

- <http://www.heardisland.aq/>
- <http://www.antarctica.gov.au/>

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Biographies

Dr Tony Fleming took up the position of Director of the Australian Antarctic Division of the Department of Sustainability, Environment, Water, Population and Communities in late 2011. Previously he held senior executive positions within the Federal and State public services for more than 20 years including appointments as the Director of the NSW Parks and Wildlife Service and Deputy Director-General of the NSW Department of Science and Climate Change. More recently as National Operations Manager for the Australian Wildlife Conservancy he managed more than 2.5 million hectares of Australia for conservation purposes.

Dr Sandra Potter currently leads the Australian Antarctic Division team responsible for the administration of Australia’s Antarctic and sub-Antarctic territories. She has more than 20 years’ experience in protected area management planning and the conduct of activities in sites of high conservation value. Dr Potter is a member of the Australian World Heritage Advisory Committee and an Honorary Research Associate with the University of Tasmania’s School of Geography and Environmental Studies.