Conserving in the deep freeze. Saving and interpreting the Heroic era huts of the Ross dependency in Antarctica.

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Abstract

The Heroic Era explorer huts in the Ross Dependency of Antarctica are located in one of the most remote and environmentally harsh areas in the world. As unique tangible evidence of world exploration and human endurance, these huts are exceptionally special, but showing the signs of environmental and human impact.

International Conservation Services (ICS) have been working with the Antarctic Heritage Trust, New Zealand (AHT) for the last 10 years. ICS's main role is providing the conservation expertise required to preserve the movable heritage items, within and around four expedition bases, amounting to many thousands of items.

In 2006, the AHT achieved a world first: to support a materials conservation team in Antarctica year round, to progress the preservation program. Extreme climate and logistical issues mean managerial and technical issues are challenging to resolve. Together, ICS and the AHT have developed mobile laboratories, conservation treatment protocols, material testing programs, disaster preparedness plans and preventive conservation strategies for the movable heritage items associated with these sites.

This paper tells the story of what has been described as 'currently the most exciting conservation project in the world.'

Background

The historic huts

At the turn of the 20th century, the Antarctic region was largely unknown beyond the whaling industry based on small outlying islands. Exploration of the area became popular at the turn of the 20th century with the race to conquer the Antarctic mainland and to discover the South Pole. This era became know as the Heroic Era of exploration, from 1899 - 1914 (Chaplin, 2004).

The Ross Dependency is managed by New Zealand and contains thirty four historic sites (AHT, 2004a), including four of the five original expedition bases left from the Heroic Era of exploration (Chaplin and Barr, 2004).

Explorers chose this part of Antarctica to launch and base their expeditions, due to its proximity to the South Pole. Nowhere else on the Antarctic continent holds such a number of historic huts (Tennant, 2007:15). One explorer base is on the Antarctic mainland at Cape Adare, the other three are on Ross Island. Ross Island is attached to the mainland by the Ross Sea Ice Shelf (see Image 1).

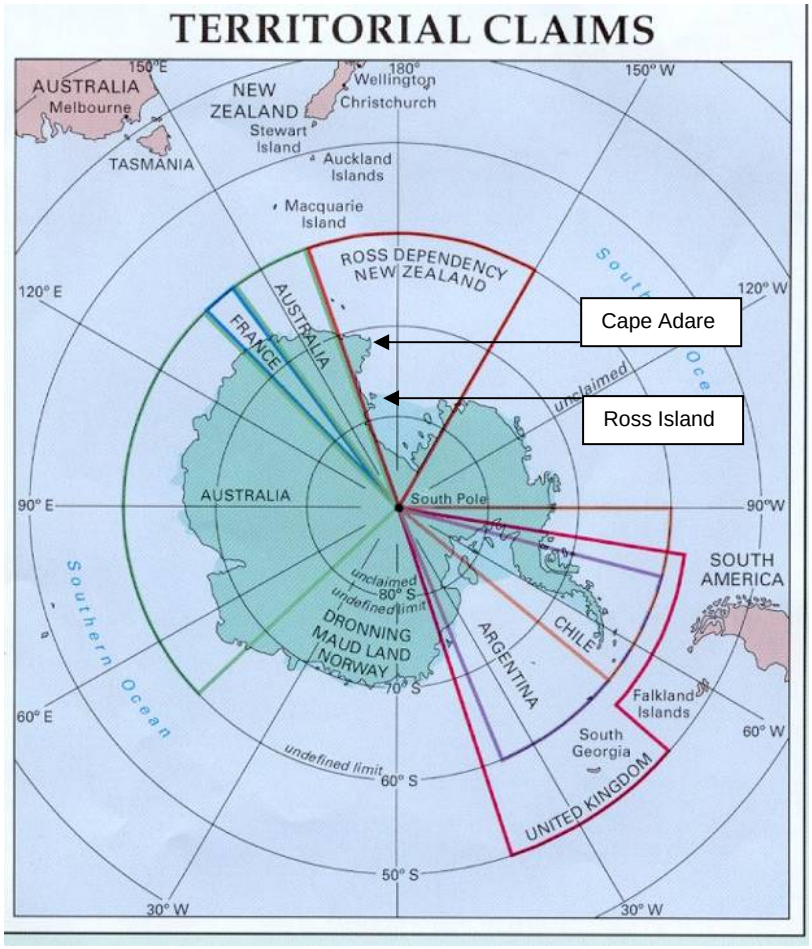

Image 1 The Ross Dependency, Antarctica (AHT, 2006)

The huts on Ross Island include:

- Discovery Hut (Hut Point), from Captain Scott's first expedition 1901 – 1904,
- Nimrod Hut (Cape Royds), from Sir Shackleton's expedition 1907 – 1909
- Terra Nova Hut (Cape Evans) from Scott's last expedition 1910 - 1913, (see Image 2 for hut locations).

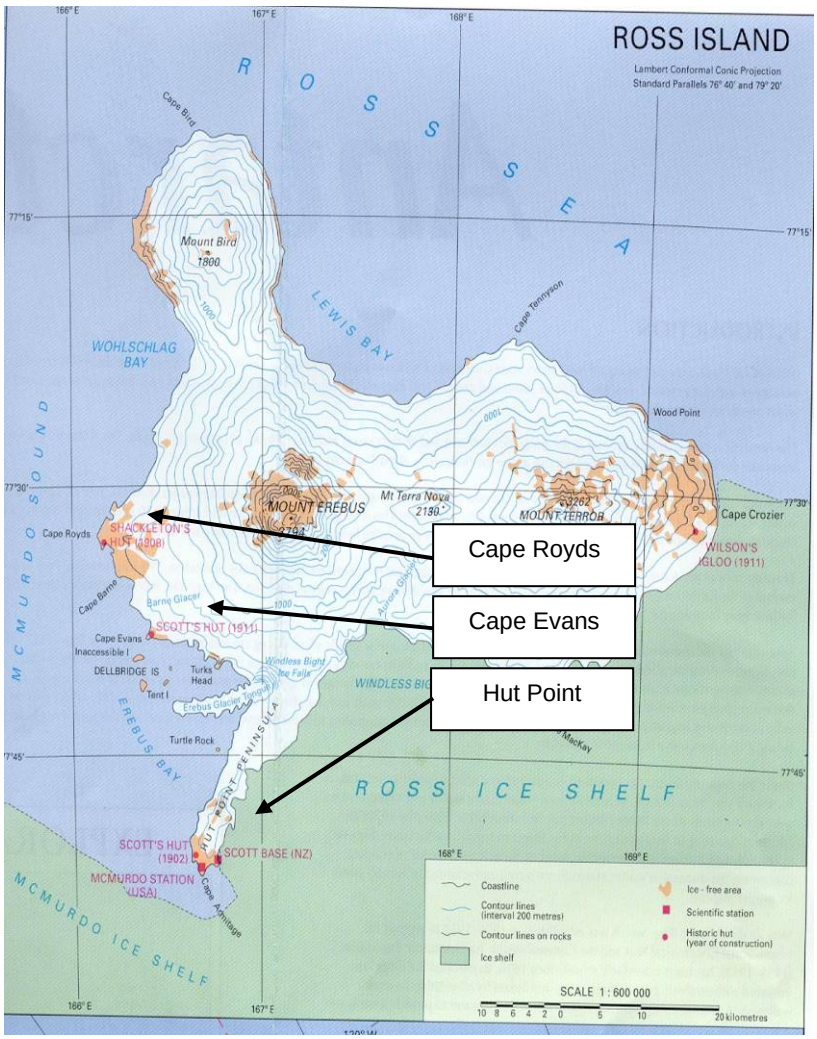

Image 2 Ross Island, Antarctica (AHT, 2006)

All of the huts were pre-fabricated kits from England and Australia. They were packaged for travel and erected by the crew when they arrived on the ice. The crew slept, ate and worked in the huts. Each of the expedition bases had working space for at least one biologist, geologist, meteorologist, and physicist, (Farrell et al, 2004) and a darkroom for the expedition's photographer to process images. Together these huts remain an 'astonishingly powerful evocation of the men who risked their lives on those early expeditions' (AHT, 2004b:12).

Cape Adare Huts, Cape Adare (1898 – 1900)

Two huts were erected by the Norwegian, Carsten Borchgrevink, on his 'Southern Cross' voyage for the British Antarctic Expedition (see Images 3 and 4).

Image 3 The Huts, Cape Adare (AHT, 2004)

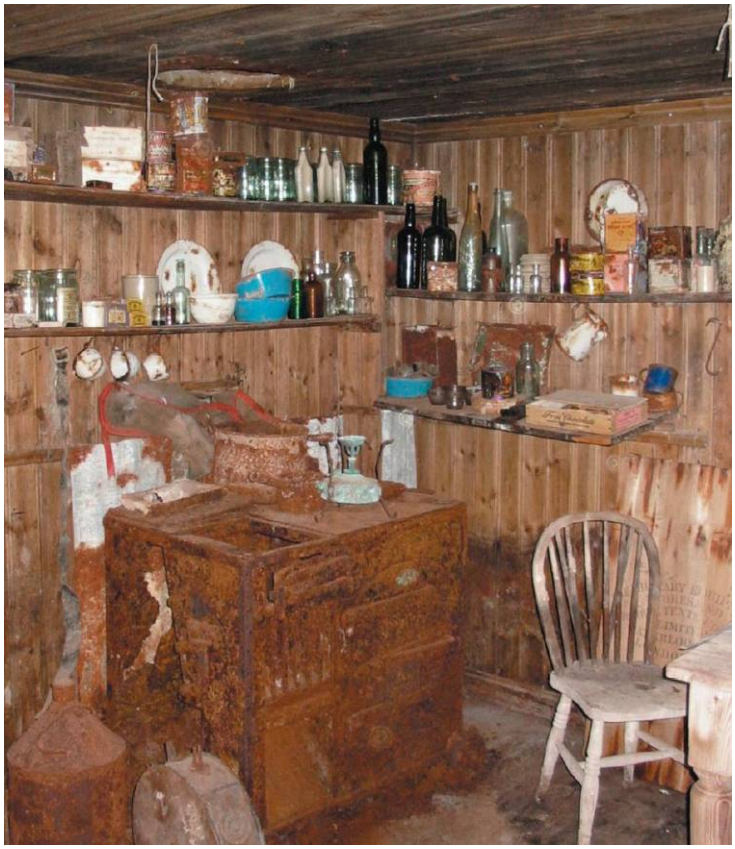

Image 4 Interior of Cape Adare Huts (AHT, 2006)

Borchgrevink was the first man to camp in Antarctica and lead the first group to winter over on the continent. It remains one of the most inaccessible sites in the Ross Dependency.

Discovery Hut, Hut Point (1901 – 1904)

This hut was erected by Scott's 'Discovery' expedition team of forty seven members on the National Antarctic Expedition (see Image 5).

Image 5 Discovery Hut, Hut Point (AHT 2004)

This was the base for Scott's first expedition to the continent. Where he and Shackleton made an unsuccessful attempt for the Pole.

Nimrod Hut, Cape Royds (1907 – 1909)

This hut was erected by Shackleton's 'Nimrod' expedition members on the British Antarctic Expedition (see Images 6 and 7).

Image 6 Nimrod Hut, Cape Royds (AHT 2006)

Shackleton returned to Antarctic with the dream of discovering the Pole. He too was unsuccessful.

Image 7 Interior of Nimrod Hut (AHT, 2006)

Terra Nova Hut, Cape Evans (1910 – 1913)

This hut was erected by Scott's 'Terra Nova' expedition members on the British Antarctic Expedition (see Images 8 and 9).

Image 8 Terra Nova Hut, Cape Evans (AHT, Ian McLaughlin, 2006)

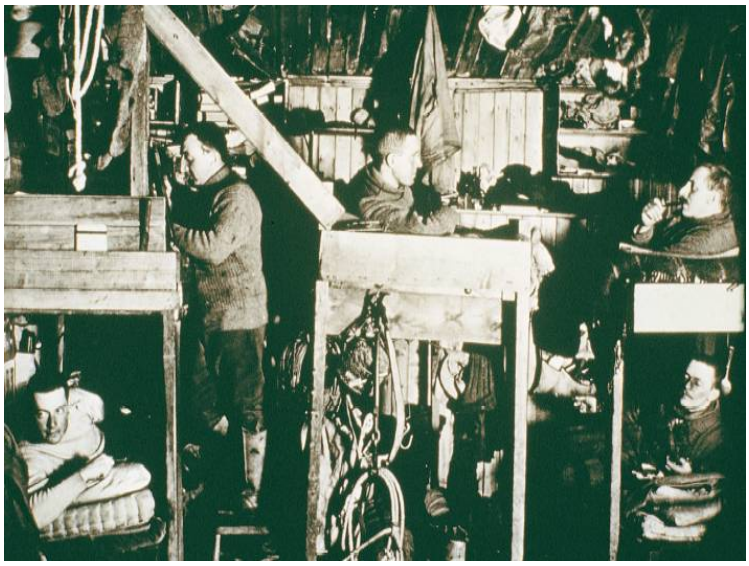

Image 9 Men living inside Terra Nova Hut (AHT)

Scott returned for his second and final attempt for the pole. He was unsuccessful, being beaten to the pole by Admunsen by a month, and died on the return. Other scientific endeavours were undertaken during this voyage, including the 'Worst Journey in The World'.

This ‘worst journey’ was made by a team of three walking across Ross Island in the middle of winter to observe the breeding season of the Emperor Penguin and to retrieve eggs for analysis.

Together, the contents of these huts amount to over many thousands of items, ranging from exploration equipment, clothing, food, scientific equipment, memorabilia, and furniture. These items were left behind as they were no longer needed, such as the hundreds of cases of food, or because crews had to leave in a hurry to board ships that needed to quickly depart or be trapped in the ice for another year.

Some examples of the collection in situ are shown in the images below:

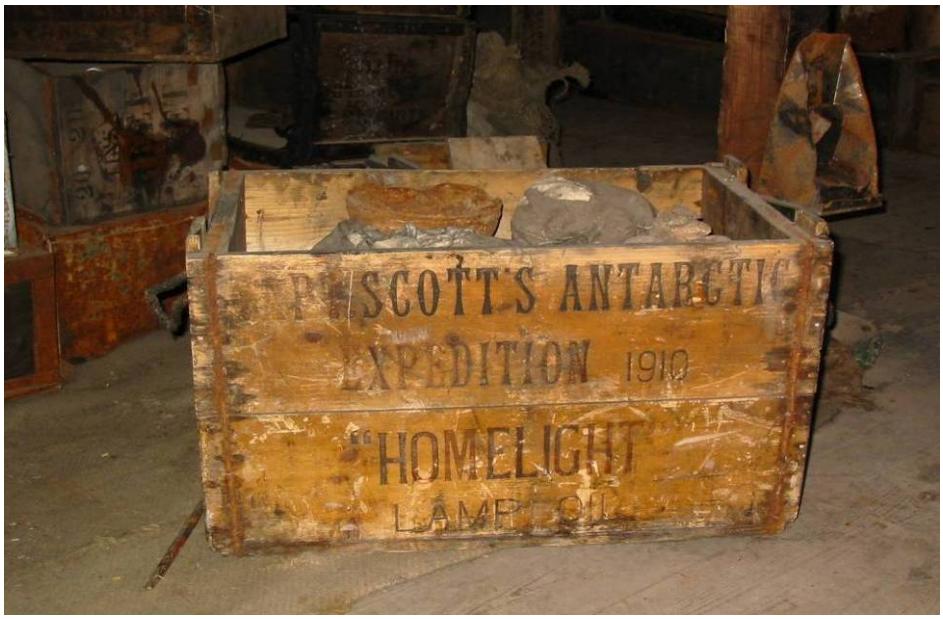

Image 100 A crate of supplies in Discovery hut (AHT, 2006)

Image 11 Interior of Nimrod Hut (AHT, 2006)

Image 12 Interior of Nimrod Hut, showing tins of food (AHT, 2006)

Image 11 Interior of Terra Nova Hut (AHT, 2006)

The Antarctic Heritage Trust's involvement

The AHT was formed in 1987 to 'care for the heritage of the Heroic Era located in the Ross Sea region of Antarctica on behalf of the international community' (AHT, 2005a).

The AHT is an independent, not-for-profit body which operates closely with the New Zealand crown entity, Antarctica New Zealand (AntNZ) in Christchurch. The relationship between the two bodies is critical, as AntNZ provide all the logistical support for AHT to operate in Antarctica, including; air and ground travel, accommodation on the ice and all clothing and food. The critical component (and bottleneck) of this support is access to the ice, which in turn, relies on the US Air Force and their C17 transport planes. AntNZ is allocated a limited number of seats on flights to the ice each season by the US National Science Foundation (USNSF). THE USNSF runs the US Antarctic programs. AntNZ then in turn has to allocate these seats between its own programs and the AHT.

The result is that there is constant pressure on the AHT to utilise the minimum number of seats possible. The AHT has sought to address this by increasing its winter program when there is less demand on seats. However, as the historic huts conservation project is now one of the largest programs in AntNZ's schedule, there will continue to be significant logistical issues in its management.

The AHT is not funded by AntNZ beyond the latter providing basic support. The AHT raises the necessary funds for the historic huts conservation project through a variety of means. This has included: grants from NZ Lotteries, direct grants from the NZ Government, philanthropists in the US, UK and New Zealand, and fund raising in NZ and the UK (the AHT has a sister organization there known as UKAHT).

Through a carefully developed program of developing relationships with key international players in the heritage field such as the Getty Conservation Foundation and the World Monuments Fund, the AHT has been spectacularly successful in raising both funds and profile for the huts, and indeed can be sited as a model of how to build a fund raising program for such a project. That said, at the time of writing, it has only almost completed conserving one of the four huts: Shackleton's at Cape Royds. It still requires substantial funds to complete the most complex of all the huts; Scott's Hut at Cape Evans. It is hoped that the UK government will build on its initial contribution of GBP250,000 as momentum moves towards the centenary of Scott's death in 2012.

The International Council on Monuments and Sites (ICOMOS) established the International Committee for Polar Heritage (ICPH) in 2000. (ICPH, 2002). The ICPH provide and coordinate communication and information relating to issues and programs associated with the Arctic and Antarctic. The shared information and experiences by participants assist organisations responsible for the care and management of polar heritage sites to work to high standards.

The challenge

Physical deterioration

As unique tangible evidence of world exploration and human endurance from over 100 years ago, these huts are exceptionally special, but showing the signs of environmental and human impact. The huts and their contents are suffering from physical deterioration caused by several factors including: the environment, human access and natural causes.

Within the Antarctic Treaty system is the Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol, 1991). This recognises the importance of Antarctic historic sites and establishes a management framework for them (Pearson, 2004; Farrell et al, 2004).

Within this framework, the huts are allocated the highest protection status possible, Antarctic Specially Protected Areas (ASPAs). Each ASPA has a Conservation Plan that includes maximum visitor levels and Codes of Conduct. All of the Heroic Era huts are ASPAs (Tennant, 2007:25).

No more than 2,000 people are allowed to visit each hut per year (AHT, 2005), as required by the ASPA Conservation Plan, to minimise human impact on the sites and huts (F.Wills, personal email, 24/01/2007).

Human visitation is contributing to damaging to the huts and sites (Chaplin 2004; Farrell et al, 2004) and there are consequently many preservation concerns for ongoing visitation (Hughes, 2004; Barr, 2004).

It is unlikely that these limits will change. They will not be raised, due to concerns with visitor impact (J.Bickersteth, personal communication, 21/11/2006; F.Wills, personal email, 24/01/2007). They will not be lowered as it is believed the current levels are sustainable.

Chaplin believes that a balance of visitation is the key (2004) and the benefits of allowing visitation should not be underestimated. Visiting and experiencing the historical sites creates great advocates for the ongoing need for preservation (Chaplin, 2004; Barr, 2004) and some become a major source of funds for the preservation program (Chaplin, 2004).

Environmental deterioration

The Antarctic environment is incredibly harsh. Extreme temperatures and wind speeds are having a brutal effect on the huts and their contents, both inside out.

Freeze-thaw cycles between winter and summer are affecting most materials including textiles, leather, metals, timber and glass. The wind and ice abrasion, is gradually weakening not only elements of the hut structure but the movable heritage items as well.

Image 14 Exterior of Discovery Hut (AHT, 2006)

Image 15 Exterior of Discovery Hut, showing cases of food (AHT, 2006)

Image 16 Detail of deteriorating cases of food, exterior Discovery Hut (AHT, 2006)

Environmental conditions, together with the effects of human impact, are accelerating the natural deterioration processes.

Limited site interpretation to date

Site interpretation is a complex issue that has been driven to date by a mixture of well meaning on site distribution of artifacts by visiting Antarctic specialists and in depth research by polar historians. The result to date has been to provide an experience for visitors which is very powerful and evocative, but not totally historically accurate. This accuracy is in itself complex, as the huts have all had various overlays of use during the historic era. The prime example is Scott's hut at Hut Point (1902), which was the used by Shackleton in 1907-1909, Scott again in 1911-1913 and Shackleton's Ross Sea party in 1914-1916.

With up to 1500 visitors to the three Ross Island huts each year (Cape Adare is much more difficult to reach and is only visited every few years), interpretation has consisted of pre-visit lectures (for cruise liner tourists) and carefully organized groups of up to 6 visitors into each hut once the site is reached. The huts are normally locked and tour guides bring the key.

Once inside, the interpretive method has been to seek to create an ambience of the expeditioners having just left, there being no story boards, labels or other interpretive devices. The only concession to visitors has been at Cape Evans where certain parts of the heavily artifact filled spaces have been subtly sealed off either by blocking access with furniture or by roping off sections.

The resulting experience is almost universally appreciated as highly evocative, judging by comments in the visitor books. The exception is at Hut Point where the hut is heavily visited, due to its proximity to the US McMurdo Base, and the limited artifacts have been laid out along the walls.

The project

The conservation program

Located in one of the most remote locations in the world, with extreme climatic conditions and limited access to resources, the 'diversity and complexity of these historic sites is daunting' (Chaplin and Barr 2004:9). The explorer huts present many unique management issues including: access, interpretation, education and conservation. (Tennant, 2007:24).

In 2006, the AHT achieved a world first; to support a materials conservation team in Antarctica year round, to progress the preservation program. Extreme climate and logistical issues mean managerial and technical issues are challenging to resolve. Together, ICS and the AHT have developed mobile laboratories, conservation treatment protocols, material testing programs, disaster preparedness plans and preventive conservation strategies.

The AHT conservation program has been developed over a number of years since the early 1990s. During the 90s much useful work was undertaken during summer seasons, stabilizing and repairing the hut structures, and cataloguing and condition reporting the collections. However it was the creation of Conservation Plans from 2003-05 that moved the program into a major project. The Plans were written using an international team of specialists, peer reviewed by heritage professionals and other stakeholders in a number of countries.

These plans laid the foundation for the program, providing guidance on overall policy and detailed recommendations. The artifact conservation program began with Shackleton's Hut at Cape Royds, principally because of the urgency of conservation issues there. It also had the advantages that this was a smaller hut than Scott's at Cape Evans, more accessible than Cape Adare, and experiences could be used for the conservation work on the remaining huts as conserved. A summer program of major hut conservation began at Royds in 2005/06 followed by the first winter-over artifact conservation team working through the Winter of 2006. It is expected that this pattern will now continue until at least 2012.

The conservation lab

In 2006, ICS and the AHT worked together to design a two part mobile conservation laboratory to help conservators work on the ice. The lab is fully equipped to undertake an extensive range of conservation treatments on all the different materials in the huts. It includes large washbaths, a microscope, fume hood, chemical store, photographic equipment, as well as storage for a great variety of materials, such as rolls of special plastics, tissues, papers, all required to undertake complex conservation treatments in a controlled and safe environment.

Prior to this, conservators were limited to the amount of treatment they could do to the objects, as a) they were only there for a summer season – six weeks at most, b) it was not possible to transport all of this equipment to each hut site, c) it was impractical to try and transport all this equipment and waste valuable time setting up and taking down each season and d) it was not possible to use all necessary materials, such as chemicals, in a safe way.

Image 12 The first winter-over team in front of the labs (AHT, 2006)

The combination of having conservators on the ice year-round, and a fully equipped laboratory has enabled the conservators to work more productively and effectively.

Logistics

Careful forward logistical planning remains critical for the program, due to the isolation of the location, the cost, and difficulty in providing back up supplies and equipment. The key has been long term forward planning, and the AHT has been provident in appointing personnel with extensive Antarctic experience.

The planning requires a number of different threads. There are the heavy non-urgent supplies and equipment which need to be sea freighted from Christchurch to arrive at the end of each summer season (January). Then there are the supplies that can be brought in by air during the summer. Finally there is the onward movement of equipment and supplies from Scott Base to the historic hut sites themselves.

This is achieved over the sea ice early in the season using Haggalund tracked vehicles, and by helicopter later in the season once the sea ice has melted. The latter is a much more costly process than the former and also has significant weight restrictions.

Accordingly almost all the artefact movement between the historic huts and the lab at Scott Base are undertaken early on the season over the ice.

Image 18 Moving supplies in creates by Haggalund (AHT, 2006)

For the winter season, the last flights from New Zealand occur in late February, after which there is no way of re-supplying until August, when there is some brief movement of flights once daylight has returned. This is known as Winfly or Winter fly in. After that, there are no more flights until early October, when the summer season starts gearing up again.

The conservation teams

For the artifact program, the conservation staff requirements have been dictated by the specialties required. These are principally for; objects/metal conservators (due to the large number of cans of foodstuffs), and to a lesser extent for paper and textile conservators. A leather specialist has also been employed for one season to treat the leather dog and pony tack, footwear and sleeping bags.

The issues

Staffing

Any limitation on staffing has been caused not by lack of applicants, but by lack of access to the ice. This is due to the restricted number of plane seats available for conservators to reach the ice.

The program identified the need for four conservators during winter and two during the summer to achieve the required treatment outputs. An international advertising program was undertaken by ICS in 2005 to identify potential applicants, to which there were 80 responses in the form of expressions of interest and 34 applications. These numbers have remained consistent in succeeding years, reflecting the interest in what has been termed by a British conservator ‘the current most exciting conservation project in the world’.

Conservation treatment methodology

Conservation treatments that work in most museums are not always successful for objects in Antarctica, that are exposed to conditions such as -30 - +5°C and 10 – 50% RH (relative humidity). It is not always possible to use the same range of materials and methods as used elsewhere in the world. The same philosophies applied by material conservators around the world of: intervening as little as possible, preventing further damage, and re-treating when necessary still apply for the Antarctic movable heritage items, however the treatments used must ensure the artefact’s stability in the extreme conditions mentioned above.

This has meant considerable rethinking of standard treatments, and controlled experimentation with different materials and methods. The result has been the formulation of a comprehensive Conservation and Documentation Manual that specifies treatment protocols to be used by each team on all the material types.

Image 1913 Conservators working on the movable heritage items

Site interpretation

The AHT has always communicated the significance of these huts and collections as part of the preservation program. This is an important task and part of their mandate, as promoting the significance of these huts encourages public goodwill and support. (Tennant, 2007).

The future interpretation of the sites plans to be a subtle refocusing, rather than a complete rethink. The key issue being to ensure the sites remain what the World Monuments Fund has dubbed ‘The most evocative heritage sites in the world’ (AHT, 2007).

The refocused plans will ensure consistency of the hut contents and layout, to an agreed time in the history of the huts as dictated by the Conservation Plans. Thus at Cape Royds, evidence of later use by Scott's 1912 party and the 1914 Ross Seaparty will not override the original configuration at the time of first occupation in 1907-1909. It is not planned to add any interpretive devices beyond folders of historic photos being available to allow comparison.

Conclusion

The Heroic Era explorer huts of the Ross Dependency are unique examples of human exploration and endurance. The AHT are financing a year-round program to conserve the movable heritage – with Shackleton's Hut nearly complete and work on Scott's hut programmed to start next year.

The challenges of such a program are numerous for these heritage sites in such a remote and harsh location. Deterioration is accelerated by physical and environmental impact, and there has been limited site interpretation to date.

The conservation program has been running since the 1990s but has increased in intensity with the Ross Sea Heritage Restoration Project's inception and particularly from 2006 with a year-round program and increased numbers of conservators able to work in improved conditions supplied by the purpose-designed mobile laboratories. The logistical issues associated with running a team of four or more people in such an isolated and inaccessible area are numerous. Well planned supply shipments, communication channels and protocols for treatment keep unforeseeable issues to a minimum.

There is plenty of international interest to be on the conservation team undertaking the work. Their work is viewable online at the British Natural History Museum website www.nhm.ac.uk/antarctica-blog/ . The Museum is a partner of the Antarctic Heritage Trust.

Staffing the program is difficult however, due to limited access to Antarctica, and finding suitable people from the necessary material conservation disciplines.

Extensive work and ongoing controlled experimentation has enabled the development of a comprehensive operations manual to help the ongoing teams pick up from the team before and deliver best practice standard conservation results on the collection.

Interpretation of the sites is evolving and refocusing to ensure consistency of the hut contents and layout, to reduce confusion caused by layers of use from different Antarctic explorations.

With conservation work planned for more than the next five years, we look forward to being involved in ‘the current most exciting conservation project in the world’.

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