

An Inquiry into Australia's Antarctic Territory

Joint Standing Committee on the
National Capital and External Territories

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Introduction

For more than a century, The University of Queensland (UQ) has maintained a global reputation for delivering knowledge leadership for a better world. UQ has won more Australian Awards for University Teaching than any other university. This commitment to quality teaching empowers our 52,000 current students, studying across UQ's three campuses, to create positive change for society.

Our research has global impact, delivered by an interdisciplinary research community of more than 1500 researchers at our six faculties, eight research institutes and more than 100 research centres. The most prestigious and widely recognised rankings of world universities also consistently place UQ among the world's top universities.

School of Biological Sciences

The UQ School of Biological Sciences is home to a vibrant community of life scientists, whose research spans the scales of biological organisation from molecules and cells to organisms, populations, species and communities. The School has more than 60 postdoctoral researchers, who contribute to a diverse undergraduate and postgraduate teaching program.

The School is in the top 50 universities globally for research productivity in plant and animal biology, and ecology and environmental biology. In the 2012 Excellence in Research Australia Report, UQ was the only university to consistently perform above or well above world standard across all sub-disciplines of biological sciences: ecology, evolutionary biology, genetics, plant biology and zoology were all rated as well above world standard.

This submission represents the opinions of the contributing authors listed in this document. It does not necessarily represent an official position of The University of Queensland.

Summary and recommendations

Antarctica is owned by no-one but claimed as a global common.

It is this premise that has resulted in the opportunities but also the challenges Australia faces in Antarctica today. Australia has long been a leader in discovery, governance, science and management on the icy continent. Our explorers, expeditioners and enthusiasts have provided research, education and conservation expertise. Today, Hobart acts as one of five Gateway Cities globally.

It is only appropriate that Australia looks to continue its leadership in scientific research, conservation, governance and education about Antarctica. As this submission outlines, there is still much Australia can offer to the southern-most continent and more still that Antarctica can provide to Australia in terms of scientific discovery, and economic growth and development. It is with pleasure that we provide this submission for your consideration.

Recommendations outlined in this document are:

1. Increase the amount of funding available for researchers by:
 - a. Engaging and supporting Australian university researchers to access the Australian Antarctic Science program and other government-funded Antarctic research initiatives such as Gateway partnerships
 - b. Providing more specific opportunities for early- and mid-career researchers.
2. Ensure the value of grants represents the costs of both the research and logistics, in line with other Australian funding programs to ensure researchers are appropriately rewarded for Antarctic research.
3. Provide a mechanism for capturing and depositing research data across all Australian scientists, in turn, benefitting the global research community and ensuring relevant contemporary information reaches Treaty meetings.
4. Enhance Hobart's attractiveness as a Gateway City to Antarctica through a more developed logistics hub; broader research program; and better education and tourism offerings, both in Tasmania and Antarctica.
5. Engage in meaningful and robust discussions regarding impacts of climate change and biosecurity (invasive species) threats to Antarctica, continuing our leadership and impact in this area.
6. Continue to move to using alternative energies at Australian Antarctic bases and to reduce our footprint on the continent.

Terms of reference (ii-v)

i. Serving the scientific program into the future

Australian researchers are well recognised as leaders in Antarctic research. In addition to more traditional research areas such as krill, plankton, oceanography and wildlife biology, Australia has emerged as a leader in climate change, conservation and human impacts research.

It is absolutely critical that Australia continues to demonstrate a leadership role across the physical and biological sciences, as well as these emergent priority areas. However, other countries are also looking to expand their interests in Antarctica. For Australia to maintain its leadership position, it is vital that the Federal Government revisit its current funding structure; update its reporting; and provide consideration around Antarctic career opportunities.

Currently the bulk of Australia's Antarctic research is funded through the Australian Antarctic Program. While this is a worthwhile and well-placed program, investing further in universities would provide an opportunity to tap into considerable in-kind support and additional resources.

Providing a bigger and broader funding base would provide the Federal Government a better 'view' of all research being undertaken in this area. Currently the Federal Government misses opportunities for capturing university-based Antarctic science not funded through the Australian Antarctica Science (AAS) program, as there are no formal mechanisms to capture this non-AAS science. This has resulted in an incomplete picture and deprives researchers – both within universities and the AAS – of collaboration opportunities.

- For example, if a researcher working outside the AAS program was to identify a specific Antarctic bacterial strain or gene that had benefits to contemporary pharmaceuticals and medicine, there is currently no formal means by which this finding can be reported to the relevant authority.

Enhanced engagement with Australian researchers undertaking Antarctic-related research (regardless of how they are funded) would be advantageous to the Federal Government's broader Antarctic goals, capturing the contribution of Australian scientists more broadly and extending our knowledge of Antarctic science.

The location, accessibility and logistics associated with travelling to Antarctica have made researching the icy continent a difficult career choice for academics, particularly those balancing carer responsibilities. While some of these challenges are not easily solved, early- and mid-career researchers are now facing a new set of hurdles. Incentives for female Antarctic researchers to stay in Antarctic science would be beneficial. Australia currently has no awards for female researchers in Antarctic science.

Through the AAS there is only one fully funded postdoctoral position available in each round, the Hawke Fellowship. This, combined with a heavy merit-based grant system, makes it incredibly difficult for early- and mid-career researchers to enter the field. Australia's Antarctica research activities would hugely benefit from a program whereby PhD students had more support and formal access to resources and logistics, and funding flexibility. A new generation of scientists needs to be supported and encouraged and see there is a future in Antarctic science.

There are also challenges for more experienced researchers, particularly those associated with mainland Australian academic institutions.

- AAS grants are currently limited to \$150,000 over four years – this must be increased in line with other similar funding programs.
- The reporting and administration associated with AAS and deployment of personnel are costly. Currently logistic support is not reportable as grant funding – that is, it is not ‘built in’ to the grant. This means the total amount of Federal Government funding given to academics is not visible by their own universities, which has a flow on effect for Australian Research Council (ARC) applications and academic promotions rounds where total research funding is a metric of success. Again, this limits the success of early- and mid-career researchers. The dollar value of logistics is already known and recorded by the Australian Antarctic Division – this information should be included in grants as it is significant for the researchers.

Recommendations:

- Increase the amount of funding available for researchers by:
 - Engaging and supporting Australian university researchers to access the AAS program and other government-funded Antarctic research initiatives such as Gateway partnerships
 - Providing more specific opportunities for early- and mid-career researchers.
- Ensure the value of grants represents the costs of both the research and logistics, in line with other Australian funding programs to ensure researchers are appropriately rewarded for Antarctic research.

ii. International engagement, including collaboration and resource sharing with other countries

By their very nature, the most important scientific findings often represent the collaborative efforts of many. Often these collaborations are with colleagues from around the globe and, put simply, it is vital that Australian researchers have the opportunity to explain their findings and also learn from the findings of others. Currently researchers are precluded from using AAS grant funding for international travel, to attend international conferences or on international collaborations; it would be beneficial to researchers if a portion of AAS grants could be used to attend and present at such conferences, in line with other grants (eg ARC grants).

From a national perspective, it's also vital that these research findings are communicated with member countries at Antarctic Treaty meetings. As outlined in Section (ii), there is currently no mechanism to capture research information or outputs of academics working 'outside' of the Australian Antarctic Science program – the onus is firmly on those researchers to ensure their work is made available to the Treaty, where appropriate. A clear mechanism enabling Australian researchers to provide their findings to the Federal Government would ensure comprehensive communication of relevant information at Treaty meetings and the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR).

The nature of Antarctica makes it a complex locale for international visitors. Researchers working outside of the Australian Antarctic Division would benefit from visa support to engage international colleagues travelling to Antarctica, particularly students. Such an approach would have the twofold benefit of assisting current researchers while aiding the next generation.

Recommendation:

- Provide a mechanism for capturing and depositing research data across all Australian scientists, in turn, benefitting the global research community and ensuring relevant contemporary information reaches Treaty meetings.

iii. Fostering economic opportunities consistent with the Antarctic Treaty System obligations

Ever since Douglas Mawson set sail for Antarctica from Hobart in 1911, Australians have been fascinated with the southern continent. Behind this well-known story of discovery lies another – untold – story that is still playing out and provides considerable opportunity for Australia to better leverage its relative proximity to Antarctica. Hobart is recognised as one of five Antarctic ‘Gateway Cities’ globally, along with:

- Christchurch, New Zealand
- Ushuaia, Argentina
- Punta Arenas, Chile
- Cape Town, South Africa.

These Gateway Cities are critical to the success of any country’s Antarctic program – and yet Australia’s attempts to leverage this economic opportunity have largely lagged. We would argue there are considerable economic opportunities that Australia can realise without touching the continent itself, in turn providing significant economic prosperity for Hobart and the island state more broadly.

- **Christchurch, New Zealand** sets the standard for best practice in leveraging its title as a Gateway City and has developed an industry worth more than \$130 million per annum. The city provides logistical support to bases operated by Italy, France and the United States of America. As each base represents a small town (for example, the US McMurdo Base is home to 1,300 people at any one time and up to 2,000 across each season), the requirements are enormous for logistics including ship loading and unloading, and research support.

Further, the International Antarctic Centre – or the “best tourist attraction in Christchurch” – attracts visitors in its own right and further adds to the city’s economic bottom line.

- **Ushuaia, Argentina** has established itself as the tourism gateway for Antarctica. With a relatively short crossing to the Antarctic Peninsula, 90 per cent of Antarctic tourists flock to this city to board cruise ships. Ushuaia’s economy is centred around tourism – and increasingly high prices are testament to this.
- **Punta Arenas, Chile** has focused on short tourist trips. One of the authors of this submission has observed daytrips to Antarctica including flights and a visit to a penguin rookery costing between \$US4000 and \$US6000. The cost of these adventures includes a levy paid directly into the Chilean research program, which has multiple benefits.

By comparison, Australia’s story is unsold and untold. Hobart is currently utilised by bases operated by Australia, China, Korea and France. There are significant opportunities to develop the hub of international partners wanting to use Australia’s facilities.

As tourism continues to grow – and with no annual cap on the number of people able to visit the continent – there are opportunities for Australia to offer attractive short-term ventures to East Antarctica. This serves to provide both a tourism and education platform for people wanting to travel to Antarctica and visitors to Tasmania alike. Currently Mawson’s Hut on Hobart’s waterfront is an excellent, but small, tourist attraction funded by donations. There is a huge opportunity to develop an Antarctic adventure education centre in Hobart that would become an attraction in its own right.

Recommendation:

- Enhance Hobart's attractiveness as a Gateway City to Antarctica through a more developed logistics hub; broader research program; and better education and tourism offerings, both in Tasmania and Antarctica.

iv. Environmental considerations

Without doubt the greatest current global environmental threat is climate change. Nowhere is this being felt more so than in Antarctica.

Research published by one of the authors of this submission has identified that the ice-free section of Antarctica could expand by as much as a quarter by the end of the century¹. As ice-free sections undergo increased connectivity, the native species that have previously lived in isolation may co-occur in new ecosystems. This huge change – with predictions there could be as much as 17,000km² ‘new’ land by 2100 – will greatly change Antarctic terrestrial biodiversity as we know it. A major opportunity that Australia has to limit the impact is to ratify the Paris agreement and to take action as quickly as possible.

A threat for Antarctica that we can have immediate local control over is the introduction of non-native species. While Australia is a leader in Antarctic biosecurity protocols, there is room for improvement. The Federal Government has a responsibility to invest in biosecurity protocols and to develop new monitoring mechanisms to limit the transfer of rodents, marine invasions, weeds and invertebrates, particularly through human cargo, and major building and infrastructure initiatives.

Australia also has the opportunity to innovate and improve its Antarctic bases. Already Portugal, Belarus, Korea, India and Monaco have committed to fully sustainable, off-grid bases, reducing the human footprint on Antarctica.

Further, there must be recognition that Australia has responsibilities beyond the Antarctica territory. Notably the Federal Government must support science and contemporary assessments of the conservation values and the population status of threatened species on Heard Island.

Recommendations:

- Engage in meaningful and robust discussions regarding impacts of climate change and biosecurity (invasive species) threats to Antarctica, continuing our leadership and impact in this area.
- Continue to move to using alternative energies at Australian Antarctic bases and to reduce our footprint on the continent.

Contributing authors

This submission is the result of a collaboration between The University of Queensland's School of Biological Sciences and Centre for Policy Futures.

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End notes

ⁱ <https://www.nature.com/articles/nature22996>