

## FOREWORD

## The complex business of managing human activities and protecting the environment of the polar regions

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The thematic cluster “Human impacts in the Arctic and Antarctic” in *Polar Research* has its origins in the International Polar Year (2007–09) Oslo Science Conference held in Oslo, Norway, from 8 to 12 June 2010. We were the co-convenors of the session “Human impacts in the Arctic and Antarctic: regulatory and management implications,” in which 27 talks and 21 posters were presented over the course of two days. We invited contributors to the conference session to explore all types of impacts of human activities and regional environmental change in the polar regions, with a special focus on highlighting the management priorities for the protection of the landscape (environment and people) of the polar regions in the face of increasing human activity. Exploring a wide range of topics ranging from human–wildlife interactions to chemical contamination and from whaling to polar tourism, contributors provided examples of existing environmental management regimes that are working as well as those that are not.

To continue the momentum that was generated by the conference session, we launched two different, but complementary, writing projects. The first project is this thematic cluster in *Polar Research* that brings together a small selection of articles representing the latest in human impacts research in both polar regions. The second project is an edited volume that focuses on Antarctic environmental management and expands on the themes of strategic thinking and values that were raised during the conference (Tin et al. 2013).

Despite our best intentions to ensure an even number of contributions for the northern and southern polar regions, the thematic cluster has a strong Antarctic bias. Nevertheless, the present collection of articles still exemplifies applied research at its best: rigorous fieldwork and thought undertaken to provide knowledge and understanding to actively support the management of

human activities and the protection of the environment of the polar regions. The six articles compiled here explore a range of pertinent issues focusing on a diverse set of Arctic and Antarctic geographical locations and the many commonalities that can be found.

On the subject of tourism management in Svalbard, Hagen et al. (2012) argue that research is needed to identify sites that have the highest risk of negative impacts from human traffic. Research findings can then be used to develop integrated, evidence-based and site-specific policies, which are likely to be more sound, rational and trusted by stakeholders.

As if in response to the suggestions of Hagen et al. (2012), Tejado et al. (2012) turned their attention to a certain kind of adverse impact arising from human activities by examining how human foot traffic impacts soil ecosystems on the South Shetland Islands in maritime Antarctica. Based on their research findings, they support a mixed management strategy in which, in vulnerable areas and where visitation levels are high, traffic is concentrated along designated paths and, in less vulnerable areas and where visitation levels are low, traffic is directed towards access corridors within which movement should take place without concentrating all traffic along specific paths.

The effectiveness of a management strategy can only be assessed through long-term monitoring. However, environmental monitoring in Antarctica, especially that of tourism impact, is very limited. To fill this gap, Roura (2012) takes an innovative approach and studies the interactions between tourists and the Antarctic environment by examining tourist blogs. Roura’s study offers a much-needed qualitative approach and demonstrates that blogs can provide a wealth of information about the behaviour of tourists on site. This article also draws



The interaction between wildlife (reindeer) and permanent human infrastructure is illustrated in this scene from Longyearbyen, Svalbard. (Photo by P. Maher.)

attention to the need for precautionary action as a practical alternative to managing Antarctic tourism.

Innovative methodologies ought to be developed to address the unique challenges faced by environmental managers in the polar regions. The Antarctic is one of the few examples where potentially high-impact human



Wildlife (Gentoo penguins) putting historic human infrastructure to new use in Port Lockroy, Antarctica. (Photo by P. Maher.)



Historic activities and abandoned infrastructure often become present-day attractions for humans and wildlife alike, as shown here on Deception Island, Antarctica. (Photo by P. Maher.)

activities are allowed to take place in a wilderness area. Consequently, there are only few examples of how the impact of these activities on the area's wilderness and aesthetic values can be assessed. Summerson & Bishop (2012) surveyed over 300 people and analysed the responses to determine the effect of human presence on perceptions of wilderness and aesthetic values. They found that evidence of human activity and infrastructure, such as station buildings, vehicle tracks or weather stations, diminish wilderness and aesthetic values in Antarctica. Summerson & Bishop also discuss how this information could be used to help protect Antarctica's wilderness and aesthetic values as stipulated under the Protocol on Environmental Protection to the Antarctic Treaty, widely known as the Madrid Protocol.



Permanent infrastructure, temporary activities (tourist visits) and the vast wilderness of the Ross Ice Shelf seen from Scott Base, Antarctica. (Photo by P. Maher.)



Human settlement in the High Arctic: Longyearbyen, Svalbard. (Photo by P. Maher.)

Braun et al. (2012) demonstrate that evidence and knowledge are not the only necessary ingredients in reaching management decisions that are accepted and implemented by all stakeholders. Over a period of five years, between 2003 and 2010, Braun's research group collected a wide range of environmental monitoring data from the Fildes Peninsula, on King George Island in the South Shetland Islands. Ample evidence demonstrates the scale of environmental degradation resulting from human activities. Some waste management practices and construction activities were reported to violate the Madrid Protocol. For over a decade, researchers, their governments and environmental non-governmental organizations have urged for an integrated environmental management of Fildes Peninsula, specifically in its designation as an Antarctic Specially Managed Area. Despite the strength of the



Human settlement—McMurdo Station—in the Ross Sea region of Antarctica. (Photo by P. Maher.)

scientific data, political negotiations have advanced slowly, clearly demonstrating that evidence and knowledge alone are not enough to bring about environmental management decisions and that political will and a collective vision shared among stakeholders are fundamental considerations.

Lamers et al. (2012) caution that “care should be taken not to consider the development of a shared vision and strategy for Antarctic tourism as a discretionary exercise with little priority.” Indeed, this observation can be relevant for many other issues of environmental management in the polar regions. The development of a shared vision and strategy may be the one exercise that can help secure the stakeholders' trust in the legitimacy of the policies referred to by Hagen et al. that could ultimately lead to their effective implementation and, as such, a more dedicated protection of the environment.

Since the International Polar Year of 2007–09, there has been a stream of publications on the plight of the polar regions, poised at the beginning of a warmer and busier world in the 21st century. These include books that tell their stories through beautiful and poignant images such as de la Lez and Granath's *Vanishing world: the endangered Arctic* (2007) and Monteath's *Vanishing wilderness of Antarctica* (2011) as well as through hard-hitting scientific research and commentary such as by Chown et al. “Challenges to the future conservation of the Antarctic” (2012) and Huettmann's edited volume, *Protection of the three poles* (2012). Whichever the form of delivery, the common theme in these and similar publications is that global climate change and increasing human demands are going to put pressure on polar environments, which have heretofore been relatively protected by virtue of their remoteness and isolation.

This thematic cluster demonstrates how the research community can contribute towards addressing some of the pressures that the polar environments are facing. As raised by some of the authors, bringing about real protection of the environment requires a complex mix of conditions to be in place. This includes, but is not limited to, the integration of research into policy and environmental management decisions, the active involvement of stakeholders and their approval of protection levels and procedures, and the development and implementation of an environmental management strategy along with procedures to adjust this strategy on the basis of the results obtained from ongoing monitoring efforts. However, research evidence, political awareness of pertinent problems and the development of environmental management strategies do not necessarily result in

successful environmental protection. Regulations may be put in place and then not be adhered to by all to the same standard. Strategies can be agreed on and subsequently ignored. One community or a handful of nations cannot address global issues such as climate change, tourism development or demands for natural resources. Yet, policy-making in these areas, and especially within the Antarctic Treaty System, is typically often driven by a few powerful states and national political agendas. Protection of a common place requires the full commitment of stakeholders involved. Commitment can only be obtained when the values of stakeholders are taken into consideration and a vision for the governance of the Arctic and Antarctic is developed and shared by the stakeholders involved in decision-making, organizing, leading or partaking in human activities in these parts of the world.

Although situated at the far ends of the globe, the polar regions are interconnected with the rest of the world—environmentally, socially, culturally, politically and economically, especially through the increasing influence of civil society (Florini 2000). How individuals, communities, organizations and other legal or paralegal entities that are not directly involved in the polar regions value the polar regions or the state of the global environment in general is also significant for the future of the polar regions. Some people may embrace a more romantic and idealistic notion of the polar regions as the world's last great wildernesses and a common heritage for all of humankind. Others may adopt a more utilitarian view of the polar regions as uninhabitable deserts stocking masses of natural resources destined for human consumption (on global or national scales, depending on the ideological spectrum under consideration). Many may have opinions lying somewhere in between these extremes, largely based upon their own ecocentric through to anthropocentric ethics. While not every one of us feels that we are actively involved in the decisions surrounding the environmental management of the polar regions, our everyday decisions and actions, such as fossil fuel consumption, voting in government elections and choice of holiday destinations, often have ramifications for the polar regions in this globally interconnected world.

Environmental management of the polar regions that is proactive and forward-looking needs to integrate the perspectives of many different communities, and not only of the loudest, the most powerful or the most influential. It needs to be understood that different cultures, societies, intentions, behaviours, ecosystems, interactions and values all come into play when humans talk about “nature” or the “environment” (Esbjörn-

Hagens & Zimmerman 2009). Research in the natural and social sciences can inform environmental management and strategy development. There needs to be rigorous science complemented by an understanding of worldviews, societal needs, even the religious and spiritual priorities of communities. This will help in the development of well-rounded, feasible and comprehensive policies and procedures and in the securing of the full commitment of stakeholders. The management of human activities and the protection of the polar environments is a complex business, and we do not have all the answers. However, for the time being, the excellent articles in this collection address some of the questions that are often raised in the management of polar tourism and the protection of wilderness and aesthetic values of the polar regions.

We hope that this thematic cluster forms a modest, but solid contribution to an important body of work that needs to be greatly expanded, critically discussed and consolidated in the coming years.

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