



## **Penguins: Waddle we do without them? – Collaborative approaches to polar issues**

*Panellists: Adrian Dahood (George Mason University), Meagan Dewar (Federation University Australia/International Penguin Early Career Scientists), Lily Simonson (Artist), Ben Wallis (Ocean Expeditions), Claire Waluda (British Antarctic Survey)*

*Chair: Dick van der Kroef (Netherlands Polar Programme)*

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The European Polar Board (EPB) convened a panel session at the XIIth Scientific Committee on Antarctic Research (SCAR) Biology Symposium in Leuven, titled “Penguins: Waddle we do without them? – Collaborative approaches to polar issues”. The session featured a spectrum of experts from Antarctic science, conservation, tourism and art. Panellists discussed their different roles in advancing science and improving policy to increase understanding and protection of penguins, and the wider Antarctic ecosystem. Using penguins as a vehicle for discussion, the panellists identified how their respective fields can cooperate and collaborate for mutual benefit across all polar issues.

The panel, Chaired by Dick van der Kroef, consisted of Adrian Dahood, Meagan Dewar, Lily Simonson, Ben Wallis, and Claire Waluda. This paper summarises discussions during the session and subsequent contributions, giving an overview of the panellists’ comments.

### **Penguins as a microcosm for collaboration**

There is broad spectrum of research with penguins as foci or integral component, involving both *in situ* and remote sensing observation. Penguins are studied for their biology, population dynamics, their role within the Antarctic ecosystem, as an indicator for conservation monitoring, and even for historical and geopolitical research, with scholars employing a diversity of methodologies and techniques. In short, penguins are at the centre of a microcosm of thriving and diverse research, with many physical, life and social scientists working together.

The diversity of disciplines working in or around penguin research exemplifies the potential of collaborative approaches in polar science and beyond. Catalysing inter- and trans-disciplinary approaches to research issues, collaboration around penguins can be expanded to the wider Antarctic research community, demonstrating research approaches that are necessary to address many of the big issues in the polar regions and beyond – issues bigger than any individual discipline or domain.

## **Outreach and engagement**

Undeniably charismatic and anthropomorphic, penguins easily capture the interest and imagination of audiences. Using penguins as a gateway, children, young people, and the public as a whole can be engaged with wider Antarctic topics and science as a whole, helping to educate and inform about a range of complex issues. Utilising popular curiosity about penguins, scientists can communicate their research to more receptive audiences.

Art plays a key role in instigating discussion and debate around science, and pushing Antarctic issues into broader public spheres. Engaging the public via art can arguably be more successful than via science engagement. Exploring and understanding penguins and the wider Antarctic environment in a non-scientific context, particularly when in close collaboration with scientific researchers, can clarify or enhance understanding for experts and non-specialists alike. On the other hand, art can pose questions for researchers in a new context that may not have been apparent through a strictly scientific lens. Art and artists have a clear role to play in enhancing understanding of penguins and polar environments as a whole among wide audiences – art is able to spark intrigue about polar issues among audiences that may not otherwise be responsive.

One benefit of using penguins for science communication and outreach is that subjects, which in some spheres are controversial, can be discussed in an appropriate context to indirectly educate about broader issues of global significance and impact. In certain regions, often for political reasons, education about anthropogenic climate change and its impacts is absent from school curricula. However, it is possible to educate children about penguins in Antarctica and their plight in the face of a rapidly changing environment. In this way, children are informed and engaged in with the issue in a way that is facilitated by interest and excitement around penguins.

It can be argued that penguins can sometimes be over-used in outreach initiatives, and as a symbol of Antarctica and Antarctic science. With more non-Antarctic penguin species than those found on the continent and sub-Antarctic islands, other fauna (both micro and macro) may be more accurately representative of the southern high latitudes. Some within the Antarctic research community argue that other life forms are more scientifically interesting than penguins, or ecologically important to Antarctica and the Southern Ocean, suggesting that penguins are inappropriate as Antarctic mascots. Previous attempts have been made to use krill as a symbol for Southern Ocean science and conservation, but despite clear communication of their essential role in the Antarctic ecosystem, the effort was ultimately unsuccessful – krill are seemingly unable to match penguins for charisma in the public eye. Penguins may not be perfect ambassadors for Antarctic science, but they are clearly very effective.

## **Conservation**

Conservation of Antarctic ecosystems and environments is hugely helped by penguins in multiple ways. As iconic species, they and their interactions with the whole Antarctic and Southern Ocean ecosystem have been extensively studied. Penguins act as indicator species, with their status informing scientists about the status of the ecosystem and the impacts of ongoing changes in Antarctica. The Adélie penguin has even been heralded as a “bellwether of climate change” (Ainley, 2002) due to its sensitivity to ongoing changes in the Antarctic ecosystem and environment.

The wealth of research around penguins helps increase understanding of conservation needs and effectiveness in the region as a whole. Furthermore, with their cultural value and the global interest in them, penguins can be a good buy-in for wider conservation policies and initiatives in the Antarctic – a will to protect penguins exists among the international policymaking community, which translates into conservation incentives such as marine protected areas for the wider ecosystem. In this way penguins are an umbrella species – protecting penguins protects a range of associated species also.

Scientific research underpins conservation policy – without science there is no policy to conserve Antarctic ecosystems. Penguins are central to this research, and thus conservation policy as a whole.

The economic value of penguins to the tourism industry alone is huge – this creates an additional incentive for the development of conservation policies and protected areas that would unlikely be supported to the same extent if it were not for penguins. Furthermore, responsible tourism in Antarctica helps support conservation and science for penguins and the whole Antarctic ecosystem. International Association of Antarctic Tour Operators (IAATO) and its registered vessels support science with data collection and logistics, and often act as the eyes on the ground for conservation, reporting illegal activities and significant events such as penguin mass mortalities. Tourism, by introducing people to the changing and sensitive Antarctic environment, helps increase understanding of conservation needs and sympathy for Antarctic conservation policies among the general public.

## **Summary**

Summarising the session, panellists identified several key points:

- The diversity of research into penguins, and that which has penguins as an integral component, fosters collaboration between researchers across disciplines. Research around penguins can demonstrate the collaborative approaches that are required to address many of the big issues for Antarctica and research more broadly.
- Penguins are a very useful tool for outreach and science communication. Public interest in charismatic species such as penguins can be utilised to facilitate greater engagement with Antarctic issues and science.

- Art and science can mutually benefit each other. Art is used to support science outreach and to stimulate new discussions and perspectives of scientific issues. By working closely with scientists, artists can develop deeper understanding of their subjects, allowing for new contexts to their work.
- Penguins are used in education and outreach to explain changes in Antarctica, driven by anthropogenic activity, in settings where the underlying issues may be controversial.
- While it can be argued that penguins are over-used in Antarctic outreach, and perhaps are not the most representative species of Antarctica and the Southern Ocean, they are effective. Penguins have demonstrably facilitated great engagement with Antarctic science and other issues.
- In the context of Antarctic and Southern Ocean conservation, penguins serve as both indicator species, and umbrella species. The status of penguin populations informs scientists about the status of the ecosystem, and in turn, protecting penguins protects a range of other associated species.
- Exemplified by penguins and legislation to protect them, effective conservation policy is entirely reliant on accurate and timely scientific research. Without science there is no policymaking for the conservation of Antarctic ecosystems and environments.
- Tourism plays a key role in the conservation of penguins, both in terms of monitoring from tourist vessels and ensuring the enforcement of regulations in Antarctica and the Southern Ocean. Additionally, the economic value of penguins for the tourism industry provides a significant incentive for the establishment of wider conservation policies and stronger protection of the Antarctic regions.

## **References**

Ainley, D. (2002) *The Adélie Penguin - Bellwether of Climate Change* Columbia University Press: New York