



ENG

Agenda Item:	CEP 9e
Presented by:	SCAR, IAATO
Original:	English
Submitted:	25 Apr 2023

# **Systematic Conservation Plan for the Antarctic Peninsula Project Updates and Next Steps**



# Systematic Conservation Plan for the Antarctic Peninsula Project Updates and Next Steps

Information Paper submitted by SCAR and IAATO

## Summary

The Scientific Committee on Antarctic Research (SCAR) and the International Association of Antarctica Tour Operators (IAATO) undertook a collaborative project to develop the first systematic conservation plan for the Antarctic Peninsula. Primarily finished in 2021, correction of some input data and additional requested analyses resulted in the project concluding in 2022. The large amount of data generated by the project and the creation of a conservation planning decision-support tool tailored to the Antarctic Peninsula is likely to be of interest to a broad audience. The decision-support tool has been created in the form of R code, an open-source programming language and software environment for statistical analysis and graphics representation. This R code, together with the majority of input data used in the project, will be made available for public access and use prior to the next ATCM. Outcomes from the project will also be made available in a peer-reviewed scientific publication.

## Background

The Antarctic Peninsula is the most accessible part of the continent, and the region most subject to current and future environmental changes. It is also home to an abundance of Antarctic terrestrial biodiversity, including species not found in the rest of the continent, such as bank-forming mosses, the only two Antarctic vascular plant species, and chinstrap and gentoo penguins. As the most-visited part of Antarctica, Peninsula ecosystems are already under pressure, and human activity in the form of science and tourism continues to grow. Improving the management of human activity in the region is a key priority for IAATO, as well as for the Antarctic Treaty Parties. Clear that an integrated approach was required that accounted for multiple values and stakeholders, SCAR and IAATO undertook a collaborative project to develop an evidence-based approach to site management (ATCM XL IP166<sup>1</sup>, ATCM XLII IP24<sup>2</sup>). The primary aims of the project were to inform the Antarctic community on concurrent management of science, tourism and biodiversity in the region, using a spatially-explicit approach. To achieve these aims, the research team employed a Systematic Conservation Planning (SCP) approach, which is routinely used by conservation scientists to aid decision-makers in managing whole landscapes involving multiple stakeholders and objectives.

## Project Updates

The SCP process generally consists of a planning phase, data collection, stakeholder engagement, analyses, refinement and conclusion. The research team, based at Monash University, Melbourne, Australia, was supported by a Coordination Group consisting of SCAR and IAATO representatives.

Data consisted of two types – primary data, and qualitative survey data. The primary data were incorporated from mostly-published sources, representing high quality and generally comprehensive data (e.g. the SCAR biodiversity database, the IAATO visitor site data). Qualitative survey data, with survey ethics clearance provided by and adjudicated through

---

<sup>1</sup> ATCM XL IP166 *Systematic Conservation Plan for the Antarctic Peninsula*

<sup>2</sup> ATCM XLII IP24 *Systematic Conservation Plan for the Antarctic Peninsula Project Updates*

Monash University, were gathered from a series of stakeholder engagement workshops, representing the values identified by different stakeholders.

A half day in-person workshop was held in Miami, Florida in February 2020 at which IAATO operators identified values important to the tourism industry (e.g., penguin colonies, continental landings). They also estimated how many of these values they rely on, which helped to inform the targets used in the analyses. Due to COVID-19, the planned workshop with biodiversity, science and policymaking experts was transitioned to an online format. Replicated for two different time zones, the online workshops followed a similar process to the tourism workshop and identified values for science and biodiversity. Over 100 science, biodiversity and tourism values were identified in total, many of which were incorporated into the SCP process.

The input data were converted to 1 km<sup>2</sup> raster cells, recognising presence or absence of each value, for use in the analyses. The contemporary and flexible SCP software, *Prioritizr*, was determined to be the most appropriate software to undertake the analyses. *Prioritizr* is available as a package in the open-source, statistical computing environment R<sup>3</sup>. The analyses generated a range of scenarios where various objectives were met to assign science, tourism and biodiversity to multiple zones. Feedback generated during the stakeholder engagement process was used to inform and refine the analyses and inputs over multiple iterations.

Upon conclusion of the project, a draft final report was provided to SCAR and IAATO in April 2021. Problems with the resolution of some of the tourism site data were identified by IAATO (i.e. some landing sites were identified as two sites when they should be combined to one) and IAATO further requested that ship numbers be considered in the analysis alongside visitor numbers. The updated final report was received in late 2022 and next steps for making the tool available are now in progress.

The standardised input data and the R code developed for the process forms the core part of the decision-support tool. New data can be incorporated into the SCP process as it becomes available. Whilst anyone with basic coding experience will be able to use the R code decision-support tool, including the incorporation of new data, it is recommended that users understand clearly what scenarios they wish to test so as to understand what inputs and outputs represent. Advice from those experienced in conservation planning will facilitate understanding of how changing data, input in the form of targets, costs and constraints, influences the scenarios.

### **Next Steps**

The SCAR-IAATO SCP project is the first development of a broad-scale conservation planning process for multiple stakeholders in the terrestrial Antarctic. It represents a significant advancement on previously-available decision-support tools and data, and initial outcomes demonstrate the potential usefulness for informing concurrent management of biodiversity and human activities in the Antarctic Peninsula region.

The decision-support tool (R code) and the majority of input data used in the project will be made available for public access and use prior to the next ATCM. Outcomes from the project will also be made available in a peer-reviewed scientific publication.

---

<sup>3</sup> <https://www.r-project.org>