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Tourism monitoring in Antarctica – Report on the progress in develop- ing a concept for the analysis of the impacts of tourism on the assets to be protected in the Antarctic

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Summary

The continued expansion of Antarctic tourism involves the risk that the environmental impacts will be more than minor or transitory. The sensitive Antarctic ecosystem is exposed to multiple human pressures and repeated visits to sites can lead to changes, which are not necessarily linear but can occur rapidly with only limited potential for recovery. However, we do not know enough about the long-term and cumulative impacts of tourism, and also little is known about the effectiveness of current tourism management measures. The German Environment Agency (UBA) therefore initiated a research project to develop a comprehensive monitoring concept to investigate and monitor the environmental impacts of tourism in Antarctica. This IP provides an update on the progress of the project as well as an outlook on next steps.

Background

Since the 90s, visitor numbers have increased rapidly and reached a preliminary peak in the 2019/2020 season, which was already influenced through the onset of the COVID-19 pandemic. The pandemic has not ended the overall upward trend, as a new record number of visitors was reached in the 2022/23 season with more than 100.000 tourists visiting the Antarctic. Besides, new tourist activities are emerging, diversifying Antarctic tourism. Antarctic ecosystems are highly sensitive due to the isolation of the Antarctic continent and the extreme conditions under which flora and fauna have evolved. Increasing pressures from tourism therefore potentially contribute to the degradation of the environment or some of its individual components and values. Despite growing concerns over the sustainability of tourism, the Antarctic Treaty Consultative Parties (ATCPs) have so far been unable to agree on a comprehensive approach to regulate and manage tourism.

Knowledge on the cumulative and long-term impacts of tourism should form the basis to manage and regulate tourism effectively and proactively. However, the knowledge of the impacts of tourism is limited to some impacts, which have been researched extensively, such as potential effects on penguin and seabird populations. Other impacts have not received sufficient attention and remain widely unknown. Therefore, UBA commissioned a research project with funding from the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection to develop a monitoring concept to reveal the overall and long-term impacts of tourism.

Aim and scope of the project

In this project, a comprehensive long-term monitoring system for frequently visited tourist sites in the Antarctic will be developed to systematically detect the impacts of tourist activities on the assets to be protected as defined in the Protocol on Environmental Protection to the Antarctic Treaty (the Protocol, Article 3, para. 2 b). The results of the monitoring will establish a comprehensive knowledge base to decide on the future management and regulation of tourist activities.

The project has started in September 2021 and will end in September 2024. UBA, as representative of Germany in the CEP, will make the outcomes of this project available to the community of Antarctic Treaty Parties and other stakeholders and thus contribute to the advancement of international environmental protection in the Antarctic.

Approach and current status

The development of the monitoring concept primarily relies on a review of scientific literature and existing monitoring systems. In a first step, documents on the impacts of tourism activities on the Antarctic environment and, in particular, on the assets to be protected according to Art. 3 (para. 2 b) of the Protocol have been systematically compiled. In addition, so-called "citizen science projects" were included in the research.

The documents were then used to identify indicators and monitoring methods along the elements of the DPSIR (Drivers, Pressures, State, Impacts and Responses) concept, which was developed by the European Environment Agency (EEA) in 1999 and has been widely used since then. This model aims to reflect the relations between the environmental and the human system through simple causal relations. One example for such a causal chain for the Driver "Movement on land" is depicted below.

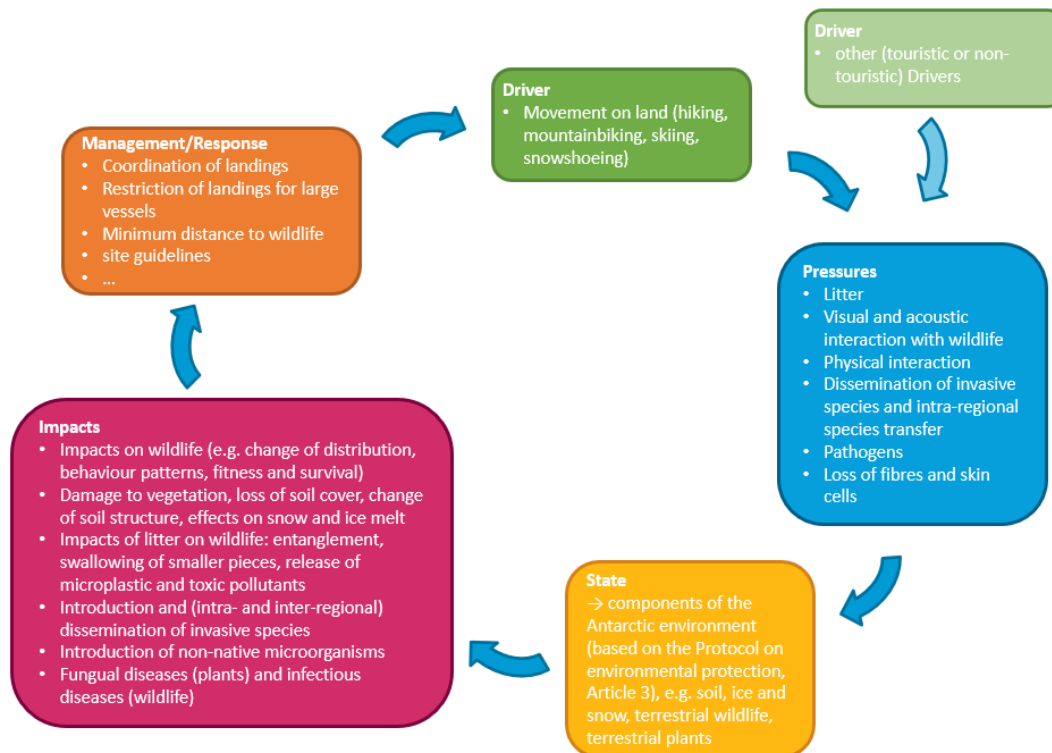


Figure 1: DPSIR causal chain for the Driver "Movement on Land"

An approach to the development of an overarching monitoring scheme was discussed with stakeholders from science, competent authorities, the tourism industry and NGOs in a workshop, which was held as a side-event at the ATCM 2022 in Berlin. The workshop reflected earlier discussions within CEP/ATCM and clearly indicated the need for an overarching monitoring system in Antarctica. The development of such a concept is a demanding task due to multiple pressures from tourism, uncertainties regarding the causalities between pressures and impacts, and the lack of indicators for some pressures and impacts. Moreover, the knowledge on the state of the environment is mostly limited to single parameters at the local level, and a comprehensive understanding of different components of the environment and their interactions on a larger scale is lacking. Therefore, there is no baseline data from which any subsequent observed changes can be measured. However, such knowledge gaps should not be a barrier to the implementation of the monitoring, as the monitoring needs to evolve dynamically with the growing knowledge base.

Moreover, it is important to consider the implementation of the monitoring. The workshop fostered discussions on organisational aspects, such as responsibilities and financing. Involving the perspectives of different stakeholders contributes to developing realistic options. In general, monitoring requires sufficient funding over a longer time span. Using synergies with existing

monitoring approaches helps to use resources efficiently and to facilitate the implementation of the monitoring system. Furthermore, it was recommended by participants that the monitoring should be embedded in the Antarctic Treaty System, and should involve several stakeholders, such as tourists, tourism operators, national competent authorities and scientists in national Antarctic programs. For the coordination of the monitoring, it is likely the best solution to set up a new management body.

Outlook

The draft monitoring concept will be discussed at a second workshop, which will be held online in October 2023. This will include the development of criteria for prioritizing the impacts which should be monitored, taking into account existing approaches and methods. All parties, stakeholders and other interested groups are invited to participate in the project. Participants from the first workshop who agreed to be contacted for the second workshop will automatically receive an invitation. Further information on the workshop will soon be available here: <https://tourism-monitoring-antarctica2.fresh-thoughts.eu/>.

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