



Transformative AI for Penguin Monitoring



Objectives

Oceanites is a globally recognized nonprofit research program dedicated to monitoring penguins in the Antarctic Peninsula. With a focus on penguin conservation, Oceanites sought to evolve their monitoring practices to help address the challenges posed by a by a 3°C temperature rise and the impending threat of Avian Influenza:

- Explore the potential of using AI as an automatic monitoring tool for penguin populations
- Increase precision and efficiency of penguin detection
- Speed up the analysis process to improve conservation efforts
- Gain insight into the evolution of other environmental parameters such as snow and rock cover

Solution

We first analyzed drone images provided by Oceanites to generate land and snow cover maps to give contextual environmental insights into a changing habitat for these birds. Then we performed a two-step approach for penguin detection:

- Detection of all penguins
- Classification of penguins inline with Oceanite’s definition into loafing penguins and penguins in nests
- Reporting and submission of all annotated image files for decision-making by Oceanites



Working with Whale Seeker has been a game-changer. Their passion for conservation, coupled with the technological precision of Möbius, has redefined how we approach penguin monitoring. The results are not just data; they’re a testament to a more insightful future for our beloved penguins.

Dr Grant Humphries, Oceanities

Möbius Observer

- **Automated detection:** advanced AI algorithms to detect penguins, penguins in nests and environmental attributes with unparalleled precision
- **Drone integration:** drone-captured images elevate monitoring to new heights, providing a comprehensive view of penguin colonies that can swiftly be analyzed with Möbius
- **Land cover mapping:** AI-driven mapping enhances insight into evolving environmental conditions, contributing to improved conservation practices



Penguins detected:

13,347



Km2 covered:

421



Recall:

97.45%

on a subset



Precision:

86.84%

on a subset



Environmental insights:

Land cover mapping of snow and bare rock areas



Varied condition adaptability:

enhanced with human-in-the-loop approach

About Whale Seeker

We are the global innovation leader that ethically leverages AI to deliver better, simpler, and faster marine mammal and bird detection data when it matters most. Founded in 2018 by expert biologists and AI specialists, we collaborate with academia, industry and governments to promote healthy oceans and sustainable business decisions.

