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Antarctic penguin monitoring

Geographers at the British Antarctic Survey have developed unique mapping techniques to locate emperor penguin breeding colonies in Antarctica, providing a baseline for monitoring their response to environmental change.

The fragile environment and ecology of Antarctica will be particularly sensitive to future climate change and environmental stress.

Photo by ianduffy

Geographers, including Peter Fretwell of the British Antarctica Survey are at the forefront of research that is monitoring changes in this dynamic environment.

By using satellite images to survey the sea-ice around 90% of Antarctica's coast, scientists from BAS have been able to search for emperor penguin colonies by identifying their reddish brown penguin poo (guano) stains which are actually visible from space using remote sensing technology. Knowing the location provides a baseline for monitoring their response to environmental change.

Emperor penguns breed on sea-ice during the Antarctic winter meaning that it is difficult for scientists to monitor their whereabouts using traditional methods. However identification of their guano stans provides a reliable indicator of where they are.

Identification of penguin colonies

The 2009 survey identified a total of 38 colonies, ten of which were new. Of the previously known colonies six had re-located and six could not be found. A previous study by French scientists extensively studied one colony and found that it was at significant risk from climate change. Given that the six colonies not found in this study were at a similar latitude indicates the potential risk to Antarctic biodiversity.

Geographer, BAS Mapping expert Peter Fretwell, said "We can't see actual penguins on the satellite maps because the resolution isn't good enough. But during the breeding season the birds stay at a colony for eight months. The ice gets pretty dirty and it's the guano stains that we can see."

By combining this data with real counts of penguin numbers significantly improves the chances of monitoring future population changes over time.

Geographer, Peter Fretwell, is geographic information officer at the British Antarctic Survey, for whom he provides cartographic and mapping expertise.

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