

## Case Study: ENVI provides 'best results' for scientists tracking seabird breeding habits and colony

### BACKGROUND

The World Conservation Union reports that the population of seabirds has deteriorated more rapidly than any other species group since 1988. More than a quarter are listed as threatened while one in twenty is considered critically endangered. Monitoring colonies is vital to understanding population sizes, breeding trends and the impact of a changing climate.

### ENVI IS PART OF THE SOLUTION

Scientists from the British Antarctic Survey, the Zoology Department of the University of Cambridge and the Field Spectroscopy Facility at Edinburgh University are using the unique spectral signature of seabird guano (excrement) to identify and track seabird colonies in the Antarctic Peninsula. The study is part of the British Antarctic Survey Polar Sciences for Planet Earth Programme.

Analysis of guano (seabird excrement) using satellite imagery and ENVI software gives some hope for the survival of endangered seabird species.



Photo: DigitalGlobe / British Antarctic Survey

Using Landsat's Enhanced Thematic Mapper (ETM) imagery, the researchers studied the colour of seabird guano in the infra red spectrum. Not only are they able to distinguish the guano from bare rock, snow and vegetation, but from one species to another. These include Adelie penguins, Antarctic shags and southern giant petrels. The study's lead author, Peter Fretwell, explains "Although Penguin and seabird poo may look rather nondescript to the human eye, in the infra-red each has a totally unique colour. This has helped us map all colonies around the Antarctic Peninsula."

Initially, to distinguish guano from surrounding rocks and vegetation, profiles were compared using ENVI routine Spectral Analyst to rank the match of a sample spectrum to an existing spectrum library.



According to the authors of the study, Spectral Angle Mapper in ENVI image processing software provided the best results.

During the process, a number of classification methods were tested for their ability to discriminate areas of guano. According to the authors of the study, Spectral Angle Mapper in ENVI image processing software provided the best results.

#### **EVEN MORE SUCCESS TO COME**

Thanks to easily-accessible ENVI image processing software, analysis of satellite data is yielding increasing insight into the habitat, breeding patterns and populations of Antarctic seabirds.

It is hoped that with further research, the techniques used by Fretwell and his team could eventually be expanded to other areas of the globe where remoteness and lack of access currently restrict our knowledge of the distribution and abundance of bird colonies.

To find out more about ENVI visit [www.exelisvis.eu](http://www.exelisvis.eu)

The logo for EXELIS, featuring the word "EXELIS" in a bold, orange, sans-serif font with a stylized 'X'.

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