

Key Stage 4

Penguin counting

Student worksheet



Globally, seabirds, such as penguins, are in decline, and Antarctic populations are no exception. However, understanding which species are under threat and which are of least concern can be a challenge – especially in a remote and hostile environment such as Antarctica.

Penguin Watch

In order to study changes in penguin populations, scientists at The University of Oxford have come up with an ingenious solution. They have established a network of time-lapse cameras in Antarctica. The cameras take photos of penguins all year round and so gather huge amounts of data. However, unlocking this information is a challenge in itself, so the citizen science project Penguin Watch (www.penguinwatch.org) was born.



How does it work?

- Each image is put onto the website and seen by multiple volunteers.
- They click on the penguins in the image.



- An algorithm is run on the data - it takes an average of all the clicks made on a particular image, by all the different users.
- The Penguin Watch team uses these aggregated data to calculate the number of penguins in each image.
- This information can then be used to examine how populations are changing over time.

Your task:

You are going to take part in a simulation of Penguin Watch to find out why multiple volunteers are used.

1. Open up the 'Penguin counting' document.
2. Follow the instructions. You will view some images collected by the Penguin Watch cameras in Antarctica and count the adult penguins in each one.
3. Share your data with the rest of the class. Your teacher will tell you how.
4. You will then be assigned one image. Use the data to calculate the:
 - Mean number of adult penguins
 - Range (the highest number counted – the lowest number counted)
 - Uncertainty (half the range)
 - Present your results like this: mean \pm uncertainty