



HEARTS IN THE ICE

Female citizen scientists making polar history

After three months of complete darkness, female citizen scientists Sunniva Sorby and Hilde Fålun Strøm continue their work as climate care ambassadors in a tiny cabin on Svalbard, Norway.

They are following in the footsteps of other polar pioneers, but instead of hunting for fur and skins, they raise awareness of climate change through citizen science projects and educational outreach. They provide major, global research institutions with invaluable data collection and perspectives from one of the most remote areas in the world.

In May the two ladies will be making history, becoming the first women to overwinter without men.

- It's overwhelming to be so vulnerable as we are, yet so meaningful to play a role in helping people around the world understand that mother nature needs us all right now, says Sunniva Sorby via satellite phone from Bamsebu.

- As the Arctic is waking up from its long polar night, it's time for all of us to wake up, get involved and act. Find a project that needs your help and show up, participate and understand the changes, they impact us all, she adds.

Polar bear on the front door

Having had at least six polar bear encounters while at Bamsebu, Sorby and Strøm continue their work to advance our understanding of climate changes in the Arctic.

- The polar bear encounters have been powerful, but also remind us of how important this is to take care of. If everyone makes small changes in their lives, the impact could be huge. This means getting outdoors, and protect what we love, says Hilde Fålun Strøm.

Citizen science collaborations like *Hearts in the ice* help scientists learn more about different dynamics at a timescale.

- One scientist alone couldn't manage! Sunniva and Hilde have been able to collect phytoplankton, and by collecting samples over time this contributes to a greater dataset that helps scientists understand how melting glaciers influence phytoplankton, says Allison Cusick, a graduate student at Scripps Oceanography and lead of the FjordPhyto Antarctic citizen science program with the Vernet Lab.

Urging people to participate in citizen science

A lot the time, data collection can be performed using rather simple means and techniques thus empowering millions of people to undertake this important endeavour for the benefit of all of us.

Eric Saczuk, a professor at the British Columbia Institute of Technology and an expert in remote sensing and geospatial technologies, has provided Sorby and Strøm with a drone in order for them to gather data about surface air temperatures and take aerial photos of glacial sedimentary deposits over the course of their stay at Bamsebu.

- The data that they're collecting allows me to ascertain the effectiveness and utility of drones as a data collection tool in a polar environment and for the purpose of climate change research. It adds tremendous value to determine whether drones can effectively be deployed into harsh polar areas to gather data related to climate change.

The thermal and visible data collected by Sorby and Strøm by drone will be analyzed for its application to the quantification of surface phytoplankton concentration in a coastal Arctic region. This will be one of the first studies of this type.

Involving people to understand climate change

Scientific samplings in polar areas are challenging, costly and risky, but Børge Damsgård from University of Svalbard values Sorby and Strøm's efforts, not only for the work it saves the educational institution, but how it helps people understand and care.

- During several decades the overall trust in science has declined globally. There are obvious differences between countries, but we see more signs of mistrust towards for example climate change research, Damsgård says.

One of the challenges is that most people do not feel connected to this huge global data collection. They are thus not motivated for the interpretation of large scale changes that simply speaking will decide not only the fate of polar nature, but presumably the existence of the world as we know it.

- Citizen science is a way to close the gap between people's perception and scientists monitoring the climate changes. The long term educational aspects of the Bamsebu project is thus probably the most important added value, Damsgård says.

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