

## **Description for general public**

The Arctic environment is changing at an unprecedented rate. Air temperatures in winter and spring have increased by around 1°C per decade since 1980 and vast area of ice sheet has melted influencing the biochemistry of the sea and biological productivity. Animals relying on the resources and environment of the Arctic have to cope with changes in the ecosystem. If they fail to do so, their population is likely to decline or even go extinct.

Little Auk, being the most abundant Arctic seabird and a top predator, is a key part of the polar ecosystem. It is also the smallest High Arctic seabird, well-adapted to live in extreme cold. It breeds in large colonies with nests located in rock crevices of islands in the High Arctic. So far, we know that rise in temperature results in Little Auk chicks hatching earlier, while temperature of sea effect foraging behaviour of adults. Little is known, however, about the influence of the changing environment on the conditions in the nest or at the colony of the Little Auks.

The aim of this project is to investigate the effect of climate change on the various behaviour and breeding parameters of the Little Auks. We will use datasets obtained at a well-established colony of Little Auks (Hornsund, Svalbard) as well as additional data collected during three fieldwork seasons of this project (2021-2024). These long-term datasets will allow us to establish how the hatching date, growth rate of chicks and daily routine of adults are changing with the recorded shifts in the weather conditions. Additionally, we will examine the properties of the Little Auk's nest and monitor its temperature and humidity by placing a miniature logger in the nest chamber. We expect that the nest microclimate influences the development of the chick, where chicks from a nest with a more stable microclimate have a better condition. Finally, we will gain a better understanding of the direct effect of weather on the body of a Little Auk, by placing a model bird with attached temperature loggers at the colony. The data collected throughout this project will allow us to examine how predicted weather changes in the Arctic will affect the social and parental behaviour of Little Auks. We expect that the Little Auk's physiology is not well-adjusted to life in a warming Arctic and the seabird has to use a variety of coping mechanisms to survive the 'hot' weather.

Our project provides a unique opportunity to monitor the changes happening in the Arctic through better understanding of their effect on a key polar resident, the Little Auk. We will fill in gaps in the knowledge about social and parental behaviour of seabirds and extend our understanding of their adaptive capacity to climatic changes. In addition, we will make recommendations about conservation actions necessary to ensure protection of viable seabird populations.