

Mapping threats to arctic bird populations. The effect of infectious organisms and pollution on bird health. IPY #172 BirdHealth

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Project summary

The arctic environment and its wildlife are currently being threatened; from climate change, from pollution and from infectious organisms (IO). Health in wildlife is regulating population numbers through individual survival and reproduction. Little is known about the combined impact of IO and pollution on the health of arctic organisms. Arctic birds typically have an exhausting breeding season where they rely upon accumulated body reserves for breeding.

This leaves arctic animals very vulnerable to environmental stressors during breeding. This study proposes to (i) experimentally test how IO and (ii) how exposure from persistent organic pollutants (POPs) and heavy metals (HMs), affect the health and fitness of breeding female common eiders. Also, (iii) by comparing health of eider populations from three areas differing in migration patterns we will assess the potential large scale effects of avian migration and climatic zones for distribution of IO. Also, (iv) waterfowl is considered the main source of avian influenza (AI) viruses, and may thus constitute a possible source for infection with AI to humans. We will thus identify previous exposure to, and current infection of, the different AI viruses in eider females from different populations to establish which individuals are most susceptible and also the geographical distribution of AI in the arctic. Eider populations have been declining in recent years without any clear explanation. The arctic breeding strategy is extreme in the eider as the female does not eat for ~30 days while incubating eggs. This study will quantify geographic variation in individual levels of POPs and HMs, and in the prevalence of pathogens. The effect of these stressors on parameters related to individual fitness like immune function, survival and reproduction will be assessed through individual health monitoring, experiments and large scale comparisons of three eider populations in different climatic zones with different pollution levels.