Project acronym: IVORY

Project title: In search of Ivory Gull: a sentinel species of climate change in the most threatened and remote areas of Greenland

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Discipline: Earth Sciences & Environment: Ecosystems & Biodiversity

Station(s): Villum Research Station (VRS) (Greenland/Denmark)

Species living in the Arctic are facing strong environmental changes. Forecasting impacts of such changes on endemic Arctic species require a full understanding of their ecology and habitat requirement. A limited number of sea ice associated Arctic species act as sentinel species, whose ecological responses to the consequences of environmental modifications deserve special attention. This is the case of the Ivory Gull (Pagophila eburnea), a species that entirely completes its life-cycle in the Arctic and thus directly facing impacts of the Arctic alteration. Here, we propose to use complementary approaches to investigate the evolutionary fate of Arctic species under climate change and other environmental modifications (i.e. an increase of bird exposure to contaminants), with Ivory Gull as case study species. We plan to combine a genomic approach (high-throughput sequencing) to infer population dynamics and population genomic structure with GPS tracking used to infer movements and habitat selection, to assess the contaminant loads of ivory gulls in its last Greenlandic breeding strongholds, i.e. on the breeding colony of Station Nord, North East Greenland. Our complementary approach will produce fundamental biological information for the conservation of the Ivory Gull in the context of climate change and of the planned exploitation of its offshore feeding grounds. In addition to proximity to breeding colonies allowing for monitoring and sampling of birds, we need access to laboratory facilities immediately following sample collection to perform crucial preliminary laboratory analysis. All these requirements are provided by the Villum Research Station, located at Station Nord.