

Project information

Keywords

seabird migration

Project title

Seabird habitat use and migration strategies

Year

2020

Project leader

B Moe

Geographical localization of the research project in decimal degrees (max 5 per project, ex. 70,662°N and 23,707°E)

78.9°N and 12,22°E; 69,6°N and 18,02°E; 69,6°N and 18,85°E; 68,2°N and 69,1°E

Participants

**Project leader: B Moe (NINA)**

Project participants in the Fram Centre and/or in Kongsfjorden:

NINA: SA Hanssen, Akvaplan-NIVA: K Sagerup, UIT: D Ehrich

Norwegian Polar Institute: GW Gabrielsen, S Descamps (NPI), NTNU: C Bech, CNRS ( France): O Chastel

Core partners in the skua networks: Univ Wageningen/IMARES, Netherlands: R van Bemmelen

Univ Bourgogne, France: O Gilg

Many national and international collaborators in the research networks on the study species.

Flagship

Fjord and Coast

Funding Source

Fram Centre, Fjord and Coast: 399k

Internal, NINA 100k

External, SEATRACK/SEAPOP 200k,

## Summary of Results

This project has provided important new knowledge about habitat use and migration strategies of arctic seabirds, with relevance for conservation management. The project is focused on the fieldwork we do in Kongsfjorden and in Troms, along with support to field work in Yamal, and we take part in large-scale research networks to ensure multi-colony tracking at many Arctic and sub-Arctic locations. The 2 highlights are :

1. Publications: One paper published, one provisionally accepted, and one resubmitted after revision.
2. Outreach/awards: Webinar presentation at Fram Centre 29.09.2020. Webinar om effekter av klimaendringer på fjord- og kystøkologi i nord.

The paper which is provisionally accepted in MEPS (Moe et al. 2020) demonstrates that European shags adopt different behavioural strategies to survive the winter across their latitudinal range, dictated by the differing light constraints. It highlights the value of multi-colony studies in testing key hypotheses to explain population persistence in seabird species that occur over large latitudinal ranges.

The paper published in MEPS (Deschamps et al 2020) suggests that adult survival is not synchronous among populations of little auks although they to large extend share the same wintering grounds.

The paper resubmitted to MEPS (Albert et al. 2020) shows that individuals with high fidelity to a wintering grounds had more similar Hg concentrations between years compared to individuals with low fidelity, suggesting an effect of their migratory strategy on mercury (Hg) contamination.

Master and PhD-students involved in the project

One phd student, Don Jean Leandri Breton (McGill University)

## For the Management

The main message for the management is that Arctic seabirds depend on healthy oceans and coasts on local to global scales. This calls for national and international management of our seas. Applied output from this project. Results/data has been part of an international process with proposal for a new marine protected area (MPA) in the northeast Atlantic Ocean. Proposal led by an NGO (Birdlife International) to OSPAR which focuses on MPAs in areas beyond national jurisdiction (ABNJ). Nominated site: North Atlantic Current and Evlanov Seamount MPA. Results are also part of the large scale tracking program SEATRACK. Results have been applied by the petroleum industry/consultancies to perform risk assessments and environmental impact assessments (EIA), e.g. for Equinor and Hywind Tampen offshore windfarm in the North Sea

## Published Results/Planned Publications

Moe, B., F. Daunt, V. S. Bråthen, R. T. Barrett, M. Ballesteros, O. Bjørnstad, N. Dehnhard, K. E. Erikstad, A. Follestad, S. Gíslason, G. Þ. Hallgrímsson, S-H. Lorentsen, M. Newell, A. Petersen, R A. Phillips, S. Björk Ragnarsdóttir, T. K. Reiertsen, S. Wanless, J. Åström, T. Anker-Nilssen (2020) Twilight foraging enables European shags to survive the winter across their latitudinal range. *Marine Ecology Progress series* (provisionally accepted)

Descamps, S., B. Merkel, H. Strøm, R. Choquet, H. Steen, J. Fort, M. Gavriilo, D. Grémillet, D. Jakubas, K. Jerstad, N. Karnovsky, Y. Kharlov, B. Moe, J. Welcker, K. Wojczulanis-Jakubas (2020) Sharing wintering grounds does not synchronize annual survival in a high Arctic seabird, the little auk. *Marine Ecology Progress Series* (in press), doi:10.3354/meps13400

### Re-submitted manuscript:

Albert, C., Moe, B., et al (2020) Interannual variations in winter distribution impact individual seabird exposure to mercury. MEPS-2020-07-023/R1 RESUBMISSION

## Communicated Results

### Oral presentations at meetings/workshops/conferences:

1. Webinar presentation at Fram Centre 29.09.2020. «Webinar om effekter av klimaendringer på fjord- og kystøkologi i nord.»
2. Seabird habitat use and migration strategies 2020. Fjord & kyst flaggskip, annual meeting 21.10.2020

## Interdisciplinary Cooperation

The project has benefitted from cooperation between researchers from different disciplines. The listed papers

mainly belong to the following disciplines: migration, ecology, climate change biology and ecotoxicology

Budget in accordance to results

We applied for 399k from the Fram Centre and we were granted 399K. We have published 2 papers (included one provisionally accepted), and one was re-submitted. This is in line with the plan for the project. We have more manuscripts that are currently being developed. Hence, there is a very strong basis for further publication of results, and we have applied for support for publication in 2021.

The total 399k funding from the Fram Centre played an important role for financing fieldwork, equipment, tracking

analyses and for writing papers, and has thus given us the opportunity to take an active role in the large-scale

network of collaborators. The project also benefitted from external funding (Seatrack/Seapop)

as well as a use of own research hours (NINA egenforskning). The Fram Centre funding has been crucial for

obtaining these external funds. This project is linked to huge research networks, involving many researchers and

costly field work and analytical work. Its large-scale success has depended on external funding for the field activities of project partners (e.g. extensive field operations in Russia, Greenland, Sweden, Faroes, Iceland and other Norwegian colonies).

Most of the 399k has been allocated to our fieldwork in Kongsfjorden (Svalbard) and Brensholmen (Troms),

equipment and tracking analyses, and resources available for writing papers.

Money allocated to Fram Centre partners within the project:

60k was allocated to NPI and costs at the Sverdrup Station in NyÅlesund.

30k was allocated to Sagerup/Akvaplan NIVA for field work contribution in Ny-Ålesund, and approximately 10k

was allocated to cost/equipment for Ehrlich (UIT) for field work in Yamal but the field work in Yamal was cancelled due to covid-restrictions

Could results from the project be subject for any commercial utilization

No

If Yes

No, but the results may have major implications for management and industry (e.g. oil industry, fisheries, shipping)

Conclusions

The project has established a strong basis for further work. We have a long-term perspective and will further develop the project to focus on climate effects on migratory strategies and habitat use in arctic seabirds, along with consequences of exposure to contaminants. The project has provided a unique basis for assessing inter-annual as well as inter- and intra-individual variation habitat use, since we now have obtained several years of data from the same individuals and population, in a wide collaborative network. The next priority is to publish more papers from this strong basis of data and results.