

Project information

Keywords

migration seabirds habitat use

Project title

Seabird habitat use and migration strategies

Year

2019

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 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: 450k

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 3 highlights are :

1. Publications: Two papers published, and one submitted. One phd thesis defended (Rob van Bemmelen).
2. Outreach/awards: Van Bemmelen et al 2019 -revealing the migration of red-necked phalaropes – awarded as one of the 25 most significant discoveries in ornithology during the last 25 years
3. Field work: First tracking of European storm petrel in Norway.

The paper published in MEPS (Guéry et al 2019) suggests that migration strategy and wintering location of common eiders may influence their exposure to storms and cyclones which in turn may affect their annual adult survival. The paper published in Frontiers in Ecology and Evolution (van Bemmelen et al 2019) demonstrates an extraordinary migratory divide among red necked phalaropes. Populations from Scandinavia and Russia migrates the Eastern flyway across land- and winter in the Arab and Indian Sea. The populations in Scotland, Iceland and Greenland however, cross the North-Atlantic and Central America and winter in the Pacific Ocean. The findings of the latter paper (van Bemmelen et al 2019) were awarded as one of the 25 most significant discoveries in ornithology during the last 25 year in the magazine/journal Neotropical Birding. This study was also highlighted at Frontiers Science News. Over the project period we have made substantial milestones in relation to the

field work. This year we succeeded in tracking European storm petrel, the worlds' smallest seabird, for the first time in Norway. This comes in addition to the main species of the project, where we now have made a unique time series from tracking populations and individuals over several years.

Master and PhD-students involved in the project

Present PhD students:

Rob van Bemmelen

Don Jean Leandri Breton

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

Van Bemmelen et al 2019 A Migratory Divide Among Red-Necked Phalaropes in the Western Palearctic Reveals Contrasting Migration and Wintering Movement Strategies. *Frontiers in Ecology and Evolution*, doi:10.3389/fevo.2019.00086

Guéry, L., S. Descamps, K. I. Hodges, R. Pradel, B. Moe, S. A. Hanssen, K. E. Erikstad, G.W. Gabrielsen, H. G. Gilchrist, S. Jenouvrier and J. Bêty (2019) Winter extratropical cyclone influence on seabird survival: variation between and within common eider populations. *Marine Ecology Progress Series* 627: 155–170, doi: 10.3354/meps13066

Submitted manuscript:

van Bemmelen, R., Hanssen, S.A., Gilg, O., Porter, R, Soot, K.S., Bangjord, G., Bollache L., and B. Moe (2019) Individual variation in non-breeding movements of Grey Phalaropes across hemispheres

Phd Thesis:

van Bemmelen, Rob (2019) Seabirds linking Arctic and ocean. Wageningen University, Wageningen, the Netherlands.

Communicated Results

Oral presentations at meetings/workshops/conferences:

Dialog day with conservation management. Arranged by Framsenteret/Fjord and coast flagship, Tromsø 16. Nov 2019. Moe, Børge: Sjøfugler langs kyst og til havs.

Workshop arranged by Equinor, Oslo 13.-14- Feb 2019:

Bird response to offshore installations and ecological mechanisms behind potential population level impacts;

Moe, Børge: Overview presentation on tracking technologies

Moe, Børge: The SEATRACK project – knowledge gained on distribution of seabirds at sea through GLS-logger studies.
Workshop – bird response to offshore installations and ecological mechanisms behind potential population level impacts

Rotary. Members' meeting, Trondheim 4. Mar 2019:

Moe, Børge: SEATRACK prosjektet – Ny kunnskap om sjøfuglenes bevegelser ved bruk storskala sporingsstudier.

British Ornithological Union (BOU) Conference/meeting: Tracking migration: drivers, challenges and consequences of seasonal movements; University of Warwick, UK 26.-28 Mar 2019

Lameris, Thomas; Nuijten, Rascha; Boom, Michiel; Bouten, Willem; Ens, Bruno J; Exo, Klaus-Michael; Jan, van Gils; Hanssen, Sveinn Are; Hoyer, Bethany; van der Jeugd, Henk; Kölzsch, Alexandra; Kruckenberg, Helmut; Moe, Børge; Müskens, Gerhard; Nolet, Bart A.; Pokrovsky, Ivan; Tulp, Ingrid; Wikelski, Martin; van Bemmelen, Rob: Does migration timing hamper the advancement of laying dates in Arctic migrants?

Media/journal:

Neotropical Birding 25: Frontiers of knowledge: a quartercentury of Neotropical discovery. Article by James Lowen, Alexander Lees and Joe Tobias. Awarding the van Bemmelen et al 2019 and the phalarope migration as one of the 25 most significant discoveries in ornithology during the last 25 years.

Journal news highlight:

Frontiers Science News. Winter is coming: a stark divide in red-neck phalarope migration.

<https://blog.frontiersin.org/2019/08/15/winter-is-coming-a-stark-divide-in-red-neck-phalarope-migration/>

Education:

Lectures at UNIS by GW Gabrielsen (AB-201, AB-202, AB-203)

Lectures at UIT by GW Gabrielsen (Bio 3003)

Lectures at NTNU by B Moe (Bi2025)

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 456k from the Fram Centre and we were granted 400K with an additional 50K in September 2019 . We published 2

papers, and one was submitted. And, one Ph thesis was defended. 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.

The total 450k 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, Kartverket) 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 450k has been allocated to our fieldwork in Kongsfjorden (Svalbard) and Brensholmen (Troms), equipment and tracking analyses, and resources available for writing papers. The funding of this project has been important for our role in the papers, and especially Guery et al 2019, but also van Bemmelen et al 2019. Furthermore, the funding has also been crucial for the Phd thesis of Van Bemmelen.

Money allocated to Fram Centre partners within the project:

90k was allocated to NPI and costs at the Sverdrup Station in Ny-Ålesund.

30k was allocated to Sagerup/Akvaplan NIVA for field work contribution in Ny-Ålesund, and approximately 15k

was allocated to cost/equipment for Ehrlich (UIT) for field work in Yamal

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. This project is now also linked to SEATRACK (funding from the Ministry of Climate and Environment (KLD), Ministry of Foreign Affairs (UD) and the oil industry (NOROG), a large-scale tracking program of seabirds in Norway, Russia, UK, the Faroes and Iceland. The development of small-sized electronic tags has been a prerequisite for the project. However, there is a constant need for further decreasing the size, increasing the battery life and increasing the precision of the electronic tracking tags