

## Project information

### Keywords

seabirds, Moulting area, Chick rearing area, diving behaviour, prey distribution, stress levels

### Project title

Seabird moulting and chick rearing area in relation to planned oil activity in the southeastern Barents Sea

### Year

2018

### Project leader

Kjell Einar Erikstad NINA (kjell.erikstad@nina.no)

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

Between: 26°E, 55°E, 58°N, 77°N

### Participants

**Project administrator;** Cathrine Henhaug, NINA

### **Institutions at The Fram Centre and contact persons;**

NINA; Kjell Einar Erikstad. Norwegian Polar Institute; Hallvard Strøm (hallvard.strom@npolar.no) Institute for Marine Research; Frode Vikebø (frode.vikeboe@imr.no, Mette Skern-Mauritzen@imr.no.

### **National/International Partners**

National; Tone Kristin Reiertsen, NINA Tromsø, Geir Systad, NINA Bergen, Manuel Balesteros, NINA Tromsø, Svein-Håkon Lorentsen, NINA Trondheim, Mari Myksvoll and Jofrid Skardhamar Institute for Marine Research, Francis Daunt, Sahra Wanless and Mike Harris, Centre for Ecology and Hydrology, UK

## Flagship

MIKON

## Summary of Results

Auk species like Common Guillemots (*Uria aalge*), Brünnich Guillemots and Razorbills (*Uria aalge*) are unique among birds in their intermediate departure strategy from the colony. The chick leaves the breeding ledge at 1/3 of adult size and spends the time at sea accompanied by the male until it reaches fledge-age. After leaving the breeding ledge, the adult male takes care of the flightless chick and migrates (swimming migration) to areas where the chick is raised to independence. During this time, adult males and females also moult their wing feathers and become flightless for a period. This is a period of their life when auk species are hugely vulnerable for any disturbances. In the present project we studied the spatial distribution and behaviour of Common Guillemots during the moulting period and when they raise the chick to independence. To achieve this we have used a combination of different miniature dataloggers (Global Location Sensing, GLS-loggers) and time-depth recorders (TDR) attached to a colour ring of the adult birds when at the colony.

## Highlights

- All common Guillemots from 4 Norwegian colonies (inclusive Bjørnøya) are distributed in a small area in the southern Barents Sea during the moulting and chick rearing period. This area covers more than 90% of the Common guillemots population that we have left in Norway.
- The reason for the accumulation of birds in this area seem to be the high abundance and predictable prey species. The drift patterns of cod and herring larvae from their spawning areas in south into the southeastern Barents Sea seems to be the main reason for the accumulation of birds in this area.
- By the use of time-depth recorders (TDR), we have estimated that the chick grows to independence of the male in around 60 days based on data on diving depths and number of dives of females and males caring for chicks.
- Based on data from stable isotopes and diving depth the birds feeds on fish (mainly 0-group Cod) during this time period and later during autumn and the winter they switch to a lower trophic level (presumably Krill). They have shallow dives of 20-30m during the autumn, but switch to deep dives of 100-150m later during autumn and winter.
- Based on analyses of Corticosterone (stress levels) from blood samples the stress is low during the autumn but much higher during winter.

Master and PhD-students involved in the project

No master and and PhD students at present

For the Management

The southeastern Barents Sea is definitely a very important area for Auk species during their molting period when the male also accompanies their flightless chick for a period of 50-60 days after they leave the breeding colony. This is a very vulnerable time period for the Auk species considered and especially for the Common Guillemot which are on the Norwegian Red list as critically endangered. More than 90% of the Common Guillemot population from norwegian colonies (inclusive Bjørnøya) accumulates in this area. The reason for the accumulation of birds in this area seem to be the high abundance and predictable prey species. The drift patterns of cod and herring larvae from their spawning areas in south into the southeastern Barents Sea seems to be the main reason for the accumulation of birds in this area. This new important information should be considered in any conservation plans for these specific areas in the Barents Sea.

Published Results/Planned Publications

Erikstad, K.E., Benjaminsen, S., Reiertsen, T.K., Ballesteros, M.& Strøm, H. 2018. Modelling av svømmetrekke til Lomvi fra Bjørnøya til norskekysten. NINA Rapport 1545.

Erikstad, K.E., Reiertsen, T.K., Ballesteros, Daunt, F., Harris, M., Wanless, S. Eriksen, E., Myksvoll, M. & Vikebø, F. Hot spot areas for molting and chick raising auks in the southern Barents Sea. Intended for Biological Conservations

Erikstad, K.E., Reiertsen, T.K., Ballesteros, Daunt, F., Harris, M., Wanless, S. Eriksen, E., Myksvoll, M. & Vikebø, F. Spatial distribution of molting and chick rearing auks at sea and their link to the marine system. Intended for Marine Ecology progress Series

Communicated Results

The results have been communicated with KLD, Mdir and the oil companies

Interdisciplinary Cooperation

The project involves researchers with competence in marine ecology, logging technology, diving ecology, seabirds and spatial distribution of fish.

Budget in accordance to results

OK

Could results from the project be subject for any commercial utilization

No

Conclusions

The project have had great success giving new and important information about a period of the life of seabirds in the Barents Sea where the knowledge so far has been absent.