

## Project information

### Project title

Adaptive management of migratory populations - developing novel tools at the interface between ecology, economy, agriculture and society - MIGRAPOP

### Year

2013/2014

### Project leader

Ingunn Tombre, NINA

### Participants

- Ingunn M. Tombre (PI), NINA
- Jarle Werner Bjerke, NINA
- Einar Eythórsson, NIKU
- Anne Kari Bergjord, Bioforsk
- Jesper Madsen, Aarhus University
- Caroline E. Simonsen, Aarhus University
- Magda Chudzinska, Aarhus University
- Silke Bauer, Netherlands Institute of Ecology/Swiss Ornithological Station
- Bart Nolet, Netherlands Institute of Ecology
- Hans Baveco, Alterra-Wageningen University and Research Centre
- Marte Sørbo Hoholm, Landbrukstjenesten Midtre Hålogaland
- Marvell Hanssen, Landbrukstjenesten Midtre Hålogaland

### Flagship

Terrestrial, Theme: Adaptive management of ecosystem services

### Funding Source

Fram Centre, NRC, Directorate for Nature Management, County Governor Nordland, Environmental Protection Division, County Governor Nord-Trøndelag, Environmental Protection Division, County Governor Nord-Trøndelag, Agricultural Division

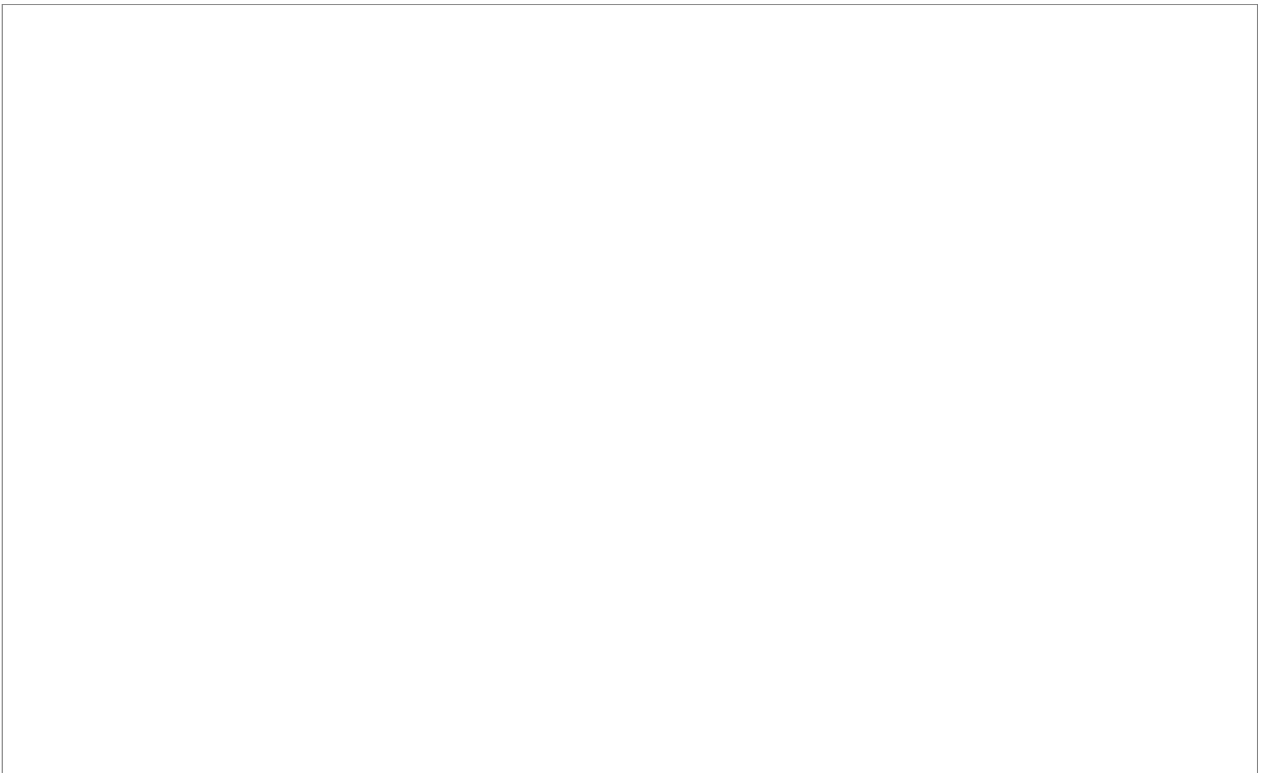
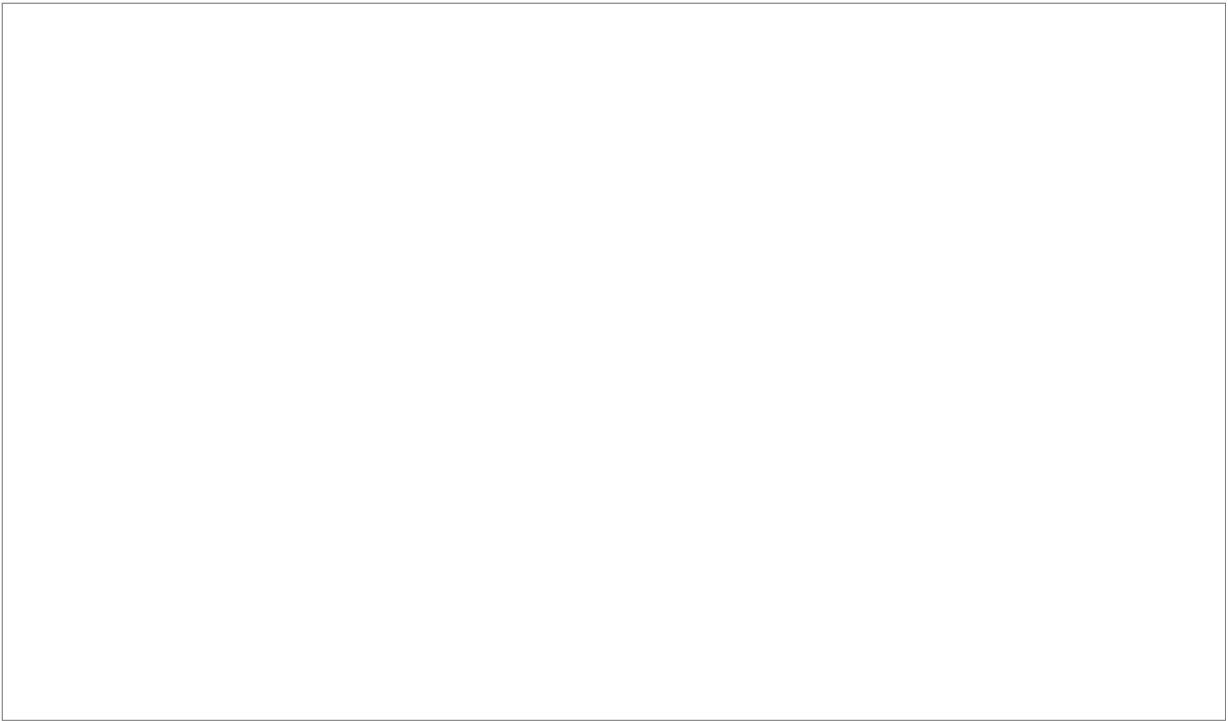
### Summary of Results

Our main activity in 2013 has been focused around several themes:

1. The grazing exclosures; where geese are prohibited to graze in order to measure consequences of goose grazing on grass fields (control plots also established).
2. An evaluation of the subsidy scheme and an examination of its practice in two regions with staging geese; Vesterålen and Nord-Trøndelag.
3. Data collection for a species distribution model (SDM) for geese in terms of goose dropping counts on a range of fields in Vesterålen (data from Mid-Norway collected in 2012).
4. A final workshop in the project consortium agreeing on the remaining analyses, their linkages and overall accomplishment.

As the main support from the Research Council ends in 2013, we are currently working hard analyzing data, writing up reports and manuscripts, as well as preparing for a final seminar to be organized 10 December 2013. More than 60 stakeholders are invited, from different parties and from different geographical areas (Mid-Norway and North Norway). This stakeholder seminar, where project results will be presented by the project partners, is supported by the Research Council and the Fram Centre (outreach).

Below are some figures illustrating our activity in 2013:



For most of the fields, the yield was less where geese had grazed (red columns) compared to where they have been excluded (blue). There are, however, variations between sites, and between years at individual sites. We have received some funding from the County Governor to follow up this.

Counting of goose droppings to be used as a basis for the development of an SDM. This will be combined with a resource depletion model in order to access the overall costs for the farming activity.

#### For the Management

Our project is highly relevant for wildlife management as well as for the agricultural authority. Revealing the underlying mechanisms for the conflicts between spring staging geese and agriculture may help to find alleviating initiatives. E.g. the SDM will predict and rank areas preferred by geese, and since the subsidies to farmers are to be paid before the geese arrive, such a tool may be very useful for the managers. How shall they distribute the money? Which farmers are expected to suffer greatest loss in the coming spring? We have an agreement with the County Governor that we will make this model/map available at the end of this year.

The grazing enclosure experiments will not only measure harvest loss and other costs in the specific plots, but will, by combining the data with the goose distribution model and resource depletion model, also provide an estimate of the overall costs of geese for larger regions. These measures may be a guideline for the various rates established in the subsidy scheme, as well as giving an evaluation of how “far/close” the money provided are from the real need seen from a farmer’s perspective.

#### Published Results/Planned Publications

##### **Scientific publications 2013**

Bjerke, A. W., Bergjord, A.K., Tombre, I. M. & Madsen, J. 2013. Reduced dairy grassland yields in Central Norway after a single springtime grazing event by pink-footed geese. *Grass and Forage Science* doi: 10.1111/gfs.12045

Chudzinska, M., Madsen, J. & Nabe-Nielsen, J. 2013. Diurnal variation in the behaviour of the Pink-footed Goose (*Anser brachyrhynchus*) during the spring stopover in Trøndelag, Norway. *DOI 10.1007/s10336-012-09278-y*.

Eythórsson, E. & Tombre, I. M. 2013. Tilskudd til tilrettelegging av beitearealer for trekkende hvitkinngås og kortnebbgås; Erfaringer fra Nord-Trøndelag og Vesterålen. NIKU Rapport 69, 48 s ISBN 978-82-8101-203-5.

Madsen, J., Bjerrum, M. & Tombre, I. M. 2013. Regional management of farmland feeding geese using an ecological prioritization tool. *Accepted AMBIO*.

Tombre, I. M. Eythórsson, E. & Madsen J. 2013. Stakeholder involvement in adaptive goose management; case studies and experiences from Norway. *Ornis Norvegica* 36: 17-24 <https://boap.uib.no/index.php/ornis/article/viewFile/430/442>

Tombre, I. M. Eythórsson, E. & Madsen J. 2013. Towards a solution to the goose-agriculture conflict in north Norway, 1988-2012: the interplay between policy, stakeholder influences and goose population dynamics. *PLOS ONE* August 8 (8), e71912, 1 – 7. <http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0071912>

### Popular and newsletters 2013

Hoholm, M. S. 2013. "Forsker på gjess i Vesterålen og Nord-Trøndelag". Vårnavisa 2013, s. 22.

Tombre, I. M. 2013. Ekskrementtelling i Vesterålen 17-21. mai 2013; En oppsummering. NINA Notat 20. juni til Sortland kommune og Fylkesmannen i Nordland, 6 s.

Tombre, I. M. & Bakken, J. 2013. Gåse- og ekskrementtelling i Sortland kommune; en metodesammenligning. NINA Notat 9. oktober 2013 til Sortland kommune og Fylkesmannen i Nordland, 3 s.

Tombre, I. M., Jensen, G. H., Madsen, J. & Gundersen, O. M. 2013. Kortnebbgås med halsringer på Nesset, vår og høst 2008-2012. NINA Notat 21. mars 2013, 14 s.

### Oral presentations 2013

Eythórsson, E. 2013. "Evaluering av miljøtilskuddsordningen; hvor står vi og hvor går vi?" Arbeidsmøte med referansegruppen 23-25 oktober 2013, Hotel Fjordgården Ringkøbing, Danmark.

Tombre, I. M. 2013. «Det goda internationella exemplet: Förvaltningsplan för Spetsbergsgås». Seminarium, Kungliga Skogs- och Lantbruksakademien; «Vad vet vi om våra vilda gäss – Forskning och förvaltning.» Stockholm 11. november 2013.

Tombre, I. M. 2013. "MIGRAPOP i 2013; noen resultater og erfaringer fra prosjektgjennomføringen." Arbeidsmøte med referansegruppen 23-25 oktober 2013, Hotel Fjordgården Ringkøbing, Danmark.

Tombre, I. M. 2013. "Gås i Vestfold; kan erfaringer fra Trøndelag brukes i forvaltningen?" Møte om forvaltning av grågås, 13. september 2013, Fylkesmannen i Vestfold, Statens Park, Tønsberg kommune.

Tombre, I. M. 2013. "MIGRAPOP Workshop; status and progress." Progress workshop project consortium, Roskilde 10-12 June 2013.

Tombre, I. M. 2013. "Alternative management actions in the Flyway Management Plan; including research results." 1<sup>st</sup> Meeting of the AEWA Svalbard Pink-footed Goose International Working Group, 23 April 2013, Copenhagen, Denmark.

Tombre, I. M. 2013. "Gås på ferd gjennom Norge; hvem der og hva skjer? MIGRAPOP; et prosjekt finansiert av MILJØ 2015." Konferanse: På TVERS av miljøkonfliktene. Miljø 2015-konferansen IV. Oslo 6.-7. februar 2013.

Tombre, I. M. & Eythórsson, E. 2013. "Ecosystem services provided by arctic geese; examples from research projects in Norway." Thematic day on ecosystem services at the Fram Centre, Tromsø 31. October 2013, The terrestrial Flagship.

### News at the internet and in newspapers 2013

"Miljøtilskudd viktig for både gårdbruker og gås". Bonde og Småbruker nr. 8, 4. oktober 2013.

"Bøndene krever at beitetilskuddet økes kraftig. Gåseplagen koster ham 100 000 kroner i året." Trønderavisa 25. april 2013

”Miljøtilskudd viktig for både gårdbruker og gås”, Nyhetssak NINAs hjemmeside 12.september 2013 i forbindelse med PLOS OBE-artikkel og NIKU-rapport. <http://www.nina.no/Aktuelt/Artikkel/tabid/945/ArticleId/2220/Miljotilskudd-viktig-for-bade-gardbruker-og-gas.aspx>

”Tilskudd til tilrettelegging av beitearealer for trekkende hvitkinngås og kortnebbgås” Nyhetssak NIKUs hjemmesider i forbindelse med NIKU Rapport 69, 9. september 2013. [http://www.niku.no/no/nordomrade/forskning\\_i\\_nord/Tilskudd+til+tilrettelegging+av+beitearealer+for+trekkende+hvitkinng%C3%A5s+og+kortnebbg%C3%A5s.9UFRvG47.ips](http://www.niku.no/no/nordomrade/forskning_i_nord/Tilskudd+til+tilrettelegging+av+beitearealer+for+trekkende+hvitkinng%C3%A5s+og+kortnebbg%C3%A5s.9UFRvG47.ips)

”Frekk og nebbete”, Dagbladet 7. april 2013 <http://ret-web02.int.retriever.no/go/?u=http%3A%2F%2Fret-web02.int.retriever.no%2Fservices%2Farchive.html%3Fmethod%3DdisplayPDF&a=39556&d=05500720130407C538E62319F5F5404CFE67959EF39CAA&i=0&sa=2022302&t=1365423879&x=f668f6b42a6623cd158ff9ab8ad9cd79>

”Grådig gås lever farlig”, Dagbladet 6. april 2013

”Gjess stjeler avlingen”, Aftenposten 6.april 2013 <https://web.retriever-info.com/go/?p=499911&a=38470&sa=2022465&x=0d4d4235066fae0b101a1c2f6176f35c&d=020002201304061175861>

”Kortnebbgåsa spiser en firedel av gressavlingen”, NTB 5.april 2013

”Kortnebbgåsa spiser en firedel av gressavlingen”, Harstad Tidende, 5.april 2013

”Kortnebbgåsa spiser en firedel av gressavlingen”, Adresseavisen, 5.april 2013

”Kortnebbgåsa spiser en firedel av gressavlingen”, Landbrukstidende, 5.april 2013

”Kortnebbgåsa spiser en firedel av gressavlingen”, Agder Flekkefjord Tidende, 5.april 2013 [http://avisenagder.no/index.php?page=vis\\_nyhet&Type=NTB&NyhetID=71748](http://avisenagder.no/index.php?page=vis_nyhet&Type=NTB&NyhetID=71748)

”Spiser opp halve avlinga til bonden” [http://www.nrk.no/nyheter/distrikt/nrk\\_trondelag/1.10974155](http://www.nrk.no/nyheter/distrikt/nrk_trondelag/1.10974155)

”Spiser ett av fire strå”, Nationen 5.april 2013 (på trykk) [http://web.retriever-info.com/go/?u=http%3A%2F%2Fweb.retriever-info.com%2Fservices%2Farchive.html%3Fmethod%3DdisplayPDF&a=38470&d=0550172013040544962&sa=2022465&x=0af299213f57c90ca6eadc0245387f00&pp=\[7.8.9.10.11.12.13\]&x2=202045fd4c8cb82fd47cd1edf76c7fd8&pu=https%3A%2F%2Fwww.retriever-info.com%2FproxyTest%2F%3Fid%3D055017201304052o289Q2mnfS82cB7P00HNcpR100201010a14%26x%3D6a84da933257fe7a65e163bdc5134650](http://web.retriever-info.com/go/?u=http%3A%2F%2Fweb.retriever-info.com%2Fservices%2Farchive.html%3Fmethod%3DdisplayPDF&a=38470&d=0550172013040544962&sa=2022465&x=0af299213f57c90ca6eadc0245387f00&pp=[7.8.9.10.11.12.13]&x2=202045fd4c8cb82fd47cd1edf76c7fd8&pu=https%3A%2F%2Fwww.retriever-info.com%2FproxyTest%2F%3Fid%3D055017201304052o289Q2mnfS82cB7P00HNcpR100201010a14%26x%3D6a84da933257fe7a65e163bdc5134650)

”Hvert fjerde strå havner i gåsas mage”, Natonene, på nett, 5. april 2013

”Denne spiser en fjerdedel av avlingen”, Trønderavisa, 5.april 2013 <http://www.t-a.no/nyheter/article7349439.ece#.UV56dJMwpmN>

”Beitende gjess kan gi halv avling”, Norges Bondelag, 3.april 2013 <http://www.bondelaget.no/nord-troendelag/beitende-gjess-kan-gi-halv-avling-article73004-181.html>

”Gåsa spiser opp føret ditt”, Bonde og småbruker / Norsk Landbruk, 4.april 2013 <http://www.norsklandbruk.no/gaardsdrift/2013/04/04/gaasa-spiser-opp-f%C3%B4ret-ditt.aspx>

”Beitende gjess gir mer ugress”, Finnmark Dagblad, 26.mars 2013

”Beitende gjess gir mindre gress”, Nyhetssak på forskning.no 25.mars 2013 <http://www.forskning.no/artikler/2013/mars/352303>

”Beitende gjess gir mindre gress”, Nyhetssak NINAs hjemmesider 25. mars 2013 <http://www.nina.no/Aktuelt/Artikkel/tabid/945/ArticleId/2112/Beitende-gjess-gir-mindre-gress.aspx>

TV/Radio 2013

NRK1, Ut i naturen; “Dum som en gås?” 19. november 2013 <http://tv.nrk.no/serie/ut-i-naturen/dvna60000913/19-11-2013>

NRK P1 Friluftsmagasinet, 19.mai 2013

NRK P1 Radio Distriktsprogram 26.mars 2013: ”Beitende gjess gir mindre gress”, Nyhetssak om beiteskadeforsøk, Jarle W. Bjerke

## Communicated Results

See above.

## Interdisciplinary Cooperation

The project consortium is multidisciplinary, constituting biological and sociological expertise. Through our relation to the reference group we also gain from agricultural and economical expertise. This has been vital for the project, also in terms of progress. I can't find any negative aspects in this respect.

## Budget in accordance to results

The funding from the Fram Centre contributes to the "own funding" in the original project application where the main support is from the Research Council, but funding is also provided by the environmental and agricultural authority. The funding from FRAM also opened for the possibility to expand the enclosure experiments to include Vesterålen in addition to those already established in Mid-Norway.

## Could results from the project be subject for any commercial utilization

No

## Conclusions

1. Some information is provided in 10.

The project has also been a basis for two new applications submitted to the Research Council this year. One of these has succeeded (Miljø 2015) and the second will be evaluated and outcome decided in February 2014 (KLIMAFORSK). Moreover, we have received one more year of funding from the County Governor to continue our enclosure experiments in the plots with the most intensive goose grazing (see 5.1).

2. No specific new methods/techniques have been developed during the project period, but we increasingly experience and understand that, if the implementation is to be successful, there is a need for 1) an interdisciplinary approach in project where there are conflicts around resources and several stakeholders are affected, and 2) an involvement of stakeholders at various levels and phases.