

Project information

Keywords

management geese implementation hunting

Project title

Geese Beyond Borders

Year

2016

Project leader

Ingunn Tombre

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

63,434 N and 11, 135 E

Participants

Einar Eythorsson, NIKU

Sanne Holmgaard, NIKU

Camilla Brattland, UiT

Jesper Madsen, Aarhus Universitet (AU)

Chris Topping, AU

Lars Dalby, AU

kevin Clausen, AU

Flagship

Terrestrial

Funding Source

Research Council of Norway (MILJØ 2015)

Terrestrial Flagship, FRAM

Aarhus University

Summary of Results

In this project, the main theme is the local implementation of an international management plan for Pink-footed Goose. In the study area, the Nord-Trøndelag County in Mid-Norway, 80% of the Pink-footed Geese shot in Norway is harvested here. The population has increased significantly, and the aim is to reduce the population size in order to reduced conflict with agriculture, limit the damages on the arctic tundra while sustainably managing the population and its habitats. In spite of the fact that various stakeholder groups are participating in the international management processes, local actions are also needed. E.g. in order to reduce the current population size of Pink-footed Geese, an increased harvest rate is needed. In the present project, we investigate how local stakeholders act in accordance with the plan, their participation and expectations (Workpackage 1/WP1). Interviews and surveys have been conducted among landowners, who are responsible and administrate the hunting locally, and hunters, who practice the hunting. In a parallel-integrated project, it has previously been documented that the harvest rate will increase if farmers cooperate and administrate the hunting over large areas also containing refuge areas available for the geese (see

references in the result-indicator-list). Results from WP1 demonstrate that landowners would like to organise the hunting in this way, and in addition to those already engaged in such arrangements there are several farmers who would like to initiate cooperation. The hunters are interested in participating in the management processes, and the majority says they will follow the current international directives. There is, however, a desire to be informed, also regarding causes for the decisions. Hence, in the international process, there is a responsibility among the authorities and stakeholder representatives to inform and communicate locally.

The harvest rate depend on the geese and the hunters. We investigate this further in WP2, where simulations of biological and sociological elements contemporarily provide predictions of the outcome under various conditions. E.g., how many Pink-footed Geese will be harvested if the number of another goose species in the area, the Greylag Goose, increase? Will the harvest change in accordance with the length of the hunting season, which may be shortened as a management action? In addition, what about bag limits and the hunter quality in terms of skills and experience? The models need a significant amount of data from the biological resources as well as about the hunters hunting in the area. The theoretical platform is already established, and simulations implemented with real data have been tested and run in our parallel Danish project. We are currently working on adaptations to the Norwegian case. Such simulations are useful for management as the harvest rate, an important measure in the international plan, can be evaluated based on affecting parameters.

The hunters' willingness to report their harvest of Pink-footed Geese is an important premise for successful implementation of the management plan. The environmental authority in Norway has developed a smartphone application with a daily reporting system. The hunters are requested to use this application, and such data collection by non-scientists are the theme in WP3. Goose management is an excellent case where such "citizen science" may play a central role. In addition to reporting the harvest (including juvenile rate), goose registrations in the field are also activities useful for managers. In fact, the international management plan are depending on reliable harvest reports in order to generate realistic predictions of the yearly harvest quota. During autumn 2016, we follow a hunting team testing the smartphone application. We also work on a manuscript where the use of data collected by non-scientists in goose management is described.

Goose management touches several levels of the environmental authority

administration, as well as stakeholder groups, disciplines and countries. Hence, we have a «multi-level-governance system», and interactions within the system are the main theme of WP4. There are many challenges when implementing international initiatives at a local level in Norway. E.g., communicating the decisions to the right recipients, identifying responsibilities for specific implementations and acknowledge that iterative learning is essential. Over the last couple of years, some failures have emerged in one or more of these processes. Two manuscripts will elaborate on this.

As a part of WP5, a reference group has been established with relevant stakeholders/managers. In adaptive management processes, the borders between managers, researchers and stakeholders partly decrease and an arena for exchanging knowledge and experience, building trust and respect will be useful. Three workshops have been organised with the whole group, one of them in Denmark.

Master and PhD-students involved in the project

Jamtfall, E.H. 2016. *Gåsejakt i Midt-Norge: et potensial for verdiskapning eller kun en fritidsaktivitet? (Goose hunting in Mid-Norway: a potential for added value or just a leisure activity?)* Master thesis, Norges miljø- og biovitenskapelige universitet (Norwegian University of Life Sciences), 10th June 2016.

Kristoffersen, H. L. 2016. *Autumn staging behavior in Pink-footed Geese; a similar contribution between sexes in parental care.* The Arctic University of Norway, 7th June 2016.

For the Management

The project results inform directly into the local implementation of an international management plan for geese. See also "Summary of results"

Published Results/Planned Publications

2015-2015

Manuscript in preparation

Eythórsson, E., Søreng, S. U. & Tombre, I. M. 2016. Goose population control by landowners' associations: Motivations

and actions of hunters and landowners in Nord-trøndelag, Norway. *Manuscript in prep.*

Madsen, J., Tombre, I. M., Linnebjerg, J. F., Rigét, F. & Fællid, C. 2014. Squeezed out: interspecific competition between spring-staging geese. *Manuscript in prep.*

Papers in review

Bergjord Olsen, A. K., Bjerke, J. & Tombre, I. 2016. Yield reductions in perennial leys in Norway after springtime grazing by pink-footed geese. *In review Journal of Applied Ecology*

Holmgaard, S. B., Tombre, I. M. & Eythórsson, E. 2016. Hunter Opinions on the Management of Migratory Geese: a Case of Stakeholder Involvement in Adaptive Harvest Management. Submitted to *Wildlife Society Bulletin*.

Accepted papers

Baveco, H.J. M., Bergjord, A.-K., Bjerke, J.W., Chudzińska, M.E., Pellissier, L., Simonsen, C.E., Madsen, J., Tombre, I. M. & Nolet, B.A. 2016 Combining modelling tools to evaluate a regional goose management scheme: goose damage depends on weather, land use and refuge size. *Accepted Ambio*

Eythórsson, E., Tombre, I.M. & Madsen, J. 2016. Goose management schemes to resolve conflicts with agriculture: theory, practice and effects. *Accepted Ambio*

Madsen, J., Williams, J. H., Johnson, F.A., Tombre, I. M., Dereliev, S. & Kuijken, E. 2016. Implementation of the first adaptive management plan for a European migratory waterbird population: the case of the Svalbard pink-footed goose *Anser brachyrhynchus*. *Accepted Ambio*

Simonsen, C. E., Tombre, I. M. & Madsen, J. 2016. Scaring as a tool to alleviate crop damage by geese – revealing differences between farmers' perceptions and the scale of the problem. *Accepted Ambio*.

Online/in press/DOI

Fox, A. D., Elmberg, J., Tombre, I. M. & Hessel, R. 2016. Agriculture and herbivorous waterfowl: a review of the scientific basis for improved management. *Biological Reviews* DOI: 10.1111/brv.12258.

<http://onlinelibrary.wiley.com/doi/10.1111/brv.12258/epdf>

http://www.readcube.com/articles/supplement?doi=10.1111~2Fbrv.12258&index=0&parent_url=1&preview=1

Jensen, G. H., Pellissier, L., Tombre, I. M. & Madsen, J. 2016. Landscape selection by migratory geese: implications for hunting organisation. *Wildlife Biology* DOI. 10.2981/wlb.00192. <http://www.wildlifebiology.org/accepted-article/landscape-selection-migratory-geese-implications-hunting-organisation>

Published

2016

Anderson, H.B., Speed, J.D.M., Madsen, J., Pedersen, Å., Ø., Tombre, I. M., van der Wal, R. 2016. Late snow melt moderates herbivore disturbance of the Arctic tundra. *Ecoscience* 21: 29-39. <http://www.tandfonline.com/doi/full/10.1080/11956860.2016.1212684>

Hessen, D. O., Tombre, I. M., van Geest, G. & Alfsnes, K. 2016. Climate impacts on ecosystem connectivity; How geese link fields of central Europe to eutrophication of Arctic freshwaters. *AMBIO* DOI 10.1007/s13280-016-0802-9.

Holmgaard, S. B., Eythórsson, E. & Tombre, I. M. 2016. Gåsejakt i Nord-Trøndelag. Spørreundersøkelse om gåsejegeres holdninger til forvaltning av kortnebbgås. NIKU Rapport 85, ISBN 978-82-8101-228-8, 40 s.

Jensen, G. H., Madsen, J. & Tombre, I. 2016. Hunting migratory geese: Is there an optimal practice? *Wildlife Biology* 22: 194-203. <http://www.bioone.org/doi/pdf/10.2981/wlb.00162>

Jensen, G. H., Tombre, I. & Madsen, J. 2016. Environmental factors affecting numbers of pink-footed geese *Anser brachyrhynchus* utilizing an autumn stopover site. *Wildlife Biology* 22: 183-193.

<http://www.bioone.org/doi/pdf/10.2981/wlb.00161>

Madsen, J., Cottaar, F., Amstrup, O., Asferg, T., Bak, M., Bakken, J., Frikke, J., Goma, V., Gundersen, O. M., Günter, K., Kjeldsen, J. P., Kruckenberg, H., Kuijken, E., Månsson, J., Nicolaisen, P. I., Nielsen, H. H., Nilsson, L., Reinsborg, T., Shimmings, T., Tabio, T., Tombre, I., Verscheure, . & Ødegård, P.-I. 2016. Svalbard Pink-footed Goose. Population Status Report 2015-2016. Aarhus University, DCE – Danish Centre for Environment and Energy, 14 pp. Technical report from DCE – Danish Centre for Environment and Energy No. 83. <http://pinkfootedgoose.aewa.info/node/202>

Tombre, I. M., Gundersen, O. M. & T. Reinsborg, T. 2016. Fordeling av gjess og jaktorganisering i Nord-Trøndelag om høsten. NINA Rapport 1272, 33 s. ISBN: 978-82-426-2933-3. <http://hdl.handle.net/11250/2417812>

2015

Clausen, K. K., Madsen, J. & Tombre, I. M. 2014. Carry-over or compensation? The impact of winter harshness on spring-fattening in a migratory goose species. *PLoS ONE*

Madsen, J., Christensen, T.K., Balsby, T.J.S. & Tombre, I. M. 2014. Could have gone wrong: Effects of abrupt changes in migratory behavior on harvest in a waterbird population. *PLoS ONE* DOI:10.1371/journal.pone. 0135100
<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0135100>

Madsen, J., Cottaar, F., Amstrup, O., Asferg, T., Bak, M., Bakken, J., Christensen, T. K., Gundersen, O. M., Kjeldsen, J. P., Kuijken, E., Reinsborg, T., Shimmings, T., **Tombre, I.** & Verscheure, C. 2015. Svalbard Pink-footed Goose. Population Status Report 2014-2015. Aarhus University, DCE – Danish Centre for Environment and Energy, 16 pp. Technical report from DCE – Danish Centre for Environment and Energy No. 58.
<http://dce2.au.dk/pub/TR58.pdf>

Simonsen, C. E., Madsen, J., Tombre, I. M. & Nabe-Nielsen, J. 2015. Is it worthwhile scaring geese to alleviate damage to crops? – An experimental study. *Journal of Applied Ecology* DOI: 10.1111/1365-2664.12604

Søreng, S.U., Eythórsson, E., & Tombre, I. M. 2015. Jakt på kortnebbgås i Nord-Trøndelag. Grunneieres erfaring med høstjakt og synspunkter på gåseforvaltningen. Norut Alta RAPPORT: 2015:3. ISBN: 978-82-7571-249-1. 70 s.
http://norut.no/sites/norut.no/files/jakt_pa_kortnebbas_i_nord-trondelag.pdf

2014

Madsen, J., Cottaar, F., Amstrup, O., Asferg, T., Bak, M., Bakken, J., Christensen, T. K., Hansen, J., Kjeldsen, J. P., Kuijken, E., Nicolaisen, P. I., Shimmings, T., **Tombre, I.** & Verscheure. 2014. Svalbard Pink-footed Goose. Population Status Report 2014-2015. Aarhus University, DCE – Danish Centre for Environment and Energy, 14 pp. Technical report from DCE – Danish Centre for Environment and Energy No. 39.
<http://pinkfootedgoose.aewa.info/node/173>

Communicated Results

Oral presentations

2016

Tombre, I. M. 2016. *Geese Beyond Borders; status og samarbeid med Bondelagets gåseprosjekt*. Faglig presentasjon på møtet til Styret til Norges Bondelags gåseprosjekt. Framsenteret, Tromsø 16-17. november 2016.

Tombre, I. M. 2016. *Interaksjoner mellom gås og landbruk i Vestfold; effekter av konfliktforebyggende tiltak*. Faglig presentasjon på møtet til Styret til Norges Bondelags gåseprosjekt. Framsenteret, Tromsø 16-17. november 2016.

- Tombre, I. M. 2016. *Gås i forskning og forvaltning; nødvendigheten av brukerinvolvering*. Naturdatas Viltkonferanse 2016, 3.-4. november 2016, Værnes/Stjørdal.
- Tombre, I. M. 2016. *Forvaltning av gjess er utfordrende, men koblingen mellom forvaltere, forskere og brukere gjør at det kan funke! Eksempler fra forskningsprosjekter i Nord-Trøndelag*. Gåseseminar, NJFF Møre og Romsdal, Thon hotell Kristiansund 28. oktober 2016.
- Tombre, I. M., Eythórsson, E. & Holmgaard, S. B. 2016. *Samfunnsfaglige studier i gåseproblematikken; hvorfor er dette nyttig for forvaltningen? Grunneiere og jegernes involvering i gåseforvaltning, beiteskadeproblematikk og utfordringer*. Gåseseminar NJFF Møre og Romsdal, Thon hotell Kristiansund 28. oktober 2016.
- Tombre, I. M. 2016. *Status for gjessenes; tellinger, jaktorganiseringer, forvaltningsplan og gjeldende forvaltning*. Kveldsseminar for regionale og lokale forvaltere (miljø og landbruk), grunneiere og jegere. Backlund Thon hotel, Levanger 20. oktober 2016.
- Tombre, I. M. 2016. *Arctic Geese; Characteristics, Population Dynamics, Life-history and Management*. UNIS, Longyearbyen Svalbard 29. August 2016.
- Tombre, I. M. 2016. *The Timing of Migration in Arctic Geese*. UNIS, Longyearbyen Svalbard 30. August 2016.
- Tombre, I. M. 2016. *Population Size in Dark-bellied Brent Goose and Faltering Lemming Cycles in Taimyr; A Presentation of the Paper by B. Nolet et al. 2013*. UNIS, Longyearbyen Svalbard 29. August 2016.
- Tombre, I. M. 2016. *Gjess i Vesterålen; status fra overvåking og forskning*. Medlemsmøte i Sortland Bondelag, Kleiva landbruksskole/Sortland videregående skole, 14.april 2016.
- Tombre, I. M. 2016. *Geese and hunting in Nord-Trøndelag, Norway*. Workshop "Geese Beyond Borders" Sandbjerg Slott, Danmark, 15-17 March 2016.
- Tombre, I. M. 2016. Erfaringer med bedre organisering av gåsejakt; eksempelet Nord-Trøndelag. Åpent kveldsmøte arrangert av Vestfold Bondelag: «Gås – kan bedre jaktorganisering redusere utfordringene for landbruket?» Grønt Fagsenter, Stokke 17. februar 2016.
- Tombre, I. M. 2016. Hvitkinngåsa; en ekstremспортutøver!" Familieforedrag på Polaria, søndag 14. februar 2016.

- Tombre, I. M. & Eythórsson, E. 2015. Geese beyond borders – “grenseløse gjess” (2014-2016), WP 4 – Adaptive Management of Ecosystem Services. Flaggskipmøte “Det Terrestre Flaggskip”, Universitetet i Tromsø, 16. desember 2015.
- Tombre, I. M. 2015. Monitoring and minimizing agricultural conflicts; Presentation of Norwegian subsidy review. 3rd Meeting of the AEWA Svalbard Pink-footed Goose International Working Group, 10-11th December 2015, Gent, Belgium.
- Tombre, I. M. 2015. Hvilke erfaringer er det med beitende gjess i Norge og ellers i verden? Møte i Sande kommune. «*Beitende gjess – en utfordring for landbruket.*» Sande Rådhus 26. november 2015
- Tombre, I. M. 2015. Internasjonal forvaltning av kortnebbgjess og relasjoner til Bondelagets Gåseprosjekt. Møte i styringsgruppa for Bondelagets Gåseprosjekt, Landbrukets Hus, Oslo, 23. november 2015.
- Tombre, I. M. 2015. Geese beyond Borders; status og bidrag til oppgaver fra Bondelagets Gåseprosjekt. Møte i styringsgruppa for Bondelagets Gåseprosjekt, Landbrukets Hus, Oslo, 23. november 2015.
- Tombre, I. M. 2015. «Vad säger forskningen om gässen som betare på landbruksgrödor?» «*Kunnskapsdag om gjess i Kristianstad*», Sverige, 16/11-2015. Arrangør: Högskolan i Kristianstad og Länsstyrelsen i Skåne.
- Tombre, I. M. 2015. «Framtidens gåsförvaltning går över gränserna: exemplet spetsbergsgås.» «*Kunnskapsdag om gjess i Kristianstad*», Sverige, 16/11-2015. Arrangør: Högskolan i Kristianstad og Länsstyrelsen i Skåne.
- Tombre, I. M. & Eythórsson, E. 2015. Orientering om årets tellinger; resultatenes konsekvenser for jakt og gårdbrukere. Seminar «*Beiteskader fra kortnebbgås*», Fylkesmannen i Nord-Trøndelag, Landbruksavdelingen, Inviterte deltakere til Statens Hus Steinkjer, 4. november 2015.
- Tombre, I. M. & Eythórsson, E. 2015. Management schemes in Norway, practises and effects. International Conference; “*Goose management: Challenges 2015*”. Denmark, 27-29 October 2015
- Madsen, J. & Tombre, I.M. 2015. Interspecific competition in geese; Exemplified with a case study from Norway. International Conference; “*Goose management: Challenges 2015*”. Denmark, 27-29 October 2015
- Tombre, I.M. 2015. Kortnebbgås i Nord-Trøndelag; fra forskning til forvaltning, jaktpraksis og lokale tiltak. Åpent kveldsmøte for grunneiere, jegere og forvaltere. Backlund Thon hotel, Levanger 23. september 2015.
- Tombre, I.M. 2015. International Management of Pink-footed Geese; consequences for Svalbard? Seminar at UNIS, Svalbard, 7. September 2015

Tombre, I. M. *Kortnebbgås i Nord-Trøndelag i et lokalt og internasjonalt perspektiv*. Lunsjseminar Fylkesmannen i Nord-Trøndelag, 12. Mai 2015. <http://www.fylkesmannen.no/Nord-Trøndelag/Miljo-og-klima/Naturmangfold/Lunsjseminar---kortnebbgas/>

Tombre, I. M. 2015. *Gåsejakt og gåsejegere; fra internasjonale til lokale tiltak*. Småviltseminar 2015; Norges Jeger- og Fiskerforbund. Jakt- og fiskesenteret, Flå, 28-29. April 2015.

Tombre, I. M. 2015. Gåseforvaltning i Vestfold; nye initiativer og forskningsprosjekter basert på tidligere prosjekter? Møte om gåseforvaltning/prosjekt i Vestfold. Fylkesmannen i Vestfold, 17. april 2015.

Tombre, I. M. 2015. Multi-species multi-stakeholder multi-scale management of geese from the perspectives of an interdisciplinary co-operation between natural and social sciences (Norway case). "Goose Management Summit", University of Kristianstad 13-15. April 2015

Tombre, I. M. 2015. At the interface between research, management and geese; from international agreements to local implementation. Seminar series, Norwegian Polar Institute, 7. January 2015.

2014

Tombre, I. M. 2014. *Geese Beyond Borders; a progress report*. Yearly meeting in the Terrestrial Flagship, The Fram Centre, University of Tromsø, 18 December 2014

Tombre, I. M. 2014. Stakeholder involvement in wildlife management; from international agreements to local implementation. The 16th Meeting of the Goose Specialist Group, Wetlands International, 22-25 November 2014, Beijing, China.

Tombre, I. M. 2014. *Kortnebbgåsa død eller levende – ja takk, begge deler!* FRAMDAGEN 2014, Framsenteret Tromsø 13. november 2014.

Tombre, I. M. 2014. *Kunnskapsdeling og samarbeid lang kortnebbgåsas trekkerte*. NINA-dagan 2014: Åpent fagseminar; Lokal deltakelse i prosjekter i NINA – der lokal deltakelse og erfaringsbasert kunnskap gjør en forskjell. NINA-huset, Trondheim 21.oktober 2014.

Tombre, I. M. 2014. Goose-agricultural conflicts; crop damage assessment and reporting – linking goose populations sizes and crop damages. 2nd Meeting of the AEWA Svalbard Pink-footed Goose International Working group, 14-15th October 2014, Sneek, The Netherlands.

- Tombre, I. M. 2014. Arctic tundra degradation. 2nd Meeting of the AEWA Svalbard Pink-footed Goose International Working group, 14-15th October 2014, Sneek, The Netherlands.
- Tombre, I. M. 2014. *The GEESE BEYOND BORDERS project; an overview*. «Kick-off» workshop 10-11 February, Tromsø, for the NRC-funded project *Geese Beyond Borders*.
- Tombre, I. M. 2014. Gåsejakt på Nesset; erfaringer så lang og innspill til veien videre. Årsmøte Nesset Grunneierlag, Backlund Hotell Levanger 10. mars 2014.
- Tombre, I. M. 2014. Erfaringer med tilrettelagt gåsejakt i Nord-Trøndelag og noen tanker om veien videre. Møte om økt organisering og økt tilrettelegging for jakt på kortnebbgås – Jægtvolden Fjordhotell, Inderøy 11. mars 2014. Arrangør Fylkesmannen i Nord-Trøndelag og Nord-Trøndelag Bondelag.
- Tombre, I. M. 2014. Erfaringer med tilrettelagt gåsejakt i Nord-Trøndelag og noen tanker om veien videre. Møte om økt organisering og økt tilrettelegging for jakt på kortnebbgås – Verdal Hotell, Verdal 12. mars 2014. Arrangør Fylkesmannen i Nord-Trøndelag og Nord-Trøndelag Bondelag.
- Tombre, I. M. 2014. Hva vet vi om gåsa og gåsetrekkene i Vesterålen? Dialogmøte Gåseforvaltningen i Vesterålen; Erfaringer og veien videre. Arrangør: Sortland kommune i samarbeid med Øksnes kommune, Hadsel kommune og Andøy kommune. Samfunnssalen, Sortland, mandag 31. mars 2014, Sortland.
- Tombre, I. M. 2014. Grunneierne på Nesset; hva får de ut av GOOSEHUNT-prosjektet? NINA-seminar, Framsenteret 5. mai 2014.
- Tombre, I. M. 2014. Adaptive goose management beyond borders: “Grenseløse gjess”. Prosjektbesøk NFR, Tromsø 26. juni 2014
- Tombre, I. M. 2014. Project status and achievements, WP1-5. 2nd Workshop for the Geese Beyond Borders Project, Levanger 22-23 September 2014.
- Tombre, I. M. 2014. The use of data collected by non-scientists, WP3. 2nd Workshop for the Geese Beyond Borders Project, Levanger 22-23 September 2014.
- Tombre, I. M. 2014. Gåsejakt; hvorfor tilrettelegge og hvordan? Forskningsresultater og noen tanker om fremtiden. Forskningsdagene «Kortnebbgås – død eller levende?» Mære landbruksskole 24. september 2014.
- Tombre, I. M. & Olsen, A.K.B. 2014. Gås om våren; hva medfører det for gårdbrukeren? Forskningsdagene «Kortnebbgås – død eller levende?» Mære landbruksskole 24. september 2014.

Interdisciplinary Cooperation

The project is by definition interdisciplinary including ecologists and social scientists.

Many publications include both.

Budget in accordance to results

The project follows the planned budget and scientific progress. Hence, no divergence to report.

Could results from the project be subject for any commercial utilization

No