

Monitoring of Barnacle Geese and Greylag Geese in Iceland



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Barnacle Geese monitoring

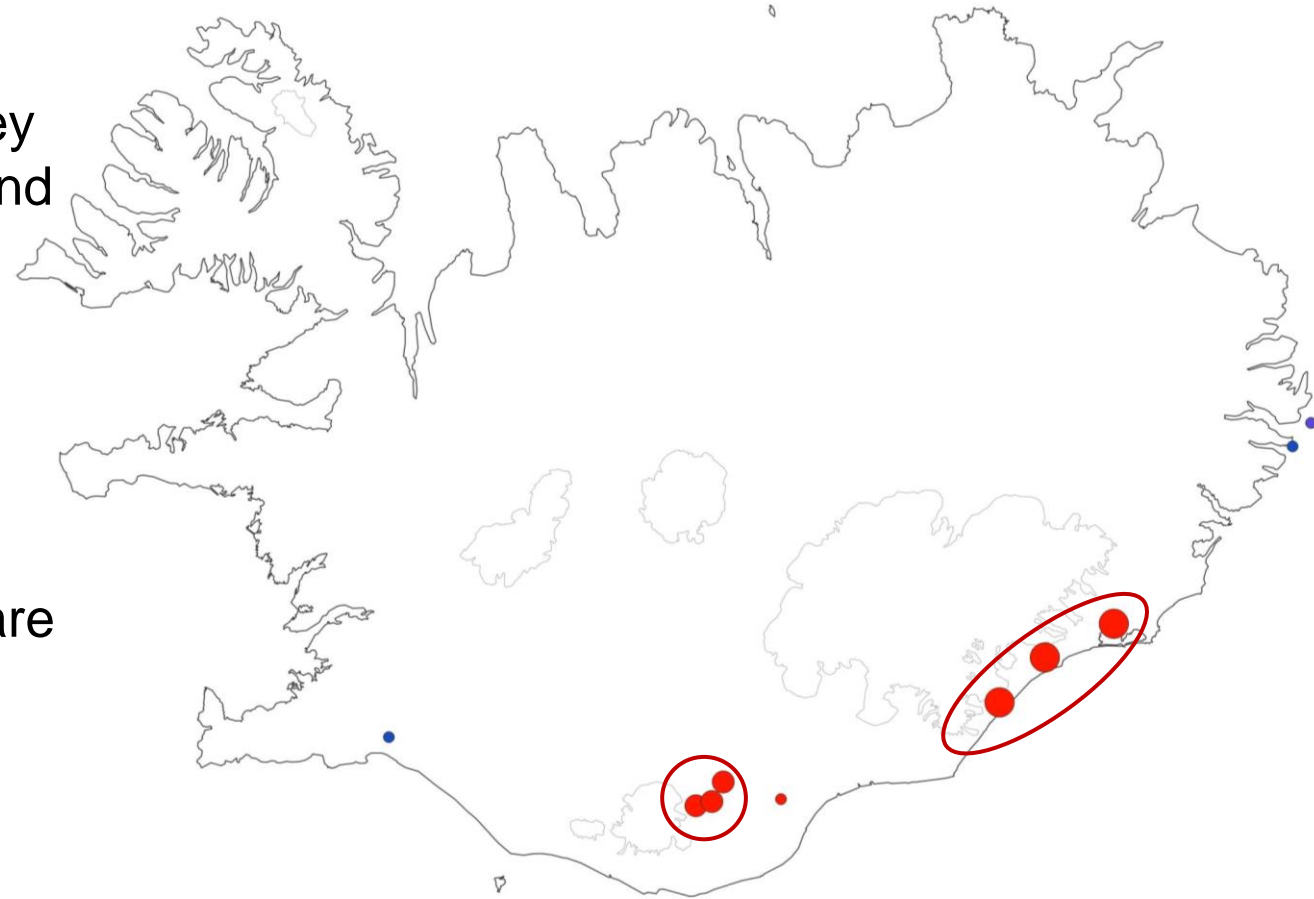
- Monitoring takes place as part of a governmental scheme led by the Icelandic Institute of Natural History (IINH), including data management and storage.
- Fieldwork is organized and carried out by the IINH along with a regional nature research centre (the Southeast Iceland Nature Research Center); involved are researchers, professional counters and volunteers (less than 50 total).
- Nest and total counts in the main breeding area every three years in hand with the March flyway census since 2020. Additionally annual nest counts on the biggest breeding colony (Skúmey) by the Southeast Iceland Nature Research Center. Data fully validated and available in the end of the year of each count.



Barnacle Geese monitoring

Nest counts

- Timing: End of May just prior hatching
- Main breeding area is Southeast Iceland, distribution area was identified by arial survey in 2019. A few small colonies have been found since
- Coverage: All known colonies visited
- Accessibility of colonies and therefore count protocol differ
- Not in all breeding colonies total counts of birds present are feasible, there only nests are counted not all birds present. To get an estimate of the total Icelandic breeding population, non-breeder percentages are evaluated where available and extrapolated for colonies where not available.



Barnacle Geese monitoring

Biggest colony, Skúmey, island in a glacier lagoon, very densely populated, island visited, all nests examined and mapped. First count 2014, annually counts since 2017



Barnacle Geese monitoring

Oldest colony, Hólmsá, glacial river with islets, walked along the distribution area nests and birds counted.

Known since 1999, first count 2009, other counts 2019, 2020 and 2023.

- Other rivers and accessible areas are covered the same way.

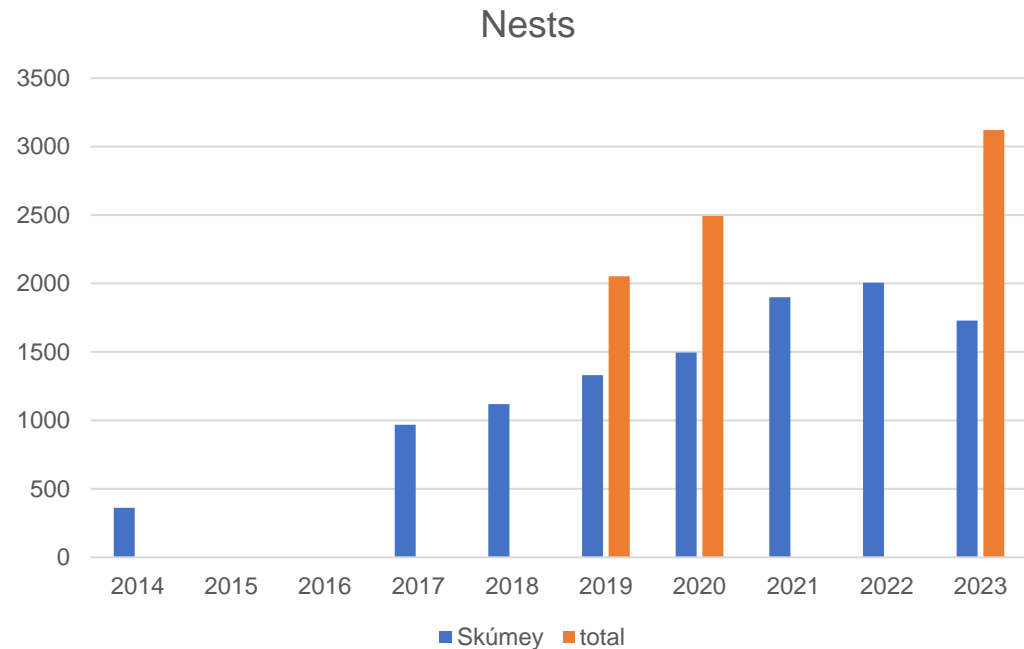
Areas with none or little accessibility are assessed by telescope or pictured by drone.



Barnacle Geese monitoring

Nest counts

- Even though this year's totals seem to show an increase in the total breeding population in Iceland
- when looking at Skúmey, annual numbers show a decline compared to the two previous years



Barnacle Geese – other monitoring activities

- Census of migrating Barnacle Geese in Northwest Iceland spring 2022
 - 51.536 birds total, carried out by IINH
 - Same methods as Steve Percival 1987, 1994 (Percival&Percival 1997) and 2018
- Bag numbers, summaries available online 1998 - 2021 at the Environment Agency of Iceland
 - <https://ust.is/veidi/veiditolur/>
- Juvenile proportions in harvest
 - Arnór Þ. Sigfússon, independent researcher



Barnacle Geese – other monitoring activities

- Colour ringing
 - Cooperation of Arnór S. Þórisson, independent researcher and IINH along with research centre and volunteers
 - **Birds in moult, July, close to breeding grounds in Southeast Iceland**
 - **First colour ringing attempt in 1999 (40 birds)**
 - **Annually since 2017 (over 1500 birds)**



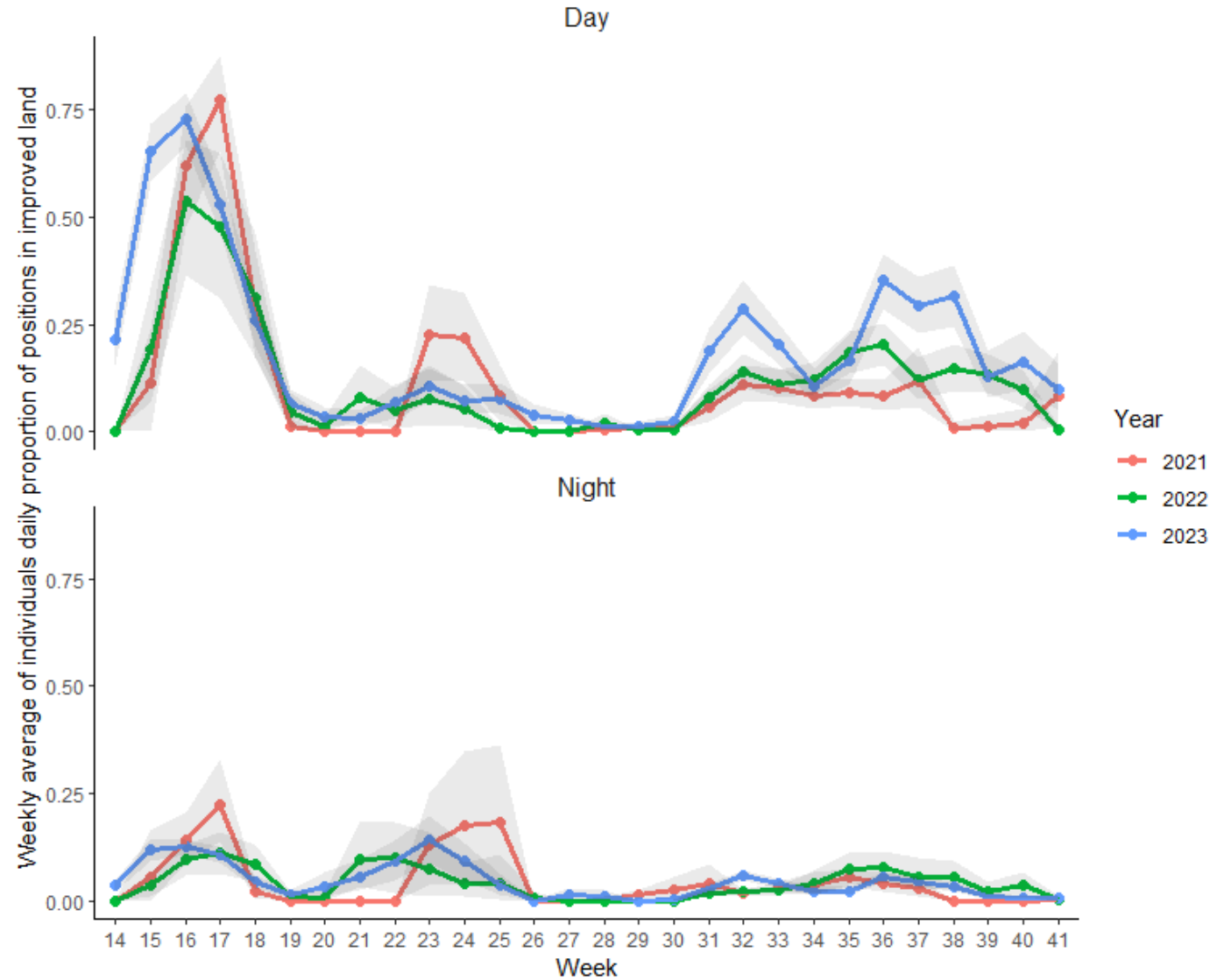
Barnacle Geese – other monitoring activities - GPS

- GPS tagging
 - Along with colour ringing activities
 - First deployments 2020
 - ~ 26 deployments of 23 tags
 - + 483.000 positions
- No data analysis done so far – prospects:
 - land use
 - grazing pressure on agricultural land
 - How much time do the birds spend on agricultural land while in Iceland?



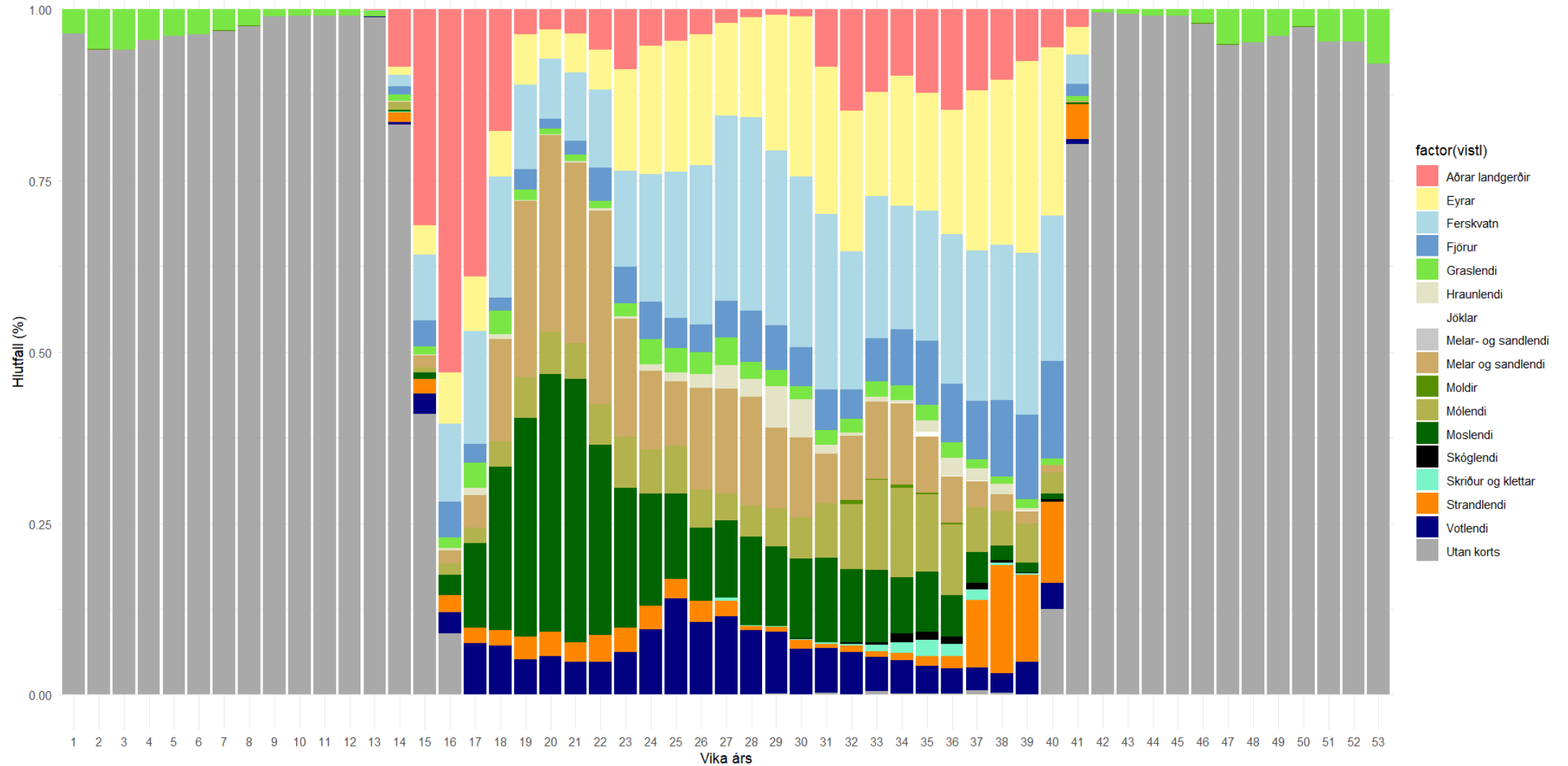
Barnacle Geese – other monitoring activities - GPS

Weekly average of individuals daily proportion of positions in improved land in Iceland
note very raw data



Barnacle Geese – other monitoring activities - GPS

Proportions of positions within rough habitat types using the IINH's habitat map.



Greylag Geese monitoring

- Current monitoring project started in 2020
 - November census
 - Proportions of juveniles and brood sizes between regions, seasons and years
 - Juvenile proportions in harvest
 - *East Iceland Nature Research Centre and Arnór Þ. Sigfússon independent researcher*
 - Issues with sample size and distribution left to be solved
 - Bag statistics, summaries available online 1998 - 2021
 - *Environment Agency of Iceland*

Aim: to find a suitable parameter for productivity

- Initial plan to compare and combine three data streams. Proportion of juveniles in harvest in Iceland and in vivo juvenile proportions and brood sizes in Iceland and the UK.

- GPS tagging



Greylag Geese monitoring – November census

- Carried out in Iceland concurrent to census periods in the UK since 2004, first attempt 2001.
 - By plane (if conditions allow since 2006) covering South Iceland where the majority of geese is found at that time of the year, IINH
 - By observers on land (Southwest Iceland mainly)
 - Information gathered from research centers and volunteers e.g. hunters and bird watchers



Greylag Geese monitoring – November census

2020

- 11.980 greylags counted in Iceland.
- 10.907 (91%) found in South Iceland



Greylag Geese monitoring – November census

2021

- 15.959 greylags counted in Iceland.
- 13.929 (89%) found in South Iceland



Greylag Geese monitoring – November census

2022

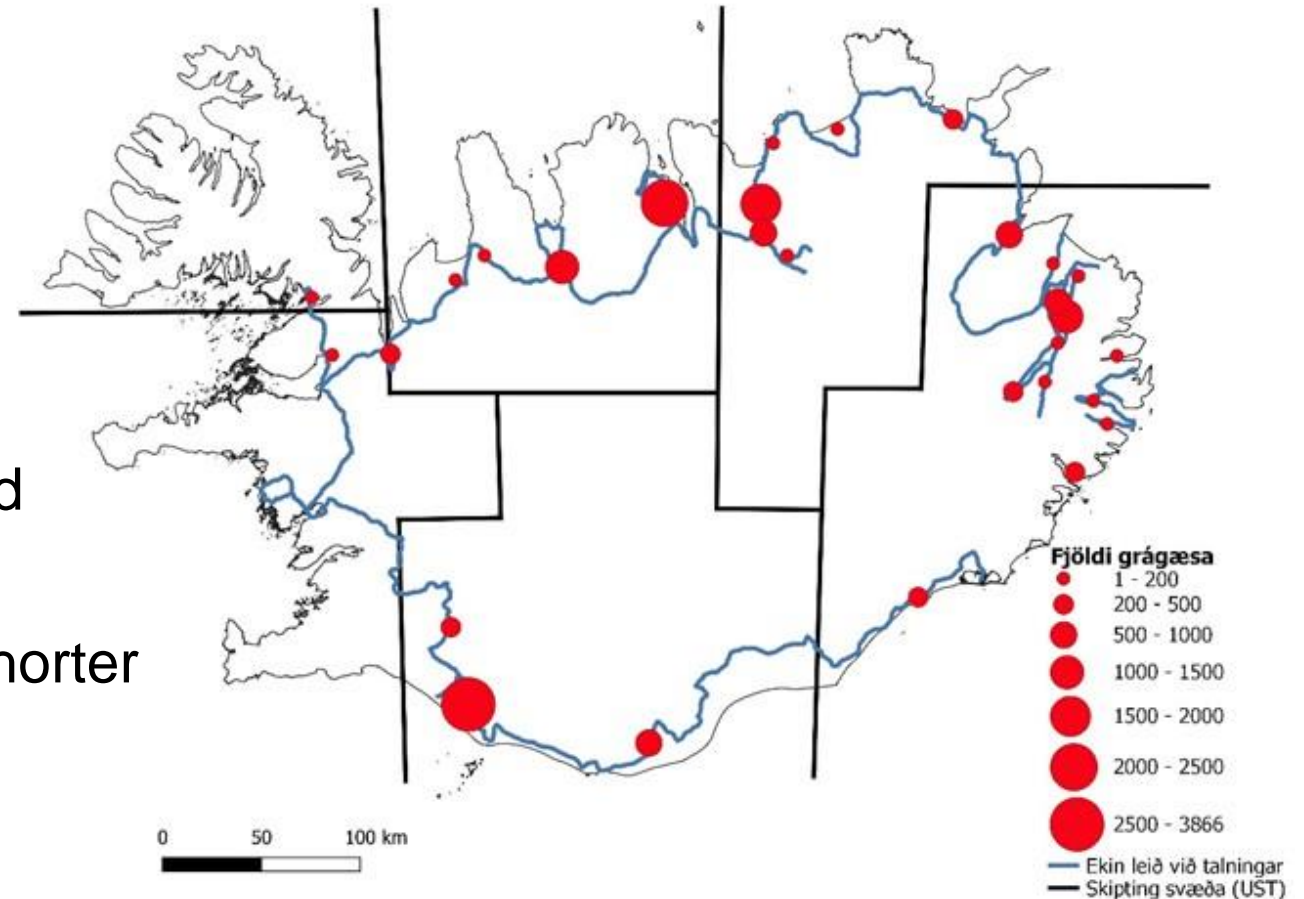
- 25.382 greylags counted in Iceland.
- 16.484 (66%) found in South Iceland



Greylag Geese monitoring

Proportions of juveniles and brood sizes between regions, seasons and years

- Two searches made each year.
 - East Iceland Nature Research Centre
 - Late summer (Late July/August)
 - Large goslings and moult
 - Autumn (October)
 - Before the onset of migration
- Birds aged and family sizes measured
- Methodology in development !
 - Fixed routes for each survey and shorter survey periods.
 - Unsolved issues with age ratios



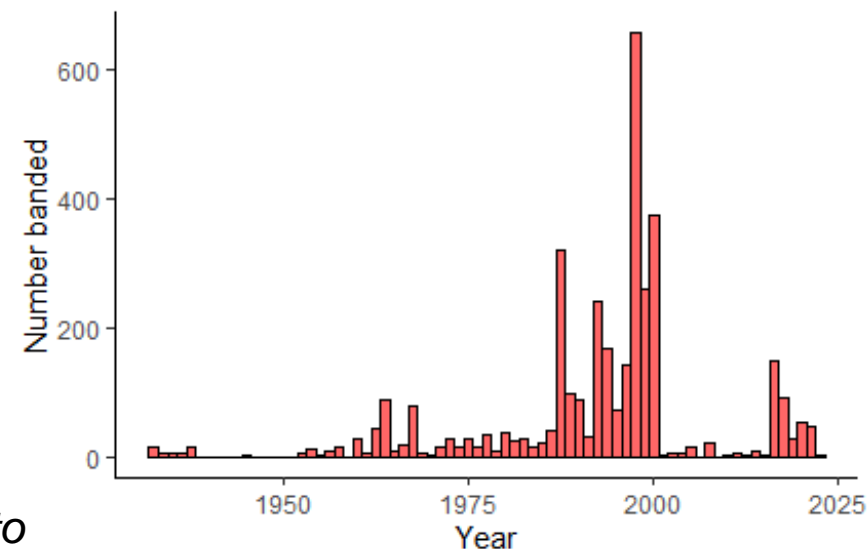
Greylag Geese monitoring – GPS tagging

- Three tagging periods during moult in late summer 2021 – 2023
 - collaborative project with Nature Scot
- 23 individuals tagged summer of 2021
- 16 individuals tagged summer of 2022
- 50 deployments, 21 ongoing
- Main question: distribution of Icelandic greylags on wintering grounds - proportion of individuals south of defined line during census period
- Other even more important aspects to be considered are habitat use, survival rates, migratory patterns, hunting pressure and effects of external factors such as avian flu.



Icelandic ringing data

- 3564 greylags (1749 CR) ringed from 1932 to 2022
- 1224 resightings and recoveries of 1019 individuals.
 - 960 in Iceland, 264 abroad.
- Only 435 banded post 2000.



Not likely to be of much use for survival estimates, at least unlikely to add more than what Morten Frederiksen estimated based on these data.

- Might it provide info on harvest in the UK as carried out by Frederiksen et al 2002?

- Might complement other data, e.g. bag data and for testing assumptions.

- According to Bob Swann there has been no ringing of Icelandic greylags in the UK since 2011.

