

USING STABLE ISOTOPE ANALYSES TO ASSESS THE IMPACT OF HUNTING ON THE BREEDING POPULATION OF COMMON SNIPE IN DENMARK



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Background

What do we know:

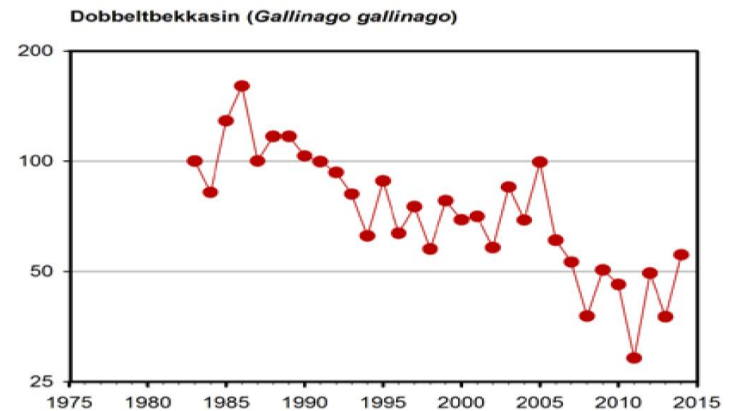
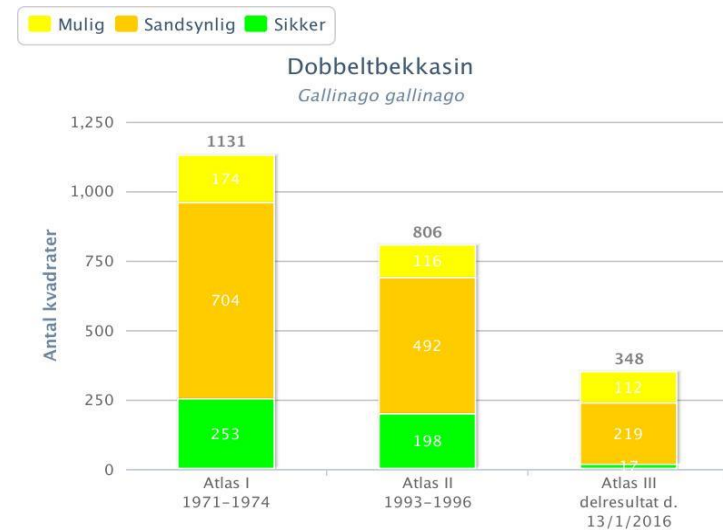
- Denmark holds a breeding population of c. 1,300 pairs (2011)
- Population decline since the 1970s
- Recent inventories suggest further decline
- National red-list status changed from “Least concern” to “Vulnerable”
- Denmark is passed by c. 1.8 million birds each autumn
- C. 1 million birds are supposed to moult in Denmark
- The annual bag of Common Snipe is on average 11,000 birds (2010-2014)



Denmark

Population status and development

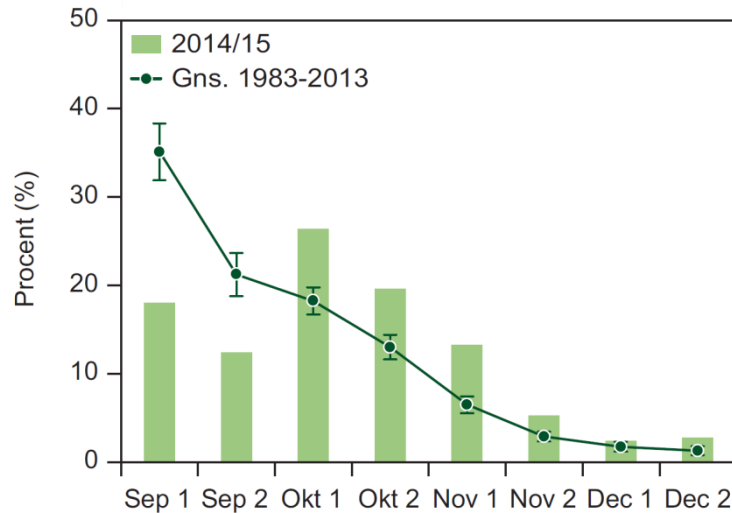
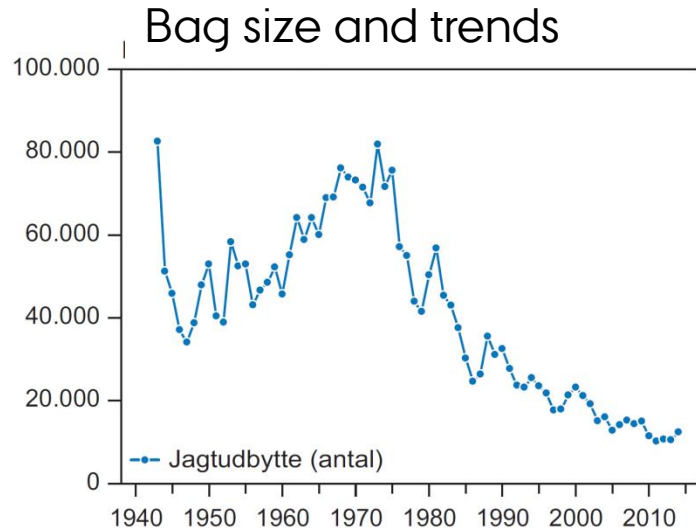
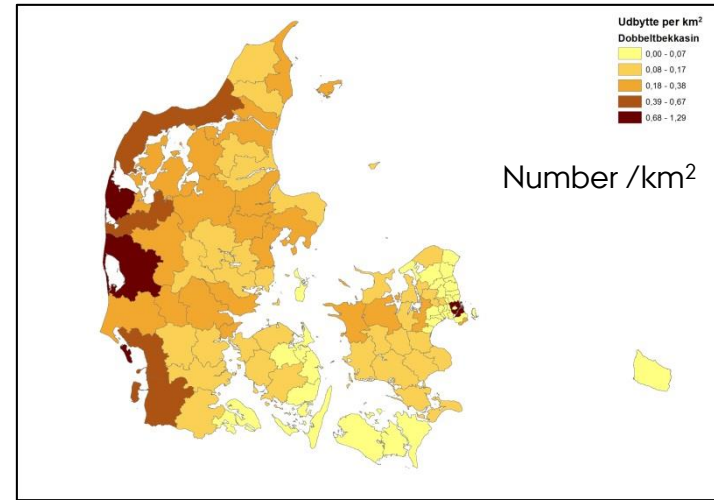
- Atlas inventory
1971-1974
1993-1996
2014-2017 (ongoing)
- Danish Pont Count Census
1976-2014 (ongoing)



Denmark

Hunting

- Open season (since 1982):
1. september – 31. december



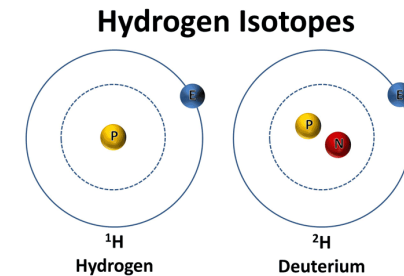
Questions:

- How many Danish breeding birds are bagged by hunters in Denmark ?
- Is snipe hunting a potential threat to the Danish breeding population ?



Assessing snipe provenance:

- Analysing recovery of ringed birds
(9 juveniles and 9 adults ringed in Denmark and recovered)
- Using chemical markers in feathers -
stable isotope ratios



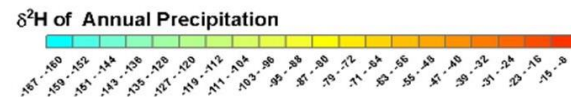
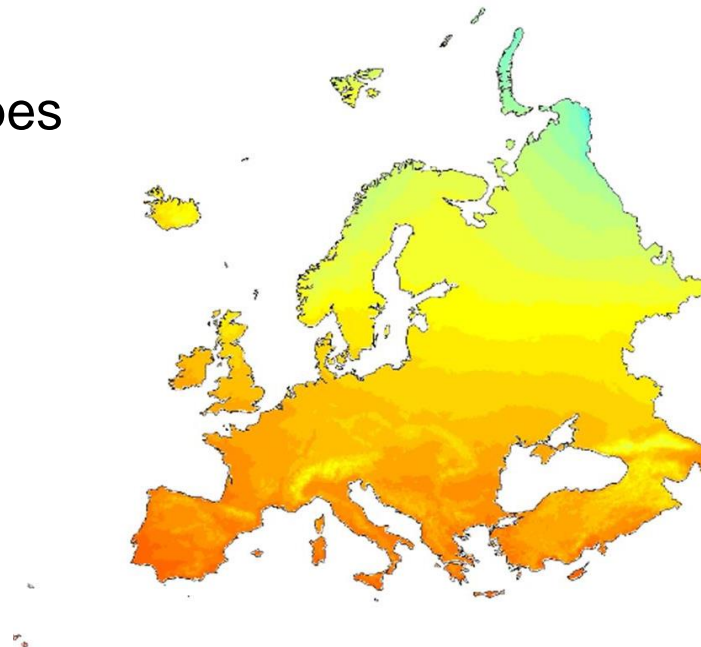
Method:

- Sampling wings from 97 bagged snipes collected by the Danish Wing Survey 2014/15
 - Isotope analyses on juvenile tertial feathers using the isotope ratio of
 - Hydrogen: $^1\text{H} / ^2\text{H}$
 - Nitrogen: $^{14}\text{N} / ^{15}\text{N}$
- (Keith Hobson, Chantel Gryba & Geoff Koehler. Canada)

Danish bird should have values of

Hydrogen ($\delta^2\text{H}$): **-84 ‰ to -89 ‰**
(corrected for annual precipitation differences)

Nitrogen ($\delta^{15}\text{N}$): **>8 ‰**

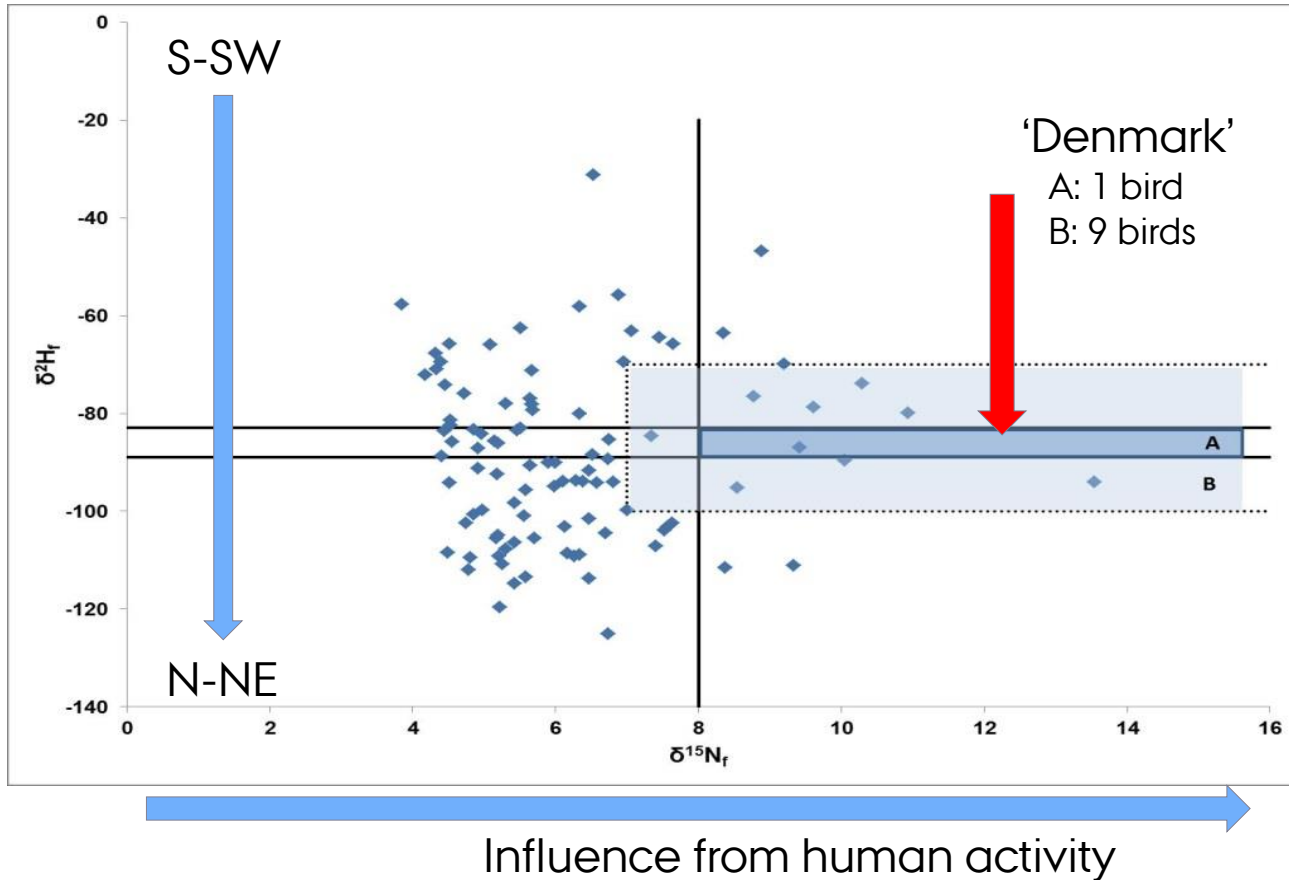


Hydrogen isotope ratio gradient
http://wateriso.utah.edu/waterisotopes/media/isoMaps/jpegs/h_Euro/hma_Euro.jpg



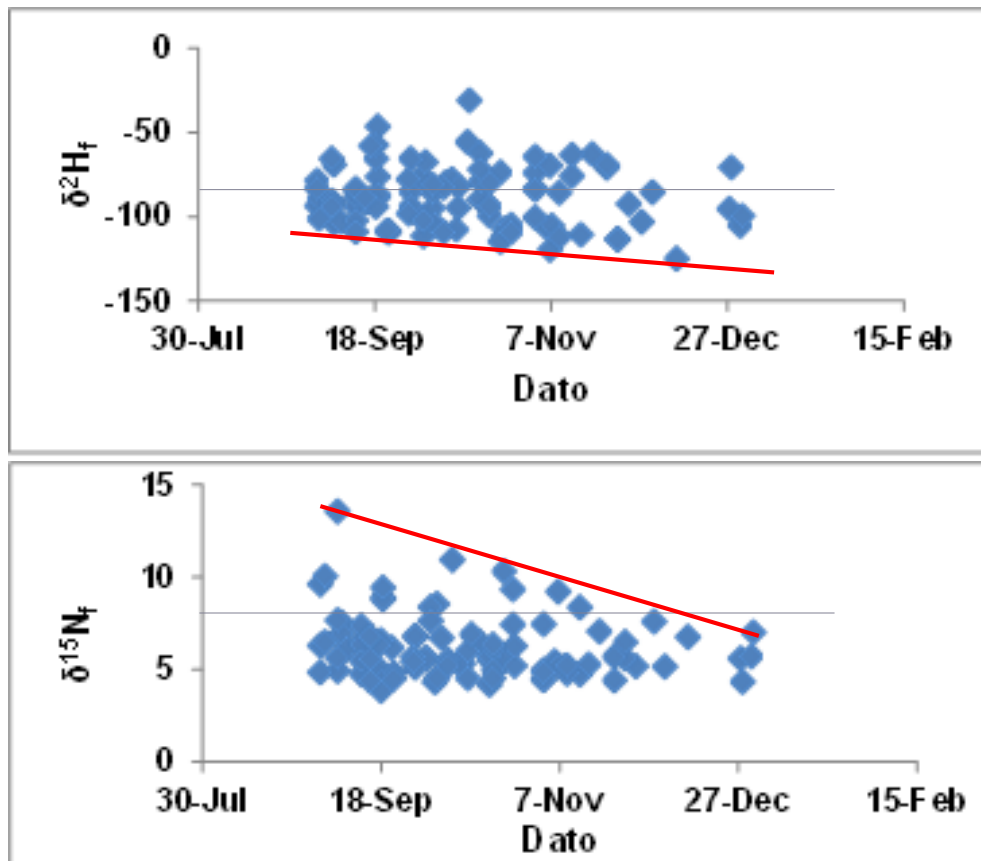
Results of isotope analyses

Geographical signature



Results of isotope analyses

Temporal occurrence



Assessing the impact of hunting

Scenario A: 1 bird have Danish signatures (c. 1%)

113 Danish birds are bagged:

28 adults ~ 1.1%

85 juveniles ~ 3.0%



Scenario B: 9 birds have Danish signatures (c. 9.3%)

1,021 Danish birds are bagged:

255 adults ~ 9.8%

765 juveniles ~ 26.8%



Unsolved questions:

- Do Danish birds stay and moult in Denmark or have they left the country prior to hunting ?
- Danish birds may have similar isotope signatures as birds from southern Sweden, southern Norway, northern Germany and southern Baltic countries ?
- We need reference data on isotope signatures from known Danish breeders ?
- Is hunting mortality completely additive to natural mortality or is there a compensatory component



Tentative conclusions

- Very few Danish adult breeding birds are bagged by hunters annually, both numerically and proportionally.
- We lack knowledge on migration (sex, age) and moulting movements/areas of Danish birds that may influence hunting susceptibility
- The impact of hunting is tentatively assessed as sustainable



THANK YOU FOR YOUR ATTENTION



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