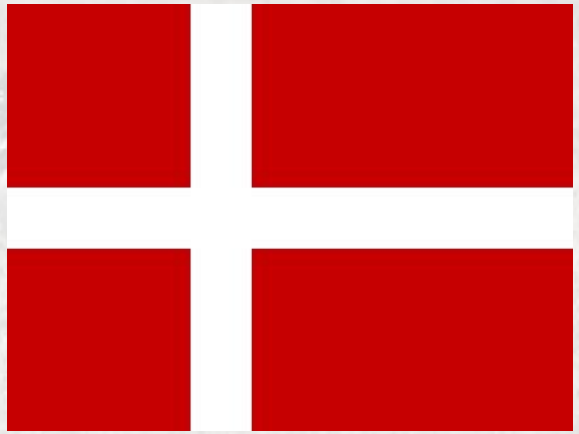
Agriculture TF webinar

At the interphase between geese and agriculture:

Setting the Scene

Denmark



Kevin Kuhlmann Clausen

The Danish context

- No systematic monitoring of goose damage to crops.
- No large scale quantitative assessment of goose damage to crops.
- Derogation efforts well documented and might be used as a measure of perceived damage:
  - Legal restrictions
  - Effect of quarry vs non-quarry species
- Data from the years 2018 and 2019.

Outline

Where do the damage occur?

When does it occur?

What is damaged?

Who is doing the damage (culprit species)?

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Denmark

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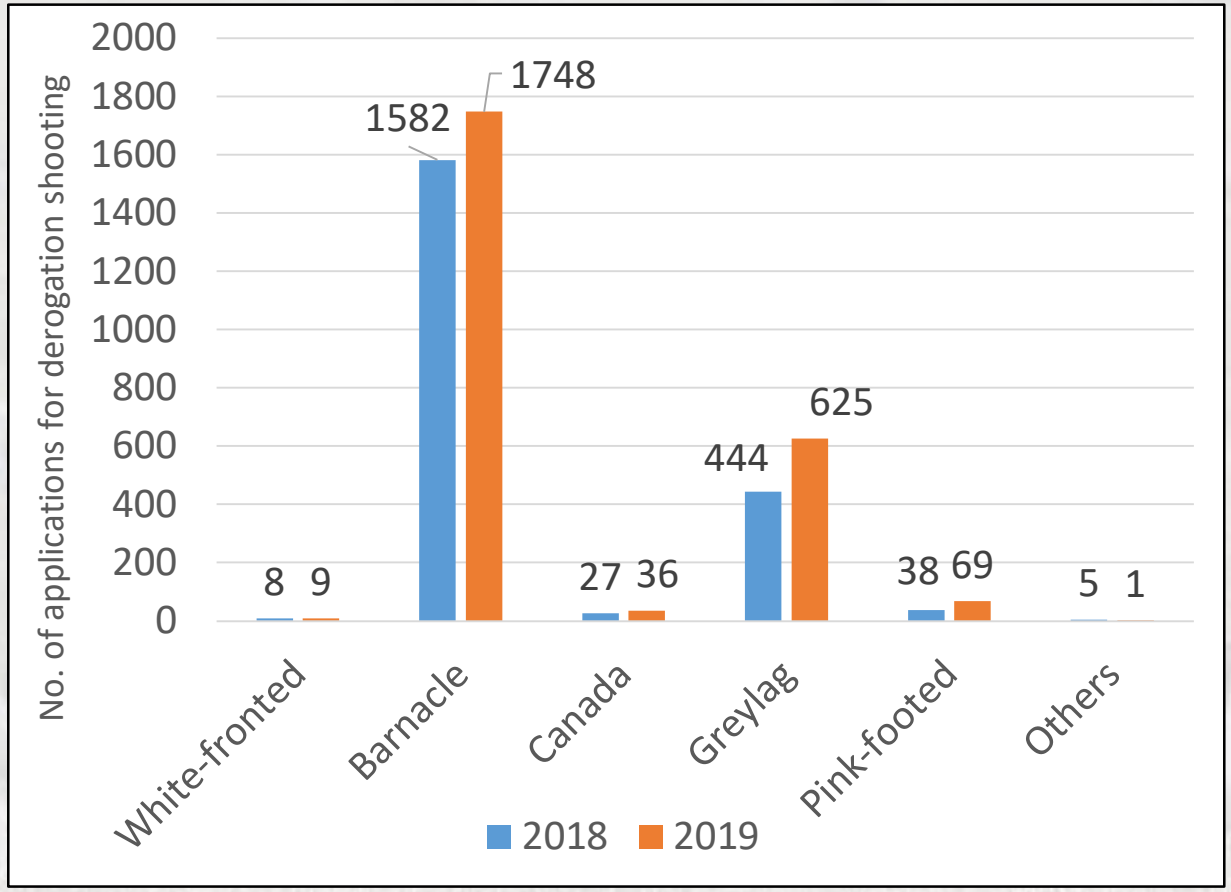
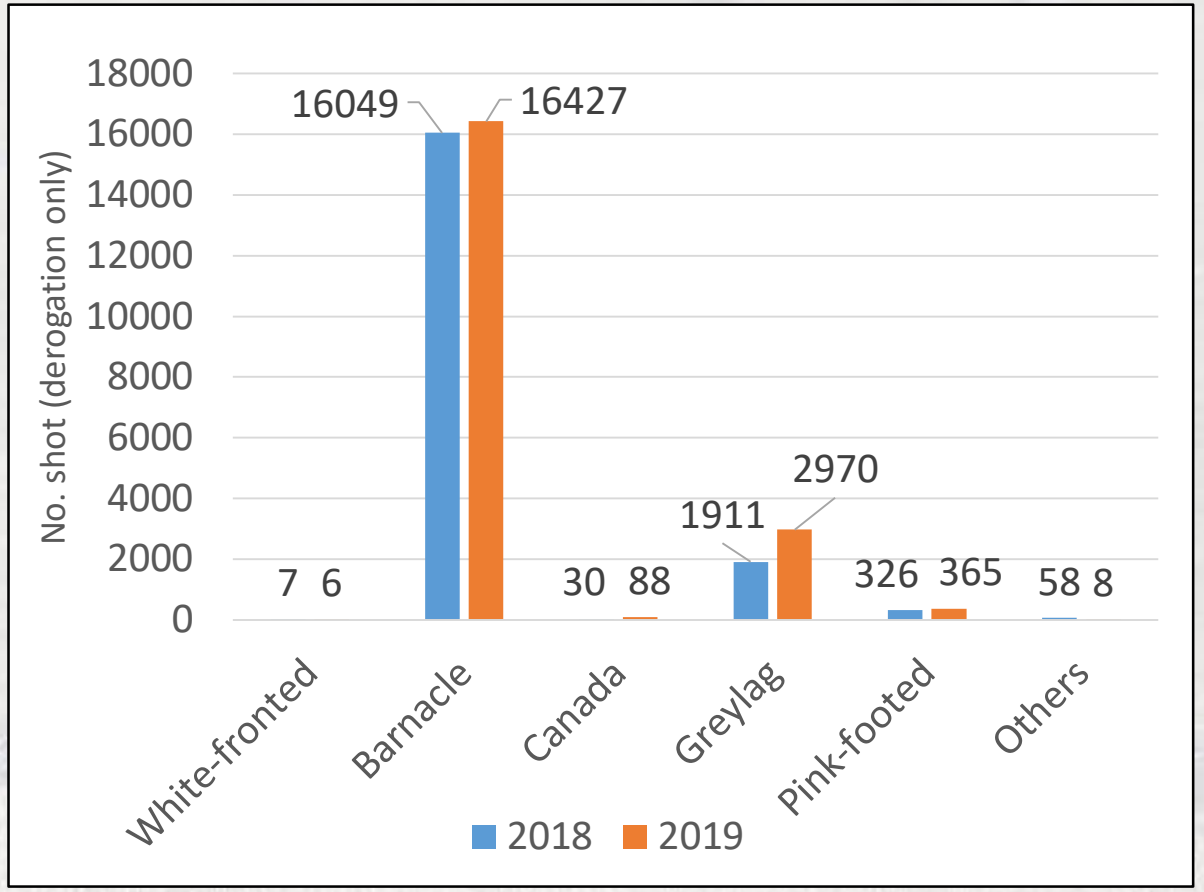
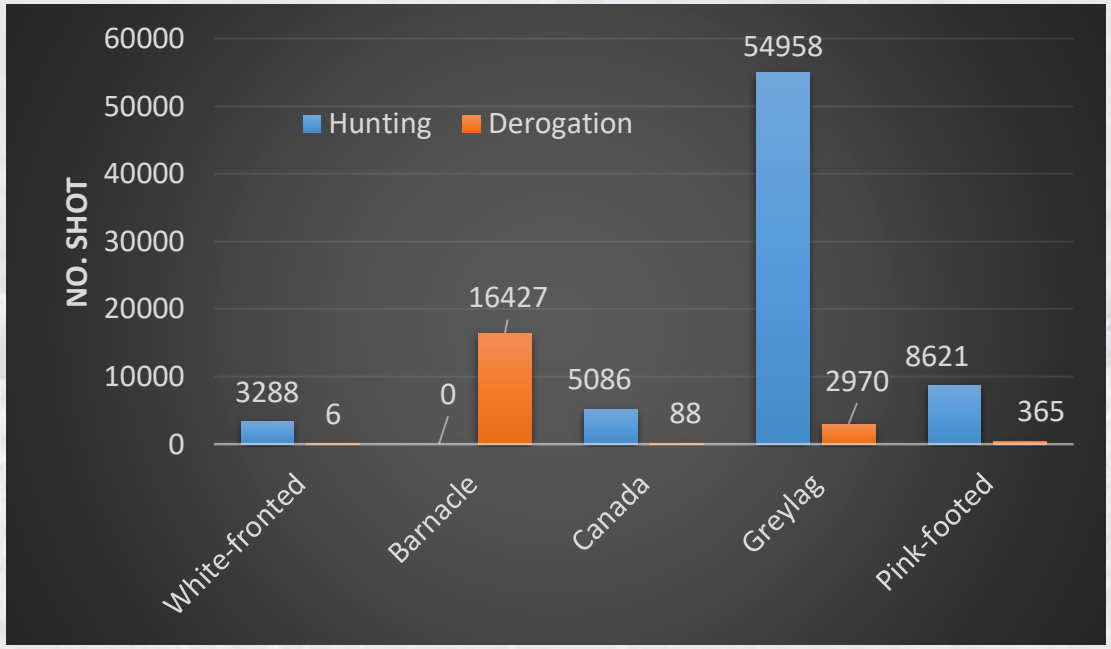




- Numbers dominated by barnacle geese (2nd most important greylag geese), but heavily confounded by the effect of an open season for most species.

- Mitigation of damage from quarry species is for the most part resolved by hunting (allow landowners to act on crop damage without applying for a derogation permit) - hence not included in the numbers presented here.

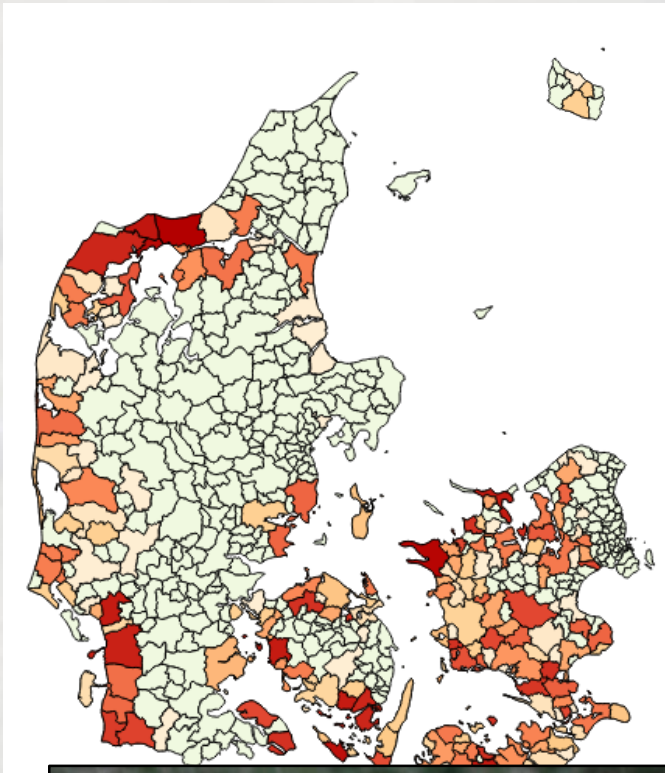
- **Underestimating the impact of quarry species.**



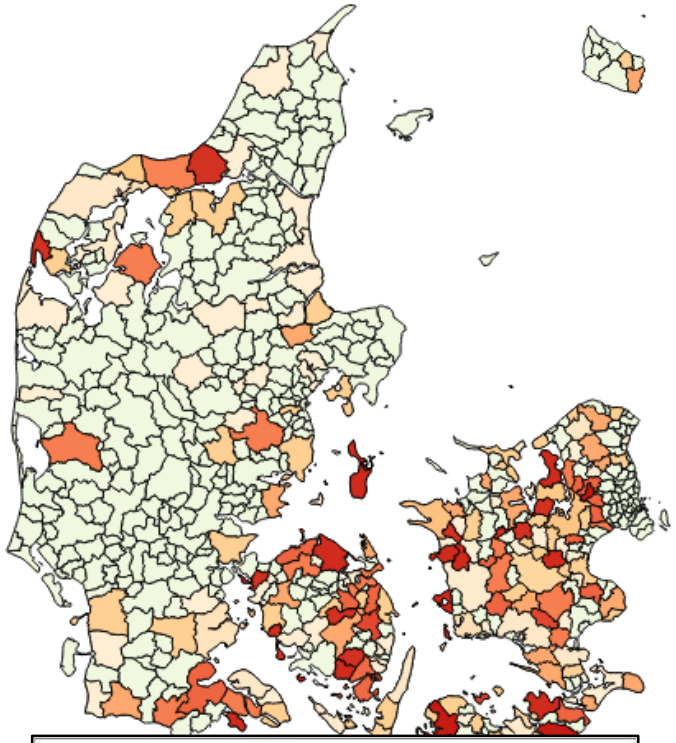
Where do the damage occur?

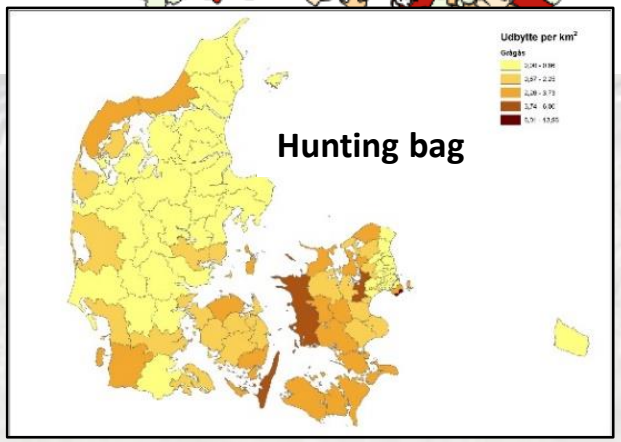
Denmark

Barnacle

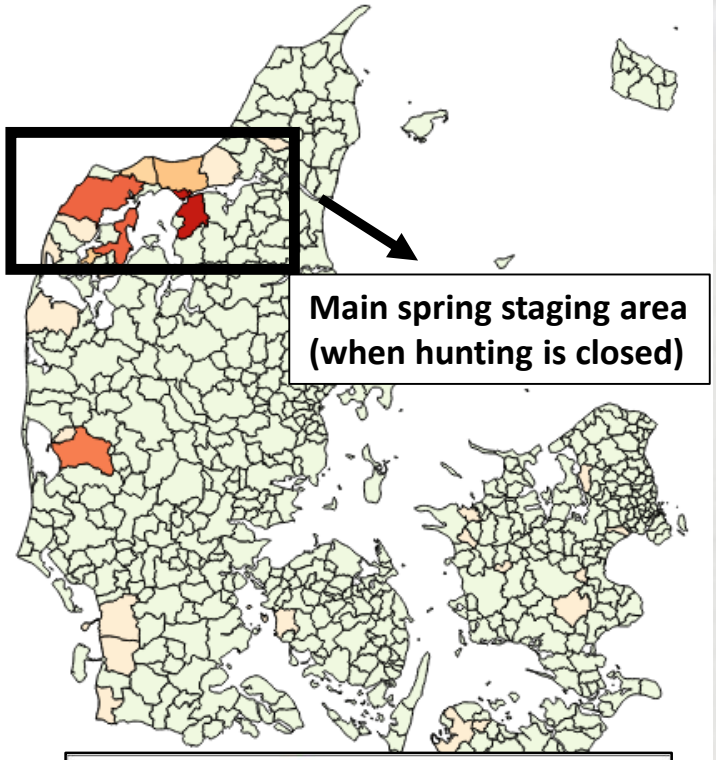


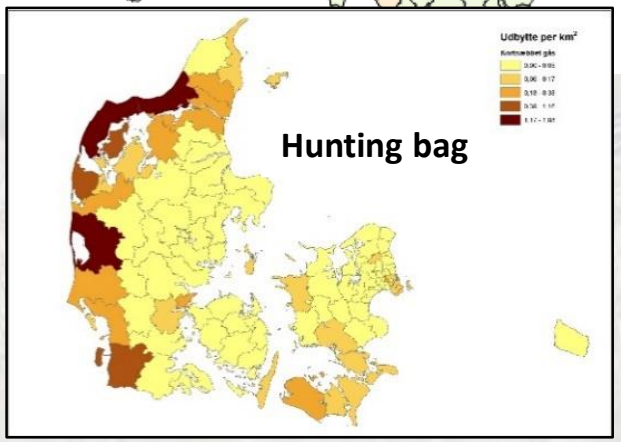
Greylag





Pink-footed

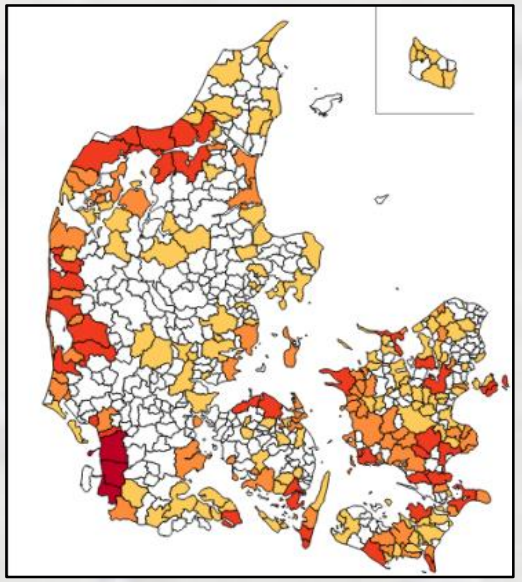




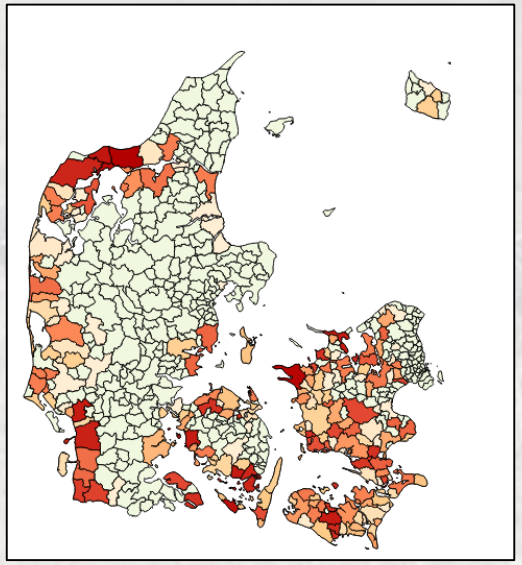
Drivers of geographical differences

- Based on in-depth analysis of barnacle goose data:
  - Differences in the number of issued derogation permits across the country is primarily explained by differences in barnacle goose abundance.
  - In addition, secondary effects of prevalence of vulnerable crops and differences in crop productivity.
  - Hence, derogation effort (perceived damage) is highest in areas with many geese, high proportions of crops vulnerable to goose grazing and high crop yields.
  - The analysis indicates that the perceived damage, and potentially the economic impact of affected farmers, is proportional to the number of geese present locally.

Barnacle goose abundance



Derogation efforts



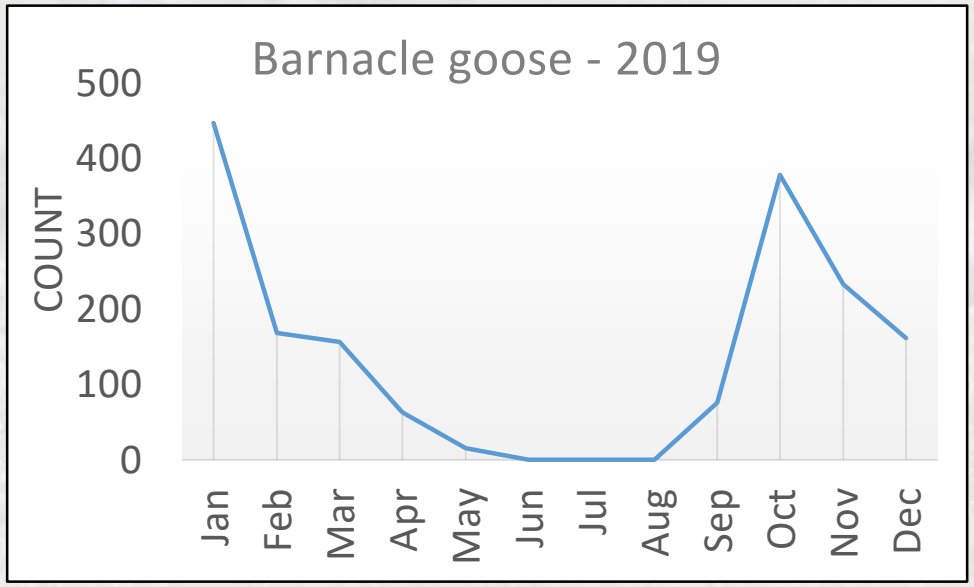
When does it occur?

Denmark

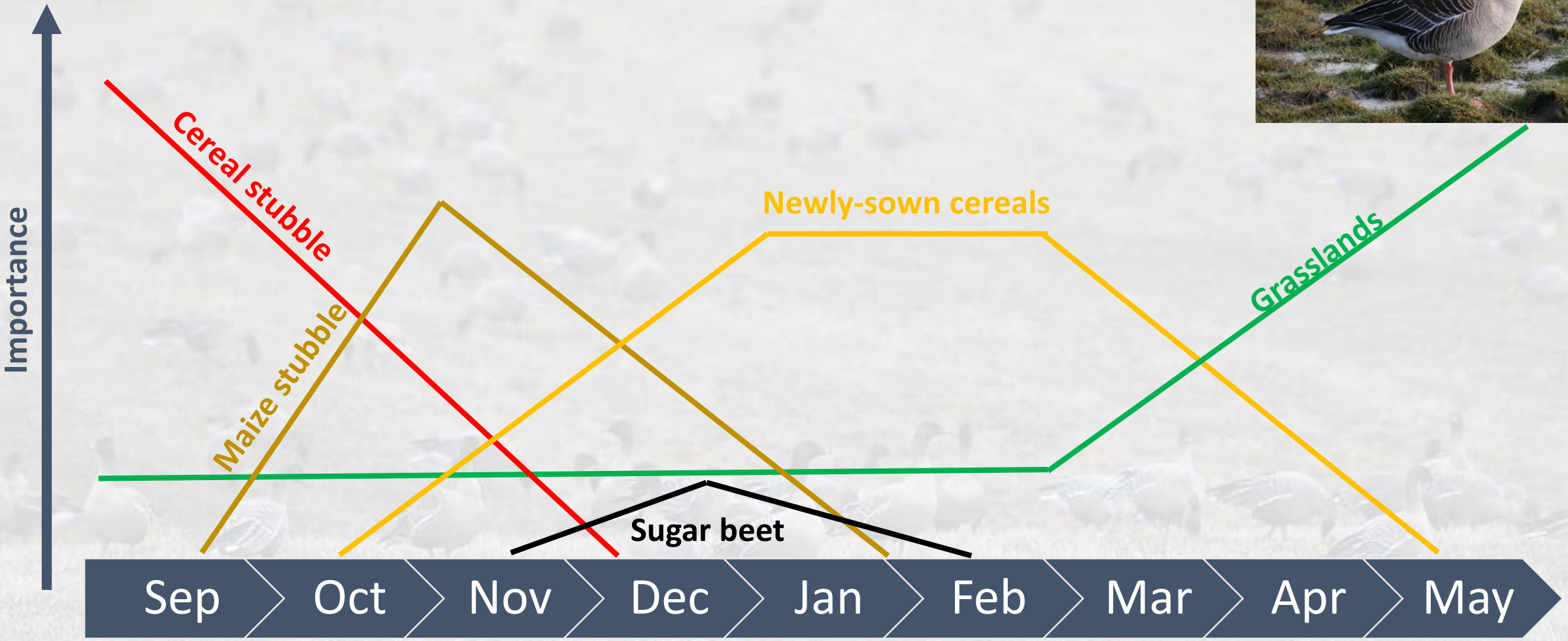
When do landowners apply for derogation?

Confounded by legal constraints and differences in terms and conditions

Species	Open season	Derogation February	Derogation July
White-fronted goose	Sep - Jan	100 %	0 %
Canada goose	Sep - Jan	100 %	0 %
Greylag goose	Aug - Jan	61 %	39 %
Pink-footed goose	Sep - Jan	100 %	0 %



General tendencies in habitat use



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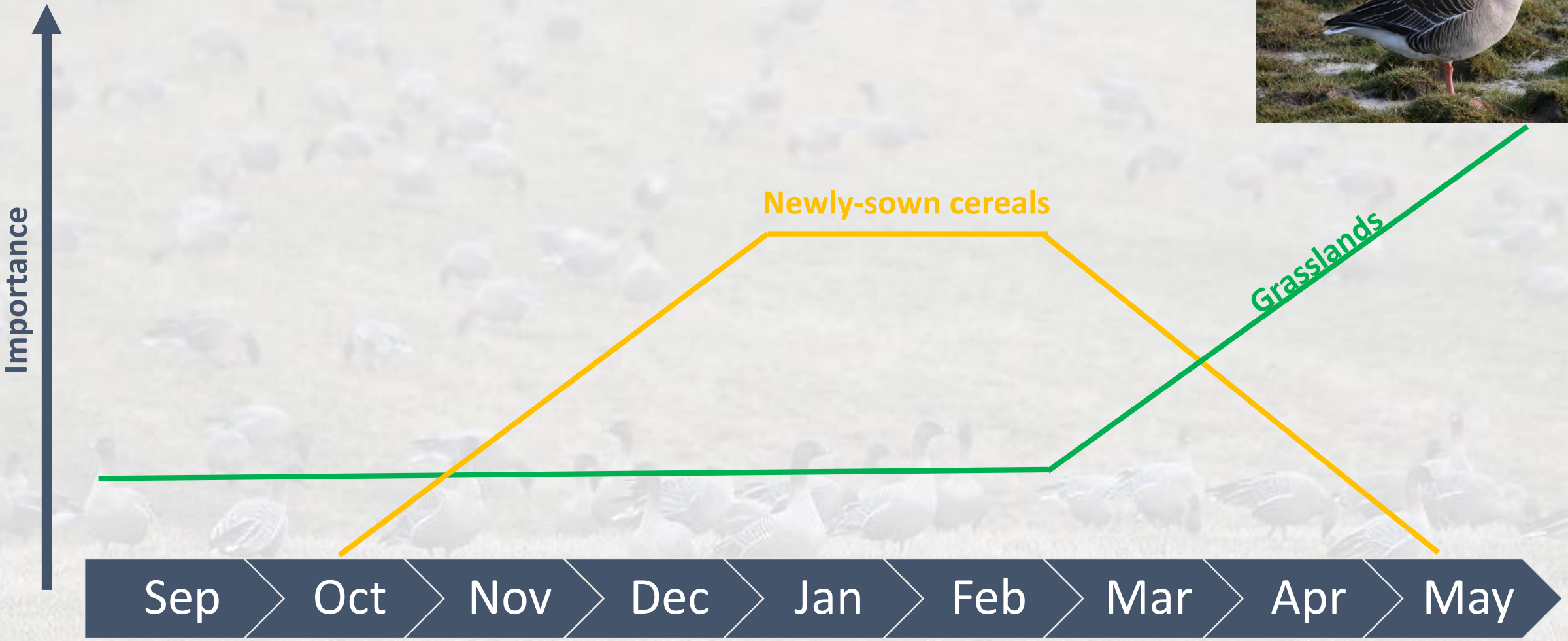
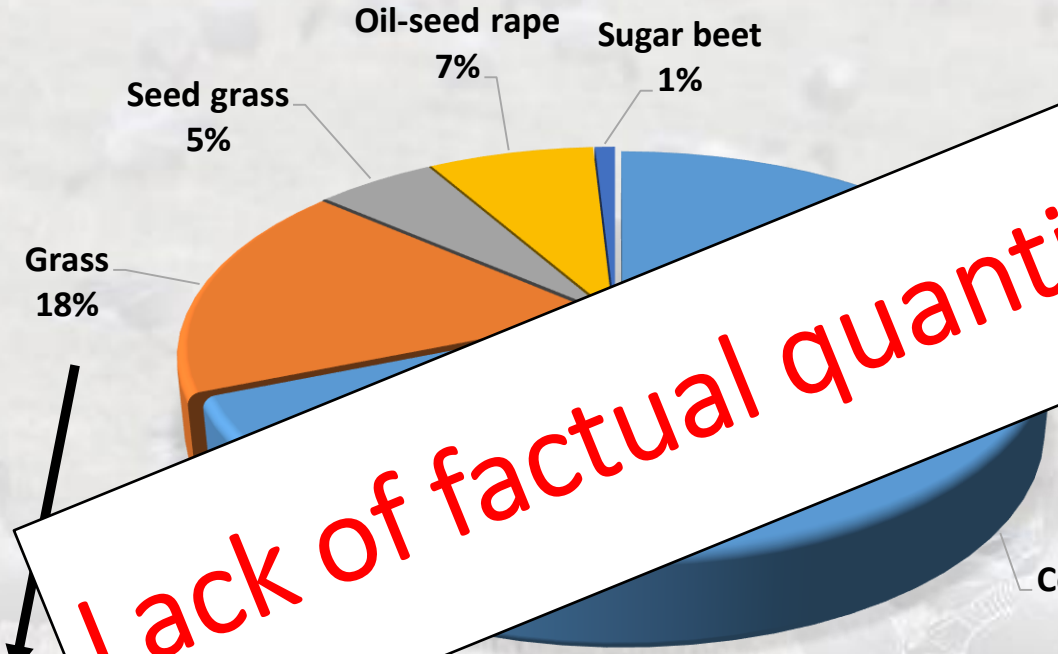


What is damaged?

Denmark

Mentioned in applications for derogation shooting



Lack of factual quantitave data on damage

Fodder for d… animals (grazing, hay harvest).

Mainly newly sown cereals (winter wheat and spring barley), but greylags also on mature fields before harvest.