Factors affecting nest predation in Common Eider

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Background

Nest predation can have long lasting effect on the Common Eider (*Somateria mollissima*). Female eiders whose nests get predated are less likely to nest in the following years, and generally move to a different nest site for future nesting attempts (Hanssen and Erikstad, 2012). Therefore great predation pressure can lead to the dispersal of whole colonies. The Common Eider is the most numerous duck in Iceland (Arnþór Garðarsson, 2009). Down feathers of eider ducks are used commercially to fill i.e. duvets and pillows. Nest down is therefore a valuable product and collected by many farmers in Iceland. By identifying which factors affect the predation rate on the nests of the common eider it is possible to improve eider management and thereby improve eiderdown yield. This study assessed the effect of certain factors on predation rate in eider colonies in five islands in Breidafjördur, W-Iceland

Aim

Assess which of the following factors affect nest predation rate in the Common Eider:

1. **Nest surroundings**
2. **Nest initiation date**
3. **Nest shelter (Estimated 0-4)**
4. **Frequency of predator visits (visits/day)**

Materials and methods

This study was conducted by visiting each colony twice during the incubation period and by using cameras with motion sensors.

First visit:

- Nest initiation date estimated using a flotation test
- Vegetation around the nest documented
- Nest shelter evaluated on a scale of 0-4, where 0 is no shelter and 4 is shelter from all sides

Second visit:

- Nest fate estimated from nest contents.

Cameras:

- Placed at selected nests with the aim of identifying nest predators.
- Set to take pictures at 15 minutes interval as well as every time there was movement at the nest.

Results

Total nest predation rate was 16% (n=178 nests). Identified predators were Ravens (*Corvus corax*) and Great Black-backed Gulls (*Larus marinus*).

1. Predation was lower if nests were surrounded by the plant angelica (*Angelica archangelica)* (Figure 1).

2. Predation rate was highest on nests initiated early in the season, and decreased linearly as the incubation period progressed (Figure 2).

3. Nest shelter did not affect the predation rate. Nest were not evenly distributed between the nest shelter categories (Figure 3).

4. Four out of the 18 nests monitored with cameras were predated. Predators visits were more common on nests which eventually were predated, or on average 1.7 times/day (n=61) compared to 0.7 times/day (n=119) on successful nests.

Figures

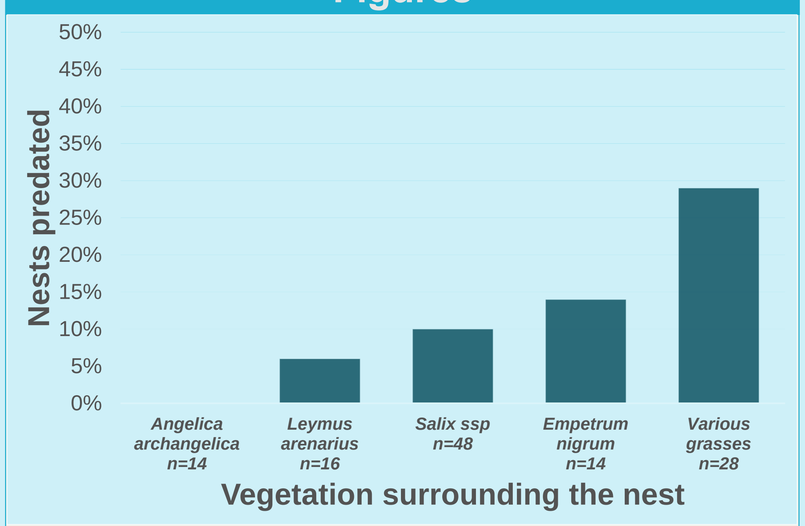

Figure 1: Predation rate on Common Eider nests by vegetation surrounding the nest in five islands in Breidafjördur, W-Iceland

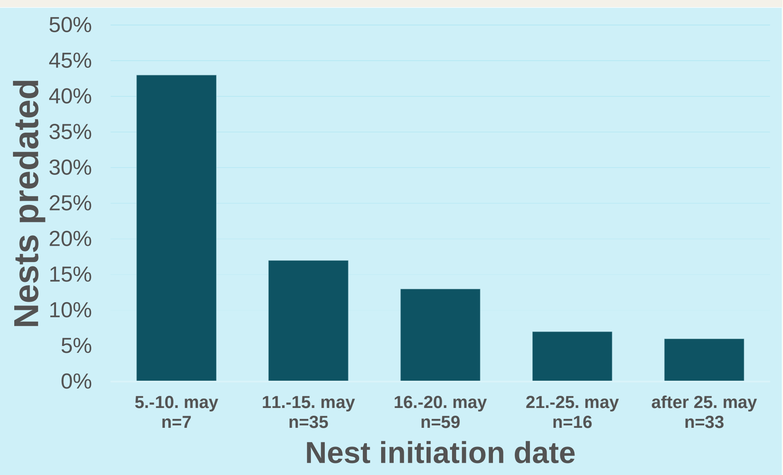

Figure 2: Predation rate on Common Eider nests by nest initiation date in five islands in Breidafjördur, W-Iceland

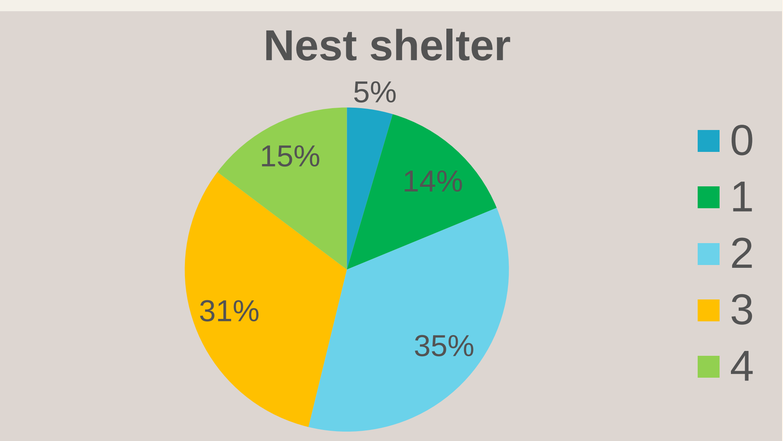

Figure 3: Division of Common Eider nest shelter in five islands in Breidafjördur, W-Iceland. 0 equals no shelter and 4 shelter from all sides.

Figure 4: A Great Black-backed Gull eating a Common Eider egg from a nest in Ellidaey island in Breidafjördur, W-Iceland.

Discussion

1. Near the end of the incubation period, the Angelica will overgrow nests and cover them from above, thus hiding them from avian predators.

2. Early in the season there are proportionally more predators relative to number of nests, vegetation is less advanced and nest density is low and therefore there is limited benefit from nearby Common Eiders and gulls.

3. Nest shelter did not affect predation. The Eiders seemed to avoid nesting in completely open areas so shelter seems to be of some importance to them. It is possible that nest shelter has more effect on the female eider condition at the end of the incubation period rather than the predation rate.

4. Predators possibly identify nest locations and visit to see if the female eider is present, and eventually try to flush her off the nest.

Conclusion

Factors that affected the nest predation rate in Common Eider were:

- **Nest surroundings**
- **Nest initiation date**
- **Frequency of predator visits**

References

- Arnþór Garðarsson. (2009). Fjöldi æðarfugls, hávellu, toppandar og stokkandar á grunnsævi að vetri. [Numbers of common eider, long-tailed duck, red-breasted merganser and mallard, wintering on the coast of Iceland] Bliki 30: 49–54 (In Icelandic with an English Summary).
- Hanssen, S. A. and Erikstad, K. E. (2012). The long-term consequences of egg predation. *Behavioral Ecology, 24*(2), 564-569.