Effects of Nest Site and Parental Behaviour on Shorebird Reproductive Success

Paul A. Smith*, H. Grant Gilchrist and Mark R. Forbes

Objectives

Many studies have demonstrated that nest sites are selected actively, such that microhabitat at nest sites differs from random sites. However, far fewer studies have clearly demonstrated that such nest microhabitat preferences are adaptive; i.e., that individuals nesting in preferred microhabitats experience higher nest success in the long run (Clark and Shutler 1999). Nest success may also depend on factors other than habitat, such as nest distribution or the behaviour of the incubating parents. These latter factors may be of particular importance in tundra systems, where habitats are comparatively homogeneous and suitable nest sites are abundant.

We studied shorebird nest habitat and parental behaviour to determine which factor has the greater influence on nest success in a tundra system.

Study Site

East Bay, Southampton Island, Nunavut, 63° 59’ N 81° 40’ W

Nest Habitat

We tested for patterns of nest preference by contrasting nests with random sites, and looked for differences between the microhabitat of successful and unsuccessful nests to test for adaptive nest site choice. Nest sites (n=21-63/species) and random sites were characterized at scales of 1m$^2$ and 75m$^2$.

Behaviour

When predators use visual cues to locate nests, the amount of activity exhibited by incubators can influence the risk of predation (Ghalambor and Martin 2002). In shorebirds, the amount of activity near the nest is related to incubation system; uniparental incubators must leave the nest more often to feed. At East Bay, uniparental incubators suffered higher predation in all years (Fig. 4).

Summary

We found clear evidence that nest site selection was non-random, but little evidence that variation in the habitat of nest sites contributed to variation in reproductive success. In tundra habitats, shorebird densities are low and competition for suitable nest sites is weak or non-existent. Under these conditions, behaviour of the incubating adults may have a greater influence on the risk of predation.

Future Directions

We found indirect evidence for effects of incubator behaviour on the risk of predation, but more work is required to link them unequivocally. To further investigate the effects of behaviour on nest success, we are asking the following questions:

• Do species and individuals taking more recesses suffer higher predation?
• Do individuals alter incubation in response to a perceived high risk of predation?
• How widespread are these effects of behaviour?

References:


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*Contact: paulallen.smith@ec.gc.ca