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## RESEARCH NOTE

# Nest usurpation by a common eider toward a long-tailed duck

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## Keywords

Nest takeover; sea ducks; *Somateria mollissima*; *Clangula hyemalis*; High Arctic; limited habitat.

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## Abstract

Intraspecific and non-obligate brood parasitism and nest takeover is well documented in common eiders (*Somateria mollissima borealis*) nesting in the Arctic. However, we report the takeover of a long-tailed duck (*Clangula hyemalis*) nest by a female common eider on Nasaruvaalik Island, Nunavut, Canada. The high nesting density due to limited habitat in the region may have contributed to this seemingly risky behaviour, which provides no clear benefits to the eider.

Nesting interference and nest parasitism are common reproductive behaviours among waterfowl (Lyon & Eadie 2008), particularly sea ducks (Eadie & Savard 2015). These behaviours have been well studied in common eiders (Goudie et al. 2000). Intraspecific nest parasitism occurs frequently, with rates varying among colonies in response to annual environmental conditions, but generally occurring most often in areas of high nesting density (Robertson 1998; Goudie et al. 2000). Female eiders may also take over the nests of conspecifics (Waldeck & Andersson 2006; Waldeck et al. 2011), a pattern that Robertson (1998) proposed as a strong explanation for the prevalence of nest parasitism among eiders. From an evolutionary perspective, many of these behaviours are thought to persist because pre- and post-hatch brood parasitism occurs often among kin in common eiders (Andersson et al. 2015).

Unlike common eiders, most long-tailed ducks nest solitarily or in small clusters (Robertson & Savard 2002). Alison (1975) observed that long-tailed duck nests were never found where common eiders occur in Churchill, Manitoba. However, long-tailed ducks may nest in association with terns, benefitting from the terns' effective anti-predatory response (Robertson & Savard 2002). On Nasaruvaalik Island, 100% of 64 long-tailed duck nests were located within Arctic tern colonies, and in a year when no terns nested (2013), only four long-tailed ducks attempted to nest, suggesting that this species may be heavily influenced by the presence of terns at this site, as shown elsewhere (e.g., Alison 1975). Nasaruvaalik

Island (75°49'N, 96°18'W) is a low, alluvial island of 1.4 km<sup>2</sup> that hosts common eiders (*Somateria mollissima borealis*), as well as Arctic terns (*Sterna paradisaea*), Sabine's gulls (*Xema sabini*), Ross's gulls (*Rhodostethia rosea*) and long-tailed ducks (*Clangula hyemalis*) (Maftei et al. 2015). This island supports the largest and densest known colony of common eiders north of 75°N in Canada (Maftei et al. 2015).

The numbers of common eiders on Nasaruvaalik Island have been growing steadily since 2007 (Pratte et al. 2016), including in areas of the island also used by both terns and long-tailed ducks. Increasing nesting density and competition for suitable nesting sites may explain at least one interspecific nest takeover, as described below.

## Observation of nest takeover

The nest takeover we observed took place on 2 July 2013. We found an active long-tailed duck nest containing three warm eggs, within approximately 10 m of at least three active eider nests, while numerous failed or non-breeding female eiders (wandering "aunts"; Goudie et al. 2000) were also present in the area. On 2 July, from a blind, we observed a female eider walk towards the female long-tailed duck incubating its clutch. The eider used its bill to grab the long-tailed duck by the neck, pull it off the nest, and immediately take its place. The female long-tailed duck remained close by while the female eider sat on the nest for a few minutes before eventually leaving. After the eider departed, the long-tailed duck

resumed incubation. Less than an hour later, presumably the same female eider returned and again dislodged the female long-tailed duck from its nest. This time the eider sat on the nest for a few hours before leaving, at which time the long-tailed duck returned and resumed incubation. Between 3 and 8 July, we twice observed an eider (presumably the same one) sitting on the long-tailed duck nest, while the female long-tailed duck stood nearby. On 10 July, one egg was missing from the clutch and by 12 July the remainder of the clutch disappeared, and the long-tailed duck female had left. We did not record any eider eggs laid in this nest. On 16 July, we found a female eider sitting on a different long-tailed duck nest containing one egg, which ultimately did not hatch (abandoned as of 12 August).

## Discussion

Because female eiders assemble in groups based on relatedness (McKinnon 2006), conspecific parasitism, egg adoption and nest takeover might confer some benefits to females since in this species females often take care of the ducklings together (Robertson 1998; McKinnon 2006). To our knowledge, this is the first evidence that female common eiders may take over the nests of sympatrically nesting species of waterfowl, leading to host abandonment of the nest. Why a female eider takes over the nest of another waterfowl species without laying any eggs remains unclear, since it does not intuitively present selective advantages.

Andersson et al. (2015) observed that nesting and/or brooding common eiders react more aggressively towards unrelated parasitic females than towards kin, but that parasitic females are not typically aggressive themselves. It may be that aggressive hosts quickly deter parasitic females, or that aggressive hosts “mask” a low-level aggression in parasitic female eiders—a response absent in the highly passive and submissive long-tailed duck we observed being usurped.

Kristjansson & Jónsson (2015) have observed shared nest attendance between females at a dense colony (2000 nests ha<sup>-1</sup>) of eiders in Iceland. They attributed this unusual behaviour to the visual stimulus of many nests close to each other. Despite the lower density of nests found at Nasaruaalik Island (maximum 161 nests ha<sup>-1</sup>), a similar phenomenon could have prompted the takeover we observed. Moreover, the action of sitting on eggs increases the secretion of prolactin in female eiders, which encourages both incubation behaviour as well as the “helping” behaviour of aunts (Crisuolo et al. 2002).

## Conclusion

If increased nesting densities result in more frequent and/or more direct interaction between eiders and long-tailed ducks at Nasaruaalik Island, eiders may eventually have a negative effect on the small long-tailed duck population at this site, particularly if nearby nesting options are limited (Maftai et al. 2015). Our observations, although anecdotal, add to a growing body of evidence (e.g., Maftai et al. 2016), which suggests that birds breeding in dense multi-species colonies at isolated sites in the high Arctic may exhibit unusual interspecific behaviours.

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