Territorial Behavior of Short-eared Owls, *Asio flammeus,* at more than 1000 km North of their Current Breeding Range in Northeastern Canada: Evidence of Range Expansion?

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A pair of Short-eared Owls was observed throughout the summer of 2008 showing territorial behavior more than 1000 km north of their known breeding range in north-eastern Canada. These observations might be related to high lemming densities and/or climate change occurring in the Arctic.

Key Words: Short-eared Owl, *Asio flammeus*, territorial behavior, range expansion.

Among North American Strigidae, the Short-eared Owl, *Asio flammeus*, is known for its patchy distribution and irruptive behavior (Wiggins et al. 2006*). This erratic behavior is thought to be related to the varying abundance of its main prey items: small mammals (Wiggins et al. 2006*). Since 1989, wildlife biologists have spent 3 months each summer (late-May to late-August) on Bylot Island (73°09.329'N, 79°58.111'W), in Sirmilik National Park, Nunavut, Canada (Figure 1). The main camp is located in a flat plain (approximately 70 km^2) which would appear, at first glance, to provide excellent habitat for nesting Short-eared Owls. Low elevation and a relatively dense cover of grasses, forbs and shrubs are the main features of the area. Lepage et al. (1998) published a complete list of the bird species seen on Bylot Island and adjacent Baffin Island, and recorded the species which are known to breed there. Before 2008, the only owl known from Bylot Island was the Snowy Owl and, even it, was only seen in years of high lemming abundance (Gauthier et al. 2004).

In 2008, two adult Short-eared Owls (most probably male and female given their slight but apparent difference in size and color) were observed at the start of the field season (4 June). Both birds were often seen from a distance throughout the summer. Both were hooting, mobbing and displaying territorial behavior as we walked toward a specific area. Both owls were also seen showing similar behaviors against adult Arctic Foxes (*Vulpes lagopus*) on many occasions. However, no nest or signs of young were found during our three visits to the core area. Short-eared Owl's nests are known to be well-camouflaged and hard to find. Moreover, a breeding pair of Arctic Foxes had their den within 250m of the area defended by the owls. The foxes might have destroyed the nest, if any, before we were able to spot it. Both male and female owls were seen until 12 August, our last visit to the area before camp closure. Seven regurgitated food pellets were found in the area occupied by the Short-eared Owls and were analyzed. Collared (*Dicrostonyx groenlandicus*) and Brown (*Lemmus sibiricus*) lemmings constituted respectively 63% and 37% of the 8 preys identified in the pellets. Lemming abundance was high in the study area in 2008, resulting in the presence of numerous Snowy

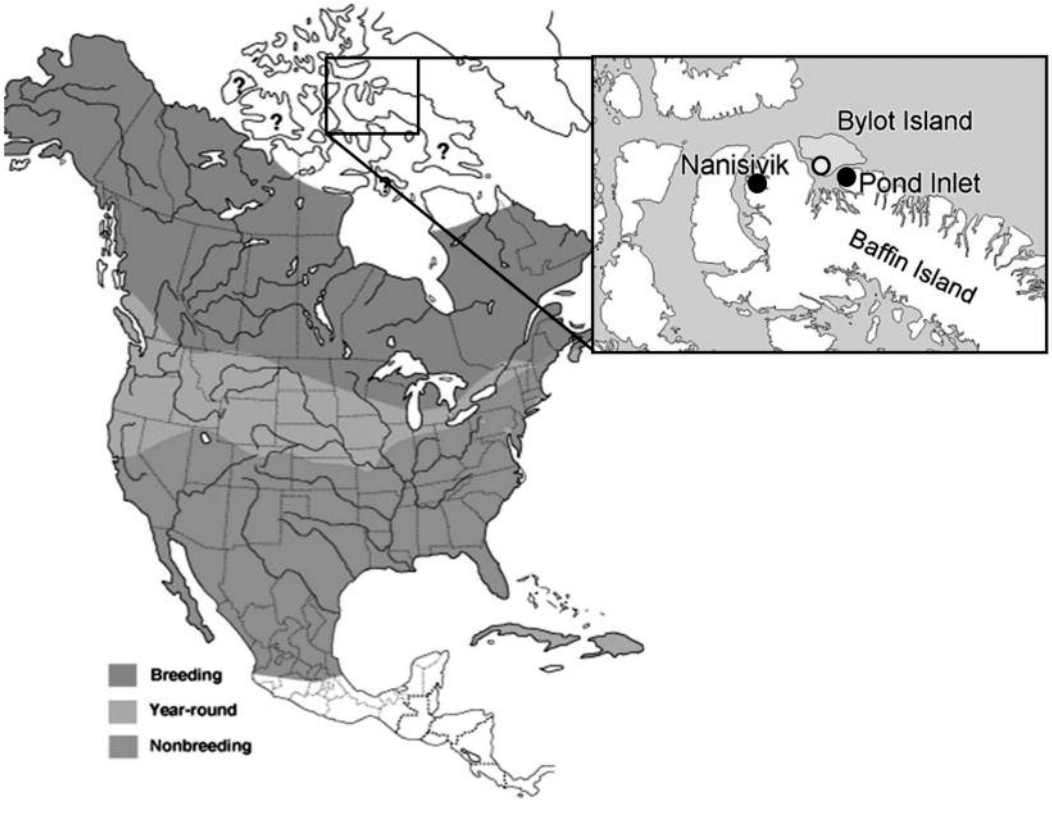

FIGURE 1. Actual known range of Short-eared Owls in North America with location of the observations on Bylot Island in summers 2008 and 2009 (open circle). Picture adapted from Wiggins et al. (2006*).

Owls' nests. In 2009, two adult Short-eared Owls were again seen on Bylot Island on 8 and 12 June. They did not, however, show territorial behavior and were not seen later on. Lemming abundance was low in 2009, as witnessed by the absence of Snowy Owls.

Conclusion

This note records Short-eared Owls showing territorial behavior, more than 1000 km to the north of its known range (Wiggins et al. 2006*). No Short-eared Owl was ever reported at such a latitude in the Northwest Territory/Nunavut Bird Checklist Survey of the Canadian Wildlife Service (K. Kardynal, personal communication, 20 May 2009). Discussions with residents of Pond Inlet suggest that this might be one of the first records of Short-eared Owl in the northern Baffin area. We thus believe that the breeding range of Short-eared Owls might include the northern edge of Baffin Island as well as Bylot Island in Eastern Canada. This observation follows the pattern of projected short-term impacts of climate change in the Arctic ecosystem (i.e. addition of new species and changes in the abundance and distribution of the species already present) (Hinzman et al. 2005, Fischlin et al. 2007). With climate change being especially evident in the high Arctic, as observed from the weather station of Bylot Island in the last decade (Dickey et al. 2008), such observations of species outside their known range might become the rule rather than exceptions. More interviews with elders and residents from other communities in the eastern Canadian Arctic could provide valuable insight about Short-eared Owls presence and behavior.

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