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Range Expansion of Northern Hawk Owls (*Surnia ulula*)  
and Boreal Owls (*Aegolius funereus*) in Nova Scotia

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**Abstract.**—The Northern Hawk Owl (*Surnia ulula*) has never been recorded to breed in Nova Scotia (and only once in recent history in all of the Maritimes). Three pairs of hawk owls were found within 4 km<sup>2</sup> of woods in 1996, and of these, young were found with two pairs. The first provincial summer record for the Boreal Owl (*Aegolius funereus*) was also obtained in 1996. These findings increase the known breeding range of hawk owls (and likely that of Boreal Owls) to the south and east of that previously described in North America. The range extension of the hawk owl may be explained by a beneficial habitat change which resulted from a major outbreak of the spruce budworm (*Choristoneura fumiferana* (Clemens)).

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A major outbreak of the spruce budworm (*Choristoneura fumiferana*) caused total defoliation and death of most softwood trees in and around Cape Breton Highlands National Park during the late 1970s and early 1980s. The only large trees left alive in the study area were white birch (*Betula papyrifera*). Since then, a lush understory developed allowing for the existence of dense populations of small mammals. The Northern Hawk Owl (*Surnia ulula*) is classified as a rare winter visitor in Nova Scotia (Tufts 1986). The Boreal Owl (*Aegolius funereus*) also is without breeding records for the province. The purpose of our expedition was to document the presence of a number of rare animals and plants, including the two owls. Figure 1 indicates the location of the study site in Nova Scotia, as well as the Canadian breeding distribution for the Northern Hawk Owl and Boreal Owl.

#### METHODS

We searched for Northern Hawk Owls during daylight hours anytime we were in appropriate habitat. Boreal Owls were sought in the early evening by either playing a tape or imitating their breeding call. Another goal of the expedition was to locate disjunct populations of two small mammals, arctic shrew (*Sorex arcticus* (Kerr)) and northern bog lemming (*Synaptomys borealis* (Richardson)). We did this by laying

out snap traps (baited with peanut butter and rolled oats) to give us an indication of the relative density of the small mammals that were potential prey for the owls. Trap line transects were placed randomly to cover the largest representative area. Lines were 90 m long and consisted of one snap trap set every 10 m. Traps were placed for an average of 4 nights per trap line.

#### RESULTS AND DISCUSSION

Although we did not find either of the target small mammal species, we did capture five other species of small mammals. Trapping success was 19.6 percent (36 animals, 184 trap-nights). This trapping success represents a very high relative density of small mammals and is undoubtedly responsible for the numerous predators (mostly avian) that we encountered. The number of each species trapped is as follows: 16 *Microtus pennsylvanicus* (Ord), 15 *Clethrionomys gapperi* (Vigors), 3 *Napaeozapus insignis* (Miller), 1 *Sorex cinereus* (Kerr), and 1 *S. fumeus* (Miller).

We found three pairs of Northern Hawk Owls (fig. 2) in approximately 4 km<sup>2</sup> of forest; two of these pairs had young (figs. 3, 4). In addition to the Hawk Owls, we also found Great Horned Owls (*Bubo virginianus*), American Kestrels (*Falco sparverius*), Red-tailed Hawks (*Buteo jamaicensis*), and one Boreal Owl (fig. 5). The presence of the Red-tailed Hawk alludes to the openness of the woods (fig. 6).

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Figure 1.—Canadian breeding distribution (Godfrey 1986 and courtesy of the Canadian Museum of Nature, Ottawa) for both owls and the study site (\*) in Nova Scotia where the new records were documented. (W.E. Godfrey, *The Birds of Canada*, 1986. Courtesy of the Canadian Museum of Nature, Ottawa.)



Figure 2.—Adult Northern Hawk Owl (*Surnia ulula*) near the nest site (June 1996), Nova Scotia, Canada.



Figure 3.—Nest and chicks of Northern Hawk Owl (*Surnia ulula*) in Nova Scotia, Canada. The chicks appear as a mass of gray down at the arrow (June 1996).



Figure 4.—Fledgling Northern Hawk Owl (*Surnia ulula*) in July, 1996, in Nova Scotia, Canada.



Figure 5.—Boreal Owl (*Aegolius funereus*) - first summer record for Nova Scotia, Canada. This is likely a breeding bird.

It is thought that hawk owls are a recent addition to the avifauna of the province. These birds have likely exploited newly created habitat (spruce budworm defoliated forest) only recently. This assumption is based on the fact that hawk owls are not particularly difficult to find, being large, vociferous, diurnal and prone to perching at the tops of tall trees. Had they bred here before, it is unlikely that they would have been missed.

The Boreal Owl occurrence is the first summer record of this bird for Nova Scotia—it is a bird that authorities “know” nest here, it just has not been documented. We managed to call it in

Randy Lauff



Figure 6.—Nesting habitat and nest tree of the first breeding record of the Northern Hawk Owl (*Surnia ulula*) in Nova Scotia, Canada. The outlined area is enlarged in figure 3.

Randy Lauff

Randy Lauff

on both the June and July legs of the expedition; on each occasion it responded aggressively. In addition, we found a possible nest cavity in the area. The cavity contained a contour feather of a Boreal Owl. It is felt that a more rigorous search during its breeding season will turn up an active nest.

#### ACKNOWLEDGMENTS

Thanks go to my colleagues on the expedition, Calvin Brennan, Tony Miller, Vanessa Partridge, Anne Powell and Peter Batt. This work was funded by a Nova Scotia Museum Research Grant.

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