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Acknowledgments
We thank C. Birch, T. Bell, S. McKenna, A. McLenman, and S. MacNell for field data, R. B. Allen, G. Chapdelaine, A. J. Erskine, A. R. Lock, and G. R. Milton for unpublished observations, C. Sadder for piloting the helicopter patrol, C. M. McLean and the Island Nature Trust for permitting access to Ram and Little Courin islands, respectively, and R. B. Allen, T. Hurlbut, and A. Locke for manuscript review.

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Received 22 May 1997
Accepted 31 December 1997

Visitation of the Endemic Dwarf Lake Iris, Iris lacustris, by Halictid Bees, Augochlorella striata

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Insect visitors to the endemic Dwarf Lake Iris Iris lacustris have not previously been reported. Halictid bees (Augochlorella striata) were observed visiting I. lacustris at Dorcas Bay, Bruce Peninsula, Ontario, in late May 1996. Their floral visitation and grooming behaviours suggest that they are potential pollinators.

Key Words: halictid bees, Augochlorella striata, flower visitation, Dwarf Lake Iris, Iris lacustris, pollinators.

Dwarf Lake Iris Iris lacustris (Iridaceae), is a narrow endemic that is largely restricted to the northern shores of Lakes Huron and Michigan in Ontario, Michigan, and Wisconsin (Guire and Voss 1963). It is often locally abundant, but because of its restricted range and habitat, and intense development pressures on shorelines, it is considered rare to uncommon globally and in Ontario (Bruce and Manitoulin Counties), Michigan, and Wisconsin (Argus and Pryer 1990; Oldham 1996). In Canada, it is listed among the rare plant species deserving highest conservation priority (Priority 1 of Argus and Pryer 1990). Despite investigation of the breeding system and other aspects of the biology of I. lacustris, its pollinators have not yet been observed (Planisek 1983; Van Kley and Wuiek 1993). This ignorance is significant because knowledge of its pollination biology may provide insight into factors limiting its fecundity (e.g., Planisek 1983) and genetic variation (e.g., Simonich and Morgan 1994). In this note, I
report visitation of *I. lacustris* by halictid bees on Ontario’s Bruce Peninsula in 1996.

*Iris lacustris* has showy flowers that bloom from mid-May to early June. They consist of three independent pollination units (see Figure 1 in Kron et al. 1993), each composed of a dorsal petaloid style and a ventral sepal that form a tube enclosing the anther. The stigmatic surface is located on the upper side of a flap on the ventral surface of the petaloid style. *Iris lacustris* is self-compatible, but autonomous self-pollination only accounts for about one-third of open-pollinated fruit set (G. Hannan, personal communication; and see Kron et al. 1993; Zink and Wheelwright 1997 for potential mechanisms). Therefore, most pollination occurs when insects carrying pollen crawl between the petaloid style and the sepal, and deposit pollen on the stigma.

In the early afternoon on 25 May 1996, halictid bees (*Augochlorella striata*) (voucher specimen deposited at the Royal Ontario Museum) were observed visiting a few local patches of *I. lacustris* on an open shoreline at Dorcas Bay (81°35’ W, 45°11’ N). As many as two bees visited flowers concurrently, and they spent up to one minute within individual pollination units, presumably collecting nectar and possibly pollen. The bees crawled between the sepal and petaloid style until their abdomen was entirely hidden and at the level of the stigma flap, a position that could allow pollen removal and deposition. Lengthy visits in this position suggest that the bees may often facilitate self-pollination within pollination units (G. Hannan, personal communication). They regularly moved between pollination units and from flower to flower, suggesting that pollen transfer is likely and that self-pollination (pollen transfer between pollination units, flowers on a plant or plants in a clone) may be frequent. The bees also groomed pollen intensively, often when perched at the flower’s centre. From this central position, they sometimes “cheated” by entering the base of pollination units sideways, such that the style could not be contacted.

*Augochlorella striata* is an abundant and widely distributed halictid bee in Ontario (Knerer and Atwood 1962) that is a common polylectic flower visitor (numerous plant genera, but not *Iris*, listed in Mitchell 1960; Knerer and Atwood 1962). It was considered the major pollinator of Shining Ladies’-tresses (*Spiranthes lucida*) on the southern Bruce Peninsula (Catling 1983), and has also been observed visiting two other prevalent spring flowers on Bruce Peninsula shorelines, Bird’s-eye Primrose (*Primula mistassinica*) (Larson and Barrett in press a) and Bluets (*Hedyotis longifolia*) (Larson and Barrett in press b). It was frequent to occasional on the flowers of several Ottawa weeds (Mulligan and Kevan 1973), and lastly, in Muskoka it has been observed “buzzing” (sensu Buchmann 1983) individual anders of Virginia Meadow Beauty (*Rhexia virginica*) (personal observation). These observations suggest that its relationship to *I. lacustris* is not highly specialized.

Intensive observational studies are required to determine whether *A. striata* is the predominant pollinator of *I. lacustris*. Given the commonness of this bee, it is surprising that it has not been observed at these flowers before, but visitation during late May may be quite stochastic and weather-dependent. Fruit-set in the Dorcas Bay population in 1996 was extremely low, so future research should also investigate the degree of pollen limitation and modes of self-fertilization (e.g., Lloyd and Schoen 1992) in Ontario populations of this species, to ascertain the relative contribution of low pollinator visitation and inbreeding depression to limited fecundity. Further investigation of pollination and factors limiting reproductive success in *I. lacustris* may facilitate effective management and conservation of shoreline populations.

Acknowledgments

I thank Laurence Packer for confirming bee identification, Spencer Barrett, Gary Hannan, John Pannell and anonymous reviewers for comments, and the Natural Sciences and Engineering Research Council of Canada for support through a postgraduate scholarship to the author and a research grant to S. C. H. Barrett.

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First Nest Record of Northern Hawk Owl, Surnia ulula, in Nova Scotia

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Two families and one additional pair of Northern Hawk Owls, Surnia ulula (L) were discovered in the core of the Cape Breton Highlands National Park during an expedition in the summer of 1996. They were found in woods defoliated by Spruce Budworm (Choristoneura fumiferana). This defoliation and the resulting opening up of the woods may have enticed the Hawk Owls to expand their breeding range into Nova Scotia; alternatively, the rather remoteness of the site may have prevented their previous discovery.

Key Words: Northern Hawk Owl, Surnia ulula, Cape Breton Highlands National Park.

In June and July of 1996, we conducted a field study in a remote part of Nova Scotia’s Cape Breton Highlands National Park. The objective was to document the presence of several rare species of animals and plants in that area. The avifaunal component of the project included ten target species (see appendix), some of which were sporadically known from the Highlands, whereas others like the Northern Hawk Owl had never been recorded as breeders. The Northern Hawk Owl is a holarctic species known to breed in a variety of more open areas of the boreal forest. It does not breed in Prince Edward Island and is only an occasional breeder in New Brunswick (Erskine 1992); Godfrey (1986) shows its nesting range to include Newfoundland. In recent decades, there have been sporadic summer sightings in Nova Scotia, though no reports of breeding (Tufts 1986).

Study Site and Habitat
Cape Breton Highlands National Park is located in the extreme north of Cape Breton Island. Much of the study site (centered at 46° 42’ N, 60° 40’ W) is dominated by fairly large areas of open forest with most of the mature Balsam Fir (Abies balsamea) and spruces (Picea spp.) killed by Spruce Budworm (Choristoneura fumiferana) infestation in the 1970s and early 1980s (Anonymous 1980; Pech 1993); many of the snags have fallen but the majority remain standing. Remnant stands of mature White Birch (Betula papyrifera) pocket these budworm-killed areas. The younger birches are severely stunted in growth due to the heavy browsing by Moose (Alces alces). The forest has recovered somewhat, especially in the wet areas, where it is growing up in alders (Alnus spp.) and sedges (Carex spp.). In the drier areas, low shrubs (e.g., Rubus spp.), White Birch and a thick cover of grasses predominated.

The lush understorey, released by opening of the canopy due to the budworm infestation, provides dense cover for an abundance of small mammals, which themselves would be ample food for the Hawk Owls (Figure 1). The search for rarer small mammals formed another component of the overall project; this was done by laying out lines of snap traps. This component of the work also allowed us to survey the types of small mammals in this habitat,