

Articles

First Nest Record of White-winged Crossbill in the Greater Toronto Area

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Introduction

The White-winged Crossbill (*Loxia leucoptera*) occurs throughout the boreal forests of both North America and Eurasia. The nominate subspecies (*L. l. leucoptera*) occurs across boreal coniferous forests from western Alaska to eastern Newfoundland and northern New England and south to the central Rocky Mountains of Idaho and Wyoming (Benkman 1992) and has been documented breeding farther south in suitable habitat in Utah (Smith 1978), Colorado (Groth 1992) and New Mexico (Pasquier and Perkins 1981). Another subspecies (*L. l. bifasciata*) breeds across the coniferous forests of the Palearctic from northern Scandinavia to Siberia (Cramp and Perrins 1994). A third subspecies (*L. l. megaplaga*) occurs as an isolated population in the pine forests of the mountains of Hispaniola (Kepler et al. 1974, AOU 1998).

All three subspecies of the White-winged Crossbill are known to be nomadic (Svårdson 1957; Newton 1970; Bond 1985; Benkman 1987a, 1987b; Larsen and Tombre 1989), with movements which are defined by the need to find devel-

oping cone crops of tree species to which their specialized bills are adapted for high efficiency of seed extraction. Throughout Ontario, these would include white spruce (*Picea glauca*), black spruce (*Picea mariana*), tamarack (*Larix laricina*), balsam fir (*Abies balsamea*), eastern hemlock (*Tsuga canadensis*) and to a lesser extent red spruce (*Picea rubens*) and introduced Norway spruce (*Picea abies*). This species is known to periodically irrupt in large numbers south of its core range in the boreal forest, an amplification of its usual nomadic movements in search of ever-shifting cone crops, induced most often by widespread simultaneous failure of production of several of its preferred seed cones over a large geographic section of its range (Taber 1968, Sealy et al. 1980, Kane 1982, Benkman 1987a).

In Ontario, the breeding range of the White-winged Crossbill extends primarily from the Hudson Bay coast south to the southern edge of the Canadian Shield (Peck and James 1987, Smith and Lumsden 1987). The breeding status of White-winged Crossbill in Ontario is still poorly understood in

large part due to the access limitations inherent in coverage by observers in its core range, its nomadic tendencies, its ability to nest in virtually any month, and the relative difficulty in locating numbers of its nests for study. The map of breeding evidence obtained during the Ontario Breeding Bird Atlas (1981–1985) probably best represents its breeding status in Ontario, but note that only six percent of squares with records reported confirmed breeding.

In years of large irruptions south of the Shield, birds that can find areas with large emerging cone crops (more often than not of spruce) will periodically breed opportunistically well south of their core range in areas where increased observer coverage and lack of closed coniferous forests favour greater likelihood of nest discovery than in its core range. Recent examples in Ontario are nests found in Oxford County and Haldimand-Norfolk Regional Municipality in the years since the first Ontario Breeding Bird Atlas.

In February 2001, a nest of White-winged Crossbill was discovered in Caledon Township of Peel Regional Municipality. This nest record represents the first confirmed breeding evidence for White-winged Crossbill for the Greater Toronto Area (GTA – comprising Halton R.M., Peel R.M., Toronto, York R.M. and Durham R.M.). It becomes the 191st confirmed breeding species

for the area (Coady and Smith 2000). The purpose of this paper is to document this White-winged Crossbill nest, detail aspects of breeding biology noted during these observations, and summarize the previous nest records reported for Ontario.

Observations

In January 2001, reports of White-winged Crossbill in Peel R.M. began to emerge, with six reported by the South Peel Naturalists at Claireville Conservation Area on 7 January (Mark Cranford *vide* ONTBIRDS listserve) and two singing males reported by David Milsom at Palgrave Conservation Area on 28 January (Worthington 2001a). On 10 February, at least six singing males were found by Alfred Raab in an area of Palgrave Conservation Area east of Duffy's Lane and south of Finnerty Sideroad. Males were observed singing from the tops of black spruces and performing flight songs in pursuit of females in an area with a heavy crop of black spruce cones (Alfred Raab, pers. comm.). On 17 February, six birds (3 males, 3 females) were observed again at the north end of Duffy's Lane by Milsom and Bill and Becky Peckham (*vide* ONTBIRDS) and independently by Glenn Coady and Leslie Johnston. The males were singing and performing flight songs and Milsom observed a female carrying lichen near the beaver pond northwest of the parking area off Duffy's Lane, about 350 m south of

Finnerty Sideroad. On 18 February, seven White-winged Crossbills were observed in the same area by Coady, Johnston and Roy Smith. Males were observed singing from the tops of black spruce and performing flight songs in aerial pursuit of females. Coady and Johnston also observed a single female briefly singing (Worthington 2001b).

Convinced that nesting was likely, Coady assembled a team of searchers to return to the area of Duffy's Lane in Palgrave C.A. on 25 February in an attempt to locate a nest. A group consisting of Coady, Mark Peck, Leslie Johnston, Wayne King and Andrew Keaveney arrived shortly after dawn to a continuous drizzle of freezing rain for the first four hours after sunrise (during which no crossbills were observed). It was not until late in the morning, with the rain subsiding, that the first male White-winged Crossbills began to sing from perches on top of black spruces. A maximum of 12 White-winged Crossbills were observed, with lone males singing from perches, males performing flight songs and pairs foraging together. Shortly after 1230h, Peck found a pair of White-winged Crossbills which did not appear to be foraging, but were slowly moving around the tops of adjacent trees together in the area of the Duffy's Lane beaver pond. Holdsworth and Graham (1990) and Benkman (1992) noted that during nest construction the male provides escort to the female, often

perching in nearby trees as the female builds the nest.

After Peck alerted the rest of the search party to the presence of this pair of birds, they were both observed to remain quite still and silent at the tops of adjacent trees for several minutes, appearing very cautious. Next, the female flew a few metres away into a nearby black spruce about six metres tall and disappeared into a dense portion about a metre down from the top. The male remained on his original perch the entire time and the female remained concealed for a couple of minutes. The female then emerged from behind a spruce bough with a large amount of nest lining material in her bill and was observed lining her nearly completed nest by five very delighted searchers (nest location: 17T 591359 4867129 North American Datum 1983; 43° 57' 05.9" N, 79° 51' 41.1" W).

On 4 March, Coady returned to inspect the nest and found the female incubating. Employing a mirror, an examination of the nest revealed that it contained two eggs and a spruce cone! Although incubating females are predominantly courtship-fed by regurgitation by the male (Newton 1972, Benkman 1992), the presence of this cone in the nest might tempt one to suspect that the female occasionally may procure readily available cones immediately adjacent to the nest supplementary to these feedings. After singing very late into the afternoon, the male of this pair was

observed going to roost in a nearby cedar visible from the nest.

On 10 March, Coady, Jim Richards, George Peck and Mark Peck kept the nest under observation from an adjacent tower. The female was observed incubating three eggs. Nest dimensions were taken by Richards, but despite a paucity of such data, egg measurements were not obtained in an effort to minimize nest disturbance, so that incubation (entirely by the female) was more or less continuous. The eggs were ovate and the ground colour was very close to white with a very faint bluish cast and a dull gloss. They were streaked and spotted with fine markings of chocolate brown and lavender, most prominently at the larger end. The male was observed feeding the female by regurgitation on several occasions during incubation, at intervals ranging from 45 to 120 minutes between such feedings. Before coming in to feed the incubating female, the male would invariably fly to a nearby perch several metres from the nest and call several times in a manner very similar to that described by Tufts (1906). The female would then call back to the male in an imitation of these calls, nearly identical in structure, as described by Munding (1979), followed shortly thereafter by a visit by the male for a regurgitated courtship feeding. Both the male and female White-winged Crossbills and the nest and eggs were documented with photographs by Jim Richards, Mark Peck and George Peck and with videotape by Glenn Coady (see

Figures 1 and 2). Besides the nesting pair under observation, a second pair was observed foraging on black spruce cones (both from trees and from fallen cones), gathering grit, and drinking from melt water pools not very far from this nesting pair. White-winged Crossbills have been shown to breed successfully in the wild with sole requirements being abundant conifer seeds, grit and water (Benkman 1990). Only when the male of this second pair would sing near the nesting pair's territory would aggressive song flights be elicited from the male of the nesting pair.

The nest was positioned in a well concealed location in a crotch formed between the trunk and two small lateral branches on the south-east aspect of a six metre tall black spruce (diameter at breast height of 11.1 cm) at a height of 5.04 m in a fairly open section of second growth in a beaver pond. Benkman (1992) noted that in winter, nests are most likely situated between the south and east sides of trees. At this nest it was quite evident that this position optimized the amount of time the nest was exposed to direct sunlight. The nest was a bulky circular cup with a fairly shallow bowl, composed mostly of loosely woven twigs of black spruce. It was lined with a mixture of lichen, dead grasses, plant down (cotton-grass, bulrush, cattail), bark strips, white and red pine needles, large grey feathers (possibly Ruffed Grouse *Bonasa umbellus*) and White-winged



Figure 1: Female White-winged Crossbill being fed by the male at the nest, Palgrave Conservation Area, Peel R.M., 18 March 2001. Photo by *Jim Richards*.



Figure 2: Nest and three eggs of the first White-winged Crossbill nest for the Greater Toronto Area, Palgrave Conservation Area, Peel R.M., 10 March 2001. Photo by *Jim Richards*.

Crossbill feathers. Nest dimensions were: outer diameter – 10.4 cm; inner diameter – 6.5 cm; outer height – 7.1 cm; inner height – 1.75 cm.

On the morning of 18 March, Coady, Richards and George Peck observed the female still incubating three eggs. Further photographic and videotape documentation was acquired. Late in the afternoon, Coady believed he observed a crack forming in one of the eggs.

On the afternoon of 24 March, Coady noted the female was nearly continuously brooding at least one hatched young, which was not yet feathered and whose eyes were still

not yet open. This would indicate hatching of this individual likely occurred on or about 19 March. Assuming the eggs were laid at one day intervals, this would suggest an incubation period of 14–16 days, depending on whether incubation commenced with the laying of the first or third egg.

On 25 March, Coady, Richards and George and Mark Peck found both the male and female feeding two young (see Figure 3). A single non-hatched egg remained in the nest. Parental feeding of the two young was performed by both the male and female at intervals ranging from 15 to 45 minutes. Both



Figure 3: Male White-winged Crossbill feeding young at the nest, Palgrave Conservation Area, Peel R.M., 25 March 2001. Photo by *George K. Peck*.

young were fed a regurgitated meal of seed kernels in a dark, viscous bolus. Most bizarre was that occasionally both adults attempted to feed fairly large feathers to the largest hatchling! Fecal sacs, offered after each feeding was completed, were consumed at the nest without exception by both the male and female parents. This suggests that this species is likely very difficult to confirm as a breeder without finding a nest, since most birds also often carry feedings very well disguised in their crops.

On the morning of 31 March, the same four observers found the larger of the two nestlings very recently decapitated, with its body and severed head both found on the lip of the nest. The smaller young was still alive, and in the nest, and appeared to have suffered no injury. It was still being fed by both adults, though now more frequently by the male. The egg which had not hatched by 25 March was no longer present in the nest. The nature of this depredation would seem to most likely implicate the Red Squirrel (*Tamiasciurus hudsonicus*), a known predator of the White-winged Crossbill (Benkman 1992), which were quite abundant in this section of Palgrave Conservation Area.

On the morning of 1 April, Richards and Coady found the nest empty. Interestingly, the male and female were still observed coming to the nest together several times. Each time the female (with the male

as an escort) was seen to remove parts of the nest lining and fly off quite some distance in a northeasterly direction. Benkman (1992) stated that there was no evidence of reuse of nests or nest materials by White-winged Crossbills. Coady obtained videotaped documentation of this behaviour. An immediate attempt at re-nesting would thus appear to have been likely. No attempt was made to locate and confirm such re-nesting, however. On a subsequent visit on 14 April, Glenn Coady, Leslie Johnston and Mary Schuster located what was possibly this same pair of birds in an area of black spruce in a marsh area approximately 700 m to the northeast from the original nest.

The modest irruption of White-winged Crossbills into the Greater Toronto Area early in 2001 was not limited to Peel R.M., with birds being found in several areas across the Oak Ridges Moraine where large enough tracts of suitable coniferous forest occur. As many as four male White-winged Crossbills were found singing in the Hall Tract of the York Regional Forest, York R.M. by Ron Fleming between 10 March and 14 April (*vide* ONTBIRDS) and on 3 March, 17 birds (including two obvious pairs and two additional singing males) were found in the Osler Tract, Durham R.M. by Jim Richards (pers. comm.). It is a good possibility that other GTA nests of White-winged Crossbill went undiscovered in 2001.

Reported Nest Records of White-winged Crossbill in Ontario

The following ten records account for the twelve nests reported in Ontario, sorted by County, District or Regional Municipality (Source: Ontario Nest Records Scheme):

Oxford

1989 A female was found building a nest 5 m up in a Norway spruce on 7 April at the east end of Wildwood Lake (43° 15' N, 81° 06' W) by James M. Holdsworth and Don S. Graham. It was seen incubating this nest on 16 April, and a pair was observed near, but not at, the nest on 22 April. The nest was subsequently abandoned and on 6 May it was collected by Graham (Holdsworth and Graham 1990).

Haldimand-Norfolk R.M.

1993 A pair was found at the Old Cut Field Station of the Long Point Bird Observatory (42° 35' N, 80° 24' W) on 27 March by Chris Risley, and the female was observed by Lisa Enright constructing a nest at 7.76 m up in a 15.22 m high white spruce between 29 March and 2 April. The female began incubation on 3 April, and the male was seen feeding the female at the nest 4–18 April. In the afternoon of 18 April, the nest was determined to be abandoned and subsequently the nest and three eggs were collected on 24 April. The nest and eggs/embryos were deposited in the Royal Ontario Museum (ROM # 509834).

Peel R.M.

2001 A nest was found under construction at 5.04 m up in a 6 m tall black spruce in Palgrave Conservation Area in Caledon Township (43° 57' 05.9" N, 79° 51' 41.1" W) on 25 February by Mark Peck, Glenn Coady, Leslie Johnston, Wayne King and Andrew Keaveney. This nest contained two eggs on 4 March, three eggs on 10 and 18 March, and two young and one egg on 25 March. One of these young was depredated, likely by Red Squirrels, on each of 31 March and 1 April. The female subsequently re-collected the entire lining from this nest. The empty nest was collected by Coady on 1 April and deposited in the Royal Ontario Museum (ROM # 500553)

Victoria

1926 A nest with eggs was found on 19 August near Head Lake (44° 44' N, 78° 55' W) in a small cedar, according to D.A. MacLulich (Baillie and Harrington 1937).

Nipissing

1983 A female was discovered building a nearly completed nest 7 m up in a 17 m tall black spruce near the junction of Sand Lake Road and Achray Road (45° 54' N, 77° 44' W) in Algonquin Provincial Park by Craig M. Benkman on 30 January. The nest was observed being lined 1–2 February, but was apparently deserted on 25 March.

On 20 February, a second nest was discovered under construction by a female at 10 m up in a 14 m tall white spruce about 720 m west of the nest found on 30 January. Benkman estimated 10–15 nesting pairs of White-winged Crossbills (five of which he saw carrying nest materials) along a 1 km section of this road. The birds all deserted when a warm spell in late March caused the white spruce cones to drop their seeds en masse (Smith and Lumsden 1987; notes from an unpublished manuscript by Craig W. Benkman).

- 2000 A female was observed carrying nesting material to a probable nest site 2.5 km along the Cameron Lake Road from its junction with the Opeongo Road (45° 38' N, 78° 19' W) in Algonquin Provincial Park on 30 December by Derek Connelly and Frank Pinilla.

Haliburton

- 2000 A male and female were seen by Peter Burke and Colin Jones on 30 December gathering plant fibres from a dead white pine, which the male took up to a probable nest in a tall white spruce, 9 km south of Whitefish Lake on the Martin Lake logging road (45° 29' N, 78° 31' W) in Algonquin Provincial Park, near Rod and Gun Lake.

Sudbury R.M.

- 1992 Three nests (one 3 m up in a balsam fir, one 2.5 m up in a jack pine and one 10.7 m up in a black spruce), each with adults feeding young, were found by C.J. Whitelaw on 22 August in Lumsden Township where the Ontario Hydro transmission line crosses the Vermilion River near Valley East (46° 40' N, 81° 06' W).

Algoma

- 1927 A nest with three young close to fledging was found 12.5 m up in a 14.6 m tall spruce near Lake Manitowik along the upper Michipicoten River (48° 10' N, 84° 20' W) on 20 August by Milton B. Trautman. The nest and all three young were collected and deposited in the Ohio State Museum at Columbus (Fargo and Trautman 1930).

Benkman (1988a, 1988b, 1989, 1990, 1992) has provided ample evidence of the link between food dispersion, seed extraction and foraging efficiency, and the timing and success of breeding in White-winged Crossbills. He identified three discrete nesting periods defined by temporal and spatial availability of preferred seed cones: 1) Early July – November, starting with the maturation of summer cones of tamarack and white spruce; 2) January – February, requiring a large white spruce crop, with desertion often occurring if unusually warm or dry weather causes cones to lose their seeds early; and 3) March – June, starting with the opening of the cones of black spruce, the period when double broods are most likely due to the longer period of reliability of

the black spruce cone crop.

Clearly, our Ontario nest records fall into all of these discrete periods of nesting, as we might expect. As a more widespread understanding of the temporal and spatial patterns of availability of the preferred seed cones that trigger nesting is developed among observers, we can undoubtedly look forward to an accelerated rate of additions to the list of nest records and other confirmed breeding records for White-winged Crossbill in Ontario.

Summary

In late February 2001, the first nest of White-winged Crossbill for the Greater Toronto Area (GTA) was discovered in Palgrave Conservation Area in Peel R.M. It represents the twelfth nest record of this species

reported for Ontario and the 191st confirmed breeding species found within the GTA.

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Richards, who drove many hours over multiple visits to provide a tower for unobtrusive nest observations and provided photographic documentation of the Palgrave C.A. nest; George K. Peck, who provided both photographic documentation of the nest and access to the Ontario Nest Records Scheme; Roy Smith, who provided an unpublished manuscript by Craig W. Benkman on his findings of both Red Crossbills (*Loxia curvirostra*) and White-winged Crossbills in Ontario in 1983; Glenn Murphy of the Royal Ontario Museum's Centre for Biodiversity and Conservation Biology, who prepared the White-winged Crossbill nest collected.

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PUBLICATION NOTICE

The Sibley Guide to Bird Life & Behavior. 2001. Edited by *Chris Elphick, John B. Dunning, Jr., and David Allen Sibley*. Alfred A. Knopf, Inc., New York. Hardcover, 608 pages. \$65.95. (ISBN 0-679-45122-6)

The aim of this book is “to provide an introduction to the great variety and complexity of bird life – a book by and for birders that will help readers interpret and understand the things they see in the field”. It combines more than 795 full-colour illustrations by David Sibley with authoritative text by 48 expert birders and biologists to show “how birds live and what they do”.

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