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Articles

Nikon Photo Quiz

Cover Illustration: Least Bitterns (*Ixobrychus exilis*)
Barry Kent MacKay

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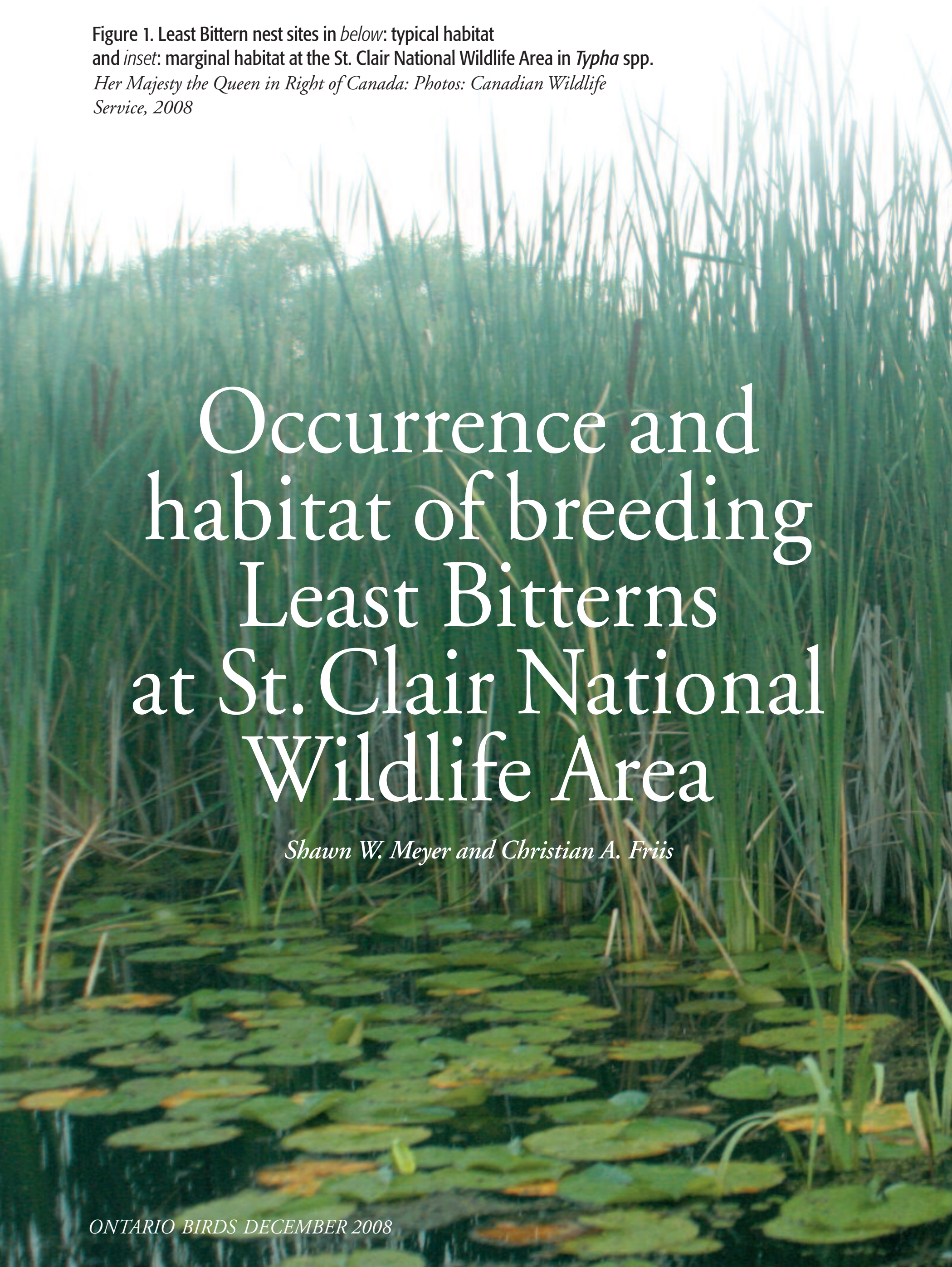
Figure 1. Least Bittern nest sites in *below*: typical habitat and *inset*: marginal habitat at the St. Clair National Wildlife Area in *Typha* spp.
Her Majesty the Queen in Right of Canada: Photos: Canadian Wildlife Service, 2008



Occurrence and habitat of breeding Least Bitterns at St. Clair National Wildlife Area

Shawn W. Meyer and Christian A. Friis

Introduction

The Least Bittern (Petit Blongios) (*Ixobrychus exilis*) is a small buffy-coloured heron (~ 30 cm long and 80g in weight) that breeds primarily in southern marshes in Manitoba, Ontario, Quebec, New Brunswick, and potentially Nova Scotia. Its contrasting black head and back against its white underside and buffy wing patches readily distinguishes this marsh bird from all others. In Ontario, it breeds primarily in cattail (*Typha* sp.), but has also been observed nesting in bulrush (*Scirpus* sp.), grasses, horsetail (*Equisetum* sp.), sedges (*Carex* sp.), willows (*Salix* sp.) and dogwood (*Cornus* sp.). In Ontario, Least Bitterns typically initiate breeding in mid-May, with pair formation, territory defence and eventual egg laying (egg dates: 15 May to 2 August) (Peck and James 1983). It is a very secretive marsh bird and, therefore, difficult to detect. Its soft, low-pitched "coo-coo-coo" is often unnoticed, and its avoidance of call broadcasts (Tozer *et al.* 2007) results in poor detection rates, and thus, an incomplete population estimate in Ontario (Woodliffe 2008). Habitat degradation and habitat loss continue to threaten this and other marsh bird species, and have resulted in the Least Bittern being designated as a Threatened species in Ontario and Canada.

Ontario's population of Least Bittern is concentrated around Lake St. Clair, Long Point and areas south of the Canadian Shield, from approximately Peterborough to Kingston, including the marshes of eastern Lake Ontario (Woodliffe 2008). In the Lake St. Clair vicinity, marshes associated with the shoreline provide breeding habitat for many Least Bitterns. The St. Clair National Wildlife Area (SCNWA) is one such marsh. It was designated for inclusion on the Ramsar List of Wetlands of International Importance in 1985, and it currently consists of two units: (1) Main Unit (~244.0 ha) and (2) Bear Creek Unit (~89.5 ha). It is recognized for its high biodiversity and national significance to wildlife, and has become a perennial birding "hotspot" in southwestern Ontario. Both historical and current records from the SCNWA suggest that numerous Least Bitterns nest within these marshes. The purpose of this article is to document the occurrence and habitat of breeding Least Bitterns in both units of the SCNWA, with additional reference to other southwestern Ontario sites. This information will support the identification of critical habitat for this species at risk, as well as help guide SCNWA management.

Observations

Data for breeding Least Bitterns were collected between 9 May and 15 July 2007 and 8 and 9 July 2008. They were collected in 2007 while conducting marsh bird and Least Bittern surveys in the SCNWA and while collecting nesting habitat data in 2008 to help identify critical habitat for Least Bitterns on the SCNWA. Nest record data were collected

Figure 2. Least Bittern feeding platform in *Typha angustifolia* at the St. Clair National Wildlife Area.
Her Majesty the Queen in Right of Canada: Photo: Canadian Wildlife Service, 2008

following the methodology of the Ontario Nest Records Scheme (Peck *et al.* 2001). In all instances, disturbance to the adult birds and/or young was minimized. For example, data collection around the nest was limited to a few minutes and was not collected during inclement weather such as rain or heavy winds. Global Positioning System (GPS) coordinates were collected using a Trimble GeoXT (accuracy ± 1.0 m). Results are summarized into four sections: (1) nesting, (2) semi-colonialism, (3) nest-site fidelity and (4) reproductive success. If data were collected over multiple visits to a particular nest, either the highest recorded breeding level (i.e., eggs < chicks < fledglings) or that of the last recorded visit was used in the summary.

Nesting

In total, 14 and 27 active Least Bittern nests were found in 2007 and 2008, respectively (Table 1) (Figure 1a and 1b).

Table 1. Habitat type, nest contents, locations and characteristics of Least Bittern nests recorded at the St. Clair National Wildlife Area in 2007 and 2008.

Year	Dominant Vegetation at Nest	Number of Nests	Average number of eggs or young ± SD	Nest Exposure (number of nests)	Average water depth at nest (cm) ± SD
2007	*Typha angustifolia* Narrow-leaved Cattail	7	Eggs = 3.57 ± 1.81	Well hidden (2) Partially hidden (5)	52.14 ± 17.64
	Typha glauca Common Cattail	3	Eggs = 4.00 ± 1.00 Young = 0.67 ± 1.15	Well hidden (1) Partially hidden (1) Exposed (1)	49.00 ± 21.07
	Typha spp. Cattail species	2	Eggs = 2.50 ± 3.54 Young = 1.00 ± 1.41	Partially hidden (2)	39.00 ± 21.21
	Scirpus validus Softstem Bulrush	1	Eggs = 4	Exposed	22.00
	Sparganium eurycarpum Large-fruited Burreed	1	Eggs = 4	Exposed	N/A*
	TOTAL	14†	**Eggs = 3.50 ± 1.70** **Young = 2.00 ± 0.00**	–	**45.78 ± 18.52**
2008	*Typha angustifolia* Narrow-leaved Cattail	12†	Eggs = 2.50 ± 1.68 Young = 0.50 ± 1.24	Well hidden (8) Partially hidden (3)	66.82 ± 15.96
	Typha glauca Common Cattail	5	Eggs = 1.60 ± 1.95 Young = 1.40 ± 1.95	Well hidden (3) Partially hidden (1) Exposed (1)	54.60 ± 7.89
	Typha spp. Cattail species	2	Eggs = 4.50 ± 0.71	N/A*	N/A*
	Sparganium eurycarpum Large-fruited Burreed	7†	Eggs = 2.29 ± 1.70 Young = 1.29 ± 1.70	Well hidden (4) Partially hidden (2)	57.00 ± 21.55
	Acorus calamus Sweetflag, Calamus	1	At least 1 egg*	Partially hidden	75.00
	TOTAL	27	**Eggs = 2.37 ± 1.74** **Young = 0.81 ± 1.47**	–	**61.96 ± 16.47**

* - data were not collected at nest to avoid disturbance. † - one nest was excluded from summary due to lack of data

Average height of nest above water (cm) ± SD	Average cup depth of nest (cm) ± SD
84.29 ± 19.81	4.33 ± 0.82
65.00 ± 24.06	6.33 ± 3.21
95.00 ± 14.14	7.50 ± 3.54
23.00	2.00
N/A*	N/A*
74.14 ± 26.80	**5.08 ± 2.36**
66.18 ± 22.57	3.38 ± 2.26
72.40 ± 25.67	3.75 ± 2.36
N/A*	N/A*
29.67 ± 6.65	2.33 ± 1.63
30.00	20.00
56.43 ± 26.34	**4.00 ± 4.36**

Only active nests (i.e., nests with eggs and/or young) were recorded because Least Bitterns are known to build dummy nests or platforms for feeding and brood rearing (Gibbs *et al.* 1992) (Figure 2). In 2007, 12 nests were built in cattail with one in softstem bulrush and one in burreed (*Sparganium* sp.). Nest heights, to the bottom of the nest, varied between a low of 23 cm (bulrush) and a high of 115 cm (cattail) with a median of 77 cm (mean = ~74 cm). Average cup depth was 5 cm in vegetation that was growing in approximately 46 cm of water (Table 1).

In 2008, 19 active nests were found in cattail plus eight in non-persistent emergent vegetation (e.g., burreed and sweetflag [*Acorus calamus*]) (Figures 3a, 3b, 3c and 3d). Nest heights, to the bottom of the nest, varied between 22 cm (burreed) and 120 cm (cattail) with a median of 50 cm (mean = ~56 cm). Average cup depth was approximately 4 cm and nesting vegetation was on average in 62 cm of water (Table 1).

Figure 3a. Least Bittern nest in *Typha x glauca* at the St. Clair National Wildlife Area. *Her Majesty the Queen in Right of Canada: Photos: Canadian Wildlife Service, 2008*

top: **Figure 3b. Least Bittern nest *Sparganium eurycarpum* (encircled),**
right: **Figure 3c. Least Bittern nest *Acorus calamus,***
above: **Figure 3d. Least Bittern nest *Typha angustifolia* (encircled),**
at the St. Clair National Wildlife Area. *Her Majesty the Queen in Right of Canada: Photos: Canadian Wildlife Service, 2008.*

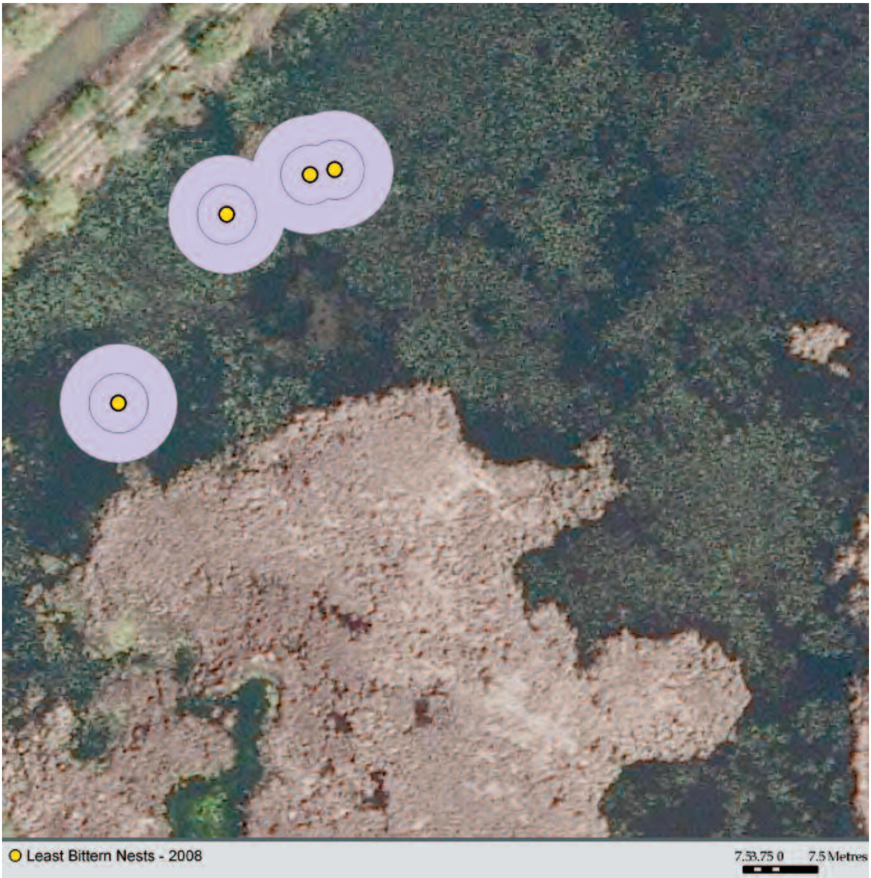
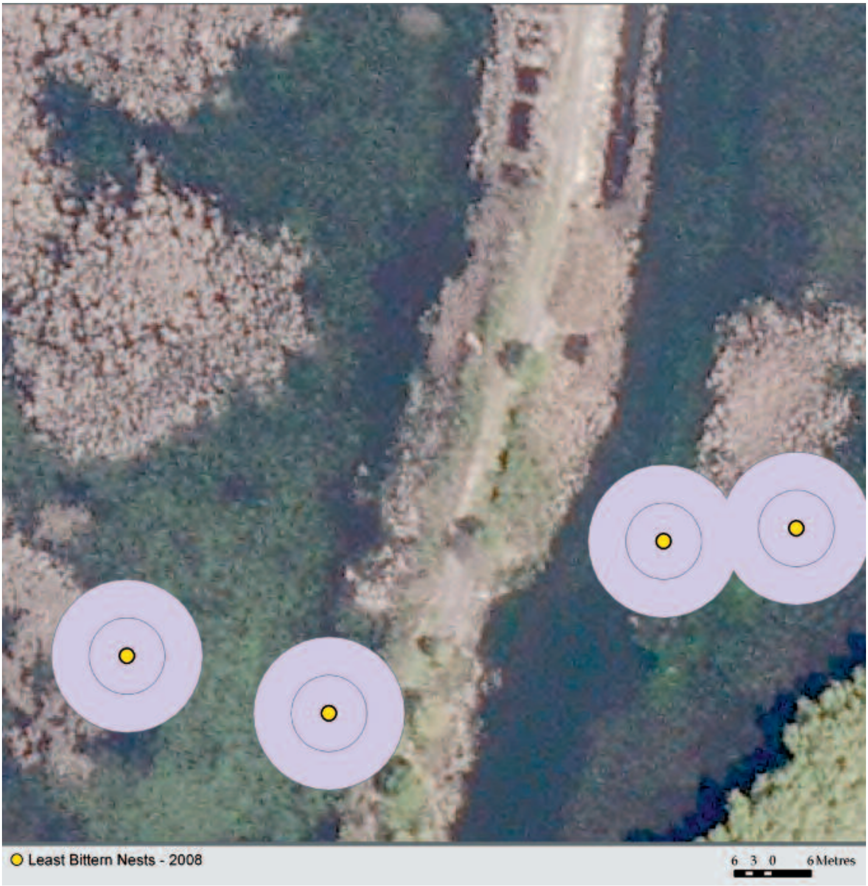


Figure 4a *above* and 4b *right:*
Locations of selected active Least Bittern nests at the St. Clair National Wildlife Area showing proximity to nearest neighbouring nest (inner ring = 6 m / outer ring = 12 m).
Maps produced by CWS-ON – Background Data: True Colour Ortho Photos, 2006 © First Base Solutions, 2006.

Semi-colonialism

Although the term "semi-colonialism" is not defined clearly in the literature, our results confirm anecdotal evidence that some Least Bitterns at the SCNWA tend to nest in small colonies (13 of 41 nests). Least Bitterns have been documented as semi-colonial nesters in southern Florida, where the range from nearest neighbour was 1.0 to 6.1 m (Kushlan 1973).



To illustrate this range with nests from SCNWA, all active Least Bittern nests were mapped using ArcGIS 9.2 software from GPS coordinates collected in the field. A concentric ring corresponding to a 6-m radius was then overlayed on active nest locations in close proximity to one another to show potential semi-colonialism. A 12-m radius was also overlayed for comparative purposes, and to investigate possible ranges to nearest neighbour at this latitude (Kushlan 1973). In 2007 and 2008, evidence of semi-colonialism existed in one and three distinct areas of SCNWA, respectively (Figures 4a and 4b). In these four areas groups were of four, four, two, and three nests, with a range from closest to furthest distance of 4.5-64, 20-108, 35 and 46-135 metres, respectively.

Nest-site Fidelity

No record of Least Bittern banding at SCNWA or in the surrounding vicinity is known. Therefore, determining nest-site fidelity of individual birds is not possible. The results, however, show that some Least Bitterns are nesting within a few metres of where birds nested the previous year (Figure 5). This suggests re-occupancy of the same territory in subsequent years by returning pairs.

Figure 5. Selected Least Bittern nest locations between 2007 (blue) and 2008 (yellow) at St. Clair National Wildlife Area, illustrating proximity between nesting seasons (inner ring = 1 m / outer ring = 5 m).
Maps produced by CWS-ON – Background Data: True Colour Ortho Photos, 2006 © First Base Solutions, 2006.

Discussion

Our results show that Least Bitterns use flooded emergent vegetation for nesting, will nest in close proximity to one another (i.e.,semi-colonially), and will use similar locations in the marsh each year if habitat conditions do not change. Results from this study also quantify the extent to which Least Bitterns nest in non-persistent emergent vegetation (e.g., burreed) in SCNWA, and show that Least Bitterns nest in some numbers where habitat conditions are appropriate. Future research will be required to help understand what "ideal" habitat conditions are, as well as more details of the breeding biology of Least Bittern in Ontario, to help guide its recovery and assist SCNWA management.

Reproductive Success

Targeted Least Bittern surveys were completed at SCNWA in 2007 as well as at Long Point and Big Creek National Wildlife Areas. Data from these surveys show nesting at all sites and in relatively high numbers. Although reproductive success was not completely documented (all sites combined: 13 of 21 nests had eggs or young on the last visit; 4 of 21 failed at egg stage; 4 of 21 had adults on the nest when visited), it is probable that many of these birds, and those not detected, successfully reproduced in 2007. Similarly at the SCNWA in both years, reproductive success was not documented (23 out of 27 nests had eggs in July 2008; 5 of 14 in July 2007).

Nesting

To our knowledge, this is the first study in Ontario that quantifies the use of emergent vegetation by nesting Least Bitterns at a wetland. Numerous studies have documented the use of emergent vegetation (e.g., cattail, sedges, bulrush, etc.) by breeding Least Bitterns (Weller 1961, Manci and Rusch 1988, Gibbs *et al.* 1992, Bogner and Baldassarre 2002, Winstead and King 2006a, Winstead and King 2006b, Rehm and Baldassarre 2007) and more specifically, nest habitat characteristics of Least Bittern in Ontario (Peck and James 1983). Our results corroborate ranges of nest habitat characteristics from Ontario data but differ from ranges in other North American studies (e.g., nests from this study were generally placed higher above water and in deeper water) (see above references). Future studies should examine microhabitat characteristics (e.g., plant stem density and residual vegetation cover) around nests to help refine critical habitat for nesting Least Bittern.

Semi-colonialism

Although most members of the Ardeid family nest colonially, Least Bitterns are predominantly solitary nesters, and are known to nest in loose colonies (Kushlan 1973, Gibbs *et al.* 1992). This study presents the first documented evidence of semi-colonial nesting of Least Bitterns at SCNWA and confirms previous anecdotal evidence (John Haggeman, pers. comm.). More locations of semi-colonialism were evident in 2008 (n = 3) than in 2007 (n = 1) suggesting that changes may have occurred in either population demographics (ratio of adults to subadults) or resource availability. The return of many sub-dominant birds may explain semi-colonial nesting of Least Bitterns at SCNWA presumably because sub-dominant birds are less aggressive and/or experienced when defending territories. Banding with further observation would corroborate possible changes in population demographics as well as confirm natal philopatry.

Changes in resources, specifically nesting habitat and prey availability, may also explain the high concentration, including semi-colonialism, of breeding Least Bitterns at SCNWA. The germination and growth of wetland plants is determined by many factors (e.g., turbidity, soil type, available nutrients) but ultimately water levels drive the distribution and extent of wetland plants such as cattail and burreed (Keddy and Reznicek 1986, Mitsch and Gosselink 2000). Low water levels in 2007 resulted in the germination of some non-persistent emergent vegetation, but without a complete drawdown (i.e., where water levels are significantly lowered in a managed marsh), cattail cover was generally not affected. Consequently, in 2008, more non-persistent emergent vegetation, in conjunction with higher interspersion, likely provided more high quality breeding habitat for Least Bitterns compared to 2007. This, in turn, affected other biotic communities (e.g., fish, amphibians and aquatic invertebrates) which have been shown to depend on wetland plant species (Turner and McCarty 1998, Angradi *et al.* 2001) as well as wetland habitat quality (Burton *et al.* 2008). Many of these faunal species are prey for Least Bittern (Gibbs *et al.* 1992) and thus likely affected food availability, and potentially allowed them to nest in high densities (i.e., semi-colonially).

Although most polygynous species in North America are found in wetlands and grasslands (Cech *et al.* 2001), polygyny has not been documented in Least Bittern (Gibbs *et al.* 1992). Resource availability (specifically food) has been shown to affect rates of polygyny in other birds, such as the Marsh Wren (*Cistothorus palustris*), Savannah Sparrow (*Passerculus sandwichensis*) and Red-winged Blackbird (*Agelaius phoeniceus*) (Kroodsma and Verner 1997, Wheelright and Rising 1993, Yasukawa and Searcy 1995). Thus, further studies should examine the dynamics among wetland vegetation, prey availability and breeding behaviour of Least Bittern (possibly polygyny) particularly in relation to wetland water-level management.

Nest-site Fidelity

Although the results of this study do not confirm nest-site fidelity in Least Bitterns, the data show that in some instances the same nesting areas (within 5 m) were used between years. Birds were generally evenly distributed across the SCNWA, and whether birds returned to the same area because the habitat was of high quality, or they simply used an area repeatedly, remains unclear. There is undoubtedly high quality breeding habitat (i.e., nesting and prey resources) at these sites, and future studies are required to help determine the extent to which Least Bitterns use a marsh complex as a whole and at finer scales. Studies that identify the microhabitat around nests that are used successively over time will help to elucidate answers to this question. In addition, reproductive success of these nests as well as others will need to be documented in order to determine what resources (i.e., habitat, prey) are important for breeding Least Bitterns.

Reproductive Success

The annual breeding phenology of many birds is determined by environmental cues, such as the weather (Reed and Elphick 2001). Colder temperatures and more days with winds greater than 50 km/h in 2008 may explain the high proportion of nests detected with eggs in early July of this year (Table 2).

While Least Bittern nesting dates at SCNWA fell within the range of expected egg dates (Peck and James 1983), on average, most of these birds would be expected to initiate nesting closer to the

Table 2. Mean temperature and days with a wind speed greater than or equal to 50 km/hr in the months of May and June of 2007 and 2008 (Environment Canada 2008).

Year	Mean temperature (°C)		Number of Days with winds >50 km/hr (Maximum wind speed)	
	May	June	May	June
2007	13.93	19.16	3 (69)	6 (67)
2008	11.24	19.72	10 (72)	7 (85)

peak nesting period. Harsh weather in 2008, however, may have delayed nesting or resulted in a high proportion of birds re-nesting due to nest loss. High winds can result in nest failure due to eggs rolling out of nests (SWM and CAF pers. obs.) and may explain the increased use of non-persistent emergent vegetation in 2008, as compared to 2007, as a result of birds attempting to re-nest. Conversely, it is also possible that many of the nest observations in 2008 were birds attempting to double brood; Least Bittern fledglings, many greater than two weeks old, were observed at this time. Bogner and Baldassarre (2002) documented double brooding of Least Bitterns in New York State. SCNWA is at a similar latitude as northern New York State. Therefore, it is possible that Least Bitterns in Ontario may double brood and this behaviour should be looked for in Ontario.

Although natal philopatry has not been confirmed in Least Bitterns (Gibbs *et al.* 1992), it is possible that high reproductive success in 2007 resulted in a high return of sub-adults to the SCNWA in 2008. This, then, may have resulted in many inexperienced and sub-dominant birds returning in 2008 and nesting in less-preferred vegetation (e.g., burreed and sweetflag) because dominant birds had already established breeding territories in the marsh. This may also explain the location of some Least Bittern nests in marginal habitat, such as fringing cattail separated from main stands (Figure 1b).

Conclusion

Results from these observations show that, at a minimum, 27 pairs of Least Bitterns nested within both units of the SCNWA in 2008. In 2007, there were 14 nesting pairs within both units. This suggests that Least Bitterns will quickly respond to high quality habitat conditions by breeding in high densities and semi-colonially. Observations from this study, however, also indicate that further research is required in order to help understand the breeding biology of Least Bittern in Ontario, as well as continue to adaptively manage the SCNWA for the future benefit of all wildlife.

Acknowledgements

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Erratum:

Great Egret sighted in the Azores

The caption for Figure 1 on page 136 should read: This map shows the Nottawasaga Island banding location (star) of a Great Egret and the Azores Islands where the bird was resighted during November 2005-January 2006. *Map courtesy of Andrew Jano.*

Bohemian Waxwings selectively feeding on the stamens of Silver Maple

Winnie Poon

Introduction

In the winter 2007-2008, Ontario experienced its largest winter finch irruption in the last ten years. Many boreal finches irrupted well south of their normal ranges, following the largest coniferous and deciduous tree seed crop failure in a decade across the boreal forests in much of Ontario and western Quebec. This event unfolded exactly as forecasted by Ron Pittaway in his *Winter Finch Forecast 2007-2008* (Pittaway 2007). At the same time, a massive crop failure of the native Mountain Ash (*Sorbus decora*), also occurred across much of northern Ontario. Mountain Ash berries normally provide an important winter food for Bohemian Waxwings (*Bombycilla garrulus*) across boreal regions of Canada, but the 2007 crop failure evidently precipitated another irruption of this species across eastern North America.

Figure 1. Location where the Bohemian Waxwings were seen feeding; the flowering Silver Maple is nearest the picnic table. Alden Road, Markham, *York*, 8 April 2008. *Photo: Winnie Poon*

This irruption turned out to be the largest ever recorded in the Greater Toronto Area (GTA) and adjacent southern Ontario (Poon 2008). It lasted from approximately mid-October 2007 to the third week of April 2008. It was very extensive in terms of bird numbers, geographic area covered and duration. Within the GTA, it surpassed the previous record of 1999-2000, and even the influx of 1958-1959, which Gunn (1959) described as "the largest of the century".

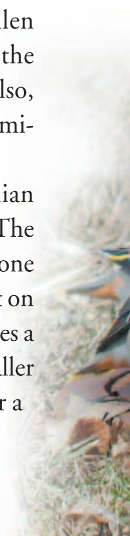
But the most notable feature of the 2007-2008 irruption was the returning wave of waxwings in spring, that resulted in an unprecedented number of April records for the GTA, especially within the City of Toronto. The number of records in the database of the Toronto Ornithological Club reached 48, whereas only eight previous years had April records, and then only 1 to 3 each. It is acknowledged that the database may be incomplete for some earlier years. It was during this returning wave that the apparently rarely seen feeding behaviour of Bohemian Waxwings eating the stamens of a Silver Maple tree (*Acer saccharinum*) was recorded.

Circumstances

On 3 April 2008, Siegmar Bodach posted to ONTBIRDS (the listserve of the Ontario Field Ornithologists) that a flock of about 35 Bohemian Waxwings and 9 Cedar Waxwings (*Bombycilla cedrorum*) had been seen near the intersection of Alden Road and Hood Road in Markham, York Regional Municipality. The waxwings were reported to be feeding on "fallen shoots", and also "newly opened shoots" on the trees. Intrigued by this report and being curious as to what the "shoots" would look like, Roy Smith and I arrived on site on 5 April for a closer look.

There were already six other birders enjoying the bird activities when we arrived at 1420 h. The location was the front lawn of a small industrial building on the southeast corner (Mactec Canada – 555 Alden Road) (Figure 1). Close to the front door of the building was a 7 – 8 m tall Silver Maple (*Acer saccharinum*) in full blossom. There were two other smaller maple trees about 10m north, but both had wilting blossoms. Around the northeast corner, at the back of the side yard, was a row of four very thin Highbush Cranberry (*Viburnum opulus*) bushes that were devoid of berries, except for some fallen ones on the lawn beneath. Most of the winter snow had melted, leaving about 5% of patchy snow cover on the lawns, and exposing the fallen fruits as noted. Lining the sides of the lawn were 6 small, bare ash trees. Also, across Alden Road were seven other similar maples in bloom.

We counted at least 38 Bohemian Waxwings, but no Cedar Waxwings. The majority were feeding actively on the one Silver Maple at the front door, but not on the other maples in the area. Sometimes a group would perch on one of the smaller bare ash trees, perceivably resting after a



good meal, while several times these birds flew down to a manhole cover nearby and drank from melt water that had collected there (Figure 2). At times, a few birds would split off and fly to the Highbush Cranberry bushes, dropping to the ground to eat the remaining fallen fruits.

All the birders were about 8-10m from the maple tree and waxwings which were pecking incessantly at what appeared to be clusters of tiny reddish buds on the branches. Using binoculars, I could see that the birds were not plucking off and consuming the buds, but instead were just dipping their bills into the buds. I examined closely a clump of these buds in my hand, and was surprised to find that from each tiny bud (flower) were many long and thin filaments (stamens) with richly laden yellow pollen pods at the tips (anthers) (Figure 3).

Each clump was a mass of newly opened maple flowers and I suspected that the birds might be after the pollen instead. I investigated further using my telescope, concentrating on one feeding waxwing. The bird appeared to be plucking off and eating only the stamens, leaving the small red petals intact on the flowers that it was feeding on. It required much concentration and time to see the bird swiftly plucking off the stamens, even with the help of a scope at close distance. At this point, I digiscoped many photographs of a feeding bird, including two series of continuous burst mode photos. Afterwards, by examining one of these series frame by frame, I was able to confirm that the bird was eating only the stamens (filaments and anthers), while the outer parts of the flowers remained untouched from the first frame to the last (Figure 4). These photos provide material evidence of the Bohemian Waxwing consuming stamens from a Silver Maple tree in spring.

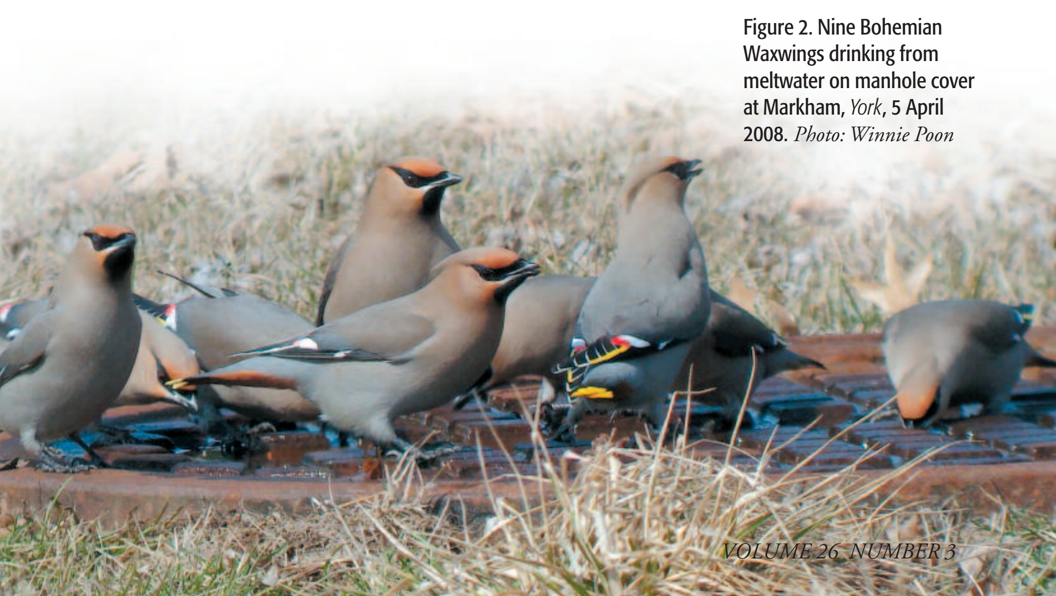


Figure 2. Nine Bohemian Waxwings drinking from meltwater on manhole cover at Markham, *York*, 5 April 2008. *Photo: Winnie Poon*

Discussion

In winter, Bohemian Waxwings are primarily berry and fruit-eaters, utilizing a wide variety of fruits for their winter survival. In Ontario, some of these fruits are Mountain Ash, crab-apple (*Malus* sp.), buckthorn (*Rhamnus* sp.), juniper (*Juniperus* sp.), bittersweet (*Celastrus* sp.), dogwood (*Cornus* sp.), and Highbush Cranberry. When available, Bohemian Waxwings may also feed on protein-rich insects (Witmer 2002) and tree buds, including American Elm (*Ulmus americana*) and ash (*Fraxinus* sp.) (Pittaway 1990), as well as maple (*Acer* sp.) (Elder 2002).

Figure 4. Bohemian Waxwing feeding on the maple tree, note that the bird has three anthers in its bill and that most of the stamens have been nipped off the flowers directly in front of it. Markham, *York*, 5 April 2008.
Photo: Winnie Poon

Figure 3. Clusters of blooming Silver Maple flower. Each flower had at least 14 -15 stamens with extremely long filaments. The anthers were large and reddish-yellow in color when fresh. Markham, *York,* 8 April 2008.
Photo: Winnie Poon

During spring, the waxwings may also feed on sap drips from maple and birch (*Betula* sp.) trees (Bent 1950). However, for North America, there seems to be no published record of Bohemian Waxwings selectively consuming flower stamens, despite the possibility that this may have been observed before. Bent (1950) quoted Swarth (1922) that Bohemian Waxwings "...were seen feeding on insects and also on berries and other vegetable matter". Although this quote may be suggestive, there is no specific mention of this species consuming flower parts in Bent's account. Witmer (2002) also quoted from Bent (1950) that the Bohemian Waxwing "often feeds on flowers of trees and shrubs in spring". It is possible that Witmer drew the above quote from Bent's account of the Cedar Waxwing, since it is commonly accepted that the two North American species of waxwings share similar dietary and feeding habits. Undoubtedly, Bohemian Waxwings have often been seen eating the same foods as Cedar Waxwings, and it seems logical to assume that the results of certain studies of Cedar Waxwings can be extrapolated to Bohemian Waxwings as well.

Bent's account of the Cedar Waxwing contains a number of statements with regard to flower consumption; including the following:

- "The only other vegetable food of importance in the diet of the Cedar-bird is flowers"
- "At New Orleans...about Feb.1, when it arrives to feed on the fruit of hackberry and Japan privet, and the flowers of the elm. It later feeds on the blossoms of the pecan..."
- There are several records of cedarbirds eating the petals of apple blossoms.

As for Cedar Waxwing specifically consuming flower stamens, one early report (Barrows 1912), states that "During spring and early summer the Cedar-bird appears to be very fond of blossoms, and especially of the stamens, of many trees, particularly fruit trees. We have seen it frequently eating the stamens of apple, pear, cherry, oak, maple and ash, and it doubtless eats stamens of many other varieties". But for Bohemian Waxwing, Barrows only noted that "...this bird feeds mainly on the same berries, seeds and fruits as the Cedar-bird...".

More recent studies on the Cedar Waxwing found that flowers, including stamens, comprised only 4% of the annual diet, but in May, when fruits are scarce, they could amount to 44% of the diet (Witmer 1996). Flower petals may provide sugars, while pollen on stamens provides protein. Consumption of plant species that do not have showy petals or nectar rewards (*Acer*, oaks — *Quercus*, and poplars — *Populus*) indicated that the waxwings were partly motivated to consume pollen. Witmer also observed that Cedar Waxwings ate the staminate catkins of Eastern Cottonwoods (*Populus deltoides*) in combination with Highbush Cranberry in spring, this observation subsequently led to his conclusion that this diet-mixing behaviour was a strategic choice for the waxwings at that time of year.

The inter-relationships between the fruiting ecology of Highbush Cranberry, and the food requirements of Cedar Waxwings, were carefully unravelled by Witmer (1994, 1996, 1998, 2001). Starting with field observations, he noted that Highbush Cranberries tended to be ignored by most bird species during the late fall and early winter, and only eaten by Cedar Waxwings in late winter and spring, when alternative fruit resources

Figure 5. Dessicated *V. opulus* fruits can persist until late spring. *Toronto*, 22 May 2004. *Photo: Winnie Poon*

would be at minimum levels. Other species virtually ignored it. One might assume that these Highbush Cranberry fruits are generally unpalatable to birds, or perhaps contain insufficient energy or protein to be 'worth eating', but Witmer found that the aged fruit in late winter did contain enough simple sugars to meet the birds' energy needs, albeit deficient in nitrogen content. When Witmer presented samples of early winter fruits (preserved by freezing), and late winter ones to caged Cedar Waxwings, he found that his experimental birds preferred the early winter fruit over the aged fruit. By the natural process of ageing and dessication, late winter or aged fruits (Figure 5) contain higher concentrations of secondary compounds that help preserve them against microbial and fungal attack. Among the four classes of secondary compounds: alkaloids, cyanogenic glucosides, terpenes, and phenolics, the latter two especially will produce strong organic acids if metabolized. Thus, the physiological challenge in consuming Highbush Cranberries is that they contain a phenolic compound (chlorogenic acid) that renders the fruits extremely acidic (ph 2.8 – 3.0). In addition, the osmotic load of simple sugars in dessicated persistent fruits likely creates a need for supplemental water as well (Studier *et al.* 1988), and waxwings often need to drink water or eat snow to meet the demand for water.

Witmer observed that Cedar Waxwings often ate the staminate catkins in early spring. But during most of the year, they are one of the most obligate frugivores found in North America, and can easily survive for long periods on sugary fruits alone. So why would they need supplemental protein at this time? Witmer guessed, correctly as it turned out, that the waxwings required the protein content from the pollen in these catkins to balance their bodily ph during the early spring period, when insect food is in short supply. To counteract the acidity in metabolizing Highbush Cranberry fruits, nitrogen (amino acids) is required in the physiological mechanism for acid buffering, producing bicarbonate and ammonium in the process. Eventually, bicarbonate is respired off as carbon dioxide, and ammonium is excreted in the urine. He supported this hypothesis by a series of experiments using caged Cedar Waxwings tested with various combinations of aged Highbush Cranberry fruits and the staminate catkins of *P. deltoides.* The results showed that the birds preferred and sought out a mixed diet of both types. He went on to establish experimentally that Cedar Waxwings fed on catkins alone did not obtain sufficient energy to maintain their body mass. Similarly, birds fed on aged *V. opulus* fruits alone did not thrive and started to lose body mass; in fact, results suggested that secondary compounds in the fruit exacerbated nitrogen losses in the birds. Evidently, waxwings need supplementary nitrogen (from pollen) in order to cope with the aged fruit. Furthermore, Cedar Waxwings seem to be more efficient at digesting the protein contained in *P. deltoides* pollen, with a relative value of 89% quoted, versus a value of <50% for protein digestion obtained in most studies of other birds (Witmer 2001). It is beyond the scope of this paper to discuss the scientific evidence in great detail here, but readers can refer to Witmer (1994, 1996, 1998, 2001, 2002) and other sources quoted therein.

Witmer concluded that "...The association of waxwings and *V. opulus* appears to be a result of the distinctive dietary habits of waxwings and the extreme persistence of these fruits". He went on to note that "The nutritional key that enables waxwings to feed on these energy-rich, but unpalatable, fruits is the sudden appearance of a complimentary protein source with the springtime emergence of staminate flowers." (Witmer 2001).

As a result, the fruits of Highbush Cranberry survive, mostly uneaten, until early spring, when they become available to wandering flocks of waxwings, and the plant achieves potential long-distance dispersal of its seeds.

Conclusion

In view of the above information, it became clear that the feeding behaviour of the Bohemian Waxwings observed on 5 April 2008 was exactly analogous to the mutualistic relationship between Highbush Cranberry (*V. opulus*) and Cedar Waxwings proposed by Witmer. It seems that Bohemian Waxwings are almost certainly subjected to the same physiological stresses and requirements as Cedar Waxwings when consuming *V. opulus* fruits in spring. The rare opportunity to observe this feeding behaviour of Bohemian Waxwing was probably enabled by four factors. Firstly, the 2007-2008 irruption lasted longer than in most previous years, allowing the waxwings to linger well into April. Secondly, because they stayed later than 'normal', the presence of some birds coincided with the flowering of Silver Maple trees. Thirdly, site conditions provided three key components — available Highbush Cranberries, freshly emerged stamens, and water from the melting snow, in close proximity. Lastly, the recent development of digiscoping as a useful tool in birding made it easier to obtain good photographs.

There must be a relatively narrow window of opportunity in April and early May in northeast North America, when newly opening flowers of various tree species provide the supplemental protein that wandering flocks of waxwings require in order to process the persistent dessicated, but well preserved and chemically laden fruits of *V. opulus*. Presumably, other frugivores such as American Robin (*Turdus migratorius*) are unable to handle this and so seldom eat these fruits. Witmer may not have had an opportunity to study Bohemian Waxwings under the same circumstances, but the observation recorded in Markham on 5 April 2008 suggests that given the right conditions, their feeding behaviour may be exactly analogous. Cedar Waxwings are great wanderers, and Bohemian Waxwings even more so during their irregular irruptions. Hence, from the plant's perspective, to be descended upon by a flock of Bohemian Waxwings would be the equivalent of hitting the seed dispersal jackpot!

Acknowledgements

Firstly, my sincere thanks to all the observers who reported their Bohemian Waxwing sightings on ONTBIRDS and elsewhere, which raised awareness and a great deal of interest in the last irruption. Thanks to Roy Smith for his valuable inputs and edits of earlier drafts. My special appreciation goes to the editors of *Ontario Birds* for a final review of this article.

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Saving the Eastern Loggerhead Shrike

Fifteen Years of Recovery Success

Elaine Williams and Jessica Steiner

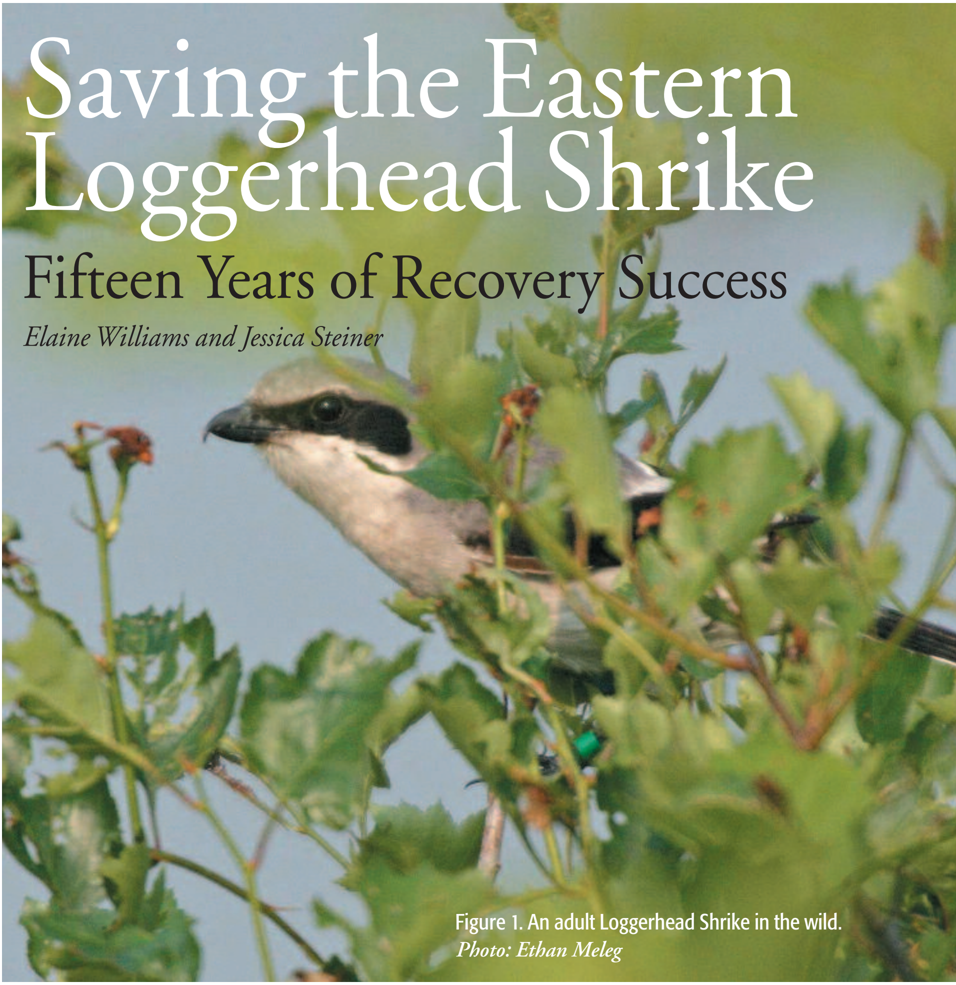


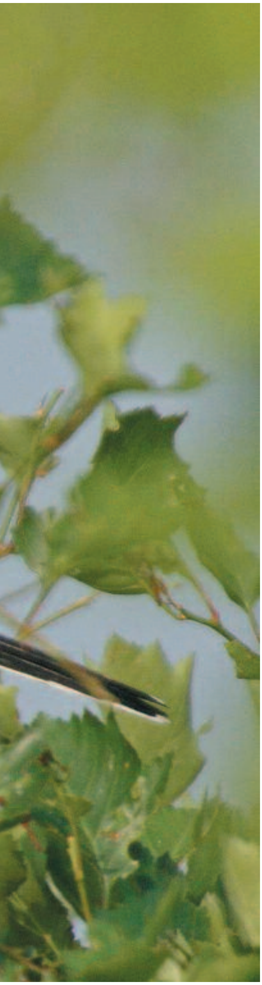
Figure 1. An adult Loggerhead Shrike in the wild.
Photo: Ethan Meleg

Introduction

The Loggerhead Shrike *Lanius ludovicianus* (Figure 1) is both a songbird and a bird of prey, a combination unique to shrikes. Because it lacks strong talons to grasp its prey, the black-masked bird impales its meals on thorns and barbed wire, earning the nickname of "butcher bird" (Figure 2).

A little smaller than an American Robin (*Turdus migratorius*), the Eastern Loggerhead Shrike (*L.l.migrans*) is one of 11 subspecies of Loggerhead Shrike found in North America (Miller 1931).

Figure 2. Shrike prey impaled on a hawthorn.
Photo: Mark Wiercinski



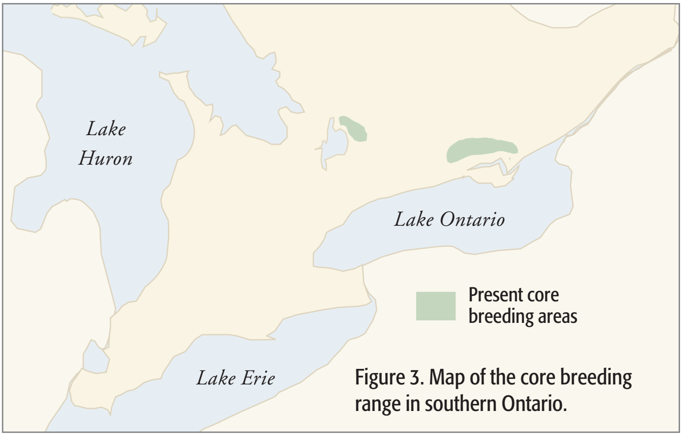


Figure 3. Map of the core breeding range in southern Ontario.

However, recent work recognizes only 9 subspecies (Yosef 1996). It was once a common sight across large areas of Manitoba, Ontario, Quebec, and the eastern United States, inhabiting cattle pastures and shortgrass prairies, where it could easily find the mice, crickets, and snakes that form its diet.

Like most North American grassland bird populations, however, shrike numbers have been declining steadily. Over the past 40 years, Loggerhead Shrike populations shrunk by 70% (Butcher and Niven 2007), with the eastern subspecies showing the steepest drop. Since 1970, breeding populations in Canada and the northeastern States have been nearly extirpated (Pruitt 2000).

As a result, Eastern Loggerhead Shrikes have been listed as endangered both federally (Migratory Birds Convention Act 1994, Species at Risk Act 2003) and in several provinces, including Ontario (Endangered Species Act 2008). According to 2008 estimates, there are currently fewer than 40 known breeding pairs across the country (K. De Smet pers. comm., Wildlife Preservation Canada unpublished data). Most are concentrated on the limestone alvars of Carden and Napanee in southern Ontario (Figure 3), with a few elsewhere in Ontario and Manitoba.

What lies behind the dramatic drop? A number of factors have been suggested, including habitat fragmentation, pesticides, predation, availability of prey, climate change, and collisions with vehicles (Pruitt 2000, Environment Canada 2006). To date, no "smoking gun" has been identified, although more research is required into mortality factors on the as yet unknown migration routes and overwintering grounds (Smith 2001).

A Strategy for Recovery

In the face of plummeting shrike numbers, a National Recovery Plan for Loggerhead Shrike was published by Johns *et al.* (1994). Its goal was to maintain or enhance wild populations of Loggerhead Shrike nesting in Canada to the point they could be removed from COSEWIC's list of threatened or endangered species (Smith 2001).

Despite very limited funding between 1994 and 2000, the multi-agency Recovery Team charged with implementing the Plan succeeded in achieving an impressive number of the measures it called for. These included: monitoring the remaining wild population, establishing a captive breeding program, assessing the genetic make-up of the wild and captive birds, and launching a habitat stewardship and restoration program to protect disappearing cattle pasture (Smith 2001).

The financial picture brightened in 2000/01 when the program secured significant funding from the newly established federal Habitat Stewardship Program, as well as additional funding for other recovery activities. Then, in 2003, Wildlife Preservation Canada (WPC) signed a five-year Conservation Agreement with Environment Canada-Ontario Region, under Section 11 of the Species at Risk Act, making WPC the lead non-governmental agency responsible for coordinating all aspects of the recovery effort in Ontario on behalf of Environment Canada.

The five-year agreement ensured a predictable flow of cash that allowed us to plan our work strategically. This paid off with strong results, particularly from the captive breeding and release program.

Captive Breeding: Breaking New Ground

One of the priorities of the National Recovery Plan was to establish a captive population of the eastern subspecies, but the cost for such a program made it controversial. However, when the wild population hit a low of only 18 pairs in 1997, the recovery team decided it couldn't simply stand by and watch a species disappear without taking steps to save it (J. McCracken, pers.comm.).

Thus, in 1997 and 1998, a total of 43 wild nestlings was collected to create a captive breeding program with the goal of protecting the genetic diversity of the population and, if possible, augmenting the wild population by releasing captive-bred birds.

At the time, little was known about how to raise shrikes in captivity, and no captive breeding and release program had been attempted at this scale for a migratory songbird. Not surprisingly, perhaps, the number of fledglings hatched in captivity at McGill University and the Toronto Zoo during the first five years was equaled by the number of deaths.

A switch in Ontario to field breeding in 2001 proved much more successful. This approach allowed captive shrikes to raise their young in large wood and wire

Figure 4. A field breeding enclosure.
Photo: Pete Read.

mesh enclosures (Figure 4) sited in traditional shrike habitat: cattle-grazed fields separated by patches of mixed forest and native short grassland.

The fledglings produced by field breeding are extremely fit (Figure 5). The young shrikes develop strong flight skills and predator avoidance skills. They are also good hunters: as well as feeding on the live crickets and mealworms and thawed mice provided twice a day, they are frequently seen hawking insects in midair and catching frogs and snakes that make their way into the enclosure.

Figure 5. Captive-bred young birds.
Photo: Andrew Smart.

Currently we have 24 field-breeding/release enclosures at two field sites in southern Ontario: 10 in Dyer's Bay on the Bruce Peninsula, where shrikes have been recently extirpated; 14 on the Carden Alvar, where a breeding population continues to exist in the wild. Five additional field-breeding enclosures are at an Ingersoll facility.

We also built a new overwintering facility in 2003 to improve the fitness of our captive birds, which were suffering from cramped winter quarters at the Toronto Zoo. The new Ingersoll facility provides large indoor/outdoor flights for 47 birds, and freed up space at the Zoo for more large enclosures with outdoor access, reducing stress and improving muscle tone and body condition for the birds housed there.

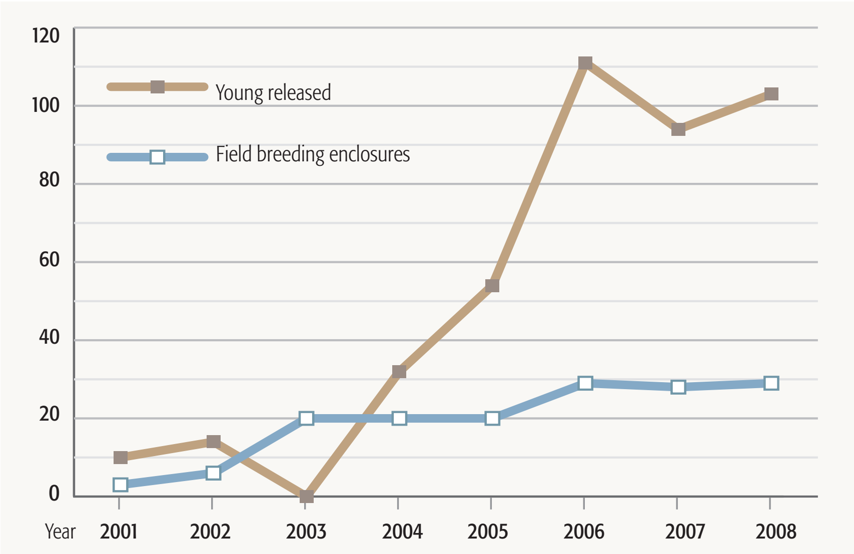


Figure 6. Productivity of field propagated pairs and number of fledglings produced between 2001 and 2008.

Releases: Achieving Precedent-Setting Results

The combination of field breeding and better winter accommodation greatly increased the number of fledglings produced annually (Figure 6). In some years the captive-bred pairs were more productive than wild pairs, and double clutches were frequent. In 2001, the captive population reached approximately 100 birds — large enough to begin releasing captive-bred shrikes — and by 2006, productivity was high enough that we could release approximately 100 fledglings each season.

Because mortality rates are high for migratory songbirds, releasing these kinds of numbers is essential if we are to boost the size of the wild population. Band results for juvenile Loggerhead Shrikes in North America reveal return rates between 0 and 4.7%, depending on the population (Okines and McCracken 2003).

To make the transition to the wild as smooth as possible, we use a soft-release technique that starts with separating fledglings from their parents between the ages of 37 and 49 days and transferring them to larger groups of mixed broods in a release enclosure. This mimics shrike behaviour in the wild, where young from different nests travel together (Pruitt 2000, Chabot *et al.* 2001a).

Once we have ensured the young shrikes are successfully hunting the live mice we provide, they are ready to be released. Post-release, we provide supplemental food until the birds are self-sufficient.

To maintain a captive population of 120 adults, we keep back the most genetically important young each year. Using a detailed studbook that tracks kinship coefficients, inbreeding coefficients, and previous breeding history, the best pairings are determined to maximize both productivity and genetic diversity. To date, we succeeded in maintaining 97.1% of the genetic diversity of the wild founders, well over the program's goal of 90% (Carnio 2007).

The real test of the success of our captive breeding and release program is producing young that could survive in the wild, migrate, and return to breed. Our big breakthrough came in 2005 when a captive-bred shrike was spotted on the Carden Alvar, where it subsequently bred with wild a male and successfully fledged five young (Nichols and Steiner 2006).

Since then, we have seen more returns each year (Figure 7). In the 2008 season, eight captive-bred birds were sighted in the wild, including two released in 2006 — the first time we have had release birds return to breed in consecutive years. At 6.4%, this year's return rate was significantly higher than that of wild juveniles. In total, almost a quarter (22.2%) of wild pairs confirmed in Ontario this year contained a release bird.

Home on the Range: Habitat Stewardship Efforts

Ontario's shrike habitat is shrinking; nearly all of the original grassland and savannahs in the province have been plowed under or paved over. At the same time, much of the cattle pasture that provided a substitute has been abandoned in recent years. Meanwhile, increasing development is fragmenting much of the remaining habitat. Thus, habitat stewardship was identified as an important component of the shrike recovery effort.

Early work focused on documenting current and past nesting sites in Ontario, Quebec, and Manitoba (Smith 2001). Criteria for "suitable" and "restorable" habitat were developed, traditional core nesting areas were mapped in Ontario and Quebec, and the information was recorded in GIS-based mapping systems (Smith 2001).

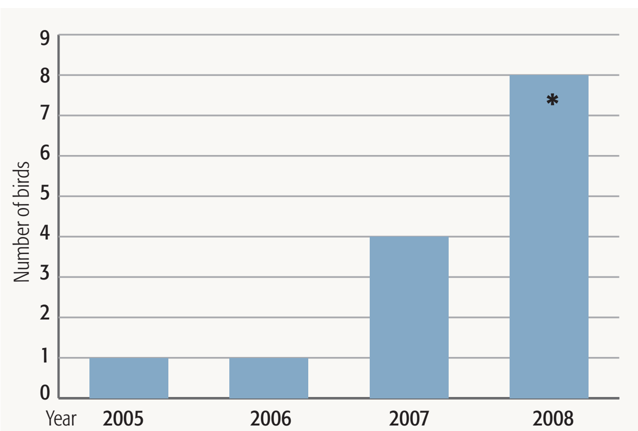


Figure 7. Number of captive-bred release birds returning to breeding grounds

* 2 birds returning in 2008 had been released in 2006

Figure 8. Fencing constructed to allow cows to pasture. *Photo: Kyra Howes*

One of the key challenges of shrike habitat stewardship is the fact that much of the habitat lies on private land. Thanks to personal contact, media coverage and public outreach (see "Community Outreach"), we have developed a solid base of landowner support for the recovery effort. In 2008, more than 80% of the landowners we contacted were supportive and allowed staff on their land for shrike monitoring and site evaluation. Between 2001 and 2008, more than 50 voluntary stewardship agreements and conservation agreements were signed with landowners in core shrike areas to protect, restore, or improve shrike habitat.

Under the federally funded Habitat Stewardship Program, launched in 2000/01, many landowners have received advice and grants to make their property more attractive to shrikes. In many cases this involved installing fencing so that abandoned pastures could be grazed (Figure 8) — a winning situation for both farmers and shrikes.

Where needed, we removed encroaching cedars, thined overgrown grasslands, planted nest/perch trees and shrubs, enhanced water sources for livestock, and installed cattle oilers. In total, since 2001, we have worked with landowners and volunteers to restore or improve more than 4,600 hectares of key shrike habitat (Table 1).

Shrike numbers are shrinking faster than would be expected based on habitat availability on the summer range (Smith 2001), implying other factors are causing the population decline. However, it is clear that habitat restoration work is making an impact. Today, more than half the wild population is nesting on properties that were enhanced or restored through the stewardship program.

Table 1. Hectares of shrike habitat restored or improved 2001-2007

Year	Area (ha)
2001	862
2002	350
2003	115
2004	680
2005	900
2006	207
2007	1575
TOTAL	**4689**

Wild Population: Mixed Trends

To measure the success of the recovery effort, tracking wild numbers is essential — no easy task with such a small population, where overlooking only a few pairs means missing a substantial percentage of the breeding population (Smith 2001). Since 1994, we have also monitored productivity, mortality, and survivorship, although variations in the sampling effort in different years make it difficult to compare figures.

Between 1999 and 2006, more than 1,000 adults and nestlings were colour-banded, thus identifying each bird, the year of banding, and whether captive- or wild-bred birds. This gave us important information on return rates for juveniles and adults, immigration and dispersal, demographic make-up, and population estimates of the wild shrike population.

This year, nearly all the wild adults in Ontario were captured for assessment, revealing that some returning birds had lost their colour bands. Not only does this make individual identification nearly impossible in the field, it means that captive return rates in previous years were likely underestimated.

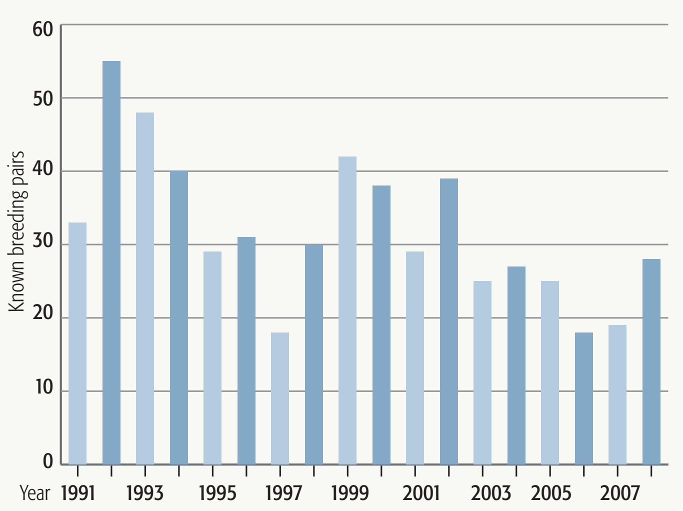


Figure 9. Number of wild breeding pairs of Eastern Loggerhead Shrike in Ontario, 1991-2008.

While the level of the wild population has fluctuated considerably over the past decade, the last few years have seen an upswing (Figure 9). This year, 27 pairs were confirmed in Ontario — the highest number since 2004, and significantly higher than the 18 pairs found in 1997. Other positive developments include the sighting of pairs in the historic breeding areas of Renfrew and Smiths Falls this year (three fledglings were also observed in Renfrew later in the season), and the occupation of new territories in Carden.

Preliminary genetic, stable isotope, and banding data from across North America, indicate that individuals from other shrike populations join the Ontario population each year (Chabot and Lougheed 2005), increasing genetic diversity and helping to maintain shrike numbers here.

In turn, the Ontario populations may feed more southerly populations, although the extent of gene flow is unknown (A.A. Chabot pers. comm.). Further research is being done to determine how important dispersal is for the sustainability of the Ontario population.

The Mystery of Migration

The evidence that a considerable amount of breeding habitat is unoccupied (Chabot *et al.* 2001b, Jobin *et al.* 2005) and that wild pairs generally have high fledgling success (Chabot *et al.* 2001a) suggests the main causes of decline may lie outside Ontario. However, the migratory routes and location of the overwintering grounds for Ontario shrikes remain unclear. To date, two of our captive-bred shrikes have been sighted at Long Point during fall migration (J. McCracken and C. Wood pers. comm.), while one was sighted in Ohio in March 2007 (P. Whan pers. comm.)— the first winter band recovery for this subspecies.

Preliminary results from stable isotope analysis of tail feathers from shrikes across North America suggest that Ontario shrikes may not have a specific overwintering ground. Instead, they likely overwinter throughout the wintering range for this subspecies, as far south as Florida (Chabot *et al.* 2006).

We hope to learn more about migration patterns from a radio-tracking program where captive-bred shrikes are fitted with tiny radio-transmitters, with a signal radius of a few kilometres, that allow researchers to track the birds by car or airplane. The transmitters, which weigh only 1.4 grams, are attached to the back of the bird using a figure-8 leg-loop harness (Rappole and Tipton 1991), leaving visible only a fine, thread-like antenna extending from the bird's tail (Figure 10).

Trials were conducted on captive shrikes in 2006/07 to test different harness designs (Steiner 2006). In a pilot study in 2007, 18 juvenile birds were released in Carden with live radio-transmitters, after first being tested with a "dummy" tag to ensure they had no physical or behavioural effects on the birds. This proved it was feasible to track shrikes using a combination of ground and aerial telemetry.

Figure 10. Shrike with radio-telemetry harness.
Photo: Joe Crowley

This winter we are exploring the use of geolocators, which have just recently been made light enough to put on small songbirds.

Attached in the same manner as radiotags, they continuously measure light levels. Because day length on a particular date varies with latitude, and timing of sunrise or sunset varies with longitude, this information will let us determine the timing and routes of migration and location of wintering grounds. In order to collect these logged data, the birds will need to be recaptured, but the impressive return rates seen with our captive juveniles in the last few years make this a real possibility.

Our 2008 study, involving 20 radio-tagged birds showed that most stayed near the Carden site for several days before dispersing. Individual shrikes were tracked to Beaverton, Duclos Point (near the south end of Lake Simcoe), Virginia Corners (about half-way to Toronto) and near Hamilton. Through the telemetry studies we learned that the post-release survival rate for the captive bred/ released shrikes, prior to leaving Canada on migration, was between 75%-77%.

Community Outreach

Because so much shrike habitat lies on private land, local landowner participation is crucial to the success of the shrike recovery effort. To build strong levels of support and avoid the conflicts that can arise between property rights and the needs of endangered species, we have put a strong emphasis on community outreach over the past 15 years. Some of our efforts have directly targeted landowners, including personal contact, a landowner handbook, factsheets, and a series of videos providing an overview of shrikes and the recovery effort, habitat restoration, and the captive breeding and release program.

We have also created Recovery Action Groups in core shrike areas to coordinate community actions, working with landowners and often bringing in volunteers to help with habitat stewardship and other activities. A newsletter keeps supporters updated on recovery efforts, while annual landowner appreciation dinners in Carden, Napanee, and Dyer's Bay acknowledge the vital contribution of landowners, volunteers, and donors to shrike recovery.

To heighten public awareness, we regularly have displays at local events, while media releases have garnered significant press coverage. We have also created public service announcements for radio and TV, asking the public to report shrike sightings, while road signs warning motorists to slow down have been erected in nesting areas.

Most recently, we have helped to launch the Integrated Carden Conservation Strategy (ICCS), a multi-stakeholder initiative aimed to benefit a number of species at risk, integrate recovery actions with habitat conservation and stewardship programs, and guide broader ecosystem-based land stewardship. Through a process that has earned kudos from participants, the ICCS has brought together naturalists, government representatives, farmers and ranchers, aggregate producers, and private landowners to resolve mistrust and conflict and develop a workable conservation strategy for the Carden Alvar.

Summary: A Pioneering Model for Recovery

When the field breeding and release program was launched in 2001, it was envisioned as an experiment that would produce new knowledge and insights (Smith 2001). We have achieved that and more. While most captive breeding and release programs typically take more than 10 years to achieve their first successes, our first captive-bred birds returned to breed just 4 years after the first releases. Comparisons with other captive breeding programs for endangered birds also reveal our program is extremely cost-effective — less than one-tenth the per-bird costs of the San Clemente Loggerhead Shrike program in California, for example (Kleiman and Lynch 2008).

It takes a minimum of 15 years before most captive breeding and release programs have impact on wild populations (Kleiman and Lynch 2008). While it is still too early for our program to create sustained increases in wild population levels, it has generated many positive effects. We have restored grassland habitat that will benefit other species in decline, including Bobolinks (*Dolichonyx oryzivorus*), Upland Sandpipers (*Bartramia longicauda*), and Henslow's Sparrows (*Ammodramus henslowii*). We have raised awareness about endangered species through extensive public outreach. Most importantly, we have pioneered an approach to captive breeding and release that generates fit, healthy young; a model that can be used by other recovery programs for migratory passerines around the world.

In May of 2007, WPC was told that due to severe budget cuts, Environment Canada would not be able to fulfill its funding commitments under the conservation Agreement, and it would not be renewing the Agreement in March 2008. WPC managed to patch together enough funding from private donors and provincial and federal government sources to maintain the captive population and other recovery activities in both 2007 and 2008 . It is thanks to the contributions from Boisset Family Estates (makers of French Rabbit wines) that WPC was able to launch the successful 2008 field season, since federal and provincial funding commitments were made only very late into the field season.

However, with no Conservation Agreement in place, and no multi-year commitments from either the federal or provincial governments, funding for the recovery effort will again be uncertain and piecemeal, making it difficult to plan or work in any strategic fashion. Despite the success of the program, and the money and time spent on recovery, the whole program faced the prospect of being shut down when funding was cut in 2007/2008. That is still a possibility if funding cannot be found in the coming year.

Acknowledgements

Environment Canada, through the Habitat Stewardship Program and grants and contributions, has been the lead funder of the shrike recovery efforts. In 2007 and 2008 the Ontario Species at Risk Stewardship Fund also provided significant funding support. Boisset Family Estates is the single largest private sector supporter of recovery effort. In addition to Environment Canada and the provinces of Ontario, Manitoba and Quebec, we would like to acknowledge our other recovery partners: Avian Science and Conservation Centre of McGill University, Bird Studies Canada, Canadian Cattlemen's Association, Canadian Association of Zoos and Aquariums, Canadian Cooperative Wildlife Health Centre, Toronto Zoo, Queen's University, and many landowners. A big thank you as well to the many landowners, volunteers, interns, researchers, and field staff who have contributed to the recovery effort over the years. We also thank free-lance writer, Julie Staffer, for pulling this article together.

Further details of the recovery program are available from Wildlife Preservation Canada at www.wildlifepreservation.ca or 1-800-956-6608, and contributions to the recovery program would be welcomed.

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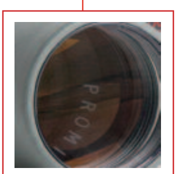

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Harry Lumsden (right) receiving the Distinguished Ornithologist Award from Ken Abraham at the OFO Annual Convention in Hamilton on 4 October 2008. *Photo: Jean Iron*

Harry G. Lumsden
Distinguished Ornithologist

Kenneth F. Abraham

I had the privilege to present Harry Lumsden with the Distinguished Ornithologist Award on behalf of the Ontario Field Ornithologists (OFO) on 4 October 2008 at the Annual Convention and Banquet in Hamilton.

Let me start by suggesting that if Ornithology were an Olympic sport, we would have some difficulty deciding whether Harry was a marathoner, a decathlete or a high jumper, and we might well conclude that he was all three rolled into one. Harry's interest in birds can be traced to his youth in Scotland, but his professional contributions began in the early 1940s, and he is still publishing in refereed journals, newsletters, and society publications to this day. That makes over 65 years of written output spanning seven decades. Certainly this qualifies as a feat of endurance in any field, a true marathon. Harry has a passion for grouse, for geese, and of course, for swans, and he has developed and led major programs on all of these groups during his long career and in "retirement". However, he has also studied and published papers on a host of other species from Tree Swallows to guillemots. He is a life-long student of the behaviour of birds, has contributed to taxonomy and classification, written about migration ecology, refined methods of captive breeding, developed trapping technologies, and described regional avifauna, not to mention constructing wetlands and developing habitat management techniques and adaptive hunting regulations. That long list certainly qualifies him in the decathlon or perhaps that should be the centathlon. What about high jumping? Well, he was named a member of the Order of Canada in 2004, he's been cited by the Ontario Heritage Trust in the Natural Heritage category, and has received recognition for significant contributions to his community. I think you will agree that three medals can comfortably rest around his neck.

Despite all of this, I would guess that the majority of you have little knowledge of Harry's life and career, beyond his well-known contributions to the restoration of Trumpeter Swans, and perhaps his involvement in the reintroduction of Canada Geese in southern Ontario. So now I want to share some of the details and highlights of his life and career in ornithology.

Impressions of his youth

Harry told me that one of his earliest memories is of walking with his father in their garden at the age of 4 1/2 and being enthralled to see his first Song Thrush, which was sitting on a nest on a low spruce branch over a grass midden. He said he was hooked on birds from that moment. His youthful fascination also included initiation into the game bird hunting tradition, which was to play a big part in his early career as an ornithologist. He also confided that he isn't much of a "bird watcher" in our modern sense of the words, partly because of poor hearing, but mostly because he would rather spend that time in focused observation because of his fascination with bird behaviour. This was much aided by the fact that his father was a contemporary of the like-minded Sir Peter Scott, the founder of the Slimbridge Wildfowl Trust, with whom he traded waterfowl that he raised in captivity. This gave Harry great opportunity to observe nesting birds and their young in close proximity. Interestingly, Harry himself interacted professionally with Sir Peter when he visited Canada on expeditions. Of course, these experiences in youth also laid the foundations for Harry's captive rearing programs for swans and geese involving private avicultural co-operators.

Coming to Canada for the first time: the RAF and ROM

During World War II, Harry joined the Royal Air Force (RAF). Like many other British pilots, he was sent to Canada for training. This involved a three year tour of duty, and for Harry it meant training at Bowden, Penhold and Vulcan, Alberta, as an instructor at Moose Jaw, Saskatchewan, Mt. Hope, Ontario, and at an Operational Training Unit on Mosquitoes at Deburt, Nova Scotia. His first formal experience with birds occurred while he was on a week's leave from his training station at Mt. Hope. He went to the Royal Ontario Museum (ROM), where he met Jim Baillie, Lester Snyder, Terry Shortt and Cliff Hope — all legends of Ontario ornithology. Harry ended up spending that week in the basement of the ROM learning to prepare bird skins — especially starlings that Cliff shot daily at the Toronto dump.

This training led seamlessly to Harry's first significant contributions to Ontario and world ornithology. He was then able to combine his skill and love of hunting with his opportunity to travel while in the RAF, as well as his new skills as a museum skin preparator, to become a consummate collector for the ROM. During his wartime service, he was posted for about a year each in India and Japan. While there, he collected birds, prepared them and shipped them back to the ROM. He was particularly interested in the grouse, pheasants and waterfowl. Upon return to the British Isles after his tour with the occupation forces in Japan, he continued the practice of preparing skins during hunts in his native Scotland. After he immigrated to Canada, it became a habit and hallmark of his career. He used vacation time, and once with a leave of absence, to study grouse behaviour in Saskatchewan, British Columbia, Montana, Wisconsin and Oklahoma. He also collected in the mountains and tropics of Colombia, South America, where, among other species, he collected Cinnamon Teal, Torrent Ducks and Ruddy Ducks. His contributions to Cinnamon Teal taxonomy led to the discovery that there were three subspecies, the North American *septentrionalium* and two resident South American forms (*borreroi* and *tropicus*).

Over his career, Harry has contributed 1506 specimens to the ROM in 19 avian Orders. (ROM catalogue information supplied by Mark Peck). Lest you shy away from this fact, remember that museums and their collections were the foundation of the study of ornithology, from anatomy to classification to food habits and even behaviour. Through DNA studies now and in the future, museums will be the bank from which many research "cheques" will be cashed. This was the era in which Harry began his long road in ornithology and it reflects the kind of work without which Roger Tory Peterson could not have created his classic guides and David Sibley would not be the household name he is in birding circles today.

Coming to Canada for good: the Ontario Government

After the war, Harry contemplated a peace time career in the RAF, but fortunately for all of us, the RAF stalled in making a decision. Harry had also written to Cliff Hope asking about the possibility of a job at the ROM. Cliff replied that no job of that sort was available, but that the Ontario government was looking for biologists. By this route, Harry shortly thereafter accepted a job offer from the Ontario Department of Lands and Forests' Doug Clarke and came to Canada for good in March 1948.

Harry became the District Biologist in the Erie District, where he lived at St. Williams for two years. He moved to the Tweed District where he worked for four years on a variety of projects, but especially on muskrat management in marshes. In 1954, he moved to Maple to become a game management coordinator for over eight years. He then took his final position with the Wildlife Research group, as Waterfowl and Upland Game Scientist, remaining there until he retired in 1988.

Almost from the beginning, he established a pattern of travelling across the province, doing what he thought was important in each region, with support from Doug Clarke, and his supervisors Jack Grew and Rod Stanfield and a host of colleagues. Among other areas, the Hudson Bay Lowland became an area of concentration for Harry's excursions and study of birds. I will summarize Harry's work on two bird groups of special interest: the grouse and the waterfowl. In the grouse group, he worked especially with the lek species such as Greater and Lesser Prairie-Chickens, Sharp-tailed Grouse and Sage Grouse. In the waterfowl group, he conducted research on Common Goldeneyes, Hooded Mergansers, Canada Geese, Snow Geese, Tundra Swans and Trumpeter Swans.

The Hudson Bay Lowland

The Hudson Bay Lowland became an area of special interest for Harry from the 1950s, when he went there to attend annual trappers meetings and record wildlife harvests, throughout the balance of his government career. Working with the Cree, he found the first Ontario nesting colony of Snow Geese near Cape Henrietta Maria and conducted the first photographic survey of the kind that has become the standard for such inventories. He discovered nesting Black Guillemots and wrote accounts of the regional avifauna of Cape Henrietta Maria. He conducted annual summer surveys of productivity of Canada Geese and Snow Geese along the Hudson Bay and James Bay coast from the Northwest Territories to Quebec for over 35 years, with colleagues from the Canadian Wildlife Service, the United States Fish and Wildlife Service and the Illinois Natural History Survey. He established the first on-the-ground nesting ecology research of subarctic Canada Geese in eastern Canada in cooperation with Dennis Raveling and the Mississippi Flyway. He also tracked their productivity with fall counts in southern Ontario in the Lake St. Clair region near Bradley's Marsh.

Geese

In the late 1960s, after the re-discovery of Giant Canada Geese by Harold Hanson, game management agencies across eastern North America were interested in restoring extirpated populations, and

Ontario was no different. Harry spearheaded this effort, working with partners from the Atlantic and Mississippi Flyways, the Ontario Waterfowl Research Foundation at Kortright Waterfowl Park and districts around the province, to establish breeding groups and release areas. The program was a "giant" success by any measure. He also focused for many years on Snow Geese with Steve Curtis (CWS), carrying out numerous fall productivity surveys and two surveys of spring migration counts on the southern Hudson Bay coast, as well as conducting the first banding in the newly expanded southern part of the breeding range, that provided information on the colony associations of the founding birds and their interchange within the large mid-continent meta-population. He participated in the annual meetings to record harvest and contributed to formal quantification of waterfowl kill by Cree in the Hudson Bay Lowland in the 1970s.

Swans

Harry's interest in Trumpeter Swans began several years before retirement. It sprang from the passage of the first Endangered Species Act of Ontario in 1977. Programs to re-establish declining or extirpated species such as Peregrine Falcons and Wild Turkeys began at the same time, and it was natural for Harry to focus on a group with which he had great familiarity. As you already know, this program became one of his primary pursuits after retirement and culminated in 2007, in its 25th year, with the achievement of a self-sustaining, naturally reproducing population and the inclusion of the Trumpeter Swan on the official list of Ontario breeding bird species.

Productivity: Writing for many audiences

Harry is the sole author of 110 publications, the senior author of 14 publications and the co-author of 27 publications (that is 151 in total and still counting) spanning the period from 1945, when his first note appeared in the *Auk*, to 2007 and 2008 with contributions on swans to the *Ontario Breeding Bird Atlas* and *Toronto Birds.* Among these are 22 contributions on the grouse family, 24 about geese, 39 about swans, 14 on ducks, 5 on regional avifauna and 10 on artificial nesting structures and investigative tools. Among these, his knowledge of the birds of northern Ontario has been shared in more than 40 publications. He was a major contributor to the first *Ontario Breeding Bird Atlas*, authoring or co-authoring 18 species accounts as well as serving on many committees.

He has been a member of OFO since 1983, and is a long-time and enthusiastic supporter of the organization through his help to members and editors of OFO publications. He has contributed articles to *Ontario Birds* and to the special publication, *Ornithology in Ontario.*

Conclusion

I would be remiss if I did not mention that, while Harry is a life-long student of birds, he has accomplished all of this through self-learning. Because he went into the RAF rather than university, he has no university education or advanced degrees. In an age such as ours, when such credentials have almost become synonymous with expertise, this serves as a reminder that there are exceptions to such stereotypes. For an organization such as OFO in which the membership includes many whose birding expertise is a result of passion and concern, not professional training, Harry represents what can be aspired to by the most dedicated. Harry's career began when Jim Baillie was still determined that the best way to learn about birds was to collect them. It has spanned a period of remarkable change in our approach to bird study and our learning tools. Harry now includes DNA analysis as a matter of course when he deliberates on how to solve problems of egg hatchability in Trumpeter Swans or the phylogenetic status of Sharp-tailed Grouse on Manitoulin Island. Harry's determination and his pursuit of knowledge are a true inspiration.

It seems hard for me to believe that I have known Harry for over 30 years. He had a strong influence on me from the beginning of my graduate studies of Snow Geese in 1975, and his influence on the Fred Cooke lab at Queens University was significant. He was a mentor in my early years in the Ontario Ministry of Natural Resources in Moosonee, where he introduced me to the Hudson Bay Lowland, and trained me on his survey techniques, as he had done with my predecessor Paul Prevett. I am now honoured to work in the position Harry created and occupied for over 25 years in the Wildlife Research Section. I was extraordinarily pleased to learn that OFO had chosen him for this award, and very happy to be given the chance to present it.

On behalf of the Ontario Field Ornithologists, it gives me great pleasure to present their Distinguished Ornithologist Award for 2008 to Harry Lumsden.

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Editors' Note:

The editors received a request from Harry Lumsden to include the following remarks in gratitude for receiving this year's Distinguished Ornithologist Award:

The Ontario Field Ornithologists have awarded me a great honour in conferring on me the Distinguished Ornithologist Award for 2008. This was a complete surprise and I thank you for this singular recognition. I also thank you for giving me a life membership in your organization. Harry G. Lumsden

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Black Swift
First Record for Ontario

Stuart Mackenzie

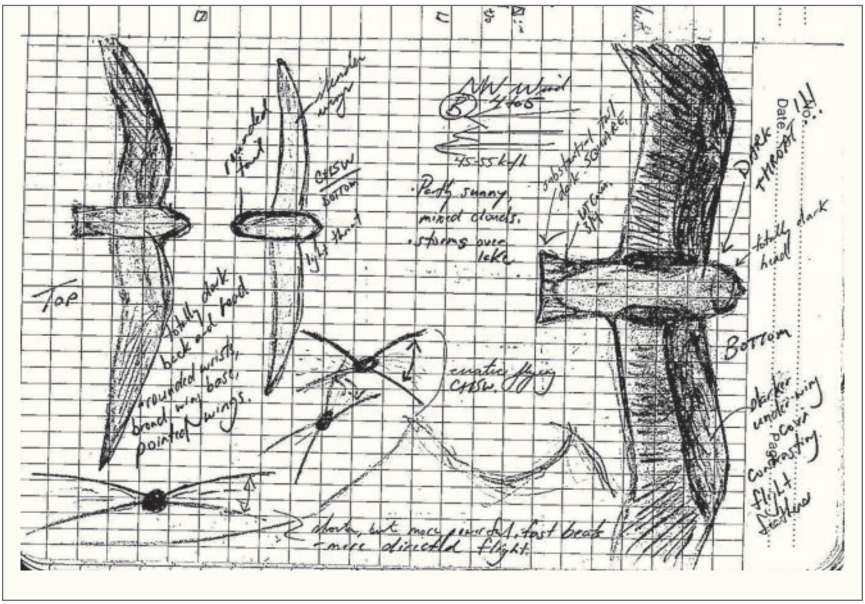

Figure 1. Notebook entry for Black Swift by Stuart Mackenzie on 21 May 2006.

Projecting forty kilometres from the north shore of Lake Erie, Long Point is the largest freshwater sand spit in the world. Its prominence along the shoreline makes it attractive to many migrants, which accumulate on this migratory stepping stone in both spring and fall. The Point's geography is also critical to attracting rare birds. Every day can present a new assemblage of migrants and the possibility of a truly mind-blowing rarity.

On 21 May 2006, the Tip of Long Point was mainly dreary and overcast, with scattered showers interspersed with patches of sunlight. A large low pressure system had blown by the previous evening, but had passed by mid-day on the 21st. Strong northeast winds overnight switched abruptly to the west early in the morning. The migration monitoring and banding operation of the Long Point Bird Observatory was hindered due to intermittent rain showers and strong westerly winds gusting up to 50km/h. Birds were plentiful though, as can be expected in May. The morning census alone documented 895 individuals of 65 species. Notable morning highlights included an Orange-crowned Warbler (*Vermivora celata*) and Clay-coloured Sparrow (*Spizella pallida*), as well as a Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*) later in the day. In total, 100 species were observed at the Tip that day.

After the morning migration monitoring effort ended, volunteer Dave Brown and I set out to the extreme eastern Tip of Long Point to see what the wind might blow in. Frequently, visits to the Tip can be very productive on windy days. We arrived there around 1130h and took refuge in the 'shanty' — a makeshift shelter overlooking the Tip. Over the next two hours, we examined gulls and terns, and scanned for passerines, swallows and swifts that were slowly flying in off the lake.

At 1345h we noticed a group of nine swifts about 300 m south of us fighting their way toward the Tip. Eight of them were obvious Chimney Swifts (*Chaetura pelagica*) — long, narrow wings; light, fast, erratic wingbeats; thin cigar-shaped bodies, and pale throats. The other swift immediately grabbed our attention as, even at some distance, it appeared darker and larger. Its shallow wingbeats were stiffer and more controlled. We didn't dare take our eyes off this flock of birds as they beat their way ashore. Apart from its size, other characteristics became obvious as the swift flew closer. We immediately noticed that the bird had a dark throat. I shouted this detail to Dave and we noted the square tail as well. As the birds approached the shore, they almost flew over us and quickly gained altitude, disappearing behind the trees to the west.

We left the Tip immediately and ran down the beach, hoping for another view. About 100 m west of the shanty, we met volunteer Henri Robert approaching from the dunes on the north beach, looking somewhat perplexed. He immediately asked us whether we had seen the large, dark swift among the flock of Chimney Swifts.

At that point, a rapid-fire discourse ensued over the salient features we had noted in our all-too-brief encounter with this 'monster' swift. Its large size, all dark colouration, apparent square tail, and direct, more powerful flight had been noted by each of us. Did we dare believe that, here at Long Point, far from its normal range, we had just observed eastern North America's first Black Swift (*Cypseloides niger*)?

Having previously observed Black Swifts in several countries, it would have

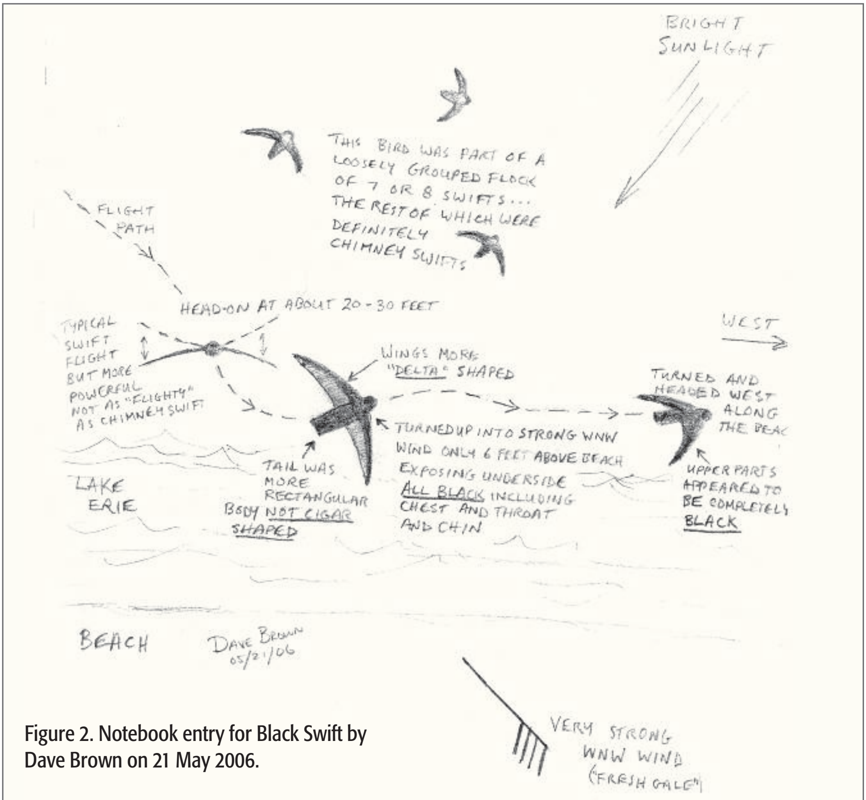

Figure 2. Notebook entry for Black Swift by Dave Brown on 21 May 2006.

been a relatively quick and easy identification, if not for the fact this bird was so far out of range. But, after ruling out a short list of similar species, we were confident that we had just observed a Black Swift. We immediately notified personnel at the stations at Breakwater and Old Cut, and staff at the Bird Studies Canada headquarters in Port Rowan, asking everyone to keep an eye out. Dave and I made sketches (Figures 1 and 2) immediately and wrote detailed notes. A report was promptly submitted to the Ontario Bird Records Committee, that was subsequently accepted as the first record of this species for Ontario (Richards 2008). The sighting brought the checklist total for Long Point to 383 species.

The Black Swift is North America's largest swift, and is one of the least studied birds on the continent, due in part to its elusive nature and inaccessible breeding locations. North of Mexico, it breeds mainly in the Rocky Mountains of British Columbia and Alberta. Scattered, localized populations can be found throughout the western United States as far east as Colorado. There are also breeding areas in Mexico and Central America as far south as Costa Rica.

Resident populations are also found locally throughout the West Indies (Lowther and Collins 2002).

Little is known about the migration of Black Swifts, and observations of them during migration are rare. Northern birds are highly migratory, reaching the breeding grounds in late May and early June, and returning south to wintering grounds in Central and South America throughout September and October.

There are few extralimital records of Black Swift. An occasional bird has been seen as far east as Saskatchewan in Canada. Apart from birds from the West Indies population observed on the Florida Keys, the most easterly record, before the Long Point bird, was from Texas.

Of possible significance are a few substantial movements of Black Swifts documented in the spring of 2006, all of which coincided with the timing of our observation. On 22 May, a record-breaking 1100 Black Swifts were observed feeding over Swan Lake in Vernon, British Columbia. On 26 May, 440 were observed in Douglas, Washington.

At the time of our observation, moderate to strong westerly winds had been blowing at Long Point since 16 May. A sustained low pressure system lingered over the northeast creating unstable conditions during this period. On 19 May, a low pressure system formed in the Midwest and moved south. It then pushed northeast on the 20th and collided with a fairly substantial cold front over the Great Lakes on the 21st. These sustained westerly winds and the frontal movements in days previous may have helped direct this bird to Long Point.

The Black Swift observed by the three of us will be remembered as one of Long Point's many remarkable bird sightings, joining Chihuahuan Raven (*Corvus cryptoleucus*), Black-capped Vireo (*Vireo atricapilla*), Hooded Oriole (*Icterus cucullatus*), Varied Bunting (*Passerina versicolor*) and Cassin's Sparrow (*Aimophila cassinii*) on the list of southwestern rarities. I'll never forget those few windswept hours we spent at the Tip. To this day I can still hear Henri's shout, "Did you guys see that swift?" We sure did!

Literature Cited

Lowther, P.E. and **C.T. Collins**. 2002. Black Swift (*Cypseloides niger*). *In* The Birds of North America, No. 676 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, Pennsylvania.

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Our present photo quiz features a small passerine with a stout, conical bill. Combined with the drab, streaked plumage, comprised of a mixture of various shades of brown, we are quickly able to discern that this is one of the 34 species of the family Emberizidae (the New World sparrows and their allies) on the Ontario checklist of birds. The superficially similar female House Sparrow, of the family Passeridae, is easily eliminated from consideration by the prominent moustachial stripe and coarsely streaked crown of our quiz bird. The female House Sparrow has a plain, drab brown crown and lacks any moustachial stripe at all.

Our view of the quiz bird gives us an excellent view of the head, back, wings and tail, but not much of a look at the pattern of the belly or breast of the bird. This works well to our advantage, as many of the members of the Emberizidae are easily separated by the proportions of the wings and tail, as well as patterns found on the head, back, wings and tail.

Most easily eliminated, are the members of the genus *Pipilo* (the Towhees). Unlike our quiz bird, towhees have very long tails and short wings. Both the Eastern Towhee and the extralimital Spotted Towhee show bright rufous flanks and butterscotch undertail coverts. The accidental Green-tailed Towhee would show green wings and tail.

The two sparrows of the genus *Aimophila*, Cassin's Sparrow and Bachman's Sparrow (both accidental in Ontario), are easily eliminated as well. Both of these species have longer, rounded tails, quite unlike the short, notched tail seen on our quiz bird. They also have short wings, quite unlike the long wing tips seen on this bird.

The five sparrow species of the genus *Spizella* (American Tree Sparrow, Chipping Sparrow, Clay-colored Sparrow, the accidental Brewer's Sparrow and Field Sparrow) are all quite different from our quiz bird as well. The Spizella sparrows are small, slim sparrows that have relatively longer tails, shorter wings, and entirely clear breasts and flanks as adults (unlike the visible flank streaks on our quiz bird). They also have less stout bills than our quiz bird.

The monotypic Vesper Sparrow, of the genus *Pooecetes*, has a thin but quite distinct eye-ring, which is lacking on this bird. The Vesper Sparrow also lacks the bright rufous edging to the median coverts, greater coverts and tertials, that are so evident on this bird.

The monotypic Lark Sparrow, of the genus *Chondestes*, has a much more harlequin head pattern than our bird in all plumages. It also has a long, rounded tail that shows obvious white in the corners, even when it is not spread at all.

Certainly no one is likely to mistake this bird for the accidental Black-throated Sparrow, of the genus *Amphispiza*, with its strikingly contrasting black and white head pattern and uniformly smooth gray back and nape.

Clearly, our bird lacks the broad, white edging to the greater coverts, that is visible on all plumages of the sexually dimorphic Lark Bunting, of the genus *Calamospiza.*

Our bird is not a good candidate for an Ontario Savannah Sparrow. Although they have fairly short, notched tails, similar to this bird, Savannah Sparrows (genus *Passerculus*, though some authorities prefer to merge them into the genus *Ammodramus*) usually show a distinct, yellow supraloral area, which strikingly stands out from the rest of the head. They lack the bright rufous edges to the greater coverts and tertials, like we see on this bird.

The five sparrow species of the genus *Ammodramus* (Grasshopper Sparrow, the accidental Baird's Sparrow, the rare Henslow's Sparrow, Le Conte's Sparrow and Nelson's Sharp-tailed Sparrow) can all by eliminated on the basis of structure alone. All of these species appear to have relatively larger heads, flatter crowns, spikier tails, and much shorter wingtips than our quiz bird. The greenish head of the Henslow's Sparrow, and the orange patterns in the heads of Le Conte's Sparrow and Nelson's Sharp-tailed Sparrow, render them easily ruled out.

Our bird clearly lacks the rusty crown, back and tail, as well as the gray rump, of the Fox Sparrow (genus *Passerella*).

The three sparrow species of the genus *Melospiza* (Song Sparrow, Lincoln's Sparrow and Swamp Sparrow) are all quickly ruled out on the basis of structure as well, as these species all have rounded tails and very short, rounded wings.

The four sparrow species of the genus *Zonotrichia* (White-throated Sparrow, Harris's Sparrow, White-crowned Sparrow and the extralimital Golden-crowned Sparrow) all have generally more striking head patterns than our quiz bird. They also all lack the nearly complete dark frame around the rear portion of the auriculars, that we see clearly on this bird.

This bird is not consistent with the unstreaked adult Dark-eyed Junco, in which males are largely pale gray overall, and females gray and brown. Even on a folded tail, we would expect to see a whiter outer tail in the genus *Junco*.

It is obvious that this bird is not a Snow Bunting (genus *Plectrophenax)*, because it lacks the extensively white greater coverts and secondaries of that species.

Therefore, having eliminated all the other Ontario Emberizidae, we have determined that this must be a member of the genus *Calcarius*, or one of the longspurs. A good look at the very ample hind claw on our bird certainly proves consistent with that diagnosis. Other general traits that are most consistent with the longspurs are: its stocky build; the short, notched tail; the long primary projection; the very broad, bold supercilium.

In separating the longspurs, it is useful to keep in mind that the two longspurs that are accidental in Ontario (McCown's Longspur and Chestnut-collared Longspur) are both short distance migrants, with concomitantly shorter wings, with less primary projection beyond the tertials (usually 3 primary tips visible beyond the tertials on the folded wing). The two breeding longspurs of Ontario's tundra coast (Lapland Longspur and

Smith's Longspur) are longer distance migrants, with longer wings and more primary projection beyond the tertials (usually 5-6 primary tips visible beyond the tertials). Our quiz bird shows 6 primary tips visible beyond the tertials, so it is clearly one of the two Ontario breeding species. Also note that we see virtually no white in the outer tail feathers, a feature much more consistent with Smith's Longspur and Lapland Longspur than with either of the more extensively white-tailed McCown's Longspur or Chestnut-collared Longspur. Field guides have traditionally over-emphasized the usefulness of the extent of white in the outer tail for field identification of longspurs.

Smith's Longspur has a thin, pale eye-ring and a less prominent supercilium than does the Lapland Longspur. Our quiz bird has a very bold, blond supercilium, and lacks an eye-ring, a feature which favours an identification of Lapland Longspur. Lapland Longspurs have broad rufous edges to the greater coverts and tertials, whereas Smith's Longspurs have narrower, paler brown edges to the greater coverts and tertials. Lapland Longspurs have a more prominent dark frame around the auriculars, that is unbroken posteriorly, whereas Smith's Longspurs have both a finer frame around the auricular (that is broken on the posterior edge) and a finer malar stripe. Smith's Longspur tends to be longer tailed than Lapland Longspur. Lapland Longspur tends to have much broader and darker flank streaking than Smith's Longspur. In the Lapland Longspur, the spacing of the primary tips beyond the tertials is more even than for the Smith's Longspur, which exhibits more staggered gaps. The Lapland Longspur has a decidedly stouter bill than the Smith's Longspur. The belly of the Smith's Longspur has a much buffier ground colour than the white belly of the Lapland Longspur. For all of the differences listed above, our quiz bird is entirely more consistent with the pattern expected for the Lapland Longspur, rather than that of the Smith's Longspur.

This early migrant **Lapland Longspur** was photographed in late September 1995 in Port Perry, Ontario, by Mike McEvoy. Based on the lack of any rufous tone in the nape, this bird is very likely a female.

Analyzing longspurs from dorsal views, like this one, is often much less challenging than trying to identify them from ventral views. I would advise readers to also review the photo quiz that Bob Curry, presented in the April 1996 issue of *Ontario Birds*, to analyze another female Lapland Longspur viewed from a ventral perspective.

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