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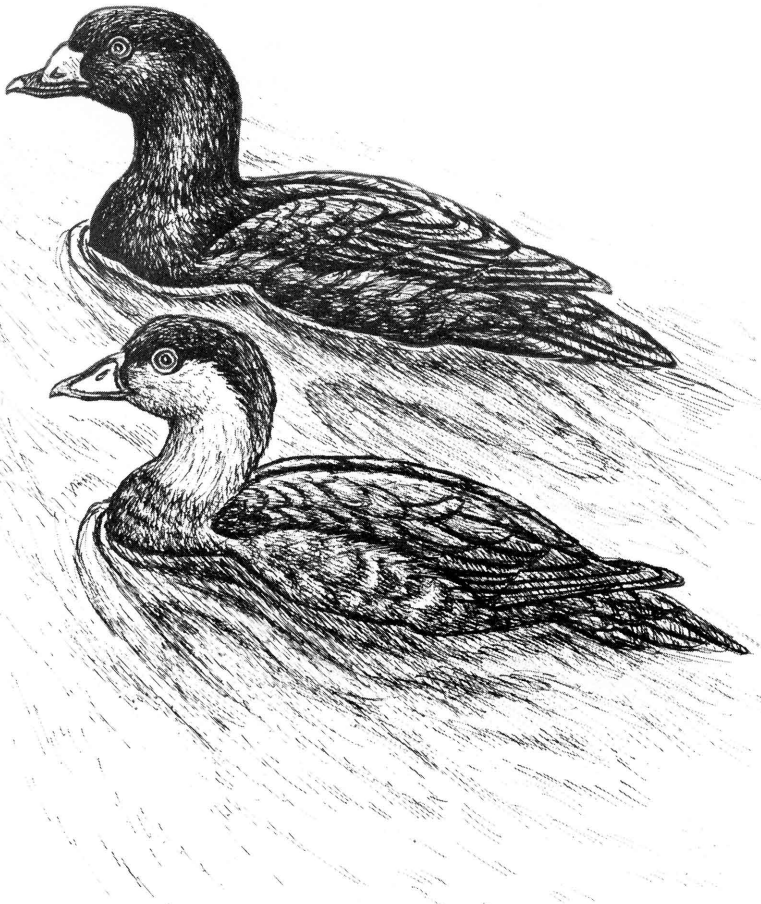

The Journal of the Ontario Field Ornithologists

Volume 12 Number 1 April 1994

Ontario Field Ornithologists

Ontario Field Ornithologists is an organization dedicated to the study of birdlife in Ontario. It was formed to unify the ever-growing numbers of field ornithologists (birders/birdwatchers) across the province and to provide a forum for the exchange of ideas and information among its members. The Ontario Field Ornithologists officially oversees the activities of the Ontario Bird Records Committee (OBRC), publishes a newsletter and a journal, *Ontario Birds*, hosts field trips throughout Ontario and holds an Annual General Meeting in the autumn. Current President: Gerry Shemilt, 51 Montressor Drive, North York, Ontario M2P 1Z3.

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The aim of *Ontario Birds* is to provide a vehicle for documentation of the birds of Ontario. We encourage the submission of full length articles and short notes on the status, distribution, identification, and behaviour of birds in Ontario, as well as location guides to significant Ontario birdwatching areas, book reviews, and similar material of interest on Ontario birds.

If possible, material submitted for publication should be double-spaced and typewritten. All submissions are subject to review and editing. Please submit items for publication to the Editors at the address noted above.

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The Black Scoter in Northern Ontario

by
R. Kenyon Ross

Introduction

The Black Scoter (*Melanitta nigra americana*) is a duck that can be found at various times of the year in many parts of Canada and yet it remains a species of considerable mystery. Unlike the European race (*M. n. nigra*), whose life history and distribution has been well documented (Cramp 1977), the North American race presents unanswered questions regarding such basic facts as breeding and wintering distributions. Godfrey (1986) still describes its Canadian breeding range in terms of local sightings scattered across the north. Description of the wintering distribution remains essentially at the qualitative stage and indicates that most of these scoters occur along the American coasts with particular concentrations around the Aleutians, and along the Atlantic shore of Georgia and the Carolinas (Bellrose 1980). The only other substantial concentrations of Black Scoters documented in North America are the flocks of moulting birds found along the coasts of James and Hudson Bays (Smith 1944; Manning 1952). An initial photographic survey of these birds (Ross 1983) enumerated a minimum of 88,700 male Black Scoters along the northern coast of Ontario during late July 1977. In 1991, an opportunity arose to undertake a second survey of these flocks to monitor any changes in this segment of the population. These results are presented in this paper along with some observations of potential breeding pairs in northern Ontario.

Methods

The survey took place on 29 and 30 July 1991 and employed the timing and technique largely similar to that used in 1977 (Ross 1983). The flight was conducted in a DeHavilland DHC-6 Twin Otter flying at approximately 160 km/h and at least 150 m ASL so as not to cause diving by the ducks. As the flocks were visible from a considerable distance, total coverage was attempted by following a zig-zag course along the coast, covering a band extending from the shoreline to approximately 15 km offshore. Visibility was very good on both days. Weather conditions were as follows: 29 July (survey duration, 1100-1830h) -sunny, warm, winds light becoming moderate in late afternoon; 30 July (survey duration, 1100-1200h) - high overcast, warm, calm.

Almost all flocks were photographed with a hand-held 35mm camera (Olympus OM-2, 135mm lens, Kodachrome 64 film). The photographer sat in the copilot's seat of the aircraft which was flown directly over the flocks to allow for

an almost vertical camera angle. A second observer made visual estimates of the few small flocks that, because of their positions, could not be placed on the right side of the aircraft for photographing without undue and disruptive circling. The location of the aircraft throughout the survey was monitored by satellite navigation (GPS). The photographed ducks were enumerated by projecting the images of the flocks onto plain paper, and marking and afterwards counting all identifiable ducks. Where multiple photographs were needed to cover a larger flock, the resulting representations on paper were overlapped and boundaries established to eliminate double counting. The number counted should be considered a minimum as a few small flocks may have been missed and some birds may have been underwater at the moment of photography; feeding activity tended to subside toward the middle of the day, thus reducing the number diving (Ross 1983).

Results and Discussion

This survey revealed 69,910 male Black Scoters in moulting flocks along the actual Ontario coast of James and Hudson Bays with a further 17,620 off the mouth of the Kettle River in Manitoba (Table 1). This total for Ontario is substantially lower than that recorded in 1977 (88,700) although when one includes the Kettle River birds the totals are more comparable (91,200 in 1977; 87,530 in 1991). As it is possible that these ducks may from year to year use different moulting sites, particularly those near each other, it is probably best to compare overall numbers which would suggest that population levels have changed little over this time period.

The distribution of the scoter flocks is illustrated in Figure 1, which shows the coastline divided into 16 sectors where the scoters occurred. All four locations that held scoters in 1977 were also used in 1991, although numbers at each site were quite different. The most southerly (Longridge Point - Sector 16) and northerly (Kettle River -Sector 1) held much higher numbers than before, while counts were lower in the other two (Ekwan to Hook Point - Sectors 8-14, and particularly Shell Brook -Sector 5). As well, four new sites were discovered during the present survey (Sectors 4, 6, 7, and 15), and flocks were seen fairly continuously from east of the Pen Islands to the Kettle River (Sectors 1 to 3), all of which suggest considerable variability over time in the use of moulting sites. It may be that intense use of certain sites sufficiently reduces food resources to cause redistribution of a portion of the birds. There have been no feeding studies of these moulting scoters although it is expected that they are eating molluscs such as the blue mussel (*Mytilus edulis*) and possibly the clam, *Macoma baltica*. Also, there is likely a sequential movement between moulting sites, probably from north to south, as birds regain the powers of flight; thus annual phenological shifts in the breeding cycle would also influence numbers in an area at any given time. This pattern of numbers peaking in late July and dropping during August was observed at Longridge Point (Ross 1983).

The origin of these ducks remains unclear although the relatively high

Table 1. Comparison of Results of 1977 and 1991 Surveys of Moulting Black Scoters along the Northern Coast of Ontario and Contiguous Manitoba.

Sector	Counts of Moulting Black Scoters	
	1991	1977
1	17620	2500*
2	2210	–
3	3950	–
4	1420	–
5	6180	43700
6	940	–
7	1250	–
8	7650	N/A
9	490	N/A
10	1730	N/A
11	8110	N/A
12	8610	N/A
13	5530	N/A
14	5520	N/A
Subtotal sectors 8 - 14	37640	42600
15	7730	–
16	8590	2400
Total	**87530**	**91200**

* Estimates taken from Vaught and Arthur in Bellrose 1980

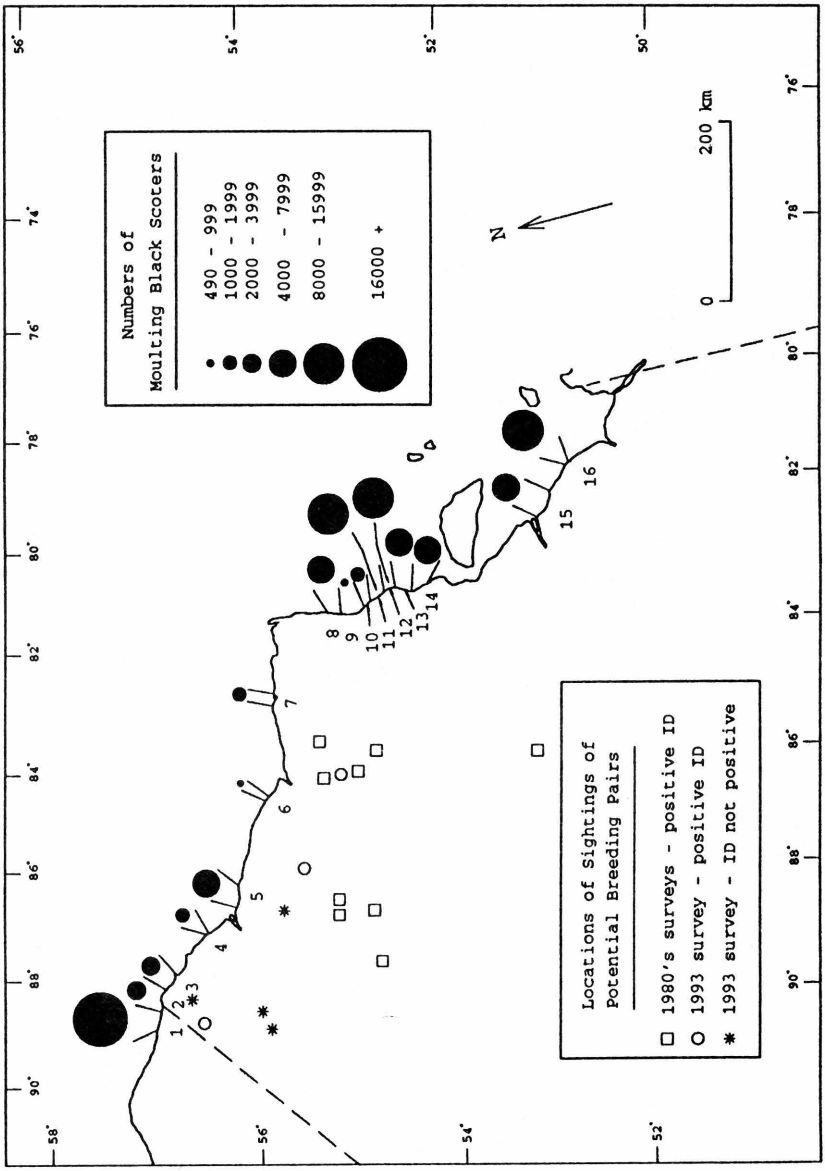

Figure 1: Distribution of moulting Black Scoters as determined during 1991 survey, and location of sightings of potential breeding pairs.

Table 2. Observations by R.K. Ross of Potential Breeding Pairs of Black Scoters in the Hudson Bay Lowlands of Ontario.

Observation	ID Confirmed (√)	Date	Coordinates	
			Lat.	Long.
1 pair	√	May 21 1982	52° 42′	85° 14′
1 lone male	√	June 01 1987	54° 18′	84° 51′
1 pair	√	June 01 1987	54° 30′	85° 09′
1 pair	√	June 01 1987	54° 51′	85° 07′
1 pair	√	June 01 1987	54° 51′	84° 30′
1 pair	√	June 02 1988	54° 30′	88° 32′
3 pairs	√	June 02 1988	54° 31′	87° 36′
2 pairs	√	June 02 1988	54° 52′	87° 37′
1 pair	√	June 02 1988	54° 52′	87° 19′
2 pairs	√	June 06 1993	54° 41′	85° 09′
3 pairs	√	June 07 1993	55° 10′	86° 35′
4 pairs		June 07 1993	55° 25′	87° 24′
1 lone bird		June 07 1993	55° 40′	89° 32′
1 lone bird		June 07 1993	55° 45′	89° 17′
1 pair	√	June 07 1993	56° 24′	89° 14′
2 pairs		June 07 1993	56° 28′	88° 51′

breeding densities recorded in the Lac Bienville area of northern Quebec (> 13 pairs/100 km^2) by Savard and Lamothe (1991) point to that area as a possible source of moulters. To date, there has been no confirmed breeding record of Black Scoters in Ontario; however, I have made several observations of potentially breeding pairs in suitable habitat (see Table 2).

Most of my records were made during waterfowl breeding pair surveys of northern Ontario which employed a systematically located grid of survey blocks (methods and block locations described in Ross and Fillman 1990). A projection based on these samples yields a population estimate of 6500 pairs although this is very approximate given the high variance.

One should also note that these surveys took place in late May and early June while the first lone male Black Scoters did not arrive in the Lac Bienville area until 11 June (Savard and Lamothe 1991). It is, therefore, likely that many birds may not yet have arrived in northern Ontario, thus lowering the estimate of potential breeding numbers. It would still seem unlikely that an additional 80,000 breeding pairs of these scoters would return and yet go virtually unrecorded. Instead it is more probable that there are some local breeding concentrations of Black Scoters in the Hudson Bay Lowlands which are supplemented on the moulting grounds by Quebec birds, particularly along the James Bay coast.

The distribution of sightings of potential breeding pairs of Black Scoters is presented in Figure 1 and includes both my waterfowl survey observations from the 1980's and some records made by J. Leafloor and myself in 1993 during the course of a goose survey; records of probable Black Scoters from 1993 are also included for interest. Although coverage of the likely breeding area in the Ontario Hudson Bay Lowlands is not complete, the observations made so far do show some relationship to the moulter distribution in that they mostly occur near headwaters of rivers around whose estuaries the moulters congregate. Only the two southernmost sectors show no potential breeding pair records from the immediate hinterland and may indicate that these birds are mostly of Quebec origin. Clearly, specific surveys are needed throughout the Ontario lowlands both during nest initiation (mid-June) and brood rearing (mid-July) to determine conclusively the status and abundance of this interesting species, and improve our knowledge of other late-nesting waterfowl.

Acknowledgements

This survey was a joint effort of the Canadian Wildlife Service (Environment Canada) and the Ontario Ministry of Natural Resources as part of the Habitat Based Assessment of Ontario's Subarctic Coast Project. I am very grateful to the Ontario Ministry of Natural Resources staff at the Moosonee office, particularly Nancy Wilson, the project co-ordinator, Jim Leafloor, the regional waterfowl biologist, and our pilot, Denis Ladouceur. Thanks also to Guy Morrison for his help with observations during the photo survey, and to my observers on the breeding pair surveys, in particular, Don Fillman, Steve Wendt, and Steve O'Donnell. Lastly, I especially thank Barb Campbell who did the photo analysis, and prepared the map and the tables.

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Sharp-shinned Hawk Declines: An Inland Perspective

by
Allen Chartier

Much has been written about the declines of Sharp-shinned Hawk (*Accipiter striatus*) at coastal sites, particularly at Cape May, New Jersey (Kerlinger in *Winging It*, September 1993). Additionally, theories to explain the differences in the declines between the coastal and inland sites have been attributed to the higher proportion of adults at inland sites (Hawk Mountain data, after Heintzelman), noted as up to a 50/50 ratio. To date, there has not been any widely published data regarding the age ratio of Sharp-shinned Hawks migrating through the Great Lakes region. The purpose of this paper is to provide such information for Holiday Beach Conservation Area, Ontario to clarify the situation. In addition, reasons for these differences and some potential causes of declines are discussed.

Season totals at Holiday Beach for Sharp-shinned Hawks have remained relatively stable over the past 20 years of organized counts. The 20 year average is about 13,000. Note the relative stability of the Holiday Beach totals compared with the extreme declines at Cape May against their 20 year average of about 32,000 (Figure 1).

Sharp-shinned Hawks have been aged on the wing by observers at Holiday Beach since 1988. Observer effort has been remarkably consistent, with between 90 and 95 days covered in each year. The ability to age birds has varied from year to year, and depends on many variables

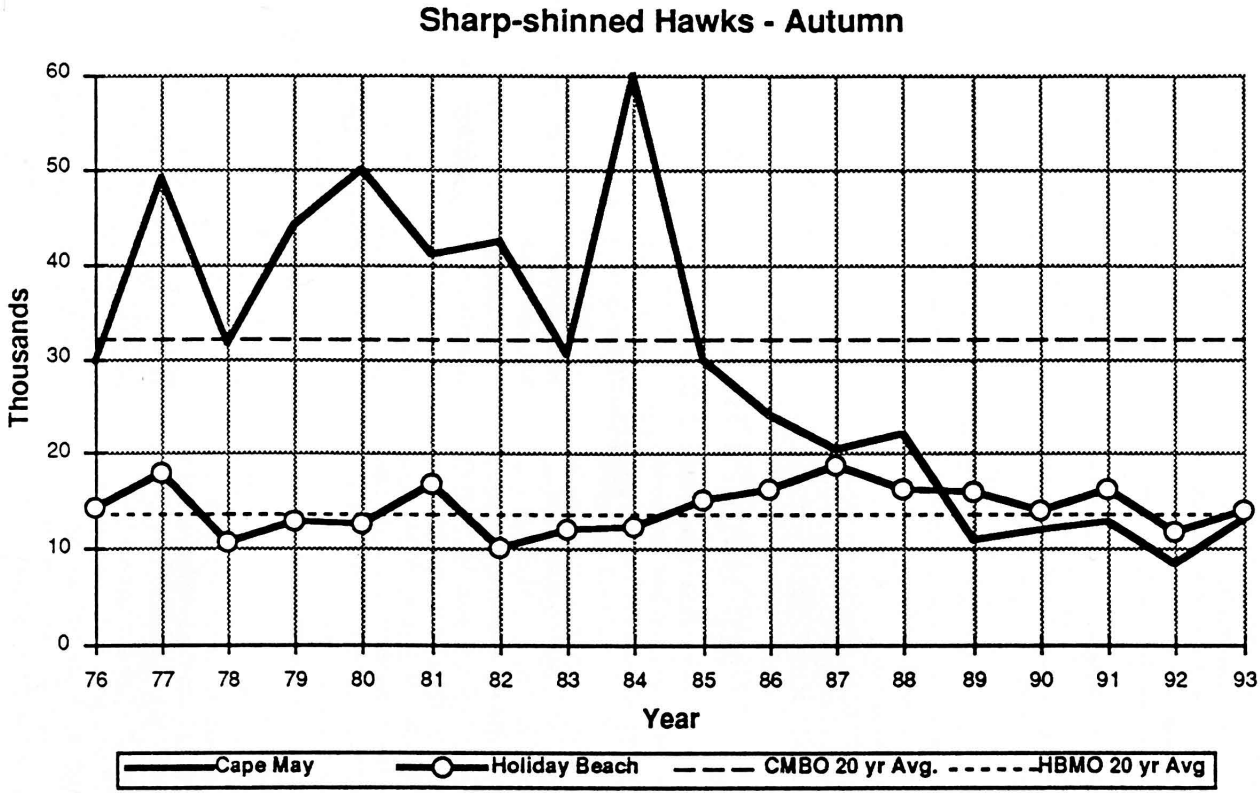

Figure 1: Sources: Cape May data courtesy of Paul Kerlinger, Cape May Bird Observatory.
Holiday Beach data courtesy of Holiday Beach Migration Observatory.

such as weather, altitude of flight, lighting conditions, etc. However, the average proportion of aged birds is very high, totalling slightly more than 23%. More than 98% of the Sharp-shinned Hawk migration occurs in September and October, with an average of 80-90% immature in September and 25-65% in October. Typically fewer than 100 birds are tallied in November, less than 1% of the season's total, but the ratio of immatures does tend to decline further, generally to less than 30% (Figure 2).

There is a total accumulated ratio of immature to adult over six years of about 75/25. Numbers at Holiday Beach declined in 1992 to the lowest level since 1982. It is interesting to note that the ratio of immatures to adults was considerably higher that year, about 88/12! (Figure 3).

Discussion

While it is difficult to draw any real conclusions from a comparison like this, it seems likely that we are observing two distinct populations, separated geographically and influenced by somewhat different environmental factors. The Holiday Beach birds are relatively stable in numbers, while coastal areas are reporting significant declines. Age ratios do not differ significantly at Holiday Beach from those seen at Cape May. As proposed by Kerlinger, acid rain effects are severe in the northeast, more so than in the Great Lakes area. It has been suggested (Ron Ridout, pers. comm.) that the intensive spraying for Spruce Budworm in the Canadian Maritime provinces could be an additional factor contributing to the declines seen at Cape May and other coastal

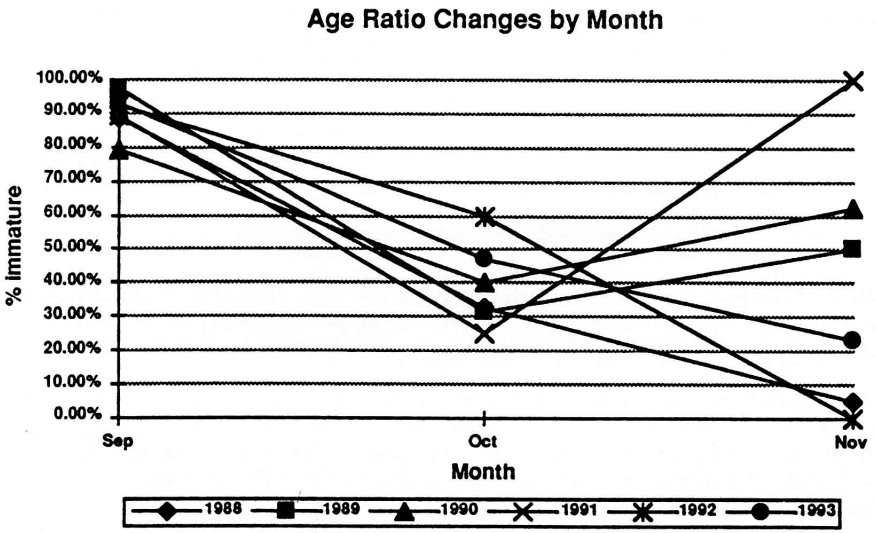

Figure 2

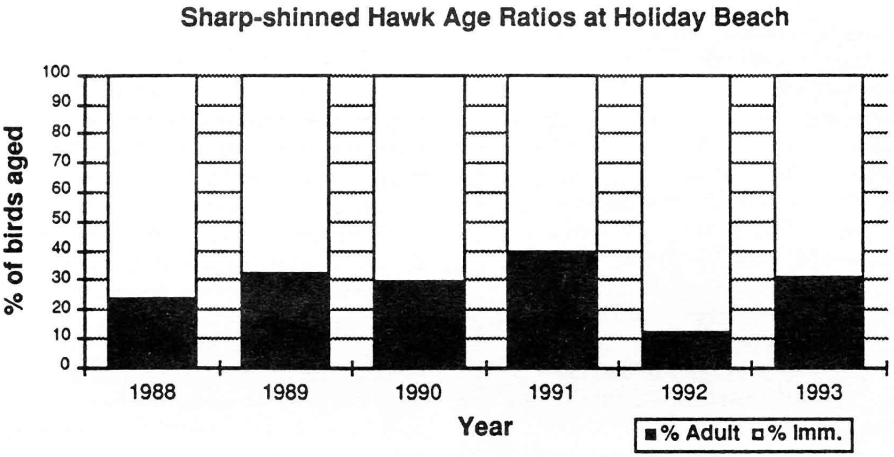

Figure 3

hawk watches, initially affecting populations of the small birds that Sharp-shinned Hawks feed on. Such spraying is much more limited in Ontario and Quebec, the likely breeding areas of the birds migrating past Holiday Beach.

Acknowledgements
The content of this paper was enhanced by discussions with Ron Ridout, Dr. Paul Kerlinger, and Drew Panko.

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Publication Notice

Bird Trends: A report on results of national and regional ornithological surveys in Canada. Number 3, Winter 1993/94. Migratory Birds Conservation Division, Canadian Wildlife Service, Ottawa, Ontario K1A 0H3. No charge.

This report deals with shorebird conservation and research, and includes much of potential interest to Ontario birders. There is an assessment of population status and trends for 44 shorebird species, based on available data and the best estimates of experts. Another section considers Canadian shorebirds at risk (Eskimo Curlew, Long-billed Curlew, Piping Plover, and Mountain Plover). In addition, there are overviews of Canada's Bird Observatories, including Long Point, Thunder Cape, Ottawa, and Toronto, with volunteer opportunities to participate in migration monitoring described.

Breeding Birds of Ontario: Nidiology and Distribution

Volume 1: Nonpasserines

(First Revision - Part C: Jaegers to Woodpeckers)

by
George K. Peck and Ross D. James

Parasitic Jaeger, *Stercorarius parasiticus*

4 nests representing 1 provincial region. During the past decade 2 more nests have been found, both near the Hudson Bay coast in Kenora District. One nest containing 2 eggs was found 23 June 1991 near the mouth of the Brant River, and the other contained 1 egg when it was located on 16 June 1992, just west of Winisk. Both nests were in grass/sedge meadows and 1 was on a mound 46 cm (18 inches) high and 91 cm (36 inches) in diameter.

Little Gull, *Larus minutus*

23 records (9 colonies, 3 isolated nestings, 28 nests) representing 5 provincial regions. The 9 colonies ranged from 2 to 5 nests and averaged more than 2 but less than 3 nests. In addition to the 1984 nesting and breeding records from Kenora District outlined in Appendix A, Volume 2 (Peck and James 1987), the Little Gull continued to nest on North Limestone Island, Georgian Bay, Parry Sound District, with 2 nests in 1981, 1 in 1983, 2 in 1984 and 2 nests in 1989.

EGGS 23 nests with 1 to 3 eggs; 1E (2N), **2E** (2N), **3E** (19N).

Average clutch range 3 eggs (19 nests).

EGG DATES 23 nests, 27 May to 21 July (39 dates); 12 nests, 12 June to 19 June.

Bonaparte's Gull, *Larus philadelphia*

11 records (40 nests) representing 4 provincial regions. A usually solitary nester, pairs of this gull may sometimes nest in loose proximity to each other, thus approximating coloniality. New nest records have been received from near the mouth of the Shagamu River in Kenora (1990), and the Ogoki Reservoir in Thunder Bay (1976).

A high nest in a black spruce was 15 m (49 ft) above ground. This same nest had an outside diameter of 22 cm (8.7 inches); inside diameter of 12 cm (4.7 inches); outside depth of 10 cm (3.9 inches); and inside depth of 6 cm (2.4 inches).

EGGS 8 nests with 2 to 3 eggs; **2E** (3N), **3E** (5N).

Average clutch range 3 eggs (5 nests).

Ring-billed Gull, *Larus delawarensis*

476 records (196 colonies, 15 single nestings, ca 829,549 nests) representing 32 provincial regions. The Ontario population of this larid has increased dramatically and more and larger colonies are being reported. The average size of 148 colonies totalling 730,224 nests, was 4,934 nests. New nesting regions are Halton (1990), Hamilton-Wentworth (1986), Lambton (1987), Lennox and Addington (1985), Peel (1989), Prescott (1983), Sudbury (1988), and Timiskaming (1985). A mixed colony at Lake of the Woods, Kenora, also contained American White Pelican, Double-crested Cormorant, and Common Tern.

Unusual colony sites were on the flat roof of a building at Owen Sound in Grey in 1985-7 (Blokpoel and Smith 1988), and in a fenced zoo enclosure at Toronto in 1989. In one island colony some nests were in the branches of dead and fallen trees.

Outside diameters of 6 nests ranged from 25 to 32 cm (9.8 to 12.6 inches); inside diameters from 12.5 to 20 cm (4.9 to 7.9 inches); outside depths from 2 to 7.5 cm (0.8 to 3 inches).

EGG DATES 9 April (Niagara) to 30 July.

Herring Gull, *Larus argentatus*

1024 records representing 37 provincial regions. Nest records have been obtained from near the Little Shagamu River in Kenora (1990), Lennox and Addington (1964), Middlesex (1983), Peel (1989), and Stormont (1976).

Colony nesting on the flat roofs of buildings was reported in Bruce and Grey in 1985-7 (Blokpoel and Smith 1988).

Figure 1: Nest and two eggs of Great Black-backed Gull, 17 May 1989, Little Haystack Island, Bruce County. Photo by *G.K. Peck.*

Great Black-backed Gull, *Larus marinus*

32 records (6 colonies, 24 single nestings, 43 nests) representing 9 provincial regions. In the past decade this species has continued to nest in Ontario along the St. Lawrence River and the Great Lakes, with new nest sites at Bruce (1988-9), Durham (1981), Haldimand-Norfolk (1991), Manitoulin (1991), Prince Edward (1986), and Stormont (1988). The 6 colonies ranged from 2 to 5 nests with an average just over 3.

EGGS 31 nests with 1 to 3 eggs; 1E (6N), **2E** (12N), **3E** (13N).

Average clutch range 2 to 3 eggs (25 nests).

EGG DATES 23 nests, 28 April to 29 June; 11 nests, 14 May to 24 May. The 19 July egg date given in Volume 1 (Peck and James 1983), was an error.

Caspian Tern, *Sterna caspia*

108 records (68 colonies, 11 single nestings, ca 11,093 nests) representing 12 provincial regions. The breeding population of the Caspian Tern in Ontario has continued to increase in the past decade. The averge size of 62 colonies totalling 10,677 nests, was 172 nests. A total of 21 provincial nesting sites has been reported, about half of which are in current use.

The first 4-egg clutches (a total of 7) were reported from two colonies in 1991.

EGG DATES 53 colonies, 6 May to 12 August, (66 dates); 27 colonies, 6 June to 24 June.

Common Tern, *Sterna hirundo*

665 records representing 32 provincial regions. Nest records have been obtained from Glengarry (1976), Grenville (1981), Grey (1936), and Hamilton-Wentworth (1985).

Outside diameter of 1 nest was 23 cm (9 inches); inside diameter was 10 cm (3.9 inches); outside depth was 4 cm (1.6 inches).

Arctic Tern, *Sterna paradisaea*

18 records (10 colonies, 1 single nesting, ca 89 nests) representing 1 provincial region and an island in each of Hudson and James Bays (NWT). Essentially a colonial species, about 8 nests were noted spread out over a 4 km strip of Hudson Bay coast in 1990. The average size of 8 colonies totalling 82 nests was 10 nests.

One nest had 20 cm (7.9 inches) twigs in the exterior; and twig pieces, grass stalks and rootlets in the lining. The diameter of this nest was 13 cm (5 inches); inner depth was 2 cm (0.8 inches).

EGGS 19 nests, with 1 to 3 eggs; 1E (4N), **2E** (14N), 3E (1N).

Average clutch range 2 eggs (14 nests).

EGG DATES 14 records, 16 June to 21 July, (19 dates); 7 records, 26 June to 5 July.

Forster's Tern, *Sterna forsteri*

49 records (16 colonies, ca 771 nests) representing 3 provincial regions. The average size of 13 colonies totalling 767 nests, was 59 nests. Colonies were loosely-knit and often consisted of well-separated single nests and groups of nests.

EGG DATES 14 colonies, 19 May to 6 July, (17 dates); 7 colonies, 29 May to 11 June.

Rock Dove, *Columba livia*

210 records (212 nests) representing 31 provincial regions. We now have a nest record from Evansville, Manitoulin (1982).

Mourning Dove, *Zenaida macroura*

2000 records (2213 nests) representing 40 provincial regions. An old nest record has been received from Thunder Bay (1958), and more recent ones from Haliburton (1991), and Parry Sound (1991).

A nest was found in a balcony flower planter in Grey (1991).

EGG DATES 12 March (Elgin) to 28 September.

Black-billed Cuckoo, *Coccyzus erythropthalmus*

443 nests representing 41 provincial regions. A photograph of a Manitoulin nest in 1991 furnished documentation.

Five more 5E nests and one 6E nest have been reported.

EGG DATES 16 May (Middlesex) to 8 September. The number of late dates suggests re-nesting.

Yellow-billed Cuckoo, *Coccyzus americanus*

113 nests representing 25 provincial regions. Early nest records have been obtained from Elgin (1885), and Frontenac (1951).

We now have three 5E clutches on file.

EGG DATES 13 May (Simcoe) to 7 August. An Essex nest contained 2 small young on 30 August, indicating a later egg date than 7 August. The number of August egg dates suggests at least occasional re-nesting.

Barn Owl, *Tyto alba*

39 nests representing 8 provincial regions. A 1985 nest record was obtained from Haldimand-Norfolk (McCracken 1987), and an old breeding record from Carleton (1937).

INCUBATION PERIOD K. McKeever (pers. comm.) found the period in wild-obtained captives to be ca 26 days.

EGG DATES An active 1989 Niagara nest with 5 eggs was observed on 16 September, and established our latest actual egg date.

Eastern Screech-Owl, *Otus asio*

106 nests representing 25 provincial regions. Old nest records from Simcoe (1918) and Waterloo (1928) were missed in Volume 1. New nest records have come in from Dundas (1987), Grey (1986), and Perth (1987).

Great Horned Owl, *Bubo virginianus*

643 nests representing 44 provincial regions. Recent new nest records were reported from Lennox and Addington (1988) and Sudbury (1989).

Northern Hawk Owl, *Surnia ulula*

5 nests representing 3 provincial regions. The account of the third Ontario nest in Kenora in 1981 appears in Appendix A.

A fourth nest, apparently recently-vacated and with agitated parents nearby, was found near the Little Shagamu River in Kenora on 23 June 1990. The nest was in the hollowed top of a black spruce stump at a height of 2 m (6.6 ft). An occupied nest cavity of a Northern Flicker was situated in the stump 20.3 cm (8 inches) below the owl's nest.

The fifth nest was found NNE of Red Lake, Kenora in 1993, and was in an old Pileated Woodpecker cavity in a dead poplar at a height of 10 m (33 ft); it contained 3 young.

INCUBATION PERIOD In wild-obtained captives the period was 28 days (K. McKeever, pers. comm.).

Barred Owl, *Strix varia*

17 nests representing 8 provincial regions. Of the 3 regions listed in Appendix A, Muskoka (1981) was a breeding record, and Bruce (1984) and York (1983) were nest records. Another new nest record has come in from Waterloo (1983).

Great Gray Owl, *Strix nebulosa*

9 nests representing 3 provincial regions. A probable breeding record involving the observation of flying young with an adult, was made in 1989 near Round Island Lake, Algonquin Park, Nipissing (Forbes *et al.* 1992). Five nests were reported in 1993 from the Red Lake area of Kenora, suggesting that the Ontario breeding population is much greater than our few nests indicate.

Four of the 1993 nests were in poplars (3 in broken-off stubs, 1 in a crotch), and the fifth was in the crotch of a jack pine. Nest heights were 5.6, 6, 10+, 20, and 18 m (18, 20, 33, 65, and 60 ft).

INCUBATION PERIOD In wild-obtained captives the period was 31 to 32 days (K. McKeever pers. comm.).

Long-eared Owl, *Asio otus*

123 nests representing 27 provincial regions. First nest records have been received from Haldimand-Norfolk (1985), Manitoulin (1993), Peterborough (1962), and a breeding record from Bruce (1988).

EGGS 82 nests with 2 to 6 eggs; **2E** (9N), **3E** (13N), **4E** (26N), **5E** (28N), **6E** (6N).

Average clutch range 4 to 5 eggs (54 nests).

EGG DATES 19 March to 2 June.

Short-eared Owl, *Asio flammeus*

28 nests representing 14 provincial regions. A historic nest record from Haldimand (1885-90) and old nest records from Kent (1944) and Middlesex (1946) have been obtained. Recent nests have been reported from Grey (1993), Lennox and Addington (1988), Victoria (1993), and, as well, breeding records from Bruce (1988) and Ottawa-Carleton (1987).

Outside diameters of 3 nests ranged from 22 to 29 cm (8.7 to 11.4 inches); inside diameters from 12.7 to 16 cm (5 to 6.3 inches); and inside depths from 3 to 5 cm (1.2 to 2 inches). One of these nests was a substantial mound of dried grasses with an outside depth of 7.6 cm (3 inches).

Figure 2: Short-eared Owl brooding young on nest in Grey County, 15 June 1993. Photo by *G.K. Peck.*

EGGS 23 nests with 1 to 9 eggs; 1E (1N), **3E** (1N), **4E** (3N), **5E** (4N), **6E** (4N), **7E** (7N), **8E** (1N), **9E** (2N).
Average clutch range 5 to 7 eggs (15 nests).
EGG DATES 20 nests, 14 April to 1 August (26 dates); 10 nests, 7 May to 24 May.

Boreal Owl, *Aegolius funereus*
2 nests representing 2 provincial regions. The second Ontario nest (see Appendix A) was found near Atikokan, Rainy River in 1984. It contained 1 or more young and was in the old nest cavity of a Pileated Woodpecker in a quaking aspen at a height of 10.7 m (35 ft).

Northern Saw-whet Owl, *Aegolius acadicus*
22 nests representing 12 provincial regions. An old breeding record from Norfolk (1927) involving the collection of a juvenile not long out of the nest (Snyder, 1931), has been added.

Common Nighthawk, *Chordeiles minor*
288 nests representing 36 provincial regions.
A **1E** clutch was incubated and a young hatched in a recently reported nest.

Whip-poor-will, *Caprimulgus vociferus*
76 nests representing 24 provincial regions. Old nest records have been obtained from Haliburton (1936), Muskoka (1936), Parry Sound (1904), and Prince Edward (1911). Other new nest records were from Lambton (1974), Niagara (1992), and Victoria (1986).
EGGS 63 nests with 1 to 2 eggs; 1E (2N), **2E** (61N).
Average clutch range 2 eggs (61 nests).
INCUBATION PERIOD 4 nests; 1 less than 19 days, 1 of 19 days, 1 of at least 20 days, and 1 of 21 days.
EGG DATES 48 nests, 21 May to 21 July (67 dates); 24 nests, 5 June to 20 June. Re-nestings and second broods were both reported in Leeds in 1984.

Chimney Swift, *Chaetura pelagica*
132 records (150 nests) representing 32 provincial regions. An old nest record from Northumberland (1902) and a recent one from Lambton (1985) have been added.

Figure 3: Chimney Swift at nest containing four young in tobacco shed, 24 June 1982, in Durham R.M. Photo by *G.K. Peck.*

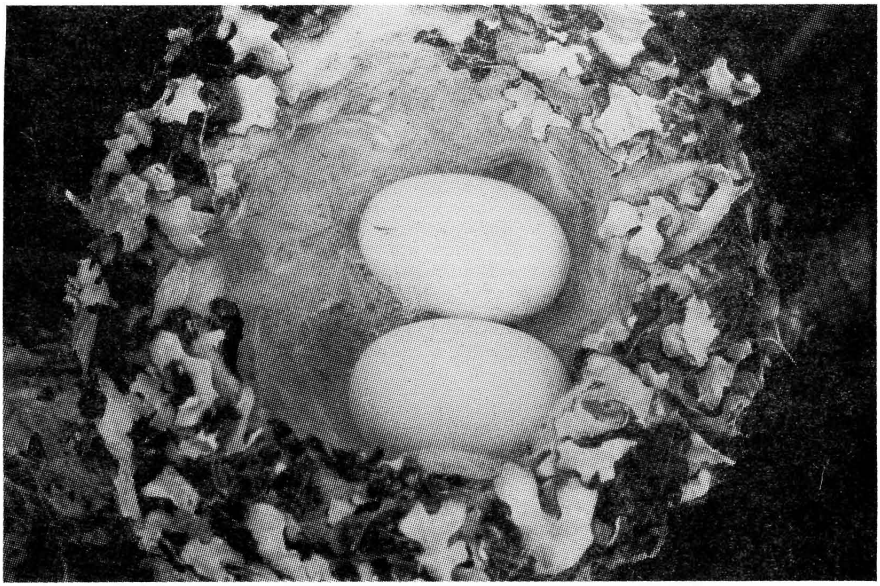

Figure 4: Nest and two eggs of Ruby-throated Hummingbird, 21 July 1992, Artemesia Twp., Grey County. Photo by *G.K. Peck.*

One chimney site contained 15 nests (at least several were active), and 2 nests (each with 4 eggs) were noted on the wall of a silo.
EGG DATES 24 May to 7 August.

Ruby-throated Hummingbird, *Archilochus colubris*
178 nests representing 41 provincial regions. Two old nest records (1935-36) from Norfolk County have been obtained.

In the second paragraph of the species account in Volume 1, the nest branch diameter should read "1 to 6.5 cm" (not metres).

One nest in a sugar maple was 7 m (23 ft) away from the tree trunk.

Outside diameters of 5 nests ranged from 3.5 to 5 cm (1.4 to 2 inches); inside diameters of 4 nests from 2 to 2.5 cm (0.75 to 1 inches); outside depths of 3 nests from 2 to 4 cm (0.8 to 1.6 inches); inside depths of 3 nests from 1.8 to 2.3 cm (0.7 to 0.9 inches).

A 1993 nest in Elgin contained 3 eggs and was the second ONRS record of this extremely rare clutch size - the probable result of laying by 2 females (Tyrrell 1984).

Belted Kingfisher, *Ceryle alcyon*
395 records (396 nests) representing 43 provincial regions. New nest records are from Essex (1986), Haliburton (1991), and Huron (1983).

Red-headed Woodpecker, *Melanerpes erythrocephalus*
250 nests representing 36 provincial regions. We now have old nest records from Elgin (1949), Muskoka (1962), and Russell (1966).
EGGS 41 nests with 1 to 7 eggs; 1E (2N), 2E (2N), 3E (4N), **4E** (16N), **5E** (12N), **6E** (2N), **7E** (3N).
Average clutch range 4 to 5 eggs (28 nests).
EGG DATES 37 nests, 14 May to 21 July (38 dates); 18 nests, 31 May to 15 June. A second instance of 2 broods from a nest was reported from Elgin in 1993.

Red-bellied Woodpecker, *Melanerpes carolinus*

24 records (25 nests) representing 9 provincial regions. A report of a 1989 nesting in Oxford (Weir 1989) was noted, but details of an actual nest have not yet been received.

Nest cavities were in dead or partially dead, deciduous trees. Selected trees were elm (2 nests), beech (2 nests), maple spp. (2 nests), and 1 nest each in basswood, oak sp., white ash, and hickory sp.

EGGS 5 nests with 2 to 7 eggs; 2E (2N), 4E (1N), 5E (1N), 7E (1N).

EGG DATES 5 nests, 1 May to 29 May.

Yellow-bellied Sapsucker, *Sphyrapicus varius*

497 nests representing 37 provincial regions. A 1972 nest record symbol for Dundas was omitted from the map in Volume 1. Early nest records for Long Portage (1926), Mattice (1926), and Moosonee (1934), all in Cochrane District, have been added. A recent nest record came in from Haldimand-Norfolk (1988).

The use of a bird house as a nest in Ottawa-Carleton (1979) should have been included in Volume 1.

Downy Woodpecker, *Picoides pubescens*

290 nests representing 37 provincial regions.

Hairy Woodpecker, *Picoides villosus*

319 nests representing 43 provincial regions. Nest records have been received from Durham (1981), Grey (1984), and Huron (1983). In Volume 1, a minimum nest hole diameter of 2.5 cm (1 inch) was undoubtedly an error on a nest card, since reported diameters are larger (Bent 1939; Terres 1980). Diameters of 24 holes ranged from 3.8 to 6.4 cm (1.5 to 2.5 inches), with 12 averaging 4.4 to 5.1 cm (1.8 to 2 inches).

Three-toed Woodpecker, *Picoides tridactylus*

18 nests representing 6 provincial regions. A nest record has been obtained from Algonquin Provincial Park, Nipissing (1964).

Nest trees were more often dead (11 nests) but occasionally living (3 nests). Black spruce (8 nests) were preferred to jack pine (3 nests), tamarack (1 nest), birch (1 nest), and poplar (1 nest). Heights of 16 nests ranged from 1.2 to 8 m (4 to 26 ft), with 8 averaging 3 to 6 m (10 to 20 ft).

Hole diameters of 5 nests ranged from 3.8 to 7.5 cm (1.5 to 3 inches). Diameter of 1 nest cavity was 9.5 cm (3.7 inches).

Black-backed Woodpecker, *Picoides arcticus*

108 records (109 nests) representing 13 provincial regions. We now have an old nest record from Swastika, Timiskaming (1955).

EGGS 21 nests with 2 to 6 eggs; 2E (2N), **3E** (11N), **4E** (6N), **5E** (1N), 6E (1N).

Average clutch range 3 to 4 eggs (17 nests).

Northern Flicker, *Colaptes auratus*

1039 nests representing 50 provincial regions. An early nest record has been obtained for Hastings (1912).

A 1990 Kenora nest was in the same tree as the nest of a Northern Hawk Owl.

Pileated Woodpecker, *Dryocopus pileatus*

142 nests representing 30 provincial regions. New nest records were from Elgin (1992), and Kearns in Timiskaming (1985). The most northerly nest record for the province was reported at Moosonee, Cochrane (1991).

Acknowledgements

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In Memoriam

William Charles Mansell (1908-1993)

Author and naturalist, William Charles Mansell (known as "the birdman of Mississauga"), has passed away at the age of 85. He was born in Toronto on 26 December 1908, and died on 30 December 1993, at Peterborough Civic Hosptial.

Bill Mansell was a lifelong student of nature, with a particular interest in ornithology. He was past editor of "The Chickadee" (a children's nature magazine then published by the Federation of Ontario Naturalists), a member of several natural history organizations, and author of various articles and books (e.g., "North American Marsh Birds", and "North American Birds of Prey").

He had a deep personal attachment to the family property on Rebecca Lake in Muskoka, which was a base for his long years of observation and study of the District's natural history. Mansell authored two books on this beloved area ("Birds of Cottage Country", and "Muskoka Daze"), and wrote a newspaper column on birds and other wildlife in the Huntsville Forester for 35 years.

Recognizable Forms

Ecological Significance of the White and Grey Colour Morphs of the Mute Swan

by
Lisa Enright

Introduction

The Mute Swan (*Cygnus olor*) is one of seven species of swans in the order Anseriformes. In Eurasia, it occurs from the British Isles, southern Scandinavia and Russia, southeast through central Europe to Asia Minor and east to Siberia and Ussuriland (A.O.U. 1983). It was introduced to North America as an ornamental species in the early 1900's (Palmer 1976; Belrose 1976; Campbell *et al.* 1990) and has established feral populations throughout parts of Canada and the United States.

Yarrell (1838) suggested that the Mute Swan was actually two species of morphologically distinct birds. He separated these two species by the leg colour of individuals and by the down and juvenal plumage colour of cygnets. Those swans which had black legs, were covered in grey down as cygnets, and had a grey-brown juvenal plumage, he named *C. olor*. Pink-legged individuals which were covered in pure white down as cygnets and had a white juvenal plumage he named *C. immatubilis* (in reference to their unchanging plumage colour). We now know that the species described by Yarrell are simply two readily identifiable colour morphs of the Mute Swan (*C. olor*).

This note describes morphological differences between the grey and white colour morphs of the Mute Swan, explains how the expression of the colour morph trait is genetically controlled and examines the potential ecological impact Mute Swans may have on native populations of waterfowl and on native North American habitat.

Plumage, Moult and Morphology

The two colour morphs of the Mute Swan are easily distinguished from each other at any age by leg colour and are named to reflect the down and juvenal plumage colour of the cygnets. Illustrations of adults and juveniles of both white and grey morphs are contained in Cramp (1977: 374).

Grey-morph cygnets are covered in grey-brown down with white underparts. Legs are slate-grey or black and bill colour can range from grey to purplish. Sometime after the seventh week posthatching, the down is completely replaced by the first juvenal plumage. At this time, juveniles are mostly grey in colour; the grey-brown streaking is concentrated on the head, neck and dorsum, but nowhere on the plumage are there any large areas of white (Palmer 1976).

Mute Swans undergo one complete annual moult somewhere between July and August. Cygnets, however, begin to moult from their juvenal plumage into their first basic plumage approximately 4.5 months after hatching (Palmer 1976). This first moult proceeds gradually, over the winter (Birkhead and Perrins 1986). It is not complete and some juvenal flight feathers are retained. Although individuals may acquire large patches of white on the freshly moulted primaries, from their first winter until early the next summer the first basic plumage remains largely streaked with greys and browns (Palmer 1976; Birkhead and Perrins 1986). By the end of their second summer, grey morphs will have moulted into their second basic plumage. Upon completion of the second annual moult, grey morphs assume the white plumage of an adult.

It may be possible to distinguish these second year grey morphs from reproductively mature adults by bill colour and by the size of the knob at the base of the bill. The bills of second year birds are light orange in colour and have not yet attained the bright reddish-orange of breeding adults (Cramp 1977; Belrose 1976; Birkhead and Perrins 1986). However, Palmer (1976) noted that bill colour varies a great deal between Mutes of the same age, hence bill colour cannot be reliably used to indicate age. Reproductively mature males generally have larger knobs at the base of their bills than adult females or immatures. Although the knob begins to enlarge in second year birds, it may not approach the knob size of a breeding adult until the third year (Belrose 1976). However, adult knob size also varies with time of year (Palmer 1976). Because knob size and bill colour can only be used to indicate the age or sex of birds beyond their second basic plumage, and because the appearance of soft parts of second year birds may not stabilize until their third or fourth year when individuals begin to form pair bonds and reproduce, the third basic plumage is considered to be the definitive basic (adult) plumage (Palmer 1976).

White-morph cygnets are easily distinguished from grey individuals by their pure white down and pink, flesh-coloured legs (Munro *et al.* 1968; Palmer 1976; Cramp 1977; Birkhead and Perrins 1986; Dierschke 1988). From the time juveniles moult into their first basic plumage, they are entirely white and will retain this plumage colour throughout the normal succession of moults (Palmer 1976; Birkhead and Perrins 1986). From the time white Mutes are fully grown as juveniles, they cannot be distinguished from a reproductively mature white-morph adult, save for possible differences in bill colour and knob size.

Morph Genetics

The sex, appearance and function of all living organisms are controlled in part by the genetic material present in the body's cells. This genetic material is organized into chromosomes; each chromosome is subdivided into units called genes. Either a single gene or a group of genes is responsible for the expression of one trait. Alleles are alternative forms of a gene and are chemically different from one another. For example, if there is one

gene on a chromosome that determines eye colour, one allele may result in blue eyes while another chemically different allele may result in brown eyes.

In higher animals, chromosomes occur in pairs. An organism receives one of each pair from the mother's egg and the other from the father's sperm. Each chromosome consists of many thousands of genes; those genes responsible for the expression of various traits are sequentially located at the same relative positions on each chromosome of a pair. If alleles are chemically identical, then the individual is homozygous for that trait. If alleles are chemically different, that individual is heterozygous. In heterozygous individuals, if one allele is dominant to the other, that allele will be expressed and will mask the effects of the recessive allele located on the opposite chromosome. Homozygous individuals will express either the recessive form or the dominant form of the gene, depending on which alleles are present on their pair of chromosomes.

The sex chromosomes are generally the exception to the rule described above. Organisms still receive a pair of sex chromosomes (one from the mother and one from the father), but there are two different types and each controls the expression of different traits from the other. The expression of any genetic information present on these sex chromosomes will be influenced by the sex of the individual and are therefore said to be sex-linked.

In birds, the different sex chromosomes are designated as X and O. The X-chromosome controls sex-related and other traits, while the O-chromosome is mainly responsible for female sex determination. In order to be female, therefore, a bird must receive an O-chromosome from its mother's egg. Females receive their second sex chromosome (X) from their father's sperm and are thus symbolically represented as XO. Males, on the other hand, are represented as XX because they receive one copy of the X-chromosome from their mother and another copy from their father.

If the genetic material for a particular trait is located on the X-chromosome, males will have two copies of the gene(s) responsible for the trait's expression. Heterozygous males will express the dominant form of the gene present on one of their X-chromosomes, and will "carry" the recessive allele present on the opposite X-chromosome. Either X-chromosome can be passed on to an offspring with equal probability.

Females, because they have only one copy of the X-chromosome, will only have one copy of the gene(s) responsible for the expression of a particular trait. This is the allele which will be expressed, regardless of whether it is the dominant or recessive allele. Because females must receive their O-chromosome from their mother, the expression of a sex-linked trait depends on which allele (on the X-chromosome) a female receives from her father. (For a more detailed explanation of the genetics involved here see Hartl 1988: 37-38).

In conjunction with a banding program initiated to determine the status of the Mute Swan in Rhode Island, Munro *et al.* (1968) undertook a study to determine the genetic mechanism which controls the

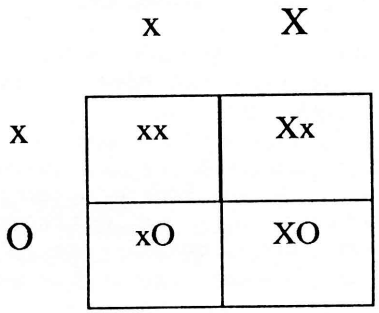

Figure 1: A punnet square illustrating the way the grey (X) and white (x) alleles can be passed on to offspring in the Mute Swan (*Cygnus olor*). The grey male "carries" the white allele and can pass either the grey or white allele on to his male (XX) or female (XO) cygnets. The white female must pass her O-chromosome on to her female cygnets. The white allele on her X-chromosome is passed on to her male cygnets. In a mating between a grey, carrier male and a white female, half of both the male and female cygnets will be grey and half will be white.

expression of colour morph in Mute Swans. Results from the study showed that colour morph is determined by a single gene, where the grey allele is dominant to the white allele. Furthermore, the gene for colour morph was found to be sex-linked and located on the X-chromosome. Figure 1 illustrates the method by which males (XX) and females (XO) pass the white allele on to their offspring.

That the white allele is sex-linked recessive, means that, overall, there should be more white females than males and a much greater proportion of grey birds than white birds in a given population. In a randomly mating population with equal numbers of white, carrier and grey adults, 1/4 of all male offspring would be grey, 1/2 would carry, but not express the white allele and 1/4 of all males would be white. Half of all female offspring would be grey and half would be white. However, the frequency with which white-morph cygnets are produced will depend on the frequency of the white allele (and therefore on the proportion of grey, carrier and white adults) in natural populations.

Morph Range, Distribution and Status

Within their native European range (see Cramp 1977), white- and grey-morph Mute Swans occur together and interbreed. However, the frequency of white morph Mute Swans in the population is distributed along a geographical cline. White morphs occur with a greater frequency as one proceeds eastward from Britain across the European continent. In Britain white individuals are relatively rare and occur at a rate of about 1% in the general population, whereas in the Netherlands, Poland and Russia, white Mute Swans can comprise up to 18 to 20% of a population (Bacon 1980; Dierschke 1988). Indeed, the name "Polish" swan was used by London poulterers to refer to the white morph, because the groups of birds imported from the Baltic frequently contained white individuals (Bacon 1980; Birkhead and Perrins 1986).

Aside from occasional description and mention in European literature, (e.g. Bacon 1980; Birkhead and Perrins 1986; Dierschke 1988), there has been little study of the white

morph itself. Perhaps this is due to its low frequency of occurrence in British populations where most long-term research projects have been conducted (e.g. Reynolds 1972: Coleman and Minton 1979, 1980; Bacon 1980; Perrins and Ogilvie 1981; Birkhead and Perrins 1986; Sears 1988, 1989).

Introductions of the Mute Swan to North America are known from 1889 in Victoria, British Columbia (Warren 1970 *in* Campbell *et al.* 1990) and from a museum specimen from Boston Market, 1875 (Griscom and Snyder 1955 *in* Palmer 1976); however, historical data are poor. Phillips (1928 *in* Palmer 1976) documented two major importations of 216 and 328 Mute Swans in 1910 and 1912, respectively. Belrose (1976) states that one pair, imported in 1919, gave rise to the Michigan population which numbered approximately 1500 individuals in 1987 (Lumsden 1987).

Since its introduction to North America very early in this century, unpinioned cygnets and breeding adults have escaped captivity to establish feral breeding populations (Palmer 1976; Belrose 1976; Birkhead and Perrins 1986; Campbell *et al.* 1990). The first feral breeding in North America was reported in 1910 from the Hudson River (Allin 1987 *in* Lumsden 1987). Localized populations are now distributed throughout North America from southern British Columbia and Saskatchewan to northern Wisconsin, central Michigan, southern Ontario, New York and Connecticut, south to central Missouri, Illinois and Indiana, and Virginia in the Atlantic region (A.O.U. 1983). The densest populations are known from Michigan and along the eastern seaboard from Delaware to Massachusetts (Root 1988). Populations on Vancouver Island and in Regina, Saskatchewan are known from at least 1967 and 1963, respectively (Root 1988). Although breeding Mutes had likely been present for some time in Ontario, Peck (1966) first documented feral breeding Mute Swans in 1958 at Georgetown, Halton County.

Munro's *et al.* (1968) found that 13% of the Rhode Island population is white. Birkhead and Perrins (1986) state that some 15% of all North American Mute Swans are white and suggest that North American Mute Swans were imported from eastern European rather than from British populations. In the Long Point population, however, the frequency of white morphs ranges from 76 to 87% (Knapton and Enright 1993). Because there are no other data, the range, distribution and status of the white morph in North America are virtually unknown!

Population Status in North America

Numbers of feral breeding and wintering Mutes in North America are increasing. Belrose (1976) estimated the Michigan population's annual rate of increase to be 18% and Davies (1981) recorded an annual increase of 12% in the Vancouver Island population. Wood and Gelston (*in* Belrose 1976) measured the annual mortality of the Michigan population to be 15%; it is unclear whether Belrose's increase estimate of 18% takes the annual mortality rate into account. Mortality rate in the Vancouver population of Mutes has not been reported (see Campbell *et al.* 1990).

The Ontario Mute Swan population appears to be increasing as well. Feral populations have established themselves on the shores of Lake Ontario between Bowmanville and Hamilton (25 nesting pairs in 1985; Lumsden 1987) and on the shores of the Inner Bay, Lake Erie at Long Point, Ontario (McCracken *et al.* 1981; Knapton 1993). While Lumsden (1987) states that there were 120 feral birds in the province around 1985, he also mentions that over 600 Mute Swans were kept in captivity under permit from the Canadian Wildlife Service. On the 1992 Christmas Bird Count, there were 227 Mute Swans found in Ontario alone (American Birds 1993). The Long Point population, established in the early 1970's has increased from one breeding pair along the Causeway at Long Point (McCracken *et al.* 1981) to an estimated population of 148 individuals in 1991 (9 nesting pairs), 172 in 1992 (22 nesting pairs) and 105 in 1993 (14 nesting pairs) (Knapton 1993; Knapton and Enright 1993).

Bacon (1980) suggested that the Polish morph is naturally selected for in expanding, low density populations. The reasoning behind his hypothesis is as follows. Mute Swans are monogamous and pair for life, generally with birds of the same age. Few breed in their second year, although some may begin to form pair bonds, defend a territory and build a nest (Palmer 1976; Cramp 1977; Birkhead and Perrins 1986). Third and fourth year birds breed more frequently. Although clutch size is not correlated with age, it is positively correlated with season (Perrins and Reynolds 1967). Clutches laid earlier on in the breeding season contain significantly more eggs and because females breeding for the first time tend to lay their clutch later on in the breeding season, they tend to lay smaller clutches.

Now white females will appear to be reproductively mature adults by the autumn of their first year. If first or second year white females are able to pair bond with older, reproductively experienced males who can defend a territory from intruders, then they can begin breeding in their second or third year, earlier than grey females. In effect, white-morph females get a one year head start over grey females. They therefore are expected to have a higher reproductive success over their lifetime.

Despite the poorly documented status and distribution of the white morph in North America, the continuing increase in Mute Swan numbers both across the continent and in Ontario, together with the relatively high estimate of white swans made by Munro *et al.* (1968), Knapton and Enright (1993), and Birkhead and Perrins (1986), lend support to this hypothesis.

Ecological Significance

In light of the increasing Mute Swan population in North America, many birders, ornithologists and conservationists are concerned that this introduced species could have adverse effects on native species of waterfowl and on native habitat. No studies have yet focused on the issue, and only anecdotal data are available (see Tiner 1993).

Mute Swans defending their territory will show aggression toward humans and other waterfowl (Palmer 1976); male swans have attacked ducks and their broods coming too close to the nest site, possibly to reduce the occurrence of disease in the area (Birkhead and Perrins 1986). Stone and Marsters (1970) actually documented, in some detail, fatal attacks on Canada Geese (*Branta canadensis*), Bean Geese (*Anser fabalis*), Snow Geese (*Chen caerulescens*), Mallards (*Anas platyrhynchos*) and Black Ducks (*Anas rubripes*). These attacks took place in a zoo pond of approximately one half hectare, which also held about 110 captive ducks and 20 geese. Feral Mute Swans may nest on small ponds and lakes or in confined areas of a marsh and may thus have similar effects on native species in the wild.

In southern Ontario, Mute Swans probably compete directly with other marsh or shore nesting species such as Pied-billed Grebe (*Podilymbus podiceps*), Mallard and Canada Goose, not only for breeding territories, but for food as well. Competition is expected to be especially pronounced in those areas with little or diminishing habitat. Moulting adults uproot aquatic macrophytes and consume only the tubers; they require up to 4 kg of wet vegetation per day (Cramp 1977). Unknown quantities of food are needed to supply growing cygnets. Aside from using food resources which would otherwise be used by native species and their broods, Mute Swans disturb much of the vegetation in a marsh or along a shore. Often a sharp line, devoid of vegetation, is left along many shoreline and marsh edges of cattails and reeds (pers. obs.).

Dierschke (1988) states that Mute Swans breeding in the Baltic Sea show no interspecific aggression to other waterfowl or gulls and have little effect on the native vegetation or general habitat. References therein do document Mute Swan aggression toward native European waterfowl; however, additional references cited within the text state that these reports of aggression were exaggerated and over-simplified.

Conclusions

Any study and documentation will further our knowledge of the effects of the Mute Swan on native species and of the distribution and occurrence of the white morph in North American populations.

Acknowledgements

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Notes

Why Do Male Belted Kingfishers Winter Farther North Than Females?

by
Ron Pittaway

Belted Kingfishers (*Ceryle alcyon*) are cold-hardy and often winter as far north as open water permits (Bent 1940). During the last four winters (1991-1994), I recorded the sex of the kingfishers observed wintering in southern Ontario. Observations were made at Bobcaygeon, Lakefield, Minden, Toronto and Whitby - all situated north of Lake Ontario. Given a good view, it is quite easy to distinguish males from females in the field (Godfrey 1986). Interestingly, all the kingfishers (n = 12) seen well enough to classify were males. In Yellowstone National Park, Wyoming, Skinner (*in* Bent 1940) also noted that all of the kingfishers wintering along streams kept open by hot springs were males. The first females arrived there on 17 March.

Why do male kingfishers winter farther north than females? My hypothesis is that the number of nest sites in the northern part of the Belted Kingfisher's range is the major factor limiting their populations. Kingfishers usually dig their nesting tunnels in stream banks and old gravel pits, often some distance from water (Godfrey 1986). Males arrive first on the breeding grounds and defend a nest site. "When the female arrives, she seems attracted to the nest site and then pairs with the male. The two then defend the nest site and fishing area" (Stokes and Stokes 1983). Godfrey (1986) states that breeding populations in rocky areas (e.g. Canadian Shield) are limited by the availability of nesting sites. Therefore, male kingfishers that defend winter territories on or near the breeding grounds would have the first choice of the best breeding habitats (nest sites and fishing areas). Returning females are apparently most attracted to those males holding the best breeding territories.

Of course, there may be other equally valid explanations why only male kingfishers are found at the very northern part of their winter range. I would be interested in hearing about any winter (December-February) sightings of female kingfishers in southern Ontario and about other hypotheses.

Acknowledgements
I thank Bill Crins, Michel Gosselin, Jean Iron, Ron Tozer and Mike Turner for much valuable assistance and advice in the preparation of this note.

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Grasshoppers as Food Source for Black-billed Cuckoo

by
David Agro

The most frequently noted food items of the Black-billed Cuckoo (*Coccyzus erythropthalmus*) are caterpillars, particularly the "hairy" species (Bent 1940, Godfrey 1966, Terres 1980). Other animals such as grasshoppers, beetles, crickets, mollusks, and fishes are mentioned as prey, but little has been noted on their importance as part of the cuckoo's overall diet. My examination of gizzards and proventriculae of two Black-billed Cuckoos found short-horned grasshoppers (Order Orthoptera: Family Acrididae) to be the major food item.

Both birds were road kills. The first bird was an adult female, found barely alive near Nanticoke, R.M. Haldimand-Norfolk, in the late afternoon on 24 July 1993. The second bird, an adult male, was found recently killed in the early morning near the intersection of Highway 24 and Regional Road 10 (Turkey Point Road) R.M. Haldimand-Norfolk, on 1 August 1993. The first bird, presumably feeding for most of the day, had eight whole grasshoppers and a number of parts that were identified as a grasshopper. There was only one part that could be determined as being from another insect, identified as a caterpillar (Lepidoptera). The second bird had two whole grasshoppers and numerous grasshopper parts, plus a small amount of caterpillar hair. It had proportionately less food in its proventriculus and gizzard than the first, possibly due to less feeding time.

The number of grasshoppers in these birds suggest that cuckoos do not always depend mainly on caterpillars for the large portion of their diet. At times when caterpillars are not plentiful, the birds presumably take advantage of other, more abundant food sources such as grasshoppers.

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Mourning Doves Wintering in Ontario

by
Ron Tozer

Introduction

The Mourning Dove (*Zenaida macroura*) occurred only sparingly in settled areas of southern Ontario 150 years ago (Snyder 1957), but had become a common breeding species of the southwestern part of the province by early in this century (Baillie and Harrington 1936). For many of these early years the Mourning Dove was migratory in Ontario (Saunders and Dale 1933). Overwintering apparently developed in agricultural areas due to the availability of waste and stored corn (Alison 1976; Armstrong and Noakes 1983). It was not until the early 1950s that wintering populations in southern Ontario "increased rapidly and in a linear fashion" (Armstrong 1987), apparently correlated with "corresponding increases in corn production" (Armstrong and Noakes 1981). The number of overwintering Mourning Doves in southern Ontario continues to increase today. Where agricultural land has been taken over by urban development, the species has adapted through extensive use of winter bird feeders (Tozer and Richards 1974; Alison 1976). In recent years, the Mourning Dove has begun to winter even farther north in central Ontario, away from agricultural areas. This note examines some of the data which illustrate these trends in wintering by Mourning Doves in Ontario.

Southern Ontario

Freedman and Riley (1980) traced population trends of various bird species wintering in southern Ontario through an analysis of annual

Christmas Bird Count (CBC) data from seven locations (Hamilton, Kingston, Kitchener, London, Ottawa, Pickering and Toronto) during the period from 1929 to 1977. Their findings for the Mourning Dove indicated that "essentially no birds were recorded prior to 1950", followed by relatively low (but increasing) numbers during the next two decades. Then "a spectacular increase" occurred from 1970 to 1977, with the combined totals for all seven sample counts averaging about 1350 birds per year (Freedman and Riley 1980). Using the same method on CBC results reported in *American Birds* from the seven selected locations over the next fifteen years (1978 to 1992), I found an average of 3479 Mourning Doves per year (ranging from 1288 in 1982, to 5226 in 1988). These sample count results were standardized to "birds per observer" in order to compensate for increasing observer effort over time, as suggested by Raynor (1975). Freedman and Riley (1980) found a peak of about six birds per observer in 1976, while I calculated that there were 10.2 Mourning Doves per observer by 1988. The dramatic increase in wintering by Mourning Doves in southern Ontario has obviously continued.

I examined all Ontario CBC data reported in *American Birds* during the twenty years from 1973 to 1992 in order to further investigate the magnitude and timing of the increase in Mourning Dove numbers. In southern Ontario (south of the Canadian Shield), there were fully 15 Christmas Counts which achieved totals of 1000 birds (or more) during the 1980s. The average year of these counts first reaching that "plateau" was 1987. Two southern Ontario CBCs have actually reached totals of more than 2000 Mourning Doves (i.e. 2016 at Cedar Creek in 1987, and 2001 at St. Catharines in 1988)!

Central Ontario

In 1966, it was reported that the Mourning Dove wintered in Ontario, "north rarely and precariously to Ottawa" (Godfrey 1966). Since then, however, the species has been regular (with increasing numbers) throughout the twenty years from 1973 to 1992 on CBCs at Ottawa-Hull, Pakenham-Arnprior, and Carleton Place. During the 1980s, wintering by Mourning Doves spread to various sites on the Canadian Shield. For example, they have become regular (with increasing numbers) on the following CBCs since the year shown in parentheses: Pembroke (1981); North Bay, Sault Ste. Marie, and Gravenhurst-Bracebridge (1982); Deep River, and Minden (1987); Sudbury (1988); and Burks Falls, and New Liskeard (1989). Mourning Doves have been regularly observed on an unpublished winter bird count at Huntsville since 1984 (Huntsville Nature Club records).

Wintering by Mourning Doves at these Shield communities is apparently linked to increases in local breeding populations (Alison 1976), and the provision of food at winter feeding stations adjacent to dense coniferous cover for roosting. Dow (1994) has suggested a similar dependency on feeders as "a factor critical to maintaining local populations as breeding entities" in outlying areas of the Northern Cardinal's (*Cardinalis cardinalis*) range in Ontario. Many Mourning Doves attempting to winter on the Canadian

Shield are totally dependent on feeding stations, with no access to agricultural land for corn or weed seeds.

Northern Ontario

Very recently, a few Mourning Doves have been detected on CBCs even farther north. These counts, with the number of birds in parentheses, were as follows: Timmins in 1992 (6); Thunder Bay in 1987 (2), 1991 (1), and 1992 (1); Dryden in 1992 (1); and even Moosonee in 1992 (3). Indicative of this species' continued advance northward in Ontario was the presence of at least 12 birds at Moosonee during the 1991 breeding season, with "courting and copulating pairs" observed and breeding strongly suspected (Wilson and McRae 1993). The Clay Belt was considered to be the northern boundary of breeding through the late 1980s (Peck and James 1983; James 1991).

Wintering Capability

Even with available food and cover, severely cold winter weather often causes injury, and sometimes even mortality, among Mourning Doves attempting to winter in northern areas such as Ontario (Nickell 1964; Alison 1976; Whelan 1994). Frost damage to the feet, including loss of toes, is a common injury (Alison 1976; Armstrong and Noakes 1983). However, birds sustaining such injuries can apparently still function. Studies of captive birds (Ivacic and Labisky 1973) have actually suggested that Mourning Doves may "possess a physiological mechanism that allows them to substantially reduce their body temperature and, correspondingly, their metabolic expenditures" when exposed to low ambient temperatues and absence of food (as during winter storms).

Successful overwintering by Mourning Doves in Ontario allows them to "avoid the hazard of migration and hunting" and to "take advantage of favourable early spring conditions that may increase the length of the breeding season" (Armstrong and Noakes 1983).

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Successful Hybridization of Common Raven and American Crow

by
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Since 1985, a single Common Raven (*Corvus corax*) has frequented an urban environment approximately 145 km south of its usual range. It has been observed pursuing, killing and feeding on Rock Doves (*Columba livia*) and Gray Squirrels (*Sciurus carolinensis*) in Metropolitan Toronto, Ontario (43° 36'N, 79° 31'W). This raven has been seen most frequently in the area of the former Etobicoke Lakeshore Psychiatric Hospital. Two nests were built by this bird under the eaves of one of the four-storey buildings during the spring of 1987. At that time there was no sign of a mate (Jefferson 1989).

Many observations during 1990 indicated that the raven had paired with an American Crow (*C. brachyrhynchos*). During April 1990 the raven was observed (M. DeLorey, pers. comm.) performing courtship flights around a crow. On 8 May 1990, the raven was observed shredding white material, and adding it to one of the aforementioned nests. It was then seen sitting on the nest for at least 45 minutes, with only its tail visible. The next day it was

observed flying into a Norway Spruce (*Picea abies*) to alight beside a crow. The raven fed the crow what appeared to be fresh "meat", and then mounted the crow. The raven and crow were subsequently observed allopreening (D. McClement, pers. comm.; Bent 1946). Since 1990, the raven and crow have been seen flying together frequently (Jefferson 1991).

In 1990, the raven began to mimic the calls of a crow, which might have led to its acceptance by the crow. Vocal interactions between the crow and raven have been heard - a pattern of two caws coming from the crow answered by three deeper caws from the raven.

In late April 1993, the Common Raven was observed actively constructing a nest in a crotch of a spruce tree on the above site. The nest was approximately 60 cm in diameter and 40 cm deep, one metre from the top of a nine to ten metre high tree. During the next two months the raven was occasionally seen on the nest; invariably it was observed perched nearby, well-concealed in the spruce branches. In a few instances, when intruders came rather close to the nest, it flew from elsewhere on the property into neighboring trees.

A crow was thrice seen leaving the nest, but all nests were too deep for any observations of a crow sitting there. On 29 May 1993, the crow was viewed leaving the nest area to confront a high-flying Turkey Vulture (*Cathartes aura*). Three minutes later, as the crow dropped back down, the raven flew up to meet it; both corvids then returned to the nest site (G. Fairfield, pers. comm.).

On several occasions - 3, 5 and 8 May 1993 - after consuming several pieces of squirrel, the raven flew to the nest where it remained for 40-60 seconds. Precise activity at the nest was obscured by the dense evergreen branches.

On 14 June begging calls were heard from the nest vicinity (A. Fairbridge, pers. comm.). The next day the author observed much activity around the nest, with a crow and raven repeatedly calling to each other. What were later deemed to be two recently fledged hybrids made short flights between nearby deciduous trees. On 18 June 1993 positive confirmation was made of the two hybrids. They were almost raven-sized, with the wedged-shaped tail of a raven and the head of a crow. Their bills appeared very thin, shorter than that of a crow, with a small amount of yellow at the gape. The two hybrids were photographed several hundred meters south of the nest in the crowns of large maple trees (see Figure 1).

Repeatedly, both the crow and raven flew away from the young birds making loud distracting noises whenever these fledglings were approached; a few minutes later the adults would silently appear from behind the observers. This behaviour was noted frequently over a 90 minute period. Begging calls from the young were silenced when the crow flew into the trees where the young remained. Dense foliage prevented precise observations of behaviour from our position 10 m to the north. Later, cawing from these fledglings sounded more highly pitched compared to that of the crow, which in turn made calls which were higher

Figure 1: Recent fledgling resulting from the hybridization of Common Raven and American Crow at the former Etobicoke Lakeshore Psychiatric Hospital, Metropolitan Toronto, Ontario, Canada, 18 June 1993. Photo by *Beth Jefferson.*

than the deep resonating caws from the raven. The crow, raven and two hybrids continued to be seen flying together until the end of June (D. McClement, pers. comm.). During the fall of 1993, the two hybrids were frequently observed with the raven. On 27 October, all of them were seen briefly by the author chasing Rock Doves.

Both sexes of crow take an active part in nest building. Both sexes of ravens also contribute to the building of a nest and both sexes of crow may help incubate (Bent 1946: Goodwin 1976). With ravens, the male is not reported to incubate but only to cover the eggs when the female leaves the nest. In corvids the male feeds the female during incubation and the female sometimes leaves the nest to be fed by the male nearby (Bent 1946: Goodwin 1976). From these descriptions and the other direct observations cited above, it has been concluded that the raven is a male and that the crow is a female.

If fledging took place 14 June 1993, the eggs would have hatched in early May during which time the raven was observed making frequent trips to the nest after ingesting squirrel meat. If the crow laid the eggs as is speculated, it would have occurred approximately 18 days prior to this in the second week of April. These dates have been deduced using averages cited in Ehrlich *et al.* (1988).

This appears to be the first known documentation of successful hybridization of Common Raven X American Crow in North America. In Britain, three reports of hybridization of Common Raven X Carrion Crow (*C. corone*) are cited in Gray (1958).

But these records date from 1897 to 1936. If undocumented raven X crow hybridization has occurred, it would be virtually impossible to distinguish in any of their offspring. (For example, visual hybrid features would not be as apparent as in Lawrence's and Brewster's Warblers.) The atypical location of this particular raven, and the distinguishing silvery-gray cast to its back and wings creating a two-toned effect in flight, have enabled this particular raven to be subjected to intense scrutiny. Thus details of its behaviour have been noted by many birdwatchers.

Prior to the spring 1993 observations described above, in May 1992 (G. Coady, pers. comm.) and during the winter of 1992-1993, "small ravens" were seen in the vicinity of the hospital. In addition, on 13 November 1993, a small raven-shaped bird was observed being chased by two crows, several km northwest of the hospital grounds, above High Park. This corvid was only slightly larger than the pursuing crows (B. Yukich, pers. comm.). It is speculated that these smaller "ravens" might possibly be hybrids from previous years. The 1993 adult hybrid "cravens", as they have been unofficially dubbed, closely resemble a raven. Identification could be quite tricky, especially if they leave their natal area.

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I appreciate the continued encouragements from Alvaro Jaramillo and Jim Rising, Zoology Dept., University of Toronto, and from Don McClement, who have commented on earlier drafts of this note and have offered many insights respecting hybridization possibilities.

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Red-Shouldered Hawk Survey

In 1994 and 1995, volunteers are needed to play taped recordings of this rare raptor's calls, and note the number and age of those individuals which respond along selected survey routes in south-central Ontario during late April. Routes consist of 20 stations over 19 km, and take about four hours to complete (starting just after sunrise). Surveyors are given a tax receipt for mileage and out-of-pocket expenses. Contact: Lisa Enright, Long Point Bird Observatory, Box 160, Port Rowan, Ontario N0E 1M0. Telephone (519) 586-3531.

Book Reviews

Ornithology in Ontario. 1994. Co-edited by *Martin K. McNicholl* and *John L. Cranmer-Byng*. Published by Ontario Field Ornithologists. Soft cover. 400 pp. $24.95 + $3.50 postage and handling from Ontario Field Ornithologists (see below).

Almost a decade ago, the Board of Directors of the Ontario Field Ornithologists conceived the idea of a publication covering the evolution and history of Ornithology in Ontario. In February 1994, the finished product rolled off the presses - a truly remarkable achievement by a contingent of unpaid, and often unappreciated, volunteers.

The tasks that confronted editors, and contributors, were infinite and at times seemingly insurmountable. Only the most dauntless organizers could have kept the venture afloat. A list of those who helped develop this publication is too long for inclusion here. All are identified within the book. We must, however, acknowledge and congratulate the co-editors, Martin K. McNicholl and John L. Cranmer-Byng for their indefatigable efforts. In addition to steering the project through rough seas, both made copious contributions to the text.

Being aware of the capabilities of those involved in this work, we expected a more than passable result. But, this 400-page volume surpasses anything we ever imagined. It is no exaggeration to say that the book is absolutely superb. The very title relates to such a vast, open-ended subject that simply deciding on the book's skeletal structure must have been a formidable challenge. This editorial dilemma has been handled with admirable success.

By its very nature, Ornithology demands great attention to detail. It is therefore, gratifying to note that the articles more than satisfy this element. Whether a chapter's theme relates to a person, a species of bird, or whatever, each contributor has covered his or her subject capably, and in great depth. Even the lists of literature reviewed and personal acknowledgements reflect an editorial regard for completeness. There are even 16 pages devoted to synopses of "Topics Not Covered in Detail". Now, that's thoroughness!

Having acquired, and refined, all pertinent manuscripts, the O.F.O. Executive, and especially the co-editors faced the problem of finding a publisher, or at least a job-printer to convert raw material into finished product. Alternatives were evaluated. Costs were a salient problem. What to do? It is here that we must single out one more name for special mention - that of Phill Holder, proprietor of Hawk Owl Publishing, based in Whitby, Ontario. O.F.O.'s good fortunes peaked when Holder volunteered to see the book through all its production stages. A keen bird student, and member of O.F.O., Phill took the ball from deep in the end-zone, all the way downfield - an unselfish and appreciated act that turned the whole project into success. Selection of paper, size of pages, quality and size of type, conversion of photos and drawings into professional-style production - items

that are often taken for granted - are all factors where Holder's assistance brought the fledgling from eclipse to radiant plumage.

We could compare the construction of this book to that of a sturdy three-storey building.

First comes the basement and foundation in the form of acknowledgements and the traditional foreward.

The ground floor is a series of 9 chapters averaging 18 pages each. Topics reflect a careful selection ranging from early historical data to special facets of Ornithology such as Oology and Bird-banding.

The second storey presents two suites of 10 divisions each. First comes a series of biographies of eminent Ontario ornithologists. These average 6 pages in length. Again, each biographer has been skillfully chosen. The second division is made up of 10 accounts of selected species whose status has varied in Ontario over time. These run about 10 pages each. Authors are well-known to O.F.O. members.

The penthouse/attic sections are 2 appendices, totalling 90 pages, devoted to more biographies. First comes an anthology of thumb-nail sketches of some 240 persons, no longer living, whose ornithological activities in Ontario were deemed worthy of inclusion. Then, the book finishes with a similar review of wildlife artists, both past and present.

The "windows" of this structure come in the form of delightful pen and ink drawings and photo reproductions. Some of the photos, such as one of P.A. Taverner, J.H. Fleming and W.E. Saunders together in an informal setting, are priceless. Drawings range from very ordinary efforts to the excellence of Terry Shortt's Bobolink on the back cover.

Are there shortcomings and faults anywhere? Well, we found that these were minor. To pick them out was to resort to such nit-picking as inconsequential spelling errors - of which we found a few - or to second-guess decisions as to whose biographies should be included in Appendix I. We can only assume that McNicholl's desire to be as conprehensive as possible led to inclusions of non-residents like Van Tyne, Sutton and Murie, all of whom were indeed eminent scientists with at least some connection to Ontario's birds. But, to include them is to overlook dozens of others with similar qualifications. So, even here, the book goes "the extra mile" rather than falling short.

It must be pointed out that this is not a book to be read in one evening - or even two. Instead, it is a literary delight that should be digested a little at a time. Having read it through once, we immediately went through it again.

To order this book, mail remittance of $28.45 per copy, payable to "Ontario Field Ornithologists", to S. Hadlington, 1 Harbour St., R.R. 3, Brighton, Ontario K0K 1H0.

We know of at least two Naturalists' Clubs who have ordered bulk lots. The book is the perfect gift to guest speakers. Quantity discounts on lots of a dozen or more copies are negotiable. Contact O.F.O. directly.

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A Birder's Guide to Churchill. 1994. By *Bonnie Chartier.* American Birding Association, Inc. 132 pages, 16 maps, 21 original illustrations, 12 black-and-white and 14 colour photographs. $14.95 U.S. + $3.50 U.S. postage & handling. ABA Sales, Inc., Box 6599, Colorado Springs, CO 80934 USA.

Many Ontario birders get their first taste of subarctic birding at Churchill, Manitoba. Easily accessible by air and rail, with good motels and car rentals — it is a paradise of shorebirds, jaegers, Ross's Gulls, Pacific Loons, Harris's Sparrows, Smith's Longspurs, Willow Ptarmigans, and other tundra and boreal forest specialties.

This newly revised ABA/Lane Guide by Churchill resident, Bonnie Chartier, is packed with user-friendly maps, site guides, bar graphs and an annotated list of the birds of particular interest. In addition, there are lists of amphibians and mammals, butterflies, moths and a checklist of the vascular plants. The guide prepares the visiting birder to the region with brief overviews of the history, vegetation, accommodations, insect pests and other valuable information. Like the other guides in this series, it is well constructed for use in the field. For example, on a recent trip to Texas using two similar ABA/Lane guides, I found the wire-O binding and the wrap around cover were very convenient and prevented excessive wear to the binding and pages under normal use in the field.

Bonnie Chartier clearly describes all the key birding areas. The text is comprehensive and easy to follow with a distinct touch of humour. The photographs and artwork capture the essence of the area and its birdlife. As a person interested in recognizable forms, I was surprised to see the illustration on page 61 of a male Spruce Grouse of the Franklin's subspecies (race) found in the Rocky Mountains!

I have birded Churchill twice, and after reviewing this guide now yearn to go again. It is absolutely essential for anyone planning a trip to Churchill. I also highly recommend the guide even if you just wish to dream about birding this subarctic outpost where tundra and boreal forest meet on the shores of Hudson Bay.

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Photo Quiz

by
Bob Curry

Answer to Photo Quiz in *Ontario Birds* 11 (3): **Broad-winged Hawk.** As the last sentence of the previous solution stated, this one is relatively easy, so much so that it may be difficult to say a lot about it.

Readers will recognize this bird soaring overhead as a broad-winged or buteo hawk. In fact, the short, broad tail is so striking and compelling that we are drawn to it, thus perhaps overlooking some other features useful in identification that might be needed given poorer light conditions or with an immature bird. So let's deal with the tail and go on to these more interesting features. Clearly, our only other buteo with a boldly black and white barred tail is Red-shouldered Hawk. Adult Rough-legged Hawk has a somewhat barred tail but is hardly likely to be confused with these two species. Red-shouldered has three visible black bars separated by two white bars about half as wide whereas Broad-winged has two black and two white equally wide bars although just the distal white bar is clearly visible. Both species have narrow white terminal bars. The broader fan of Broad-winged tail and the pattern provide a much more striking "flag" than in Red-shouldered.

At a great distance or, as is often the case, a great height, the soaring shape of Broad-winged is quite distinctive; both the leading and trailing edges of the wings taper to create a point. I call this species our only pointed-winged buteo. Swainson's Hawk wings are long and slender but they don't taper to points. Soaring Red-shouldered push their wings forward and the tips are broad and blunt. Red-tailed can look much like Broad-winged in soaring shape but have more "muscular" bulging wings and broad tips. These differences are not so distinct in gliding birds.

Two excellent overhead photos of Red-shouldered and Red-tailed Hawks taken by Barry Cherriere are found on page 230 of our own *Ornithology in Ontario* and, taken together with this quiz photo, display all of the ventral features of "typical" soaring adults of these three congeners. The one and only distinctive feature of the underwings of adult Broad-winged Hawk is the broad black trailing edge on a basically plain whitish underwing; it exists to some extent in the other two but is much less bold. Both red-tail and red-shoulder have "busier" underwings with more things to look for. Note the dark leading edge or patagium and the dark commas on the red-tail and the roughly crescent shaped light windows at the base of the outer primaries of the red-shoulder.

The intense reddish barring on the breast of adults sets off a white throat presenting an appearance surprisingly similar to the same area

of light phase adult Swainson's Hawk. But don't be mesmerized by one feature. Quite apart from considerable differences in size, shape and manner of flight the Swainson's has very different and very striking underwings with light wing linings and dark remiges, a pattern opposite to most of our hawks.

Using this information and several good guides to hawk identification you need spend only several hundred hours at hawk migration lookouts to develop facility in distinguishing the buteos!

Now for something entirely different - our next quiz bird is a passerine.

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Editors' note:
Some suggested raptor readings.

Clark, W.S. and B.K. Wheeler. 1987. A Field Guide to Hawks of North America. Houghton Mifflin Company, Boston.

Dunne, P., D. Sibley, and C. Sutton. 1988. Hawks in Flight. Houghton Mifflin Company, Boston.

Palmer, R.S. (Editor). 1988. Handbook of North American Birds. Volume 4. Diurnal Raptors, Part 1. Yale University Press, New Haven, Connecticut.

Palmer, R.S. (Editor). 1988. Handbook of North American Birds. Volume 5. Diurnal Raptors, Part 2. Yale University Press, New Haven, Connecticut.