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by *Barry Kent MacKay*

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Cowbird Parasitism of House Finches at Guelph, Ontario

Rohan van Twest

Introduction

Since its release on Long Island, New York in 1940, the House Finch (*Carpodacus mexicanus*) has spread over much of the eastern United States and southeastern Canada (Hill 1993). Colonization of Ontario began in the mid 1970s, and its natural history in the province has been previously described by Kozlovic (1994) and Tozer (1997).

In Guelph, Wellington County, Ontario, the first House Finch was reported in 1975 (Brewer 1977). The next recorded occurrence was in 1983 (van Twest 1991), and nesting was confirmed in the spring of 1985 (Weir 1985). Graham (1987) found that the frequency of nest parasitism by the Brown-headed Cowbird (*Molothrus ater*) in this pioneering House Finch population was high (88%). Moreover, 42% of Ontario House Finch nests were subject to cowbird parasitism (Ontario Nest Records Scheme, Peck and James 1987). Despite the high frequency of brood parasitism of its nests, the House Finch is now a common resident at Guelph.

During the breeding season (April to June) of 1994 and 1995, I conducted a study at Guelph to determine the level of cowbird parasitism on House Finches, and to monitor the fate of parasitized and unparasitized nests.

Methods

Between 17 April and 30 June, nests were found by systematically searching through an area approximately 10 km^2, in the northwestern sector of the City of Guelph. This area consisted of a mosaic of residential (60%), industrial (30%) and commercial (10%) development. Nests subsequently were visited daily until the young fledged from the nest or it was destroyed or abandoned. The nest contents were examined with the aid of an adjustable mirror mounted on a 1.5 m pole. If the clutch or brood was not attended continually by the pair for 3 days, it was deemed abandoned. A nest was considered parasitized if it contained a cowbird egg or nestling.

Results and Discussion

Due to the conspicuous nesting behaviour of House Finches, nests were easily detected. However, not all nests were readily accessible and therefore, contents could not be

checked. A total of 166 nests was monitored. Of these, 19 were parasitized, 16 were found with cowbird eggs, and 3 with cowbird nestlings. Nest outcomes for unparasitized and parasitized House Finch nests are summarized in Table 1.

Table 1: House Finch nest outcomes at Guelph, Ontario.

	Abandoned # (%)	**Destroyed** # (%	**Fledge**
Unparasitized nests n = 147	43 (29.3)	33 (22.4)	71 (48.2)
Parasitized nests n = 19	8 (42.1)	5 (26.2)	6 (31.6)

House Finch nests had a mean finch clutch size of 4.6 (n = 131, sd = 0.61) and 4.4 (n = 12, sd = 0.90) in unparasitized and parasitized nests, respectively. Parasitized nests had a mean of 1.5 cowbird eggs (n = 12, sd = 0.91) and a combined mean clutch size of 5.9 (n = 12, sd = 1.08). Although female cowbirds are known to reduce finch clutches by removing eggs (Kozlovic 1998), there was no significant difference ($t = 0.99$, $df = 141$, $p > 0.05$) between finch clutch sizes in unparasitized and parasitized nests. The female cowbird often reduces the host's clutch size to ensure its own eggs are adequately incubated and hatch before the host eggs. However, this process appears unnecessary for small hosts such as the House Finch, as it has no effect on the length of incubation of the cowbird eggs (Peer and Bollinger 2000).

Parasitized nests that reached the fledgling stage produced a mean of 1.8 finches per nest (n = 6, sd = 0.69), compared to a mean of 3.7 finches per nest (n = 79, sd = 1.27) in unparasitized nests. Therefore, parasitism resulted in significantly ($t = 3.52$, $df = 85$, $p < 0.001$) lowered production of House Finches. This loss in productivity may be comparatively greater at Guelph than that reported in St. Catharines (Kozlovic et al. 1996), as some of the nestling cowbirds survived more than 3 days in the finch nests, and thus competed for food and space with their nestmates (Payne 1977), which may have led to increased House Finch mortality.

House Finches usually feed their young predominantly plant material, which is apparently an inappropriate diet for cowbirds, with the result that few if any cowbirds survive to fledge from House Finch nests (Kozlovic et al. 1996). At Guelph, only 2 (n = 8) nestling cowbirds disappeared between 3 to

Figure 1: Nestling Brown-headed Cowbird in House Finch nest, 18 June 1995, Guelph, Ontario. Photo by *Rohan van Twest*.

5 days after hatching; 2 survived for at least 5 days, but their nests were destroyed; and a single nestling cowbird survived for 10–12 days, but fell out of the nest and died. This carcass was collected, and the following measurements were made: total body length (74 mm), wing length (45 mm), tarsus (20 mm), and alar feather tract length (24 mm). These measurements indicate that this nestling cowbird's growth was retarded and equivalent to a 6–7 day old with a normal host (Scott 1978). The 3 remaining nestling cowbirds apparently fledged, but only one was located after leaving the nest, and was followed for up to 6 days. The chronology and observations for this young cowbird are summarized in Table 2.

Table 2: Chronology and observations of a parasitized House Finch nest in 1995 at Guelph, Ontario.

Date	Observations
28 May	1 cowbird egg and 5 finch eggs (one slightly cracked); nest in Sky Rocket Juniper (*Juniperus* sp.)
5 June	1 cowbird nestling (N) and 2 finch nestlings (N); 2 finch eggs
8 June	1 cowbird N and 3 finch N; 1 finch N dead on ground; 1 finch egg
12 June	1 cowbird N and 2 finch N; 1 finch N live on ground
15 June	1 cowbird N and 1 finch N; 1 finch N dead on ground
18 June	1 cowbird N and 1 finch N; nest photographed (Figure 1)
19 June	Cowbird young's begging call heard, but not located; finch fledgling in nest-tree and was fed by male parent.
21 June	Begging calls of the cowbird young heard and located in a maple (*Acer* sp.) tree, close to original nest-tree. Foster parents agitated by my presence; observed male foster parent feed the cowbird. Finch fledgling flew out of nest-tree and was followed by the parents.
24 June	Cowbird young still in maple tree, alert and able to fly higher into crown of the tree by flapping and hopping. Wings appear to be fully developed, but the head and body still not fully feathered. A patch of fecal "white wash" on ground below the perch, indicating that the cowbird had received sufficient food.
25 June	Cowbird and finch gone.

Fledgling cowbirds often give loud and persistent begging calls that occasionally elicit feeding by conspecific non-foster parents (Woodward 1983). Although the successfully fledged cowbird was not banded or marked for individual identification, its features and the circumstances strongly suggested that it was fed by its foster parent. This observation is interesting, as there is only one other published instance of a young cowbird being fed by a House Finch (reported in the Panamint Mountains, California by Wauer 1964). However, departure of single cowbirds from House Finch nests has been recorded at St. Catharines, Ontario (Kozlovic et al. 1996) and at Ithaca, New York (Hartup et al. 2000). Nevertheless, the House Finch is an ineffective host as there is no report of a fledgling cowbird being raised to independence, a process that can take 16–28 days after the young leave the nest (Woodward 1983).

The incidence of parasitism was 11.4% (n = 166), which is drastically lower than the 88% reported by Graham (1987), nearly ten years before this study. A reduction in the frequency of parasitism over time also has been found in southern Ontario and the eastern United States (Peck and James 1998; Kozlovic, pers. comm.). In the native western range of the House Finch, where the host and parasite have been in sympatry for longer

than in Ontario, the frequency of parasitism is only 1% (Wootton 1986). Moreover, the incidence of parasitism is generally lower in hosts that feed their young granivorous (Middleton 1991) and frugivorous (Rothstein 1976) diets. Therefore, the decline in cowbird parasitism of House Finch nests in Guelph and Ontario is perhaps predictable.

Cowbird parasitism decreases the reproductive output from House Finch nests by reducing finch clutch sizes (Kozlovic 1998) and by reducing the number of young fledging (this study). Therefore, there must be selective pressure on the host to evolve measures that reduce the frequency of parasitism. Small hosts are known to use clutch abandonment as a principal mode of defence to counter parasitism (Graham 1988). At Guelph, parasitized nests apparently were abandoned by finches more frequently than unparasitized nests (see Table 1); however, the difference was not significant ($z = -1.14$, $df = 164$, $p = 0.25$). This may suggest that for House Finches nest abandonment has not developed as a significant defence against cowbird parasitism. Because House Finches can raise some of their own young in parasitized nests, it may be that the cost of abandoning their clutch is greater than accepting cowbird eggs. Therefore, host clutch abandonment alone cannot account for the observed decline in the frequency of brood parasitism. However, as House Finches have a protracted egg-laying season, which ranges from 22 March to 6 August, and the peak nesting season for cowbirds is from May to July in Ontario (Peck and James 1998), some House Finches may be able to escape the negative effects of parasitism by nesting outside the peak cowbird breeding season.

Similarly, female cowbirds that include House Finches among their complement of hosts would produce comparatively fewer offspring than female cowbirds that do not parasitize House Finches. Thus, selective pressure probably operates on cowbirds to avoid parasitizing House Finches and may partly explain the observed decline in the frequency of brood parasitism.

Another factor worthy of consideration is the relative abundance of the host and parasite. The importance of relative abundance in reducing the rate of parasitism in endangered species such as the Kirtland's Warbler (*Dendroica kirtlandii*) and the Black-capped Vireo (*Vireo atricapillus*) has been shown with cowbird control programs (Rothstein and Cook 2000). In Ontario, from 1985 to 1995, the abundance trend for House Finches and cowbirds was +45.6% and -5.2% per year, respectively (North American Breeding Bird Survey Trend Estimates: http://www.mbr-pwrc.usgs.gov/bbs/trend/tf98.html). These trends would suggest that more House Finches were available as potential hosts to a declining pop-

ulation of cowbirds, and could have played a role in reducing the frequency of brood parasitism of House Finches in Guelph and Ontario.

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Rates of "Peent" Calls by American Woodcocks: the Seven Percent Solution

Michael M. J. Morris

In the spring, male American Woodcocks (*Scolopax minor*) produce a recognizable vocalization, often described as a "peent", while they are on the ground. Woodcocks supplement this vocal behaviour with flights and flight calls in order to attract mates (Stap 1995). The "peent" calls have been used to census woodcock populations (Shissler and Samuel 1985, Sauer and Bortner 1991). Also, there has been some effort to determine if the calls are sufficiently distinct to permit identification of individual woodcocks (Samuel and Beightol 1972, Beightol and Samuel 1973, Bourgeois and Couture 1977, Weir and Graves 1982).

The purposes of this study were to look at the rate of singing in the spring and to examine possible differences in rates of song production among males. I also wanted to examine how the woodcock's song strategy is used during the mating season.

During the spring of 1998, I located six male woodcocks by their songs and flight displays in Dufferin County, Ontario, which is well within the known breeding range of the species (Lumsden 1987, James 1991). Five males were located in Mono Cliffs Provincial Park (44° 03' N, 80° 04' W), about 10 km northwest of Orangeville. Generally, the territories were located on abandoned farmland in early stages of forest succession, dominated by hawthorns (*Crataegus* spp.), Trembling Aspen (*Populus tremuloides*), and Apple (*Malus pumila*) (Lindsay 1991).

I recorded data from 18 April 1998, not long after the birds arrived on territory, until 12 May 1998. For each of the six males, I counted the number of "peent" calls produced during ten 30-second periods in the peak evening singing period (about 30 minutes prior to complete darkness; approximately 2030–2100h EDT early in the season, becoming progressively later during the study period). For each territorial bird, I recorded singing rates on two evenings.

Results

Woodcocks vocalized and flew for about 30 minutes just prior to complete darkness. The number of vocalizations ranged from 7 to 13 per 30-second count interval (Table 1). The median and mean numbers of songs per count interval both were 10. During the peak singing period, the rates of song production were relatively constant, as indicated by relatively low coefficients of variation [(standard deviation/mean) x 100] ranging from 8% to 14%.

Table 1: Singing rates (average # songs/30 seconds) and coefficients of variation (%) of American Woodcocks at six sites in Dufferin County, Ontario, on two nights.

	Day 1		Day 2	
Site	**Av. # Songs/30 s**	**CV**	**Av. # Songs/30 s**	**CV**
Barn Ruin	8.9	8.3	9.2	8.6
Survival Field	10.1	9.9	10.8	9.8
Bat Field	10.1	13.6	11.1	13.1
Parking Lot	9.0	10.5	9.6	10.0
DGH Field	10.7	10.8	9.4	12.5
20th Sideroad	9.4	9.8	10.8	10.5
Mean	9.7	10.5	10.2	10.8

There were some among-bird differences in the numbers of songs produced per 30-second period among the six males under study (Table 1). I used a Kruskal-Wallis test to evaluate among-bird differences, combining data from the two nights for each bird. This statistical test detected significant ($p < 0.01$) differences among singing rates of the six birds.

Discussion

My estimates of woodcock "peenting" rates are comparable with those in other published studies. Keppie and Whiting (1994) cited an average "peenting" rate of 19.3 "peents"/minute and a coefficient of variation of 33%. They noted an average duration of 0.2 seconds/"peent".

The "peent" call that forms the basis of this study is one of four principal sounds produced by male woodcocks during their courtship ritual. The two other main sounds are a "chirping" produced during the aerial flight and a "twitter" produced by the wings (Samuel and Beightol 1973).

Vocalizations by birds usually serve one of two purposes: to proclaim themselves by advertising their species and sex, thereby attracting a mate and maintaining that bond; and to establish and maintain a territory (Pettingill 1970, Catchpole and Slater 1995). Samuel and Beightol (1973) interpreted the "peent" as largely functioning in advertisement, announcement, and warning. Further, Catchpole and Slater (1995) predicted that if a song is to attract a mate, then it is best to transmit over as a wide an area as possible in the appropriate habitat. They noted that producing sound, particularly low-pitched sound, is costly, both in terms of energy expenditure and in the possibility that a predator might be attracted. Weary et al. (1992) alluded to various neurological and physiological costs that could limit the size of a bird's vocal repertoire.

The woodcock's "peent" calls have a relatively low frequency, averaging about 3.5–4.0 kHz. Singing posts in the study area were ground sites within generally open fields with low, shrubby vegetation. Cosens and Falls (1984) found that, in grasslands, the "ground effect" strongly attenuated vocal frequencies below 2 kHz. Such low-pitched sounds are particularly energetically expensive to produce, although, at the upper frequencies, they propagate rather well.

For many passerine bird species, maximum transmission can be achieved by assuming a high singing post. Alternatively, woodcocks achieve that wide transmission and minimize attenuation by physically moving around their singing ground, and through mating flights and accompanying vocalizations which help to maximize their conspicuousness (Pettingill 1970). Woodcocks also can reduce the problem of loss of their signals through the high rate of repetition and consistency of the "peent" call.

Woodcocks also may have to deal with the possible impairment of their vocalization by the songs of sympatric birds. This may decrease the alertness of the receiving bird and is probably maximized in an acoustically rich natural environment (Bremond 1978). Woodcocks begin their vocalizations and flights 20 to 30 minutes after sunset (Wishart and Bider 1977) when their main acoustic competitor in that time, on my study area, is the American Robin (*Turdus migratorius*). Consequently, the most common time for woodcock vocal behaviour is when their acoustical competition is minimal. As well, Samuel and Beightol (1973) suggested that the "peent" is used by woodcocks at dusk and dawn when visual cues would be less efficient in transmitting information.

One of the original goals in looking at "peent" calls was to examine if individual woodcocks could be distinguished, based solely on the characteristics of the "peent" calls. However, Samuel and Beightol (1972), Thomas and Dilworth (1980), and Weir and Graves (1982) expressed reservations about the usefulness of using only "peent" calls, largely because of considerable within-bird variation in calls.

If the average song duration of 0.2 seconds is used (Keppie and Whiting 1994), along with an average of 10 songs per 30-second period, then woodcocks broadcast during about 7% (ranging from 4.7% to 8.7%) of their potential terrestrial song time. In other words, only about 7% of the woodcock's terrestrial singing time is actually spent in vocalizations. Hartshorne (1992) related the time intervals between successive songs to the sequential versatility of the songs.

Finally, the mixture of calling with flights and flight calls provides male woodcocks with the means to attract females to their territories. Further study should be able to quantify the budget of flights and vocalizations.

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Progress Toward Colonial Waterbird Population Targets in Hamilton Harbour (1998–2000)

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In the 18th and 19th centuries, the water body and adjacent land areas known as Hamilton Harbour were a rich source of biological diversity. Extensive marshlands surrounded all sides of the harbour, with the greatest density of aquatic vegetation in the shallow west end of the bay, now known as Cootes Paradise. In the early months of the year, the littoral zone vegetation and wet uplands at the edge of the water presumably provided adequate cover for a diversity of breeding land and water birds, and in the months of September and October, the harbour served as a major staging area for migrating waterfowl. By the mid-1900s, the predictable changes associated with development of a major urban and industrial centre caused the nearshore areas around much of the harbour to lose the habitat diversity needed to sustain active breeding populations of wildlife species. Marshland on the south shore of the harbour had been drained to make way for heavy industry, and the north shore had been developed as an urban landscape with a golf course, yacht club and extensive housing. These and other details on the history and more recent status of the harbour waters and adjacent land areas are found in the Remedial Action Plan for Hamilton Harbour (1989) and URL site (www.mcmaster.ca/ecowise/what.htm). Gebauer et al. (1993) offer a historical review of waterbird species and populations in the harbour area.

Throughout the 1990s and into the new millenium, there are two general land locations around the harbour that remain relatively undeveloped: the southeast shoreline and Cootes Paradise at the extreme west end. Land on the southeast shore has been owned by the Hamilton Harbour Commissioners (HHC) since the mid-1960s, who manage it for current and future industrial and development activities. Portions of this land, and five islands in the northeast corner of the harbour, are occupied during the breeding season by six species of colonial nesting waterbirds (Quinn et al. 1996). The species are: Double-crested Cormorant (*Phalacrocorax auritus*), Black-crowned Night-Heron (*Nycticorax nycticorax*), Herring Gull (*Larus argentatus*), Ring-billed Gull (*L. delawarensis*), Caspian Tern (*Sterna caspia*), and Common

Tern (*S. hirundo*). Curry and Bryant (1987) recorded Snowy Egrets (*Egretta thula*) nesting in the harbour in 1986, but they have not been recorded there since.

Numbers of nesting pairs, nesting locations, and some management strategies for these species in the Hamilton Harbour area have been reported previously for the years 1959 through 1987 by Dobos et al. (1988), for 1988 through 1994 by Moore et al. (1995), and for 1996 and 1997 by Pekarik et al. (1997). Quinn et al. (1996) described three new wildlife islands whose construction was intended to reduce land-use conflict and help maintain avian biodiversity in the harbour. They also proposed long-term management procedures for the waterbirds nesting on mainland and island areas. Our objectives in this note are: (1) to record and comment on the numbers of nesting pairs in the years 1998, 1999 and 2000; (2) to note numerical trends associated with each species from their first nesting record to the present; and (3) to comment on progress toward achieving the numbers of nesting pairs projected in the Hamilton Harbour Remedial Action Plan (RAP) for the region.

THE STUDY SITE

Hamilton Harbour (43° 16' N, 79° 46' W) is at the extreme western end of Lake Ontario and connects to the lake through the Burlington Canal, a narrow causeway that permits boat access to the harbour (Figure 1). It is separated from Lake Ontario by a sandbar, known locally as the Burlington Beach Strip.

The primary areas of undisturbed breeding habitat for all six species of colonial nesting birds are at the eastern end and southeastern shorelines of the harbour (Figure 1). The two most northerly nesting sites at the east end of the harbour (Farr and Neare Islands) are simple rock piles constructed to support hydro towers and cables (since removed) that crossed the harbour (Morris et al. 1976). Three new islands (North, Centre, and South Islands in Figure 1) built during the winter of 1995–96 (Quinn et al. 1996), to provide new nesting habitat in the harbour, are immediately to the southeast of Farr and Neare Islands. The largest nesting area for colonial waterbirds is adjacent to the QEW highway on property currently owned and managed by the HHC. In the three years of our study, all six species of colonial birds that breed in the harbour area nested at various locations on the island and mainland sites, including the dikes and area surrounding the confined disposal facilities locally known as Piers 25, 26 and 27 (Figure 1). Three of these species also were recorded at other locations within the harbour basin. Ring-billed Gulls nested on the east side of Windermere Basin to the south of Pier 25, and Common Terns occupied Spur Dyke Island in

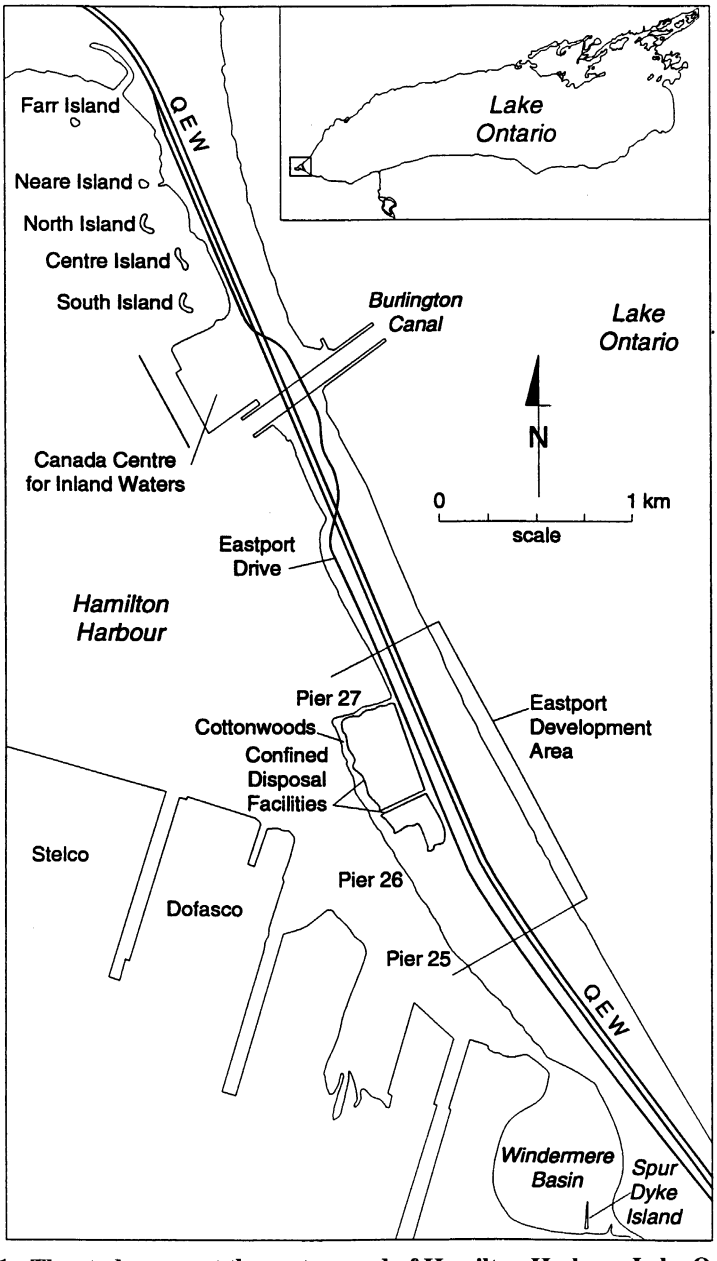

Figure 1: The study areas at the eastern end of Hamilton Harbour, Lake Ontario. The inset locates Hamilton Harbour at the extreme western end of Lake Ontario.

Windermere Basin and some small shoals offshore from LaSalle Park at the west end of Hamilton Harbour. Double-crested Cormorants nested at the extreme northwest end of the harbour at Carroll's Point, and on Hickory Island in Cootes Paradise, a marshland west of Hamilton Harbour and connected to it by a short abandoned channel (Desjardins Canal).

METHODS

General Principles of a Nest Census

For most colonial waterbird species that nest in Hamilton Harbour and elsewhere, patterns of clutch starts (laying of the first egg in a clutch) in a particular breeding season are characterized by a nesting "peak" that starts within 7–10 days after the first clutch appears, and continues for the next 7–10 days, with small numbers of clutches started thereafter. The optimal census protocol in a particular breeding season is to conduct a count of the number of nesting pairs during the final week of incubation for clutches initiated before and during the peak period of nest starts. A census conducted at this time (about 10 days after the last "peak" clutch is initiated) also counts clutches started in the 10 days following the peak of egg laying. Thus, the census counts 90–95% of all clutches started in a particular year, and takes place during a time when the majority of young chicks present are not yet mobile, and so minimizes the risk of disturbance to the colony (see Brown and Morris 1995).

Specific Nest Census Methods (1998–2000)

The census methods to estimate numbers of nesting pairs at the various locations within our study site generally replicated those described in detail by Pekarik et al. (1997), and used in previous years. Hickory Island, Carroll's Point and other locations around the Hamilton Harbour shoreline were surveyed for Double-crested Cormorant and Black-crowned Night-Heron nests from a boat or from the shore. Dates of these surveys were mid- to late May. The mainland nesting locations at Eastport (Piers 25, 26 and 27), the lands adjacent to Windermere Basin, and all six islands within the study area were surveyed from early May to mid-June in each year. In general, Ring-billed and Herring Gulls were censused from early to mid-May, whereas Common and Caspian Terns were censused from late May to mid-June. With the exception of Ring-billed Gulls, the census of all species was accomplished by counting "active nests" (nest scrapes, clutches, broods) within each relatively small nesting area. For the large nesting areas of Ring-billed Gulls, a team of field workers laid successive parallel lines approximately four metres apart across the length of each sur-

vey area. Individual members of the team walked along each line, counting "active nests" within the area between the two lines.

Management Methods

Four specific management methods were used in each year to encourage (or discourage) the nesting of individual species pairs at designated locations throughout the study area. First, in late March or early April each year, plastic sheeting was laid over the substrate of an elevated mound at the north end of North Island that was designated for Caspian Tern nests (Quinn et al. 1996). Ring-billed Gulls arrive earlier in a breeding season and begin nesting before Caspian Terns (cf. Morris et al. 1992 for Common Terns), and the purpose of the plastic was to restrict gulls from nesting on the mound. Second, a commercial falconry company was hired in each year to use raptors to restrict the nesting of Ring-billed Gulls on the new wildlife islands and portions of Piers 26 and 27. Raptors [primarily Saker Falcons (*Falco scherrug*), Harris's Hawks (*Parabuteo unicinctus*), and Ferruginous Hawk (*Buteo regalis*)] were in place from late March through late May. Third, Ring-billed Gull nests were destroyed and eggs collected under a federal permit in areas where the two previous techniques were unsuccessful at restricting nesting. Fourth, dead standing vegetation from the previous season was left in place on Spur Dyke in Windermere Basin, as the vegetation discouraged gulls from nesting there. In 1998, we removed the vegetation in late April, prior to occupancy by Ring-billed Gulls. In 1999 and 2000, Ring-billed Gulls colonized the Dyke despite the presence of dead standing vegetation, and we periodically collected their eggs from the site (under permit).

RESULTS

Numbers of Nesting Pairs

The numbers and locations of nesting pairs of Ring-billed Gulls, Herring Gulls and Double-crested Cormorants in the Hamilton Harbour area for the three years of our study are given in Table 1. Six sites contained Ring-billed Gull nests in 1998 and 1999, with two additional sites (shoals between islands) colonized in 2000. The greatest numbers of Ring-billed Gull nests in both years were at Windermere and Eastport, the two traditional nesting locations for gulls in the Hamilton Harbour basin over the past decade. Smaller numbers of nests were found on the three new wildlife islands, with the greatest number on Centre Island in each year. Herring Gulls nested on 7–8 sites, although only five sites had nests in all three years (Table 1). The greatest numbers of Herring Gull nests in each year were on Neare Island, with fewer nest numbers on the adjacent Farr Island to the north (Table 1). Of the three

Table 1: Numbers of nesting pairs of Ring-billed Gulls (RBGU), Herring Gulls (HEGU) and Double-crested Cormorants (DCCO) nesting in the Hamilton Harbour area in 1998–2000. Total numbers of all six species are summarized in Table 3.

Location	RBGU			HEGU			DCCO		
	1998	1999	2000	1998	1999	2000	1998	1999	2000
Hickory Isl.	0	0	0	0	0	0	218	222	197
Carroll's Point	0	0	0	0	0	0	13	0	0
Windermere[1]	9,337	10,080	7,829[2]	4	0	0	0	0	0
Spur Dyke	12	106	200	3	0	0	0	0	0
Eastport	5,902	11,072	14,616	16	39	43	588	820	873
Raft[3]	0	0	0	0	1	1	0	0	0
Neare Isl.	0	0	0	114	109	111	0	0	0
Farr Isl.	0	0	0	34	43	43	23	40	48
North Isl.	49	137	135	62	74	66	0	0	0
Centre Isl.	1,275	2,000[4]	745	14	0	3	25[5]	25[5]	25[5]
South Isl.	0	195	159	0	0	0	0	0	0
Shoals (C-S)[6]	0	0	51	0	1	0	0	0	0
Shoals (C-N)[7]	0	0	24	0	0	1	0	0	0
Breakwall[8]	0	0	0	NC[9]	7	3	0	0	0

[1] east side of Windermere Basin

[2] east and west sides of Windermere Basin

[3] artificial wooden raft anchored in pond south of Pier 27

[4] estimate based on nests in 2–3 1 X 1 m quadrats, extrapolated to dimensions of the island

[5] nests on five ledges attached to each of five telephone poles (25 ledges each year)

[6] two shoals between Centre and South islands; 36 nests on north shoal and 15 nests on south shoal

[7] two shoals between Centre and North islands; all 24 nests on south shoal

[8] west of Canada Centre for Inland Waters

[9] NC = not censused

new wildlife islands (North, Centre, and South), North Island contained the largest numbers of nesting pairs. Nests at the Eastport site were concentrated along Pier 27 at the north edge of the confined disposal facility. Double-crested Cormorants nested at the same four locations in each year (Table 1), and at Carroll's Point. The Eastport site contained the greatest number of nesting pairs.

The numbers and locations of nesting pairs of Common Terns, Caspian Terns and Black-crowned Night-Herons for the three years of our study are given in Table 2. Common Terns nested at seven locations in 1998, although the greatest numbers of nests were on two islands, Spur Dyke and Centre Island. In 1999, Spur Dyke again contained the greatest number of nesting terns, although the number

was estimated upwards from an actual count of 242 clutches on 14 May, shortly after peak nesting. Nest numbers on Centre Island dropped to zero in 1999, balanced by an increase in numbers of nesting pairs on South Island. The most significant change in 2000 was a decrease in the number of nests on Spur Dyke (Table 2). The LaSalle Park Shoals contained small numbers of pairs in all years. Nesting of Caspian Terns was restricted to the same two locations in each year, with the North Island site favoured over the Centre Island location (Table 2). Black-crowned Night-Herons nested at four locations in 1998, and two locations in 1999 and 2000, with consistent numbers of nests on North Island in all years. The Eastport site had the largest number of nesting pairs in 1999 and 2000.

A direct comparison of numbers of nesting pairs over the three years for all six species is in Table 3. Ring-billed Gulls were clearly the numerically dominant species, followed by Double-crested Cormorants, Common Terns, Caspian Terns, Herring Gulls, and Black-crowned Night-Herons. While the actual numbers of nests for the different

Table 2: Numbers of nesting pairs of Common Terns (COTE), Caspian Terns (CATE) and Black-crowned Night-Herons (BCNH) nesting in the Hamilton Harbour area in 1998–2000. Total numbers of all six species are summarized in Table 3.

Location	COTE			CATE			BCNH		
	1998	1999	2000	1998	1999	2000	1998	1999	2000
LaSPSh 1[1]	8	7	8	0	0	0	0	0	0
LaSPSh 2	19	5	17	0	0	0	0	0	0
Spur Dyke[2]	339	363[3]	292	0	0	0	0	0	0
Eastport	0	0	0	0	0	0	7	68	96
Neare Isl.	0	0	0	0	0	0	4	0	0
North Isl.	0	0	0	303	280	309	31	36	37[4]
Centre Isl.	166	0	0	130	141	106	10	0	0
South Isl.	75	247[5]	232	0	0	0	0	0	0
Shoal (C-S)[6]	1	0	0	0	0	0	0	0	0

[1] LaSalle Park Shoals (N = 5)

[2] Spur Dyke in Windermere Basin (Figure 1)

[3] estimated from mainland on 18 June (242 clutches counted 14 May)

[4] abandoned or washed away by high water sometime after 24 May 2000

[5] nests with immobile chicks counted on 14 June; additional nest numbers estimated from chick groups

[6] north shoal between Centre and South islands

Table 3: Estimated total numbers of nesting pairs of six colonial waterbird species in the Hamilton Harbour area in 1998–2000. The percentage change is from 1998 to 2000.

Species	1998	1999	2000	Percent change (1998–2000)
Black-crowned Night-Heron	52	105	133	+155.8
Ring-billed Gull	16,575	23,590	23,884	+44.1
Double-crested Cormorant	867	1,107	1,143	+31.8
Herring Gull	247	273	271	+9.3
Caspian Tern	433	421	415	-4.2
Common Tern	620	626	562	-9.4
Total	18,789	26,016	26,408	+40.5

species varied over several orders of magnitude, the greatest percentage increase was experienced by Black-crowned Night-Herons (Table 3). Four of the six species realized a percentage increase in numbers of nesting pairs; both tern species decreased over the three years, with Common Terns losing almost 10% of their nest numbers between 1998 and 2000. The total number of nesting pairs increased by 40.5%.

Specific Nesting Sites

The numerical data provide no information on specific sites within the nesting locations that contained the greatest number of nests. Accordingly, we briefly comment on these details for each major location.

Eastport

Eastport contained nests of Ring-billed Gulls, Herring Gulls, Double-crested Cormorants, and Black-crowned Night-Herons (Tables 1 and 2). The nests of cormorants and herons were concentrated in a small grove of willow (*Salix* sp.) and Manitoba (Ashleaf) Maple (*Acer negundo*) bushes, and dead Eastern Cottonwood (*Populus deltoides*) trees along the west edge of the confined disposal facility (CDF) between Piers 26 and 27 (see Figure 1). Heron nests were restricted to the willow bushes; cormorant nests were in the maple and cottonwoods. The cottonwoods supported substantial numbers of cormorant nests in earlier years, but by 1998 were largely collapsed and the birds were mostly nesting on the remaining low branches of broken tree stumps or on the ground. Ring-billed Gulls nested on all land areas around the CDFs, while the smaller numbers of Herring Gull pairs nested primarily along the dike on the edge of the most northerly CDF (Figure 1). The Hamilton Harbour Commissioners contracted with falconry companies in each of the three years to position raptors at strategic locations along the southern edge of Pier 26 to control the nesting of Ring-billed Gulls. Gulls were permitted to nest on land areas north of a point about 20 m south of the southerly CDF.

Windermere and Spur Dyke

The land areas around Windermere Basin and Spur Dyke on the west side of the Basin contained nests of Ring-billed Gulls, Herring Gulls and Common Terns. The highest density of Ring-billed Gull pairs was on the east side of Windermere Basin in a narrow strip of approximately 30 m along the shoreline, extending northward to the bridge across the Windermere

Channel (Figure 1). Ring-bills also nested along the northern edge of Windermere Basin. The few Herring Gull nests were on the east shore of the Basin and on Spur Dyke. Common Terns nested exclusively on the eastern half of Spur Dyke in all three years.

Neare and Farr Islands
Each island contained nests of two species: Herring Gulls and Black-crowned Night-Herons on Neare Island, and Herring Gulls and Double-crested Cormorants on Farr Island. Nests were evenly distributed around each island. Cormorants nested on the ground and in a single Manitoba Maple on Farr Island.

Wildlife Islands (North, Centre, and South)
While the substrates on each of the three islands were constructed to encourage colonization by particular species of colonial waterbird (details in Quinn et al. 1996, Pekarik et al. 1997), settlement in the three years of our study was not always as planned. Heavy vegetation covered South Island, and only Ring-billed Gulls and Common Terns nested there, with tern nests concentrated around the northern (1998 and 1999) and southern (2000) edges. Gull nesting on South Island was successfully prevented with the use of a raptor in 1998, but pairs again colonized the island in 1999 and 2000 (Table 1) despite the presence of a raptor there. Centre Island supported nests of all six species in 1998, three species in 1999, and four species in 2000 (Tables 1 and 2). Double-crested Cormorants nested exclusively on the ledges on poles in the middle of the island; none nested on the ground. Caspian Terns nested on an elevated mound at the north end of Centre Island, while Ring-billed Gulls nested throughout. On North Island, Caspian Terns nested on mounds at both the north and south ends of the island, while Black-crowned Night-Herons nested in the rocks around the edges of the island. Herring and Ring-billed Gull nests were distributed throughout.

Hickory Island/Carroll's Point
Double-crested Cormorant nests were exclusively in trees on Hickory Island and at Carroll's Point.

Historical data

Numbers of nesting pairs using the Hamilton Harbour area in 1998 and 1999 can be better placed into perspective by comparing them with numbers recorded in earlier years (Table 4). Common Terns were the first recorded nesters in Hamilton Harbour (1946), while Caspian Terns were the most recent arrivals (1986). In the 12 years after systematic counting began in 1987, numbers of Common Tern and Herring Gull pairs remained relatively constant. Numbers of Caspian Tern pairs have experienced a three-fold increase, whereas numbers of Double-crested Cormorants have increased by a factor of 20. Conversely, numbers of nesting Black-crowned Night-Heron pairs declined through the mid-1990s, but experienced a resurgence in 1999 that brought numbers to about half those present in 1987. Numbers of Ring-billed Gull pairs appear stable. However, there was only one systematic count of Ring-billed Gull nests in Hamilton Harbour between 1987 and 1999, and numbers of nesting pairs in that year (1990; Blokpoel and Tessier 1996)

Table 4: Estimated numbers of nesting pairs of waterbirds in the Hamilton Harbour area from the year when nesting was first recorded through successive major count dates. The target numbers were established by an ad hoc committee of research and policy personnel with the objective of reaching them by 2003 (see text).

Species	Number of nesting pairs					
	First count [1,5]	1987[2]	1994[3]	1997[4]	2000	Target
Black-crowned Night-Heron	15 (1959)	212	90	20	133	200
Ring-billed Gull	2 (1961)	21,207	NC[6]	NC	23,884	5,000
Double-crested Cormorant	1 (1984)	51	451	495	1,143	200
Herring Gull	7 (1976)	225	303	342	271	350
Caspian Tern	48 (1986)	134	313	399	415	>200
Common Tern	15 (1946)	553	868	753	562	>600

[1] year of first count in parentheses

[2] numbers from Dobos et al. 1988

[3] numbers from Moore et al. 1995

[4] numbers from Pekarik et al. 1997

[5] from citations in Dobos et al. 1988

[6] no count; 39,621 pairs counted by Blokpoel and Tessier (1996) in 1990 (see text)

were almost double (39,621) that reported in 1987 and 1999. The most probable reason for the decline in the 1990s is related to management activities contracted by the Hamilton Harbour Commissioners (see below).

DISCUSSION

In recent historical times (since the mid-1970s), the land areas designated as Piers 25 through 27, and that surrounding Windermere Basin, have been owned by the Hamilton Harbour Commissioners who have used it for their own purposes (J. Brookfield, pers. comm.). Because access to these properties is restricted by the HHC, the sites provide relatively secure nesting habitat for colonial nesting waterbirds. Details on general nesting location and numbers of breeding pairs for the six waterbird species nesting in the Hamilton Harbour area have been reported for the years 1959 through 1997 (Dobos et al. 1988, Moore et al. 1995, Pekarik et al. 1997), and Dobos et al. (1988) provided details of historical nesting data for some of the species.

Numerical patterns over the years since the first count (Table 4) can be taken as representative of local population changes for five of the six species in the Hamilton Harbour area; the pattern for Ring-billed Gulls cannot. The dramatic increase in the numbers of breeding pairs in the 26 years between 1961 and 1987 (+ 21, 205) probably is an accurate indication of the exponential numerical increase of which this species is capable. Ring-billed Gulls are tolerant to disturbance in their

breeding colonies (Brown and Morris 1994), are adaptive omnivores compared to Herring Gulls (Chudzik et al. 1994), and have experienced eruptive growth in numbers at colonies in the lower Great Lakes between 1976 and 1990 (Blokpoel and Tessier 1996). Conversely, while the relatively small increase in numbers of breeding pairs in the 12 years between 1987 and 2000 (+ 2,677) might suggest habitat saturation, the more likely explanation is the management activities of the HHC that operate to control the nesting locations of gulls. Management techniques have included pyrotechnics, physical disturbance, egg collection, and the use of falconry. Without these controls that started in the early 1990s, the colony is likely to have increased at the average annual growth rate of 11.6 – 12.6% reported for colonies elsewhere in Lakes Erie and Ontario (Blokpoel and Tessier 1996). Some evidence for this suggestion comes from the only systematic count of Ring-billed Gull nests in Hamilton Harbour between 1987 and 1999; numbers in that year (1990) were almost double (39,621) that reported in 1987 (21,207). Accordingly, the decrease in nesting pairs from the 1990 numbers to 23,884 pairs in 2000, is apparently the result of the use of falconry and other procedures to restrict nesting to areas designated by the Hamilton Harbour Commissioners.

Raptors were the principal means used to control nesting by Ring-billed Gulls during the three years of our study. Although the control objectives were the same in each year (to restrict Ring-billed Gull clutches from major sections of Eastport, from most of the land on the east shore of Windermere Basin, and from the three new wildlife islands), there was a significant increase in the total number of clutches recorded at all locations in 1999 (23,590) compared to 1998 (16,575). Conversely, in 2000, numbers remained relatively stable (23,884). The increase in 1999 followed by relative stability in 2000, may reflect differential efficiency in the use of raptors to control nesting gulls. Two different falconry companies were employed by the HHC and the Canadian Wildlife Service in 1998 [Bird Control International Inc. (BCI)] and 1999 [Falcon International (FI)]. BCI was again employed in 2000 to control gull nesting and there was no increase from the number of nests in 1999. Furthermore, the use of a large raptor on Centre Island in 2000 significantly reduced numbers of Ring-billed Gulls nesting there compared to the previous year (Table 1). Whether the required five-fold reduction to the target numbers of nesting Ring-billed Gulls is possible will depend on the continued and efficient use of raptors at Eastport, Windermere Basin and the new wildlife islands.

Targeted Numbers of Nesting Pairs

The Remedial Action Plan for Hamilton Harbour (1989) identified a need to create permanent habitat for colonial nesting birds within the harbour area (J. Hall, pers. comm.), and Quinn et al. (1996) argued for the importance of maintaining avian biodiversity there. As an integral part of the creation of new habitat on the three new wildlife islands, and the management of waterbird species using existing and new nesting substrate, an informal Colonial Waterbird Nesting Committee was struck to establish desirable targets for each species nesting in the harbour area. The Committee, composed of personnel from the Fish and Wildlife Habitat Restoration Project, the Canadian Wildlife Service, McMaster University and Brock University, established target numbers of nesting pairs for each species with the objective of meeting the numbers with appropriate management procedures by the year 2003.

Targets for Common Terns and Caspian Terns were approached or exceeded in 2000 (Table 4). Management efforts used to date (cf. Morris et al. 1992, Quinn et al. 1996) indicate that both tern species can likely be sustained at their current nesting locations on the new wildlife islands and Spur Dyke. However, both species require the implementation of special management procedures each year. Ring-billed Gulls are prevented from nesting on Common Tern and Caspian Tern substrate by a combination of egg removal and raptor use. In addition, sections of the Caspian Tern substrate on the new wildlife islands are covered each spring by PVC sheeting until terns arrive. Despite these efforts, the gradual decline in numbers of Caspian Terns over the past three years, and the 10% reduction in numbers of Common Terns since 1998, indicate the importance of continued vigilance.

Black-crowned Night-Herons were at the target number in 1987 and will likely reach the number again in the next 3–4 years, given the substantial increase in pairs from 1997 to 2000 (Table 4). Hawthorn (*Crataegus* sp.) bushes on South Island were planted specifically to encourage herons to nest there, and we anticipate that pairs now nesting on the ground on North Island will settle into the more suited arboreal habitat as trees mature in the next few years. While the number of Herring Gull pairs declined in 2000, the species clearly has potential to reach levels that were already at the target number in 1997 (Table 4). We anticipate little difficulty in maintaining target numbers for these two species.

Current numbers of nesting pairs of Double-crested Cormorants and Ring-billed Gulls are each about five times higher than target levels (Table 4), and will be difficult to reduce by 2003 without the use of major and intrusive management procedures.

Greater use of raptors and more intensive egg collections are almost certainly required in future years to reduce numbers of Ring-billed Gulls. We note that the target number for Ring-billed Gulls may be subject to revision (in either direction) based on the outcome of discussions currently underway between the City of Hamilton and the HHC concerning the ownership of the land east of Windermere Basin.

In our view, the most serious problem is with Double-crested Cormorants that were already well over the target number of pairs in 1994, and that have increased dramatically in the three years since 1997 (Table 4). The nesting poles on Centre Island supported the maximum number of nesting pairs in each of the past two years, and Hickory Island may also be at carrying capacity (Table 1). Numbers of tree-nesting pairs at these two locations can likely be maintained because of limited branch nesting sites. The greatest concentration of nesting pairs in Hamilton Harbour is at Eastport in the northwest corner of Pier 27 (Figure 1). Many of the birds there construct nests on the ground, and as space is not yet limiting, there is a potential for continuing increase. Accordingly, unless the target number for this species is revised upward, intrusive management procedures will be needed to discourage nesting at this site.

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Notes

Parking Garage Swallows

George Fairfield

Barn Swallows (*Hirundo rustica*) occasionally place their nests in the most unlikely places. Bent (1942), when preparing his life history of the species, received a report of a nest on a moving narrow-gauge railway that carried passengers and freight over a two-mile portage in British Columbia. Another contributor told of Barn Swallows nesting for many years on a steamer running on Lake George in New York State.

Dr. W.B. Scott recently told me about the Barn Swallows that were nesting in the parking garage under the high-rise condominium building where he lives at 1000 King Street West in Kingston, Ontario. The swallows could gain access to their nests only when a vehicle entered or left the garage.

I visited the site on 19 June 2000. The building is on Cataraqui Bay on Lake Ontario in an area which appeared to be good habitat for Barn Swallows. The entrance and exit doors were 24 m apart on the west side of the building, and were about 3.7 m wide and 2.5 m in height.

I watched the doors from outside the garage at a point where I could see both doors, as well as the nearby approaches. From 1000h to 1200h, I noted the times of all birds entering and leaving the garage, and flying close by. I also noted the times that vehicles were entering and leaving the garage.

The doors were opened and closed by a sensing device triggered by the driver from inside the vehicle, and were open for only a few seconds, just enough time for the vehicle to move safely through. The swallows demonstrated great flying ability at entering between a vehicle and the door frame, sometimes zipping through at the last second as the doors slammed shut.

In the two-hour period, I saw swallows enter the garage ten times and leave five times. They used both doors roughly the same amount. In that same period, the doors opened and closed a total of 34 times, or an average of once every 3.53 minutes. However, the 3.53 average gives a poor idea of the times available for the swallows to gain access to their nests. There was considerable variation in the vehicle traffic flow in and out of the garage. Several vehicles would go through in a fairly short period and then there would

be a long drought. The shortest period was less than one minute and the longest was 11 minutes. As the length of time between access opportunities increased, the swallows patrolled back and forth before the doors more frequently, and on one occasion, a swallow perched on a light over the garage doors, waiting for a chance to enter.

By keeping track of the swallows entering and exiting, and those flying around near the garage, I was able to calculate that there was a minimum of six swallows and three nests. This assumes that the birds were feeding young. If some were sitting on eggs, there may have been more. I did not search the garage for nests.

Discussion

It is not difficult to see the advantage of nesting inside the garage over more easily accessible nesting sites. The nests would be safe from American Crows (*Corvus brachyrhynchos*), Common Grackles (*Quiscalus quiscula*), and other nest predators. On the other hand, the birds must experience problems during the fledging and early flying periods of the young birds.

How did these birds initiate the habit of nesting in a situation with such limited access? Why would a bird take a chance on entering an opening that would immediately disappear?

The answer seems to be that the swallows established the habit of nesting in the garage at a time when the doors were always open. The assistant superintendent of the building told me that four years earlier the garage had undergone extensive renovations, and for one full nesting season the doors remained open. It is easy to see how the Barn Swallows, given their propensity for returning to previous nesting sites, would make every effort to gain access to the old nesting site in subsequent years.

Blom (2000) reported an even stranger case of Barn Swallows nesting in a garage, involving a factory in Denmark where "the birds would return from foraging and hover in front of the electronic eye, breaking the beam and causing the door to open, allowing them to get in and feed their young".

Of course, the Kingston Barn Swallows did not have the advantage of being able to trigger the garage door opening device themselves, and had to depend on the drivers to gain access to their nests.

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Re-use of Nesting Material by Blue-gray Gnatcatchers

Bill Crins

On 15 May 1999, at 1010h, along the willows bordering the Desjardins Canal in Dundas Marsh, *Hamilton-Wentworth,* I observed a pair of Blue-gray Gnatcatchers (*Polioptila caerulea*) in the early stages of building a nest. The nest was situated about 15 m up in a Crack Willow (*Salix fragilis*), on a major horizontal branch, at its junction with another, slightly overtopping, major branch. At the time of observation, the nest consisted only of a base. Both adults participated in the building activities, tamping down and shaping the nest's base, and adding webs, feathers, and fine grasses. The most interesting aspect of the observation, however, was the source from which these birds were collecting some of their building material.

On repeated occasions, I watched the birds visit an old gnatcatcher nest near the new one. Because of the close proximity of the old and new nests, it is possible that the old nest belonged to this same pair, either in the previous year, or perhaps even earlier in 1999, but abandoned for some reason. This old nest was dislodged from its branch in a nearby Crack Willow, probably by wind, but it was still hanging tenuously from that branch. The birds picked away at the remnants of the old nest, and carried the material back to the new nest.

The location of the new nest, in a major Y-shaped fork, is quite typical (Weston 1949, Root 1967, Peck and James 1987). The re-use of nesting material from previous nests by Blue-gray Gnatcatchers also seems to be a characteristic behaviour, and has been reported several times (Weston 1949, Ellison 1992).

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Mink Predation of a European Starling Nest

Ross D. James

Mink (*Mustela vison*) are well known as predators of many small animals, including birds. But, as a creature adapted to a semiaquatic life, they are not particularly noted for their tree climbing abilities, taking most prey on or close to the ground (Dunstone 1993). That they are able to climb at all should not be any surprise, as they are related to marten (*Martes americana*) and fisher (*M. penanti*), both of which are adept tree climbers (Peterson 1966). Peterson gives a rather cautious endorsement of the ability of mink to climb "as high as about 10 feet on occasion", but provides no reference for even this allowance.

A literature search on mink behaviour has failed so far to reveal their climbing ability. In fact, there are relatively few observations of predatory behaviour of this species in the wild, despite intense research worldwide (Dunstone 1993). Mink are relatively elusive and difficult to observe for any length of time in wild situations. Numerous feeding studies have been based on analysis of either stomach contents or scats, neither of which provide information on just where or how the prey was taken.

Mink spend much of their time foraging in the water for fish, frogs, crayfish, aquatic beetles, and muskrats. But they are opportunistic, able to exploit a wide variety of prey in marshy and terrestrial habitats, including a variety of small rodents in particular, and other mammals to the size of rabbits, and birds to the size of coots and ducks (Chanin and Linn 1980, Eagle and Whitman 1987). Yearly, birds probably constitute about 5 to 10 percent of the food of mink, but at some seasons and places, may form as much as 50% or more of the diet (Hamilton 1940, Gerel 1967, Hamilton 1969, Day and Linn 1972, Chanin and Linn 1980, Wise et al. 1981). Mink are known to exploit eggs, nestlings, and fledglings in spring and summer (Melquist et al. 1981, Fournier and Hines 1998, Riley et al. 1998, Kirby and Sargeant 1999), and a variety of waterfowl in autumn, that have been wounded by hunters (Gerel 1967, Day and Linn 1972). Most of the birds taken are those associated with wetland habitats, as most of the mink activity is in or close to such habitats (Day and Linn 1972, Eagle and Whitman 1987). But, in view of the few observations of foraging activity in the wild, and the absence of records of above-ground foraging by mink, the following seems noteworthy.

Observations

About 0700h on the morning of 27 May 2000, as I was walking west-

ward along the 7th Concession of Brock Township toward the Beaver River, near Sunderland, Ontario, I looked up to see a long dark short-legged animal crossing the road and disappearing into the marsh. I frequently see mink in the area, and assumed that was what I saw. As I approached closer to the river a few minutes later, I saw two European Starlings (*Sturnus vulgaris*) and a couple of Common Grackles (*Quiscalus quiscula*) scolding in the upper part of a large willow (*Salix* sp.) tree situated about 20 m south of the road. Two stems of the willow were dead and broken off. At first, I thought the starlings were chasing grackles that were trying to get at a starling nest. But, I soon realized that both species were scolding and diving at something on the far side of one of the willow stubs. Four more starlings approached the fray and added to the scolding, but took no other active part.

As I moved slightly farther along the road, I could see the tail of an animal hanging out of a cavity in the willow stub. The birds had been scolding for a short time as I approached, and it took a few more moments before a mink backed out of the cavity and descended the tree, carrying two half grown young birds. On the ground, it moved away through some brush, followed by scolding grackles right above, and starlings higher. It swam across the river and out of sight into shrubbery there. The birds did not follow.

Within two minutes, it swam back across the river and climbed the tree again, entered the cavity and took another young bird to the ground. It then climbed back up to the cavity for a fourth young. It again swam across the river to the same area as before, this time also carrying two young birds in its mouth. In the interval while the mink was gone, the starlings were about the tree cavity, carrying food. One went to the cavity and looked in, but quickly left again. The mink soon returned, and climbed to the cavity a fourth time to retrieve a fifth young bird. The adult starlings followed it down the tree, scolding all the while. It disappeared into the bushes below, and I did not see it again.

I later measured the height of the cavity at 9 m above the ground. The trunk of the tree was essentially vertical, not leaning. The DBH of the trunk was roughly 50 cm, and at the cavity, the diameter was about 25 cm.

The mink, while perhaps not as adept as a squirrel, had little trouble ascending and descending the tree. It climbed head first, squirrel fashion, but seemed to be clinging to the tree more closely, and travelling somewhat more slowly, not scampering freely like a squirrel. The young starlings were probably at least a week old, without much feathering yet, but with quite large abdomens. It took the mink much longer to get two young birds in its mouth, the first time, than it did to grab one on each subsequent trip. Two probably represented a rather large mouthful to try to gather up, if

not to climb with. The mink was willing to make the extra trip to that height rather than try to carry two young down the tree a second time.

Discussion

Mink are generally considered to be territorial and at relatively low density, and are small with comparatively low energy requirements, and therefore likely to have little overall impact on bird populations (Dunstone 1993). But, given their demonstrated climbing abilities, and opportunistic foraging habits, a considerable number of young birds, even when well above ground, may be subject to mink predation. If they will go to 9 m, there seems little to prevent them from going even higher, if they detect noisy young birds up there. However, they may be less inclined to travel along small branches to reach open nests well out from the trunk.

Acknowledgements

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Book Reviews

Birds at Your Feeder: A Guide to Feeding Habits, Behavior, Distribution, and Abundance. 1999. By *Erica H. Dunn and Diane L. Tessaglia-Hymes.* W.W. Norton & Company, New York. Hardcover, 418 pages. $42.00. (ISBN 0-393-04737-7)

This book presents detailed information on the feeding habits of North American birds derived through Project FeederWatch (an ongoing cooperative survey since 1987, which now has over 10,000 volunteer feeder watchers annually). Project FeederWatch is administered in the United States by the Cornell Laboratory of Ornithology and in Canada by Bird Studies Canada, and promoted by the National Audubon Society and the Canadian Nature Federation. The book describes "which species frequent feeders in different parts of North America, how often these species visit feeders, and what they prefer to eat".

The FeederWatch findings are presented in accounts for over 90 species that are "most widespread at North American bird feeders". Each species account includes graphs depicting the number of birds at feeders and the percentage of feeders visited (by month), and maps showing distribution and abundance at feeders. Every account also features a very attractive line drawing by Peter Burke of the species discussed.

An extremely interesting and informative component of each species account involves a summary of "winter ecology, aimed at increasing your appreciation and understanding of bird behavior that you may witness in your backyard". Key references from which this information was drawn are listed at the end of this section for each species account, and total over 600 books and articles in the Literature Cited. These references facilitate further reading on topics of special interest. For many birders, this fascinating information will be the most valuable part of the book.

I detected relatively few errors in these accounts, although perhaps inevitably when so much material was summarized from a vast array of published sources, some incorrect information did get included. For instance, Gray Jay territories are stated to be 25 to 50 acres in size, when actually they have been found to be much larger, ranging from an average of 100 acres (41 hectares) in Yukon to an average of 365 acres (146 hectares) in Algonquin Park, Ontario (see Strickland and Ouellet 1993 in *The Birds of North America* series). Similarly, the average Gray Jay life span after reaching adulthood is not "two to three years". This long-lived species can reach 10 to 15

years of age, and the average expectation of further life of a territory-holding adult is five to six years (Dan Strickland, pers. comm.).

I found this book to be a very interesting read, that will continue to be used as a reference. The species accounts are well written in an understandable style which avoids scientific jargon. It would make a great gift for anyone who feeds birds and especially for Project FeederWatch participants. The price is a little steep, but this book is available from Bird Studies Canada for a 30% discounted price of $29.95 (plus $5.00 shipping and handling); call Anne Marie Ridout toll-free at 1-888-448-2473 to order.

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Living on the Wind: Across the Hemisphere with Migratory Birds. 1999. By *Scott Weidensaul.* North Point Press, New York. Softcover, 420 pages. $24.95. (ISBN 0-86547-591-1)

In a sense, this book is a compilation of many different "stories" about the lives of migratory birds, and the difficulties facing them in our hemisphere. The longer you have been birding, the more of these stories you will have heard, but until now you would not have been able to find them all detailed in one place.

The approach is interesting. Instead of just rehashing old news from a distance, Scott Weidensaul's starting point is a visit to the place where something is happening. He has literally "been there" – from Izembek NWR in Alaska to the pampas of Argentina, the waters off Monterey to those adjoining Nova Scotia, Bombay Hook NWR in Delaware to Ontario's Long Point, with banding stations on the Gulf shores of Alabama and Texas and other equally interesting places thrown in.

He sets the stage by recounting a trip to the extreme western part of Alaska that almost touches Russia. Brief snapshots describe how Wandering Tattlers leave there and head for Australia while Hudsonian Godwits go to Argentina, and how Arctic Warblers fly to Asia but Blackpoll Warblers go to Brazil.

There are good descriptions of how birds know where they are, whether by celestial navigation or sensing the earth's magnetic field or hearing the distant low frequency sounds of crashing surf – or all of the above. These are balanced by discussion of how we humans know where the birds are, be it from banding returns, birding at a hot spot, watching the moon through a telescope at night or, the latest tool, by weather radar via the Internet.

Migration is mostly about eating. If there is enough food in the breeding grounds, and if the weather

allows the birds to get at it, they have no reason to migrate. If the supply is cut off or drops significantly, some species always return to the same non-breeding season locations, which can be thousands of miles away. Other species will travel only as far south (or north, depending on where they are in the hemisphere) as necessary to find sustenance.

Some of the migrations are incredible. We have all heard how the Arctic Tern flies from the Arctic to the tip of South America, but did you know about the Greater Shearwater? This pelagic species nests on and near the Tristan Da Cunha islands in the very middle of the far South Atlantic. When the food supply dwindles, they go looking for more, following the ocean currents which deliver fish and plankton in different places at different times of the year. First they fly west, then north up the east coast of South America, past the Caribbean and USA, to Nova Scotia and Newfoundland. After a period of Canadian hospitality, it's east across the North Atlantic to Europe, south to the coast of Africa, then west again, back across the South Atlantic to the islands in time to breed once more. In all, a voyage of 13,000 miles, sometimes more!

A visit to a Jamaican remnant forest provides a focus for discussion of how deforestation of tropical forests affects residents first, but also migrants. In Jamaica, the small numbers of the remaining indigenous species are found mostly in what little "old growth" forest is left, while many migrants are found in the "new" vegetation. In the tropics, some migrants such as the American Redstart can adapt to a winter habitat quite different from what it prefers in summer. Other species, the Wood Thrush being a good example, do not seem to be able to adapt to a winter habitat very different from what they prefer in summer. If Wood Thrushes lose the tropical forests, we lose them. Period.

In recent years, ads in birding journals have urged birders to buy shade-grown coffee. In 1970, an outbreak of coffee leaf rust, a fungal blight, occurred in Brazil. This led to wholesale replacement of shade tolerant plants with a new variety which grows well in the sun. Naturally, this meant cutting down the shade trees. The newcomer requires pesticides, herbicides, fungicides and fertilizer – all of which were previously supplied by the large amount of residue from the shade trees. Where shaded coffee plantations still exist, surveys show that birds, migrants especially, are abundant. On the other hand, recent studies indicate that while the coffee growers are getting up to 30% more coffee, the new habitat is supporting as little as 10% of the numbers and species, resident and migrant, as it did before.

As Canadians, we all know of the problem of the Canada Geese. There are too darn many of them,

right? Not quite. The real story is that the James Bay and eastern Quebec populations of Canada Geese have diminished by as much as 50 to 75% because too many of them are "stopping over" permanently in the south instead of migrating north in summer. On the other hand, we have the Snow Goose, a species whose numbers have climbed from just 3 to 4 thousand in the 1920s to 3 to 4 million today. These guys are going north, but there are so many of them that they are quickly wrecking all the habitat on the coasts of Hudson and James Bays, causing difficulties for themselves as well as for the many shorebirds which also use the same territory in summer.

On the positive side, we learn about what happened to the Swainson's Hawk, an insect-eating western North American buteo. In the early 1990s, biologists noticed that the numbers returning to their summer areas in the United States and Canada were dropping. It was thought that they wintered in Argentina, but this was unconfirmed. Two birds were fitted with satellite transmitters. One quickly stopped transmitting, but the other was eventually traced to an area west of Buenos Aires. Investigation there led to rumours and then confirmation that thousands of hawks were being killed by an insecticide used to control serious grasshopper infestations. For once, government, business, farmers and conservationists worked together quickly and effectively. The particular pesticide was taken off the market, other methods are being used, and farmers are being taught that the Swainson's Hawk is actually an ally in the fight against grasshoppers. While the problem in Argentina is not completely solved, things are going in the right direction. Sadly, the chemical, long banned in North America and now in Argentina, is still being manufactured and sold in other third world countries.

Another problem highlighted is that human activity is endangering large concentrations of some species in very small areas. On the Delaware Bay shore of New Jersey, horseshoe crabs, which delight the majority of the world's Red Knots by laying millions and millions of eggs, are being over-harvested for use as bait by fishermen. At the other end of the size scale, the famous millions of Sandhill Cranes which stop to feed at the South Platte River in Nebraska are facing development pressures which could greatly reduce their habitat. There is also the "What if?" factor. The Copper River Delta in Alaska, a primary spring food resource for millions of shorebirds, is not far from the shipping lanes the Exxon Valdez travelled before it dropped its load of oil. Closer to home, possibly 95% of the world's population of Semipalmated Sandpipers stops off to feed in the Bay of Fundy every summer. What if.....?

Many other topics are covered in *Living on the Wind*, among them the plight of grassland birds suffering from lack of grass in the mid-western states and provinces and, in the same area, the plowing under of prairie potholes, ancient geological features which have long served as the incubator for millions of puddle ducks. Problems caused by towers, stacks and lighted buildings bring a nice mention of Toronto's own Fatal Light Awareness Program (FLAP). The story of the wonderful sight of millions of raptors going over Veracruz, Mexico is also told.

Is this book a hand wringer, full of "Woe is us." (or "Woe is them.")? No. There are simple statements of the situations with, in my opinion, reasonable conclusions drawn. Not all the news is bad, but a great deal of it is not good. The message is that we still have a chance to help save some of this, but we had better hurry.

The nine maps are quite helpful. Each chapter has its own set of notes and bibliography, 24 pages in all, and there is also an 18-page index. I found out how useful the index is when I needed to check items for this review.

In a nutshell, *Living on the Wind* is a great read, and an even better reference book.

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In Memoriam

Remembering Clifford J. MacFayden (1925–1999)

Christopher G. Harris

Whatever the ebb and flow of bird life will be over the coming months and years, it will not be seen by one of Simcoe County's greatest bird chroniclers; Clifford James MacFayden died on 28 August 1999. I wish to tell you about his life as a birdwatcher, naturalist, mentor and friend.

Cliff, born in Toronto on 28 April 1925, was the oldest of four children. At a very early age, Cliff became interested in birds at a time when birdwatching was considered odd. Cliff's interests were fostered by fortuitous circumstances. At his high school, North Toronto Collegiate, Cliff became friends with John Crosby and Yorke Edwards, who shared his passion for birds. Both would have prominent roles in biological circles. Crosby is best known for his illustrations in *The Birds of Canada,* but worked for many years at the Canadian Museum of Nature producing natural history illustrations. Edwards started the public interpretation programs for both the Canadian Wildlife Service and B.C. Parks and was the director of the Royal British Columbia Museum.

Armed with Crosby's World War I monocular, the trio explored by bicycle some of the natural spots of Toronto. Looking at the megalopolis of today, it is difficult to remember that Cliff's Toronto was small, with many natural areas. Says Edwards: "It was a time of freedom for great birding and acres of bird lists and diary notes". Crosby remembers some of young Cliff's firsts: one of the first Oregon Juncos sighted in Toronto, and a rare Cory's Least Bittern at Ashbridge's Bay. Other young birdwatchers would join this group, like George Fairfield, later prominent in Toronto Ornithological Club activities, and Bruce Falls, who became a prominent University of Toronto zoology professor specializing in bird behaviour. Cliff, along with Crosby, Edwards and Falls, recorded an accidental Lark Bunting for Toronto in 1941 [*Canadian Field-Naturalist* 60: 132 (1946)].

Cliff came under the influence of several well-known birdwatchers and naturalists of the period, including Jim Baillie and Stuart Thompson. It was likely Stuart Thompson, the nephew of writer and naturalist, Ernest Thompson Seton, who first brought Cliff to Simcoe County in May, 1941. On

this first trip to Minesing Swamp, Cliff acquired rich memories which he recorded in his diary, including the following account: "...then a series of quick, high whistles and I could clearly see the bird flapping violently across the sunset sky where it was beautifully silhouetted. It circled around; then as it tumbled to the ground, we could hear a series of queer warbles and jerky whistles. These sounds were made by the bird's wings as it tumbled. It repeated its performance several more times and each time we crept closer. This is called the Woodcock's sky dance" (*Toronto Ornithological Club Newsletter*, December, 1990).

During his high school years, Cliff and his birdwatching friends sometimes went farther afield. Yorke Edwards describes one very memorable trip that he and Cliff conducted from 18–22 August 1942 to Rondeau Provincial Park. In four and a half days of constant walking "through swamplands", Cliff and Yorke endured "trousers stiff and green with burs", "countless mosquitoes in clouds" and "spider webs with sticky strands on our faces". In that time, they tallied 113 species of birds, 8 species of mammals, 5 reptiles and 2 amphibians; "but it was worth every bur, mosquito and spider". Cliff returned again to southwestern Ontario in 1943 and discovered the first Western Kingbird nest for Ontario near Port Alma, Kent County [*Canadian Field-Naturalist* 59: 67 (1945)]. Although this record lacked conclusive documenting evidence, knowing Cliff, I am sure the record is a valid one.

Shortly after this trip, Cliff joined the merchant navy and spent two years overseas in Asia and Australia. Being wartime, letters back home were censored, so Cliff wrote about the birds he saw. His birdwatching friends deciphered Cliff's whereabouts by the range of the birds mentioned!

Cliff married his wife, Swede (Eva), on 13 August 1951. They had three children: Dan, Laurie and Jamie. Cliff and his family moved to Barrie in 1966 when he was hired to work at the Canadian General Electric plant.

As a young teenage birdwatcher who had recently moved to Barrie, I first met Cliff on a blustery day in September 1970 at Centennial Park, Barrie. I was looking for birds along the shoreline of Kempenfeldt Bay. The man with the binoculars and a telescope introduced himself as Cliff MacFayden. He was searching for a pair of Buff-breasted Sandpipers observed earlier that week. Within 10 minutes, Cliff found these Arctic migrants and pointed out one of my many avian firsts. Thus began our relationship, which stretched nearly 30 years.

Nearly every Sunday, Cliff would invite me and several other teenage boys to join him in his ornithological wanderings around Simcoe County. Stuffed in the back of his white

Buick, we explored from Hockley to Hawkin's Corners and Swift Rapids to Singhampton. Cliff gave most generously to teenagers thirsty for more knowledge. There were June expeditions to Minesing Swamp to record Carolinian birds like Blue-Gray Gnatcatchers and Cerulean Warblers, September hawk watches at Horseshoe Valley, November trips to Nottawasaga Bay to view diving ducks, and February trips in search of Snowy Owls. I also remember two overnight trips to Long Point to view the great spring waterfowl congregations. Cliff bore the expenses of all these trips himself.

A day with Cliff in the field was a day of intense avian learning. One day, I heard the sweet liquid song of a bird I thought was a warbler, but Cliff correctly said it was a Brown Creeper song. He would patiently point out, using the telescope, the difference between an Iceland and a Glaucous Gull. One early June night, I excitedly called to tell him of some Grasshopper Sparrows singing in an old field close to my house. This sent Cliff racing over. As we walked through the field, Cliff suddenly said "Listen to that!". An insect-like noise: "tsi-slick" came from the grasses. Cliff immediately recognized this as a Henslow's Sparrow's song. This was the famous Letitia Street field where one June, Cliff and I recorded over 20 Henslow's Sparrows....a field now a subdivision!

All outings were documented in Cliff's meticulously kept journals. Everything was carefully recorded from the common *Empidonax* flycatcher to the rare eider duck. When we "missed" a certain bird, Cliff would point out that negative data is just as important as positive data This comment now rings very true when I think about the decline of Loggerhead Shrikes, Wood Thrushes and other species in the last few decades. Much of my note-taking ability stems from this time. I have been working with his family to ensure that Cliff's journals will be housed at the Royal Ontario Museum, where they can be viewed by future generations. Many of Cliff's Simcoe County records (over 8,500) form an important backbone of data for the revision of *The Birds of Simcoe County,* currently underway.

Cliff's interest in recording and documenting birdlife involved him in several long-running bird monitoring programs. From 1969 to 1993, Cliff conducted the Mattawa Breeding Bird Survey (BBS) route in northeastern Algonquin Park, and from 1970 to 1993, he conducted the Port Carling BBS route in Muskoka. Cliff never missed one year, making his data extremely valuable. For many years, Cliff summarized all Simcoe County observations for the Ontario report in *American Birds*. When the first Ontario Breeding Bird Atlas was undertaken in the early 1980s, Cliff was astonished to learn that nobody had signed up for his beloved

Minesing Swamp. He immediately took on three squares in the middle of Minesing. Later, Cliff contributed data on several Simcoe County sites to the Forest Bird Monitoring Program. Surveys for Red-shouldered Hawks and woodpeckers, and detailed censuses of gull, tern and heron colonies such as those at Nottawasaga Island off Collingwood were some of the many other projects Cliff undertook. Even in his final days, he continued to participate in two other long-running projects at his Lake Simcoe property near Hawkstone: Project FeederWatch and the Toronto Ornithological Club's Spring Warbler Count.

Cliff could be shy in a crowd, but once you got to know him, he had a wonderful sense of humour. During those many days in the field with him, we always had lots of laughter, often accompanied with silly songs. Even in his declining years, Cliff retained this sense of humour. When writing to Mike Cadman, saying he was no longer able to do his forest bird monitoring plots, Cliff explained that his get-up-and-go energy had got up and left!

Cliff was a great supporter of the Brereton Field Naturalists' Club and especially the younger generation. As I worked across Canada, Cliff always enjoyed hearing of my exploits and encouraged my career. Other younger people were similarly blessed by Cliff's encouragement. His two years as President of the Brereton Field Naturalists' Club saw positive improvements in club activities and in the club newsletter, *The Blue Heron*.

I will personally miss Cliff's gravelly voice, his wry sense of humour and his life-long knowledge of birds and natural history. Cliff set a very high standard for observation, documentation and support of others, that few of us will ever attain, but it is surely a goal worth striving for. Cliff, the naturalist, birdwatcher, landscape artist, guitar player, family man and friend will be missed by many people.

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Nikon
Photo Quiz
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Yet another gull stares out at us from the photo quiz page. And clearly, it is an immature gull as the plumage is quite dark throughout. Moreover, the bird seems quite small and daintily proportioned in comparison with the rocks in the foreground. Size estimates must be done with caution, however, as gulls vary considerably in size and it is always difficult to determine accurately the size of a single bird.

The quiz bird is so uniformly dark that it must be in juvenal plumage. Moreover, all the feathers are crisp, fresh and new. Every back, scapular, tertial, and wing covert feather has a clean white margin and the folded primary tips are without wear. This plumage is usually retained for just the first few months of life, and is replaced through molt with the first basic plumage. This is generally attained by late fall or winter, although a few individual gulls retain juvenal

plumage through their first winter.

So, we need to consider all gulls that are mostly dark as juveniles. The small gulls such as Bonaparte's, Black-headed, Little, Franklin's, Ross's and Sabine's, and Black-legged Kittiwake have boldly marked upperparts and heads, and white underparts. This still leaves quite a few candidate species, given the limitations of using size without comparison to other birds.

Shape and proportions are easier to determine and most often are more reliable than size. Note that the quiz bird has a rather delicate rounded head. The bill is short, being only about equal to the distance between the bill-base and the rear of the eye, and it is slender, having no apparent gonydeal angle. These features are important in eliminating smaller individuals of some juvenile gull species.

Several large gulls are mostly dark in their first year of life. Juvenile North American Herring Gulls are uniformly dark in plumage, and "runts" do occur. Even a small Herring Gull should have a longer, stouter, all-dark bill with a definite angle at the gonys. Also, the head should be more angular and the eye proportionately smaller, lending an altogether more "aggressive" look. The plumage would not be so smooth and evenly dark grey. What about Thayer's Gull, which is slightly smaller than Herring? It should still appear larger and stockier than the quiz bird. The bill, although smaller than Herring Gull's, would never reach the size and shape of the quiz bird. The upperparts of Thayer's are checkered white and dark, and there is a dark shadow on the face through the eye. A small dark juvenile California Gull should still have a much longer bill, with a bulbous tip. The basal half of the covert and scapular feathers are light, giving California Gull a more mottled and far less smooth appearance than the quiz bird. Lesser Black-backed Gull at this age shows much more contrast, with lighter nape and underparts, darker feather centres on the upperparts, darker cheeks and, again, a larger, longer bill.

Intermediate gulls cannot be eliminated by size, and some are dark as juveniles. Among the intermediate gulls which occur or are possible in Ontario are: Ring-billed, Mew, Laughing, Heermann's, and Black-tailed. Laughing Gull is an intermediate gull which is quite uniformly dusky in its first plumage. However, it has a whitish face, chin and throat, white eye crescents, and a large all black bill with a droop at the tip, and black legs. Heermann's Gull is just too uniformly dark, with no light feather margins. It too has a rather large bill, which is bright flesh with a dark tip and black legs. Even Black-tailed Gull, a distinct possibility although not yet recorded in Ontario, is essentially dark brown. It has white eye crescents

and a long, bicoloured bill, pink with a black tip.

Which brings us to the Ring-billed/Mew Gull complex. The trick to gull identification is to thoroughly study the common local species and know all its variations. Take a few loaves of bread to a parking lot at your local reservoir or lakeshore, sit in the car, and study the gulls at close range. Ring-billed Gull is abundant and ubiquitous in Ontario. We are used to seeing the all brown juveniles at parks and shores from July into September.

However, the quiz bird does not look quite like those Ring-billed Gulls. Nevertheless, be aware that some Ring-bills can be quite small and dark. Such birds may have a small bill with little angle at the gonys. But even a small-billed, dark Ring-bill would not be so smooth, and evenly so, as the quiz bird. On Ring-billed, the head (crown, cheeks, and nape) is finely streaked brown and the breast is blotchier. On the quiz bird, look at five rows of feathers along the side above the flanks. These are the upperwing coverts and they are critical to identification. Note that each feather is solidly dark, with a smooth rounded shape and a narrow U-shaped fringe. On juvenile and (most) first basic Ring-billed Gulls, each of these feathers has a white base and a dark anchor-shaped centre. This bird cannot be a Ring-billed Gull.

So, the quiz bird is a **Mew Gull** (*Larus canus*). This species has dark centred upper wing coverts with a narrow U-shaped margin. Although not diagnostic, there are other features which support this identification. The bill is more slender than almost all Ring-bills, and it has a duller flesh-coloured base which is not so sharply demarcated from the black distal half. The dark eye seems larger on the small rounded head than does Ring-billed Gull's eye. Moreover, the bird is so uniformly dark-looking, like a diminutive juvenile North American Herring Gull, that it cannot be the "Common Gull" (*L. c. canus*) of Europe. This subspecies, which may be split, has the cheek and crown streaked grey-brown, but the face and nape are whitish, as is the belly. Nor can it be the "Kamchatka Gull" (*L. c. kamtschatschensis*) which, like Ring-billed Gull, is more coarsely patterned, and with varying amounts of white on the head, nape and underparts.

This North American Mew Gull (*L. c. brachyrynchus*) was photographed at Gibsons, British Columbia, on 19 September 1998, by Glenn Coady.

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