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ARTICLES

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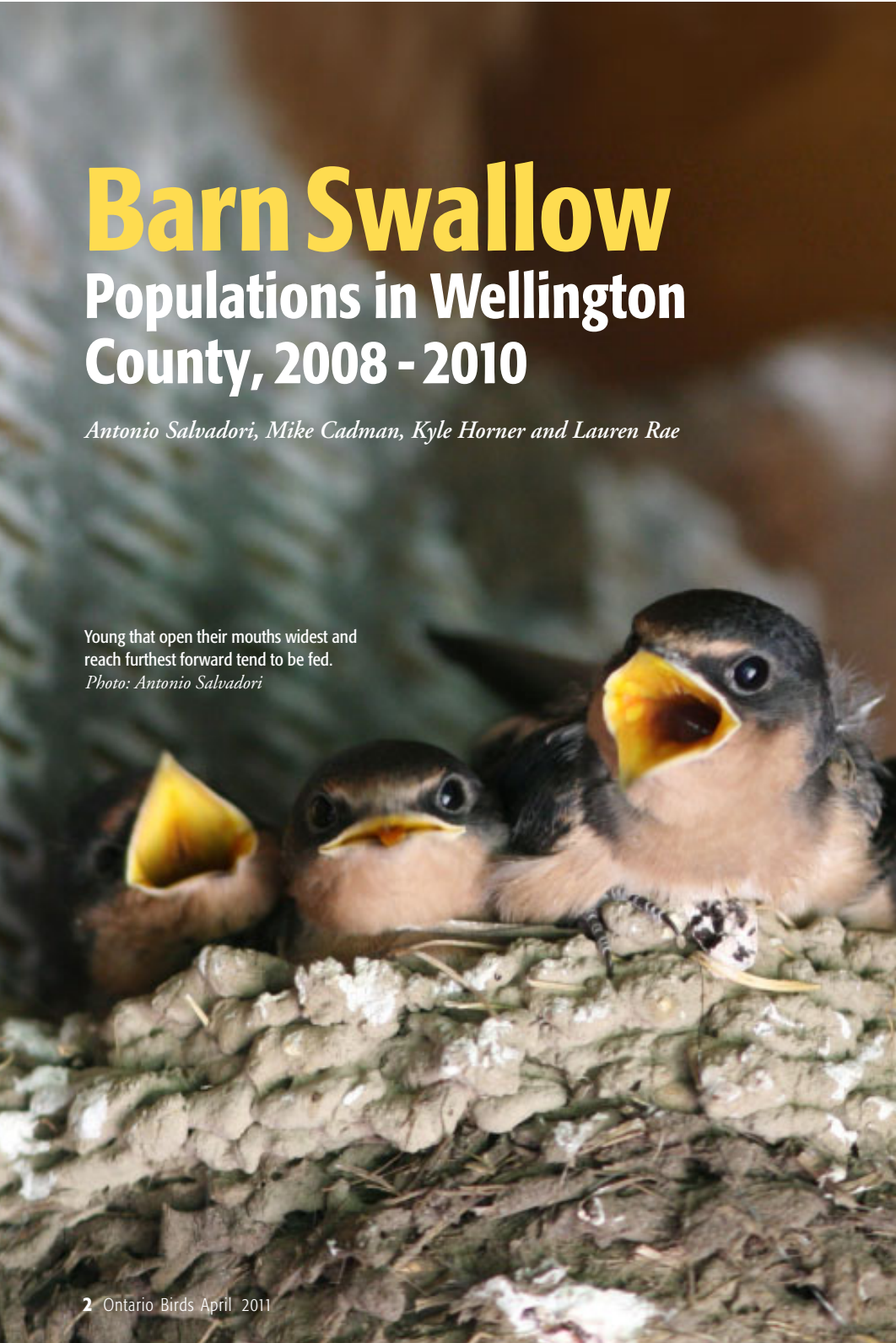
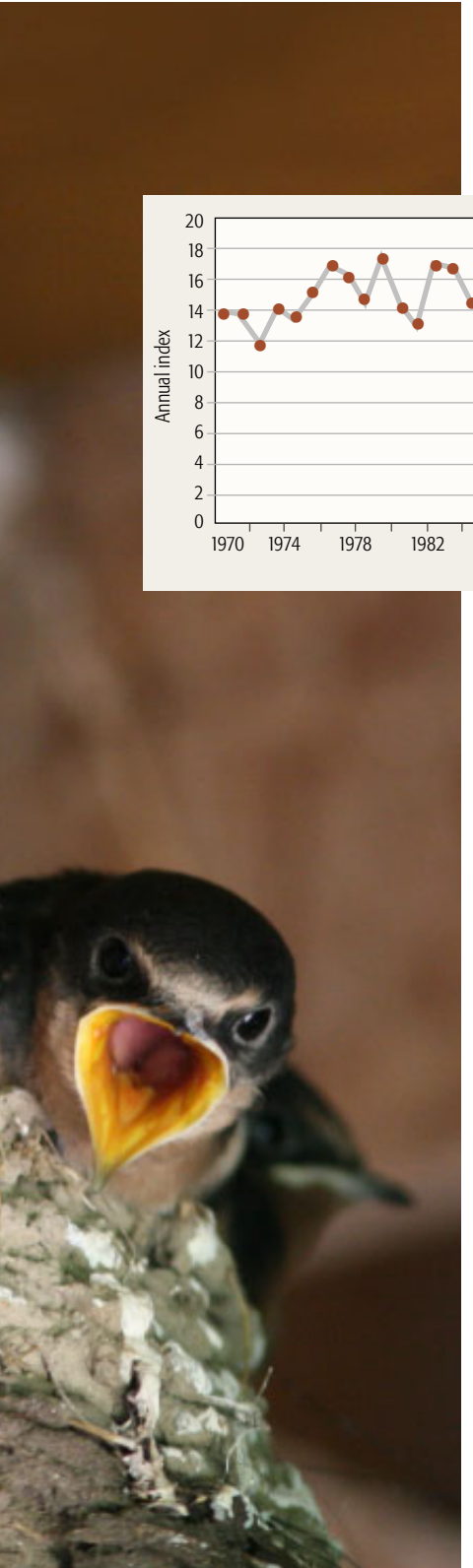
Barn Swallow Populations in Wellington County, 2008 - 2010

Antonio Salvadori, Mike Cadman, Kyle Horner and Lauren Rae



Young that open their mouths widest and reach furthest forward tend to be fed.
Photo: Antonio Salvadori



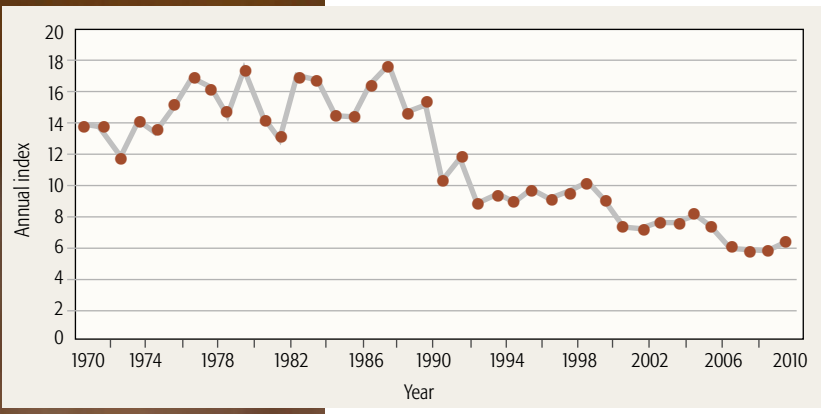


Figure 1. Breeding Bird Survey trend for Barn Swallow in Ontario, 1970 – 2009. (*Environment Canada 2010*)

The Barn Swallow (*Hirundo rustica)* has been declining in recent decades in northeastern North America, along with most other aerial insectivore birds (Nebel *et al.* 2010). According to the Breeding Bird Survey (BBS), the Ontario Barn Swallow population declined at a rate of 2.5% per year from 1970 – 2009. Specifically, declines are reported at 3.4% per year from 1989 – 2009, and at 3.5% per year from 1999 – 2009 (Environment Canada 2010; Figure 1). Note, however, that the population increased slightly from 2006 – 2009. The Ontario Breeding Bird Atlas shows an overall significant decline in the probability of observation of the Barn Swallow in Ontario between the first atlas (1981 – 1985) and the second atlas (2001 – 2005) of 35% (Cadman *et al.* 2007). The largest decline occurred in Northern Ontario (51% in the Northern Shield Region), with a decline of 7% in the Lake Simcoe-Rideau region, which extends north from the Carolinian Region to the southern edge of the Canadian Shield.

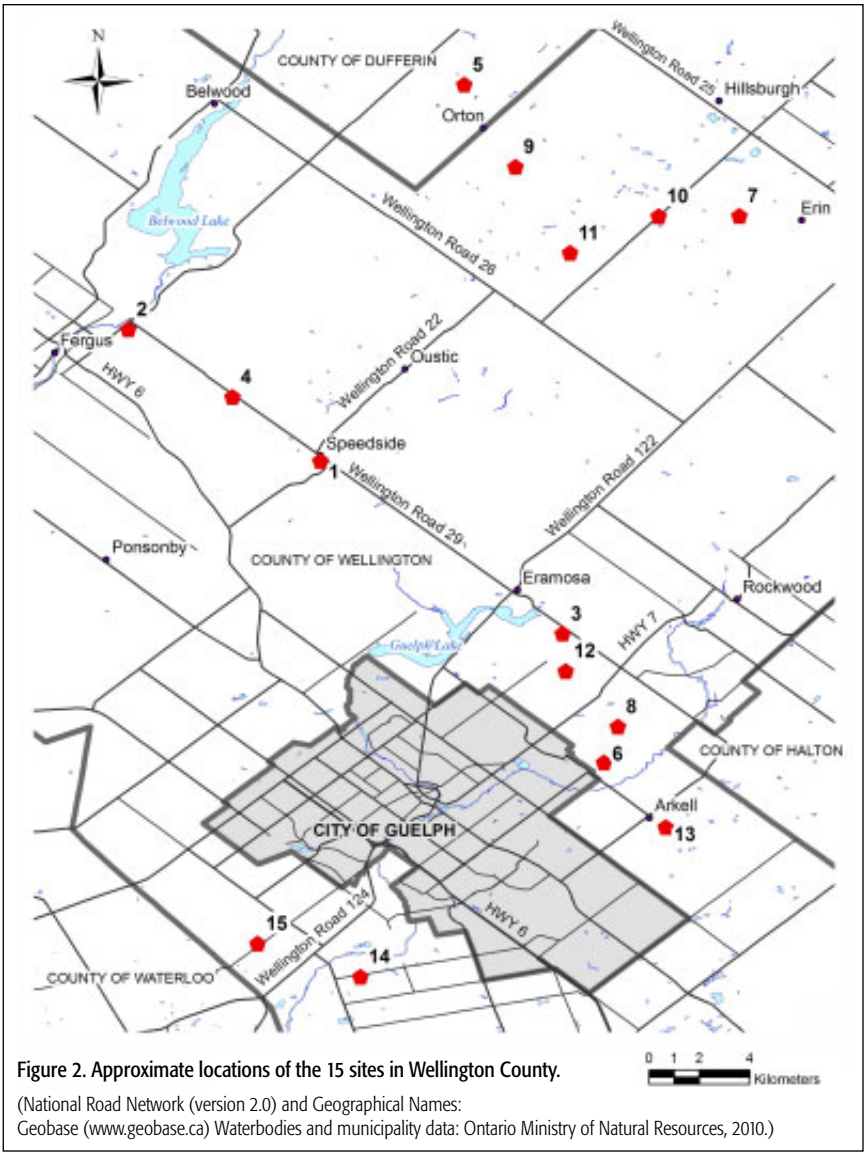


Figure 2. Approximate locations of the 15 sites in Wellington County.

(National Road Network (version 2.0) and Geographical Names: Geobase (www.geobase.ca) Waterbodies and municipality data: Ontario Ministry of Natural Resources, 2010.)

In order to shed light on the Barn Swallow decline, Salvadori (2009) began to study the species during the breeding season at several locations in Wellington County, Ontario. This area falls within the Atlas' Lake Simcoe-Rideau Region (Cadman *et al.* 2007). From 2008 – 2010, the population size and breeding success of Barn Swallows at 15 sites were monitored in a consistent and focussed way. The purpose of this study was to determine whether the population size and

Table 1: Summary of the 15 sites used in the study

Location	Farm Animals Present	Main Crops/ Land Use	Structure Type	Average Colony Size
#1	Goats and chickens	hay, corn, soya	Old barn	46
#2	Cattle	pasture, hay	Old barn	40
#3	No animals	corn, soya	Old barn	21
#4	Horse	corn, soya, wheat, hay	Old barn	19
#5	Horse	pasture, hay, corn	Old barn	16
#6	No animals	hay, corn, soya	Old barn	12
#7	Horse	pasture, corn, wheat, soya	Storage facility	12
#8	Horse	pasture, hay	New barn	11
#9	Horse	pasture, hay	Old barn	10
#10	Cattle	pasture, hay, corn	Old barn	9
#11	Cattle	pasture, hay, corn	Old barn	8
#12	Sheep	pasture, corn, soya	Old barn	7
#13	Mixed animals	pasture, hay	Shed	7
#14	Cattle	corn	Storage facility	3
#15	Sheep, chickens	pasture, corn	New barn	1

reproductive output at these 15 sites was decreasing and to look for potential reasons for the species' decline.

Study area

The farms visited in this study were in the Guelph, Fergus, and Hillsburgh area of Wellington County (Figure 2). The 15 sites were not chosen randomly but are thought to be representative of the farm-nesting population in the area. The owners of sites known to have nesting Barn Swallow populations were contacted to see if we could operate on their property, and only two did not allow us to study the birds on their farm.

All of the sites were in agricultural areas. Five were on horse farms, four were on cattle farms, four had a mix of mostly small animals (goats, sheep, chickens, rabbits, etc), and two had no animals (Table 1). Location 14 was unique, as a couple of cattle were housed in the building which was mostly used as a storage facility. All buildings were surrounded primarily by agricultural fields, mostly various crops and pasture. We distinguished between 'Old' and 'New' barns. 'Old' barns are old and large wooden structures. Old barns are generally more conducive to nesting, as they present more exposed beams and joists for nest construction and more gaps for entry. Normally they consist of a two story building of the historic type; the upper part is used to store hay whilst the lower part houses animals: horses or cattle. 'New' barns are modern one story structures with fewer nesting sites and fewer gaps for entry.

Methods

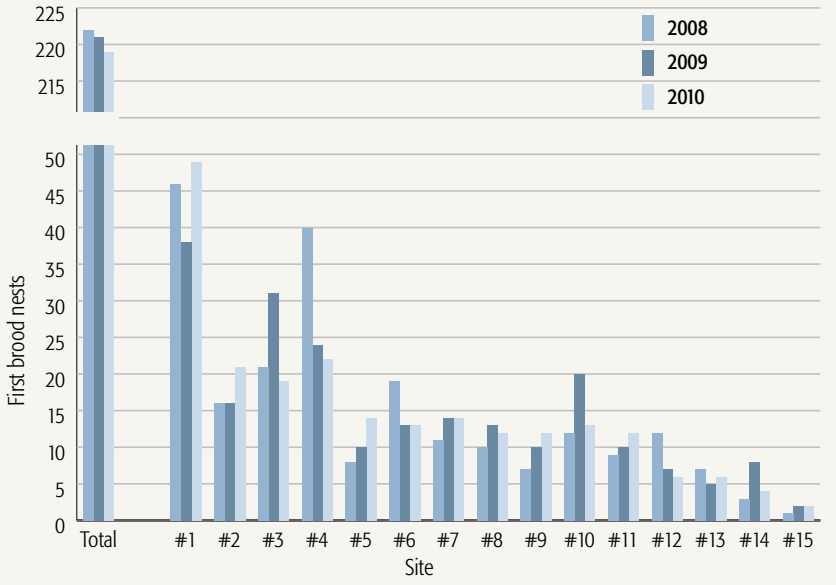
Sites were visited about once per week from the beginning of egg-laying in May until the last young left the nest in August. On each visit, barns were surveyed to determine the number of eggs in each nest (photo below), and whether or not young were present. We considered any clutch started on or before 30 June to be a first brood, and used the number of first broods as a measure of the colony size.

In most cases, young were counted only during banding to minimize disturbance of the young. Young were large enough for banding between 4 and 10 days old. (photo page 2.) All young were banded simultaneously so that the older siblings would not be disturbed at a subsequent visit. We used the total number of young banded from all broods at each site as a measure of reproductive success. We believe the number of young banded was a good estimate of the number of young fledged as very little predation or loss of young was noted after this stage of development — or, for that matter, at any stage of the nesting cycle.

Predation of nests and other disturbance thought to affect either colony size or reproductive success were noted.

Clutches are usually 4-6 eggs, though a few of 7 eggs do occur.
Photo: Mike Cadman

Figure 3. The number of first brood nests overall and for each site from 2008 through 2010.



Results

Colony size

Colony size varied from 1 – 48 nests, with an average of 14 nests per site (Table 1). As shown, locations classified as old barns usually had a greater number of nests than the other sites. The total number of first brood nests for the 15 sites remained almost unchanged during the three years of the study, ranging from 222 in 2008 to 219 in 2010 (Figure 3). Change in colony size among years varied at individual sites, with six sites increasing each year (#2, #5, #7, #9, #11, #15), three decreasing each year (#4, #6, #12) and the rest showing no consistent pattern of increase or decrease.

Reproductive success

The average number of young banded per site per year varied from eight to 255. The total number of young banded at all sites combined was 1,178 in 2008, 1,184 in 2009, and 1,281 in 2010 (Figure 4). This represents an increase in banded young of 0.5% and 8.2%, from 2008 – 2009, and 2009 – 2010, respectively. The number of young fledged per site varied considerably among years and across sites. Specifically, three sites showed an increase in banded young each year (#5, #7, #9); three showed a decrease (#12, #13, #15) and the others showed patterns of up and down (#3, #8, #10, #14), or down and up (#1, #2, #4, #6, #11). These results suggest that when averaging and summarizing Barn Swallow data care should be taken in how the data is interpreted.

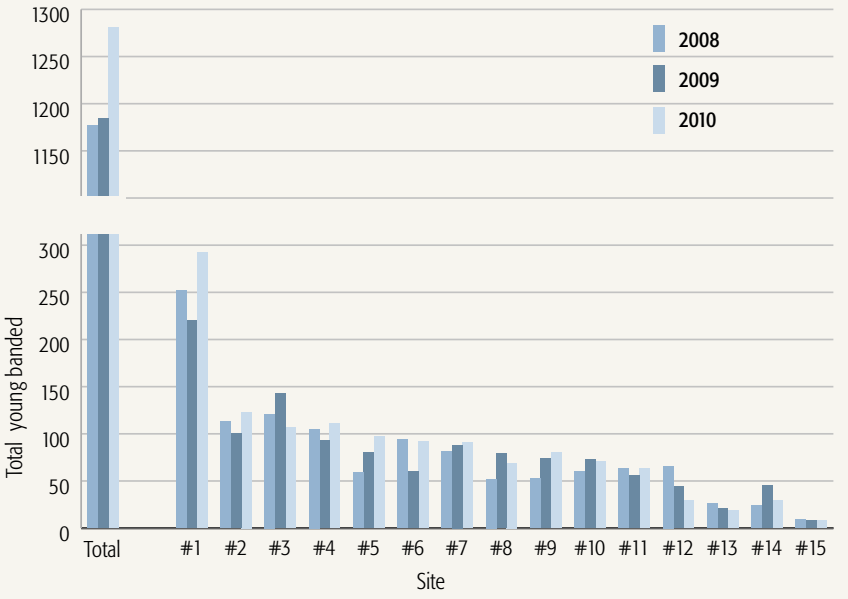


Figure 4. Total number of young Barn Swallows banded at each study site and overall.

Discussion

The number of first broods produced, and therefore presumably breeding pairs, remained almost unchanged over the three years of our study. The small decrease of less than 1% is less than the 3.5% annual decrease shown by the BBS data for Ontario for 1999 – 2009 (Environment Canada 2010). Unfortunately, BBS data for 2010 were not available at the time of writing to determine whether the decline continued through our study period. Our study area covers only a small part of the province, and may not be representative of the province as a whole.

Despite the small drop in number of breeding pairs, the number of young produced in our study actually increased 0.5% from 2008 – 2009 and a further 8.2% from 2009 – 2010. Despite this increase in reproductive output, the number of breeding birds using our study sites did not increase, though it might have helped to slow the decline. Indeed, a small percentage of banded young from previous years were recaptured as adults in subsequent years in their natal location or elsewhere within the study area. The reason for the increase in productivity during the study is unknown, though favourable weather conditions may have played a part.

As with the well known Heisenberg principle in physics, our study may have interfered with the Barn Swallows in a positive way. In some cases, the landowners became very caring of their swallows

and began to protect them from any harm that could befall them. Also, since several of the landowners know one another, they started competing with each other to see who has the largest and best colony. All this lead to a betterment of conditions and a trapping of predators such as raccoons, which may explain in part the increased productivity.

Although populations on our sites were stable, perhaps thanks in part to the protective landowners as discussed above, we did gain some insights into activities that might be negatively affecting the Barn Swallow population in the study area and perhaps elsewhere. These include:

1. Loss or degradation of suitable breeding sites

Although the number of sites occupied in our study was constant at 15, a reduction in the number of suitable breeding sites across broader areas could lead to a decline in population. Although it is difficult to quantify, there has probably been a decline in the number of 'old fashioned' barns in Ontario. The number of dairy farms is much reduced (Statistics Canada 2001), and presumably that means a reduction in the number of suitable barns. The decline in pasture probably means fewer barns are required to stable cows. Evidently, more farmers are keeping their baled hay in plastic wrap which might indicate a reduction in the number of accessible barns.

Furthermore, old barns still in existence are being converted to new uses. Of the 10 old barns that we studied, two (#3, and #6) no longer had farm animals inside them at all. They were used to store farm equipment, and had relatively new windows and doors that could be easily kept shut thus keeping the swallows out. There is some likelihood that these barns will soon become unavailable to nesting Barn Swallows. In addition, four of the 10 old barns we studied have been converted for stabling horses, so they have relatively clean floors compared to the manure- and hay-filled barns used for stabling cows. These uses may be, in some manner, less conducive to Barn Swallow nesting.

The five largest colonies in our study sites were in old barns, suggesting that these structures are particularly well suited to Barn Swallow nesting. The 10 old barns made up 67% of the 15 study sites but accounted for 85% of the nests. The loss of these old barns across Ontario might be affecting the population.

Newer barns are often made of either steel or steel piping covered with heavy plastic and, like many other new farm buildings are only infrequently used by nesting Barn Swallows. None of these plastic covered barns were included in our study. However, two such barns in our study area had no swallows nesting in them, although swallows were seen roosting in them. At a shopping mall in Aurora, swallows do indeed nest on the steel pipes under the plastic sheeting to the great annoyance of the property owners.

2. Deliberate nest destruction by property owners

Some people on farms actively destroy nests due to the excreta nuisance posed by the swallows. It is possible that our study sites are not representative of others in the area in this regard, as we have noticed that at several locations the owners actively protected the swallow nests. This

was certainly the case at several horse farms where the clients were actively discouraged from interfering with the nests. However, in at least two horse farms that we visited, but which were not included in our study, the owners actively destroyed the 'nuisance' nests due to the excreta.

3. Cats

We observed predation of some nests in barns occupied by cats, and it was probably a significant problem in at least one of our sites. In barn #7, where the population and reproductive output declined during our study, cats were able to reach some nests when farm equipment and materials were piled near those nests. Remains of several depredated adults and young were found in this barn. This may also have been a significant problem at barn #10 where many cats were observed. At one location a cat caught and killed a swallow flying about 2 meters off the ground, a truly remarkable feat!

4. Heterospecific competition for nesting locations

Although the House Sparrow (*Passer domesticus)* is generally declining, it might be an added factor exacerbating the Barn Swallow's decline. In barn #10 House Sparrows were a major problem. They built their nests onto the old Barn Swallow nests and in many cases evicted the Barn Swallow. The Barn Swallows were thus forced to move to a potentially less suitable part of the barn. This indeed may explain the low productivity of barn #10 which was an old style barn with many cattle and an excellent location in the judgement of the authors. In two other barns House Sparrows evicted Barn Swallows from their nests but to a less significant effect. At least one landowner actively destroyed House Sparrow nests.

In addition, Cliff Swallows (*Petrochelidon pyrrhonota*) took over some Barn Swallow nests, even when occupied by Barn Swallows, especially near the entrance to the barns. Cliff Swallows have increased in our study sites over the duration of our study. As well as sometimes building directly on top of Barn Swallow nests, Cliff Swallows tend to place their nests immediately inside barn doors, which might reduce the likelihood of Barn Swallows, which are forced to nest deeper inside the barn, using the site. This happened at three sites #2, #4 and #5. Site #4 has two large and expanding Cliff Swallow colonies (33 and 67 nests), and the Barn Swallows are now nesting deeper inside the barn. Barn Swallows seem to prefer good light to nest.

Other factors possibly affecting Barn Swallow numbers in Ontario

Evans *et al.* (2007) showed that, in Britain, aerial insect abundance over pastures was more than double that in silage (hay) fields, and more than three and a half times greater than over cereal fields. The conversion of pasture to these other land uses in Ontario over the past several decades (Blancher *et al.* 2007) has probably greatly reduced flying insect prey for Barn Swallows and other aerial insectivores, which has probably affected swallow numbers in Ontario, as it has in Britain. Similarly, Ghilain and Bélisle (2008) showed that nest occupancy and reproductive success of Tree Swallows

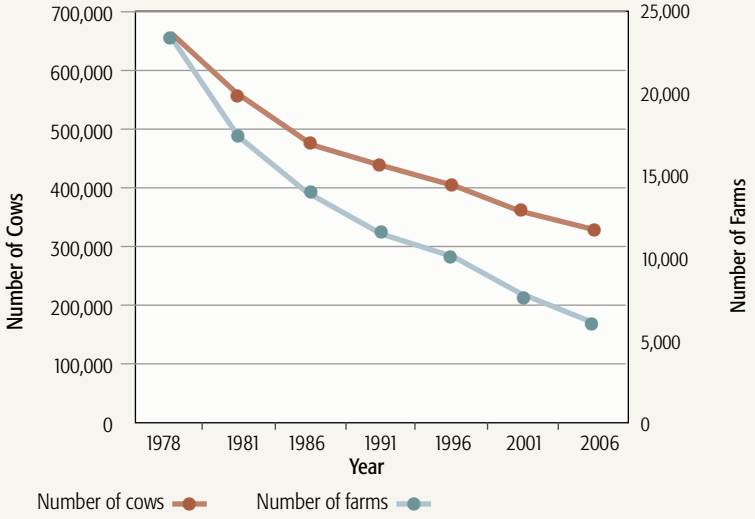


Figure 5. The number of cows and dairy farms in Ontario, 1976 – 2006. *(Statistics Canada 2007)*

(*Tachycineta bicolor*) decreased along a gradient of agricultural intensification.

Møller (2001) showed that in Denmark, the reduction in dairy farming caused a decline in Barn Swallow numbers and reproductive success. Only one of the farms we worked on (#3) was recently a dairy farm, whereas dairy farming was a much more important part of the Ontario landscape in earlier decades (Figure 5). The decline in the number of dairy farms and dairy cows in Ontario might also be an important factor in the decline of the Barn Swallow in this province.

The general decline of aerial insectivore birds in northeastern North America described by Nebel *et al.* (2010), suggests that broad factors such as an overall decline in flying insects may be involved, or that there has been a change in the phenology of insects and/or the birds that prey on them. Some of the factors we have described, such as the major changes in agricultural land use, might well be contributing to those insect declines. However, as Nebel *et al.* (2010) point out, the declines of aerial insectivores are most acute in those species, such as the Barn Swallow, which migrate the longest distances, so it may be that factors on the wintering grounds in South America are a major contributor to the reductions in the populations of these species in Ontario.

Acknowledgements

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Massachusetts-banded Ring-billed Gulls breeding in Ontario and the Great Lakes

D.V. Chip Weseloh and Dan Clark

In many traditional bird-banding studies, flightless young-of-the-year and/or adult birds are captured at their natal or breeding site, banded and released to determine where they go in winter. Among colonially-nesting waterbirds on the Great Lakes, this has been done with several species: Common Terns (*Sterna hirundo*) (Blokpoel *et al.* 1987), Ring-billed Gulls (*Larus delawarensis*) (Southern 1974 a, b), Herring Gulls *(Larus argentatus*) (Gabrey 1996), and Great Black-backed Gulls (*Larus marinus*), Double-crested Cormorants (*Phalacrocorax auritus*) and Great Egrets (*Ardea alba*) (CWS and USDA, unpubl. data). In the study by Blokpoel *et al.* (1987), over 1,700 adult and flightless Common Terns from Lake Ontario and the Niagara River were wing-tagged and found to spend most of the winter in the Caribbean, Central America and on the west coast of Peru.

A less often used approach with colonial waterbirds is to capture and band birds during migration or on their wintering grounds in hopes of determining where they go in the spring to breed. Using this method, King *et al.* (2007, pers. com.) found that Double-crested Cormorants (*Phalacrocorax auritus*) banded in Mississippi went to four main areas: Lake Champlain, western Lake Erie, south-eastern Georgian Bay, and the central Minnesota-North Dakota-Manitoba border area. Similarly, the same type of information can be obtained by analyzing accumulated data from banded birds found in a given area to see where they have come from. For example, this type of analysis was used for Herring Gulls on the Great Lakes, where more than 99% of the banded Herring Gulls encountered in the Great Lakes were also banded there, indicating a very "closed" population (Weseloh 1984).

The Ring-billed Gull is an abundant breeding bird on the Great Lakes - St. Lawrence River system (Gauthier and Aubry 1996, Cadman *et al.* 2007) and has been the subject of at least two large-scale banding studies there. Bill Southern (1974 a, b) banded birds at Rogers City, Michigan (Lake Huron) and found that the major wintering area for Ring-billed Gulls from that site was on the Atlantic coast of Florida. Gabrey (1996), looking at all returns of Ring-billed Gulls banded throughout the Great Lakes, confirmed that U.S. states along the coast of the Gulf of Mexico, especially Florida, were the main wintering areas. Interestingly, he further noted that a maximum of only 3% of Ring-billed Gulls banded in the Great Lakes were recovered in winter in the New England states (Maine to New York). Thus, the reader can picture a winter distribution of Ring-billed Gulls, which breed on the Great Lakes, that is concentrated in Florida but with diminishing numbers extending as far north as the state of Maine.

One of the limiting aspects of a traditional banding study using only metal bands is that each bird is usually only reported once, *i.e.* upon its death. However, studies which use field-readable (colour) bands or markers, or those using various kinds of transmitters, allow for repeated sightings of a given individual so that a bird's overall movements can be tracked. Such a study has been undertaken by the Massachusetts (MA) Department of Conservation and Recreation to assess the movements and breeding areas of Ring-billed Gulls which over-winter in central Massachusetts and which roost on the drinking water reservoirs that provide water to residents of the Greater Boston area (Clark 2009). Several of the Ring-billed Gulls colour-marked in that study have been observed repeatedly onthe Great Lakes and on the Atlantic coast. The purpose of this article is to

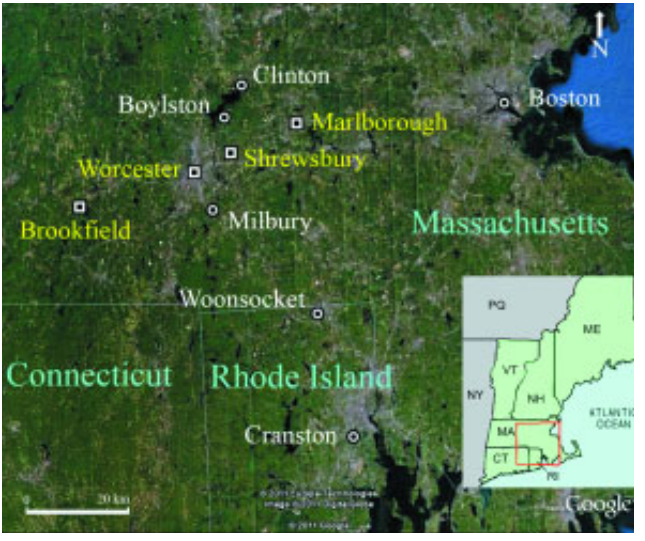

Figure 1. Local place names in Massachusetts and Rhode Island mentioned in the text. Banding sites in central Massachusetts are labelled in yellow and shown by squares; re-observation sites in this area are labelled in white and shown by circles. Some tagged Ring-billed Gulls were re-sighted at banding sites as well.

Figure 2. Gulls were baited into parking lots and within the range of a rocket net. Note the placement of the net between the front and rear tires of the truck. *Photo: Dan Clark.*

describe the movements of the birds from that study which were found, or assumed to be, breeding in or near to Ontario (ON), thus giving a slightly different perspective on the migration of Ring-billed Gulls to and from Ontario and further showing their fidelity to breeding, migratory and wintering sites.

Methods

During the non-breeding season from March 2008 to March 2010, Ring-billed Gulls were baited with bread, crackers and French fries into parking lots in central Massachusetts, near the communities of Brookfield, Shrewsbury, Marlborough and Worcester (Figure 1), where they were captured with rocket nets (Figure 2). Brightly coloured polyvinyl chloride (PVC) wing-tags were attached to the patagium of both wings. All wing-tags were individually marked, on both the upper surface and underside of the tag, with a unique combination of black numbers/letters (Figure 3). The project was widely advertised and the public was encouraged to report sightings of these birds. All bandings and re-sightings were maintained on a spreadsheet for easy sorting and when calculating the distance between subsequent re-sightings of the same bird, the straight line function in Google Earth was used. Only the results of birds re-sighted in Ontario or the adjacent U.S. waters of the Great Lakes/ St. Lawrence River are addressed in this paper.

Figure 3. Ring-billed Gull A42 (#7, see Table 1) with clearly visible wing-tag. *Photo: Chip Weseloh.*

Results

Of the 763 Ring-billed Gulls that have been wing-tagged to date in this study, 461 (60.4%) have been re-sighted at least once yielding 2,692 re-sightings (up to 15 October 2010) of these birds. The number of re-sightings per individual ranged from 1 to 77 with an average of 4.8 per bird. Thirteen of these re-sighted individuals (2.8%) were reported directly from, or near, breeding colonies in Lakes Ontario, Erie or Huron or the Ontario portion of the St. Lawrence River during April – June; they are assumed to have been breeding in those areas. There has been a total of 65 re-sightings (2.4% of the total) of these 13 birds to date. There were no re-sightings reported from west of Georgian Bay, Lake Huron.

For seven of the 13 re-sighted gulls (#s 1 - 7, Table 1), most were observed in multiple seasons in both the Ontario/Great Lakes/St. Lawrence River area and subsequently back in the Massachusetts/Atlantic coast/southern U.S. area. One individual (#1) was not re-sighted back

in the Massachusetts area but had a very noteworthy post-banding movement (see below). These seven gulls were re-sighted from 3 – 17 times each for a total of 65 re-sightings or 9.3 times per individual. Most of them provide interesting insight into the movements between these areas and their fidelity to specific sites. The chronology and details of their re-sightings are given in the narrative below. The general northward (spring) and southward (autumn) migratory movements of these tagged gulls are shown in Figures 4 and 5, respectively.

The other six wing-tagged gulls (#s 8 – 13, Table 1) re-sighted in the Ontario/Great Lakes/Upper St. Lawrence River area had very limited re-sightings. They were re-sighted in only one season and only in the Ontario/Great Lakes/St. Lawrence River area; they were not re-sighted anywhere outside the Great Lakes including anywhere near the banding location. They were seen only 1 – 4 times each for a total of 10 re-sightings or 1.7 times per individual. However, there were two distinctions in this group of re-sighted gulls (#s 8 – 13, Table 1 and

Table 1. Details on banding, resighting and status of wing-tagged Ring-billed Gulls observed in Ontario and the Great Lakes

Gull #	Tag #	Banding Date	No. Re-Sightings	1st Re-Sighting*	Location**	Status
1	A326	09-Nov-09	3	7-May-10	L.Galloo I.	On breeding colony
2	A198	06-Mar-09	4	5-Jun-09	Strachan I.	On breeding colony
3	A409	12-Jan-10	5	26-Apr-10	Port Colborne	On breeding colony
4	A421	12-Jan-10	6	9-Jun-10	Midland	Colony 25 km away
5	A186	20-Feb-09	8	28-Apr-09	Niagara Falls	Colony nearby
6	A196	06-Mar-09	12	28-Apr-10	Strachan I.	On breeding colony
7	A42	03-Oct-08	17	12-May-09	Collingwood	On breeding colony
8	A102	09-Feb-09	1	24-May-09	Long Sault	Colony nearby
9	A151	29-Dec-08	2	25-Mar-10	Toronto	On breeding colony
10	A443	12-Feb-10	4	19-Apr-10	Trenton	Colony nearby
11	Unk1	N/A	1	13-Apr-10	Lancaster	Colony nearby
12	Unk2	N/A	1	9-Jun-09	Belleville	Colony nearby
13	Unk3	N/A	1	23-Jun-10	Russell	Colony 25 km away

* Along the Great Lakes/St. Lawrence River.
** All place names except Little Galloo I. and Niagara Falls (NY) are in Ontario.

Figure 4). Their dates of re-sighting in the Great Lakes area ranged from 25 March (#A151) to 23 June (Unknown #3), which are both the earliest and latest dates of re-sighting, respectively, in the Great Lakes. Unfortunately, none of these gulls were re-sighted subsequent to their arrival in the Great Lakes so nothing can be said of their autumn movements /migration or of their fidelity to their breeding, stopover or wintering sites.

Narratives of Individual Gulls

Bird A326 (#1, Figure 4) was re-sighted three times after banding on 9 November 2009 in Brookfield, MA. It was re-sighted on 10 November, the day after banding, at the banding site and then again on 9 March 2010 at a park in Cumming, Georgia (1,375 km from its banding site). It was next observed two months later, on 7 May, at Little Galloo Island (in New York, 38 km south of Kingston, ON), 1,265 km from its previous sighting and 395 km from its banding site. The sighting of this bird in Georgia in March suggests it was a migrant when initially captured in Massachusetts. After its capture, banding and release in Massachusetts, it apparently continued southward, at least to Georgia. Perhaps it continued to Florida, wintered there, and was re-observed in Georgia on its way back north. From the date of its re-sighting at Little Galloo, it apparently made the 1250+ km trip from Georgia to Little Galloo Island in less than two months. Unfortunately, the few re-sightings of this bird do not permit any assessment of its fidelity to either a breeding or wintering site.

Bird A198 (#2, Figures 4 and 5) was re-sighted four times after banding on 6 March 2009 at Shrewsbury, MA. It was re-sighted on 5 June 2009, three months after banding, at a nest on the breeding colony at Strachan Island, Cornwall, ON, 389 km away. Six weeks later (15 July) it was seen at a different breeding colony on Four Brothers Island in Lake Champlain near Willsboro, NY, 130 km away from Cornwall. Two and a half weeks later, on 3 August, it was seen at Woonsocket, Rhode Island (RI), 308 km away from the Lake Champlain site but only 53 km from its capture site. The gull was not reported during the winter of 2009/2010, so we do not know if it wintered in the Massachusetts-Rhode Island area or if it went much farther south, like the previous bird. However, on 17 June 2010, it was seen at a breeding colony on Bergin Island, in the St. Lawrence River, less than one km west of the Strachan Island colony where it was seen in June 2009. The banding and first re-sighting dates (6 March and 5 June 2009) are too far apart to show any stages of migration or to indicate where the bird may have spent the winter. The re-sighting at Lake Champlain six weeks after being seen on the breeding colony at Strachan Island suggests the bird may have failed at nesting at Strachan Island and left the island earlier than usual. Alternatively, it may have been an early nester, raised its young and left immediately, but stopped at Lake Champlain en route to its wintering area. The re-sighting at a colony on Lake Champlain also indicates that migrant birds from elsewhere use local breeding colonies as stopover sites during migration.

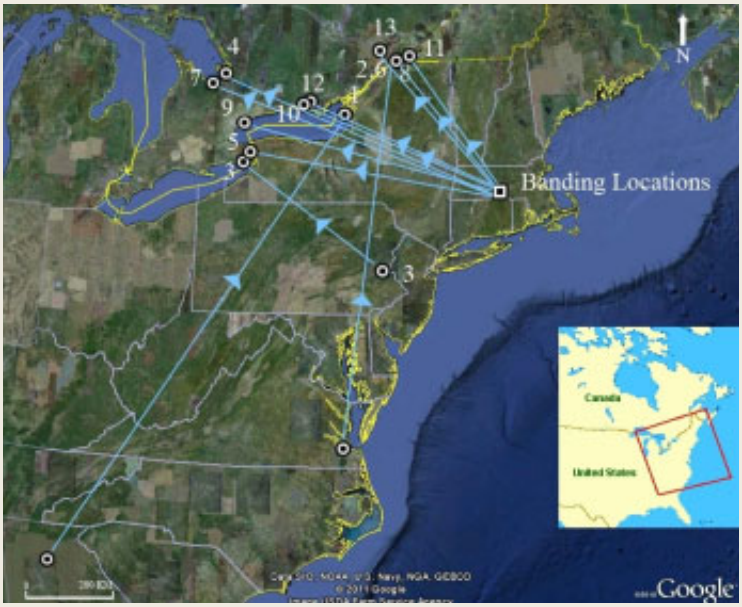

Figure 4. Suggested spring movements of 13 wing-tagged Ring-billed Gulls (as per Table 1) captured in central Massachusetts (see"Banding Locations"). All gulls except those represented by lines numbered 1, 3 and 8, were last seen in the Massachusetts-Rhode Island area before being re-observed in the Ontario-Great Lakes area during a breeding season. Gulls represented by lines 1, 3 and 8, while banded in Massachusetts, were last observed at the location where each of their lines begin (note the direction of the arrows). These three birds must have been migrants when captured in Massachusetts as they continued southward after capture. For example, line 1 represents a gull (A326, Table 1) which was banded in Brookfield, MA on 9 November 2009, re-sighted in Georgia on 9 March 2010 and observed on a breeding colony in eastern Lake Ontario on 7 May 2010.

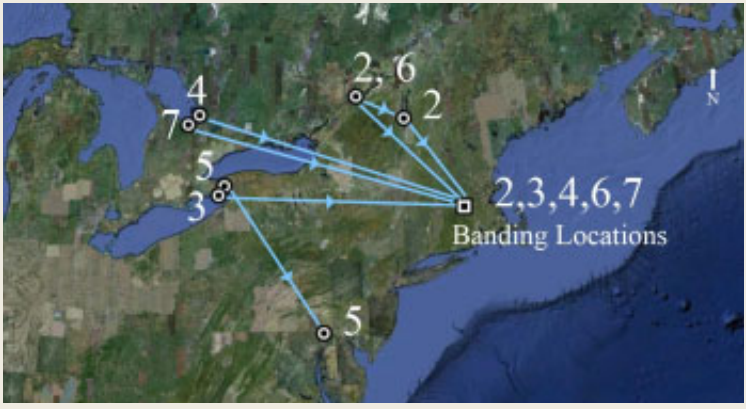

Figure 5. Suggested autumn movements of six wing-tagged Ring-billed Gulls captured in central Massachusetts, re-observed on or near a Great Lakes area breeding colony in summer and re-observed in the subsequent autumn-winter period. For example, line 4 represents a gull (A421, Table 1) that was seen in Midland, ON on 28 June 2010 and again in Shrewsbury, MA on 19 August 2010.

This is an important finding and one for which there has been very little opportunity for study among colonial waterbirds. The importance of breeding colonies to nesting birds is obvious but the importance of breeding colonies as stopover sites for migrating individuals seldom has been confirmed. The gull obviously did not stay long at Lake Champlain as it was seen in Rhode Island two and a half weeks later. It is interesting that the gull was not seen anywhere during the September 2009 to March 2010 period. However, it did return to its breeding area in 2010. Thus it showed good fidelity to both an autumn stop-over or wintering area and its breeding area.

Bird A409 (#3, Figures 4 and 5) was re-sighted six times after banding on 12 January 2010 in Worcester, MA. It was seen three weeks after banding, on 3 February, in Cranston, RI, 61 km away from its banding site. A month later, on 6 March, it was seen in Bethlehem, Pennsylvania, 350 km from the Rhode Island site. The next re-sighting came seven weeks later on 26 April at a nest on the breeding colony at Port Colborne, ON (597 km from the Pennsylvania site). The bird was then seen again on 29 September, and 5 and 22 October 2010 at a parking lot in Worcester, MA, less than one km of its capture site. It would appear that this bird wintered in the Worcester, MA area; it was captured there in January and was re-sighted there in September and October. It is very likely that it had begun its northward migration to Port Colborne when observed on 6 March in Bethlehem, even though that site is not in a direct line to the colony (see Figure 4). Ring-billed Gulls usually begin to arrive in the Hamilton area in spring, and presumably at Port Colborne, during the first week of February (Curry 2006). This bird also showed good fidelity to its apparent wintering area in Worcester, MA.

Bird A421 (#4, Figures 4 and 5) was re-sighted six times after banding on 12 January 2010 at Worcester, MA. It was re-sighted two months later (in March) near its banding location but not again during the spring migratory period of 2010. However, in June 2010 it was observed three times, on the 9th, 11th and 28th, at Little Lake Park in Midland, ON. There are several nesting colonies of Ring-billed Gulls in that vicinity, a notable one is at South Watcher Island, and it is presumed to have been nesting at one of them. The gull was then seen back in Massachusetts on 19 August at Shrewsbury and again in Worcester, MA on the 15 September. This bird also showed good fidelity to what appeared to be its wintering location, given it was seen there in January, March, August and September.

Bird A186 (#5, Figures 4 and 5) was re-sighted eight times after banding on 20 February 2009 at Marlborough, MA. It was observed in the Boston, MA, area (40 km away) five times between 26 February and 28 March. On 28 April, one month after last being sighted in the Boston area, it was reported in Niagara Falls, NY (661 km away). Many Ring-billed Gulls nest on islands and breakwalls in the Niagara River and it probably nested there. It was reported the following winter, on 2 January 2010, at the

Conowingo Dam, MD (450 km away) from Niagara and 576 km from its banding site. On 15 June 2010, it was reported at the breeding colony on the Buckhorn Weir on Grand Island, Niagara Falls, NY, thus showing good fidelity to its probable breeding site/area. This bird may have been a migrant when captured given its January date in Maryland and February – March dates in Massachusetts.

Bird A196 (#6, Figures 4 and 5) was re-sighted twelve times after banding on 6 March 2009 also at Shrewsbury, MA. It was seen later the same day at a parking lot in Millbury, MA, 8.4 km away. It was not reported during the 2009 breeding season, April – July, but it was back, or still in Massachusetts, at Clinton, in August, September and October 2009, only 14 km from where it was banded. It was re-sighted four months later on 8 February 2010 at Newport News, Virginia (VA), 727 km to the south. On 27 April 2010, two and a half months later, it was observed on a nest on the breeding colony, again, at Strachan Island at Cornwall, ON, 901 km from Vermont. Just over two months later it was reported at Wachusett Reservoir in Boylston, MA, 381 km away from Cornwall on 2 July 2010. This site is only 9 km from where it had been banded. It was seen 5 times during August and September 2010 in the same area of Clinton, MA. From the re-sightings of this bird, we cannot tell if it wintered in the Shrewsbury-Clinton area of Massachusetts or if it passed through this area in the autumn and spring. The fact that it was seen in Virginia in February suggests that it wintered in that area. However, being observed in central Massachusetts in July – September and March suggests it could have been migrating through that area but showing good fidelity to this area as a stopover site.

The last gull, bird **A42 (#7, Figures 4 and 5),** was re-sighted 17 times after banding on 3 October 2008 at Worcester, MA. It was reported six times between 7 October and 17 December 2008 in the area where it was banded. One of these re-sightings came from a reservoir where it roosted. Two months later, on 10 February 2009, it was reported from Coney Island beach in Brooklyn, NY (261 km away). But then on 16 and 20 March, five weeks later, it was back in Massachusetts where it had been captured. Approximately two months later, on 13 May, the bird was seen at a nest on the colony just south of Nottawasaga Island at Collingwood, ON (725 km from Massachusetts). Within three months, on 4 August, it was back at the parking lot at Worcester, MA where it was seen five more times up to 21 November 2009. The bird was not seen during the 2010 breeding season, although the authors searched for it on 24 June 2010 at the breeding colony near Collingwood. On 27 August 2010, the bird was re-sighted at the parking lot where it was originally captured, establishing that it did show fidelity to its wintering site in Massachusetts.

Discussion

This appears to be the first published study which has tracked individually tagged Ring-billed Gulls that breed in the eastern Great Lakes. Southern's (1974a, b) work was conducted at a colony in Rogers

City, Michigan, on the west shores of Lake Huron in the 1960s – 1970s. He found that Florida was the main wintering area of most of the Ring-billed Gulls from that area of the Great Lakes.

One of the major findings of the current study, albeit with its small sample of birds that bred or presumably bred in the southern Ontario/eastern Great Lakes/upper St. Lawrence River area, was that all six of the gulls that were observed at least twice during different breeding or non-breeding seasons, showed fidelity to breeding sites, wintering sites and/or migratory stopover sites between the Great Lakes and central Massachusetts. Five of six gulls showed fidelity to the capture area in central Massachusetts (and surrounding area, *e.g.* adjacent Rhode Island or nearby New York) either as a wintering area or as a stopover site; two birds (including one of the above) showed fidelity to breeding areas in the Great Lakes. Fidelity could not be assessed in the other six gulls (#s 8 – 13, Table 1) which were only observed in one breeding or non-breeding season.

Additionally, the average date of first detection of tagged Ring-billed Gulls on/near colonies in Ontario or the Great Lakes was 12 May. This date is heavily skewed, however, because most biologists/observers are not out on colonies until at least late April. The average date of first detection (arrival) in the banding area (Massachusetts) after the breeding season was 31 August (but four of six birds appeared between 2 July – 19 August). These dates should not be biased as observations in July – August would not be weather-dependent. Also, these dates are early compared to findings of both Southern (1974b) and Gabrey (1996) who showed that dispersal from the colonies was just beginning in August and breeding Ring-billed Gulls were, on average, only about 320 km from their natal colonies then. However, the proportion of Great Lakes Ring-billed Gulls that goes to New England to winter or as a stopover spot in migration is small and probably does not count for much in the larger scheme of gull movements. However, a specific study on wintering areas of Ring-billed Gulls from the eastern Great Lakes, or the lower Great Lakes, has not been done. Part of the trouble in establishing fidelity was the fact that only in Massachusetts were sustained regular efforts made to re-sight the birds. On the Great Lakes and in areas south of Massachusetts, *e.g.* Georgia and Virginia, all sightings were accidental or opportunistic.

Southern (1974b) identified a major migration corridor for Ring-billed Gulls departing south-eastward from the lower Great Lakes, cutting across western and central New York and most of Pennsylvania ending up in the southern two-thirds of New Jersey, Delaware and Delaware Bay. Birds captured and/or observed in central Massachusetts are on the very northern edge of this corridor and may have a migration chronology that differs slightly from those gulls moving directly in the corridor.

One of the interesting features of this Massachusetts-based study is that none of the wing-tagged birds were reported from west of southern Georgian Bay in Lake Huron. Thus, although the wintering area

for Great Lakes Ring-billed Gulls is given as from Maine to Texas (Ryder 1993, Gabrey 1996), there may be a propensity for gulls from the eastern Great Lakes to winter in the more north-eastern section of that range. This is something which has not been shown previously.

Gabrey (1996) states that the northward migration of adult Ring-billed Gulls starts in March. This is slightly at odds with what is known about arrival times of Ring-billed Gulls at Hamilton, ON, where Curry (2006) says the first arriving birds are usually present in early February. Weir (2008) notes that the average arrival date in Kingston is 9 March. Perhaps the Ring-billed Gulls which can be seen massing at Eastport in Hamilton Harbour are birds which have over-wintered locally rather than recently arrived migrants. At least three of the Ring-billed Gulls observed at/near breeding colonies in the Great Lakes were still being reported in the Massachusetts area in early and late March. All three were observed on Great Lakes colonies during the last week of April. Three of the Ring-billed Gulls assumed to be breeding on Great Lakes colonies were back in Massachusetts by early July and early August.

Among Canadian provinces, the most Massachusetts-banded Ring-billed Gulls were re-sighted in Newfoundland (26), followed closely by Quebec (23), then Ontario and New Brunswick (14 each) and Nova Scotia (3). This distribution presents a very vivid image of where some of the Ring-billed Gulls, which are in Massachusetts during the non-breeding season, go to breed. It also points out the need for an analysis of the wintering areas of Ring-billed Gulls nesting east of the Great Lakes in eastern Canada.

Summary

In this study, the migration and local movements of adult Ring-billed Gulls captured in central Massachusetts during September to March were tracked through the re-sighting of birds marked with coloured patagial wing-tags. Thirteen of 461 re-sighted tagged birds (2.8%) were observed in Ontario or the Great Lakes; all were observed south and east of Georgian Bay, Lake Huron. Six of the 13 tagged gulls were observed during two or more years and all showed fidelity to a breeding, stopover or wintering site. One gull was noted using a breeding colony as a stopover location during its southward migration. At least two gulls were captured in Massachusetts en route to wintering locations where they were re-sighted farther south.

Acknowledgements

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First Documented Nest of Connecticut Warbler in Ontario

Allan Harris

The nesting range of Connecticut Warbler (*Oporornis agilis*) extends from central Quebec to northeastern British Columbia and south into northern Minnesota, Wisconsin, and Michigan (Pitocchelli *et al.* 1997). This species is known for its secretive behaviour, but loud and distinctive song. Typical breeding habitat in Ontario is treed fen with tamarack (*Larix laricina*) and black spruce (*Picea mariana*) (McLaren 2007). In Ontario, the Connecticut Warbler nesting range extends from the Sudbury area west to Lake of the Woods and north through the southern Hudson Bay Lowlands (McLaren 2007). During Ontario's second breeding bird atlas (2001 to 2005) breeding evidence was recorded in 164 of the 10 km x 10 km atlas squares, mostly in northwestern Ontario (McLaren 2007). Confirmed breeding (including distraction displays, adults carrying food, or fledged young) was reported in only five squares. The remaining records were primarily observations of singing males. The species is generally uncommon through this range, but locally common in treed fens (McLaren 2007).

Although widespread in northern Ontario and relatively common in suitable habitat, no nests have been documented in the province. The Ontario Nest Records Scheme includes a report of three young leaving a nest in Sibley Provincial Park (now Sleeping Giant Provincial Park) on 24 July 1971, but the nest itself was undocumented (Peck and James 1987, M. Peck pers. comm.). Pitocchelli *et al.* (1997) cites Kells (1889) in reference to a previous Ontario nest, but this citation appears to be in error. Another paper by Kells (1904) describes the general range and occurrence of this species in Ontario, but does not indicate nesting (R. James and M. Peck pers. comm.).

Connecticut Warbler nests are difficult to find in part due to the elusive behaviour of nesting adults. Females tend to return to the nest by landing 10 to 15m away and walking in under the cover of vegetation (Harrison 1984). The male sings at some distance from the nest (> 100 m; Pitocchelli *et al.* 1997) and often sings from the dense cluster of branches near the top of a spruce tree.

Figure 1. Connecticut Warbler nest location north of Lake Nipigon, 15 June 2010. The habitat is treed fen with leatherleaf, cottongrass and Sphagnum moss. *Photo: Allan Harris.*

The nest is on the ground, usually hidden under vegetation or sunken in moss (Pitocchelli *et al.* 1997). The female does all the incubation, but both sexes feed the young (Pitocchelli *et al.* 1997).

On 15 June 2010, I found a Connecticut Warbler nest north of Lake Nipigon in Thunder Bay District in northwestern Ontario. This paper presents information on the first documented nest in Ontario.

I was walking through a large treed fen east of Zigzag Lake (N 50º 29' 58", W 88º 16' 25"), when a female Connecticut Warbler flushed from the ground near my feet. She flew about 10 m and landed on the ground and then flew to a low shrub where I was able to watch her for about 30 seconds before she disappeared. She was agitated, moving nervously back and forth, but performed no distraction display and did not vocalize. A male Connecticut Warbler was singing continuously from a black spruce about 50 m away.

After a few minutes of searching, I found the nest about 50 cm from the base of a 2.5 m tall black spruce. It was situated in a Sphagnum moss (*Sphagnum* sp.) hummock under a tussock of cottongrass (*Eriophorum vaginatum*) and leatherleaf (*Chamaedaphne calyculata*) (Figure 1). The nest was sunken about 12 cm below the surface of the hummock and consisted of a cup constructed of fine sedges (Figure 2). The inner diameter of the nest was 7 cm. The nest contained five whitish eggs that were marked with brown speckles and blotches (generally more heavily marked on the wide end) (Figure 3).

The habitat in the vicinity of the nest was treed fen with scattered black spruce with ericaceous shrubs (leatherleaf and bog laurel, *Kalmia polifolia*) and a continuous layer of Sphagnum moss. The black spruces were mostly 2 to 3 m tall and spaced at 5 to 10 m. This vegetation is classified as Ecosite 40: Tamarack-Black Spruce/Sphagnum: Organic Soil (Racey *et al.* 1996). The treed fen covers 86 ha and borders a small lake about 500 m to the southwest. Around the outer edges of the fen, the black spruces become taller and denser as the wetland grades into conifer swamp (Ecosite 35; Racey *et al.* 1996). The nest was about 100 m from the edge of the surrounding trembling aspen - dominated forest.

Connecticut Warblers are relatively common in the immediate area. I heard four singing males on the morning of 15 June within about 2 km of the nest site. Other common birds in the treed fen habitat included Palm Warbler (*Dendroica palmarum*), Nashville Warbler (*Oreothlypis ruficapilla*), Yellow-bellied Flycatcher (*Empidonax flaviventris*), and Ruby-crowned Kinglet (*Regulus calendula*). I did not revisit the site to determine the fate of the nest.

Discussion

The clutch size, egg dates, and description of the nest and eggs documented in this paper are similar to Connecticut Warbler nests described elsewhere (Pitocchelli *et al.* 1997). The treed fen habitat of this nest is consistent with breeding habitat previously described in Ontario (McLaren 2007). Similar habitat covers thousands of hectares of northern Ontario (Riley and Michaud 1989, Riley 1994).

Figure 2. Connecticut Warbler nest with five eggs, 15 June 2010. *Photo: Allan Harris.*

Figure 3. Connecticut Warbler nest with five eggs, 15 June 2010. *Photo: Allan Harris.*

Other breeding habitat is also used. In Rainy River District and the western provinces, upland aspen (*Populus tremuloides*) stands are used as breeding habitat (Elder 1991). The previous Ontario breeding record was in a cutover with dense undergrowth. The nest was on the ground under a raspberry (*Rubus* sp.) thicket (Peck and James 1987). This species also nests in damp woodlands (Pitocchelli *et al.* 1997) and immature Jack Pine (*Pinus banksiana*) stands (Godfrey 1986).

The incubation period for Connecticut Warbler is unknown, but other warblers of the genus *Oporornis* have an incubation period of 11 to 13 days with the young leaving the nest 7 to 10 days later (Baicich and Harrison 1997). These dates suggest that the nest described in this paper was about 2 weeks earlier than the 1971 Ontario record where recently fledged young were observed on 24 July 1971 (Peck and James 1987).

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American Robin attacks Red-bellied Snake

Ross D. James

While the American Robin (*Turdus migratorius*) may not be renowned as a snake hunter, it has been noted occasionally taking snakes (Sallabanks and James 1990) .Many bird species are known to include snakes in their diet (Guthrie 1932, Terres 1980). The most significant predators are the hawks and owls, some species specializing in snakes (Brown and Amadon 1968). Among passerine birds, the most likely to take snakes are the various crows and jays, along with shrikes (McAtee 1932). However, given the chance, even songbirds such as Carolina Wren (*Thryothorus ludovicianus*), Yellow-breasted Chat (*Icteria virens*) and a bluebird (*Sialia* sp.) have been seen eating or trying to eat snakes (Terres 1980). While the American Robin (*Turdus migratorius*) may not be renowned as a snake hunter, it has been noted occasionally taking snakes (Sallabanks and James 1990). This note reports another instance of an American Robin attacking a snake.

In August 2010, a pair of robins had been feeding young in a nest in the hedge near my house at Sunderland, ON. Late one afternoon as I entered the kitchen, I noted one of the adults vigorously attacking something at the edge of the lawn near the end of the hedge.

But, obviously this was not just an earthworm. The robin would repeatedly jump forward and grab at whatever it was attacking, then jump back as if afraid of it. Something on the ground was writhing vigorously with each attack of the robin. A check with binoculars confirmed it appeared to be a relatively small snake. Since I was not surprised to see a robin attacking a snake, and being more interested in identifying the snake species and in finding out how long it was than in providing the bird with another meal, I went out to investigate.

The bird was standing inactive about 30 cm from the snake when slowly approached across the lawn. The snake had been mauled for some time and was just lying still. The snake was a Red-bellied Snake *(Storeria occipitomaculata*), most of which was tightly balled up, only

about one third of its length still lying exposed — the head end. In order to measure the length, I had to untie two knots in the snakes body, each pulled snug. They had to be teased apart carefully to avoid injuring the snake. The snake measured 30 cm long. Although mauled, the skin was not broken, and it moved away some time later under its own power when left alone at the back of the house.

When approached, the robin made no attempt to take the meal it had just worked to get. Was the robin only interested in killing the snake, did the bird realize that the snake could not be eaten readily with knots in it, or did the bird consider that the snake was too large? Netting (1969), after observing a robin attack a Dekay's Brownsnake (*Storeria dekayi* — called Northern Brown Snake), tried unsuccessfully to feed one (size not given) to the bird, suggesting that robins were only interested in killing snakes, perhaps recognizing them as predators of eggs and young when of larger size. Several others, however, have noted American Robins eating snakes.

Friedmann (1929), reported robins killing Garter Snakes (*Thamnophus* sp.) of 10 and 13 inches (25.5 and 30 cm), and of trying to feed a Garter Snake to a nestling (a Brown-headed Cowbird, *Molothrus ater*, placed in the nest). The snake observed by Davis (1969) appeared to be about as long as the robin (ca 23-27 cm), and was carried off by the bird. A Garter Snake of about 25 cm was reported fed to a nestling (Richmond 1975), and a Garter Snake of 30 cm was reported partly eaten and the rest carried off (Erickson 1978). It seems more likely that once killed a robin would attempt to consume a small snake, particularly when also feeding nestlings.

It is tempting to speculate that tying their bodies in knots might be some sort of anti-predator strategy for a snake. However, if this were the case, why was the head left exposed, allowing a bird to finish killing the snake? The violent writhing on the ground seemed to be enough to cause the robin to recoil repeatedly (behaviour also noted by Davis 1969). While the head could bite, on a small snake, that does not seem to

be much of a serious threat. And, the robin could have torn the snake into pieces for consumption (as observed by Erickson 1978) even if knotted. Tearing a snake apart, however, required considerable time and effort for a bird not well equipped for tearing flesh.

The robin that had killed a snake observed by Erickson (1978) also easily abandoned its potential meal when approached. But, the bird returned to get and eat the dead snake left in place once examined. Perhaps if I had put the snake back, the robin I observed would also have returned to finish killing and eating the snake (and I would have returned it had it been dead). The robins may just not be sufficiently interested in snakes to make certain they take their meal with them when approached.

This seems to be the only report of a Red-bellied Snake attacked by an American Robin. While answering a couple of questions, investigating this raised other questions. Had I not intervened, however, I would have been left with different questions.

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TWO SMALL AUTUMN ROOSTS OF GREAT EGRETS

at London and Metcalfe, Ontario

D.V. Chip Weseloh

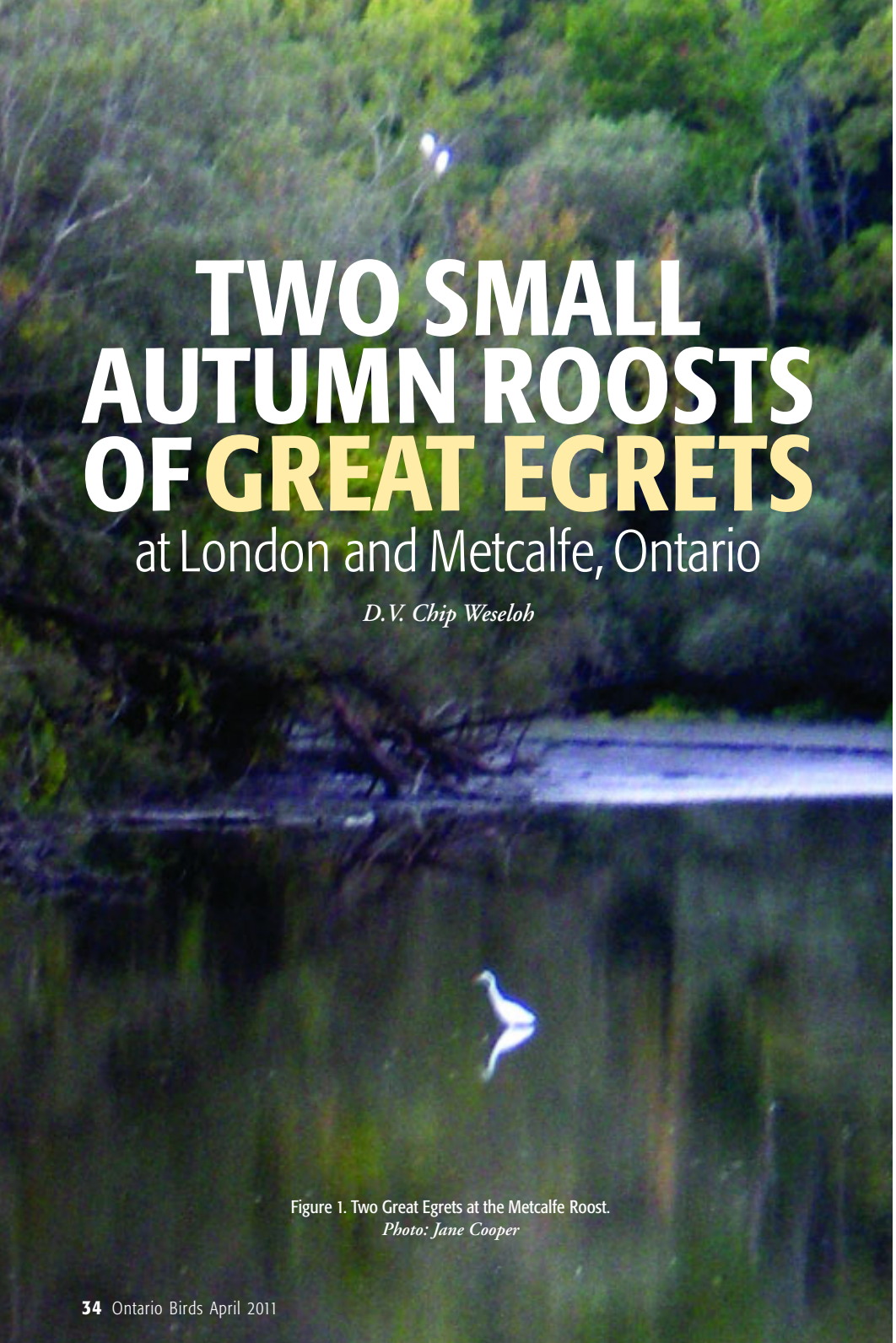


Figure 1. Two Great Egrets at the Metcalfe Roost.
Photo: Jane Cooper

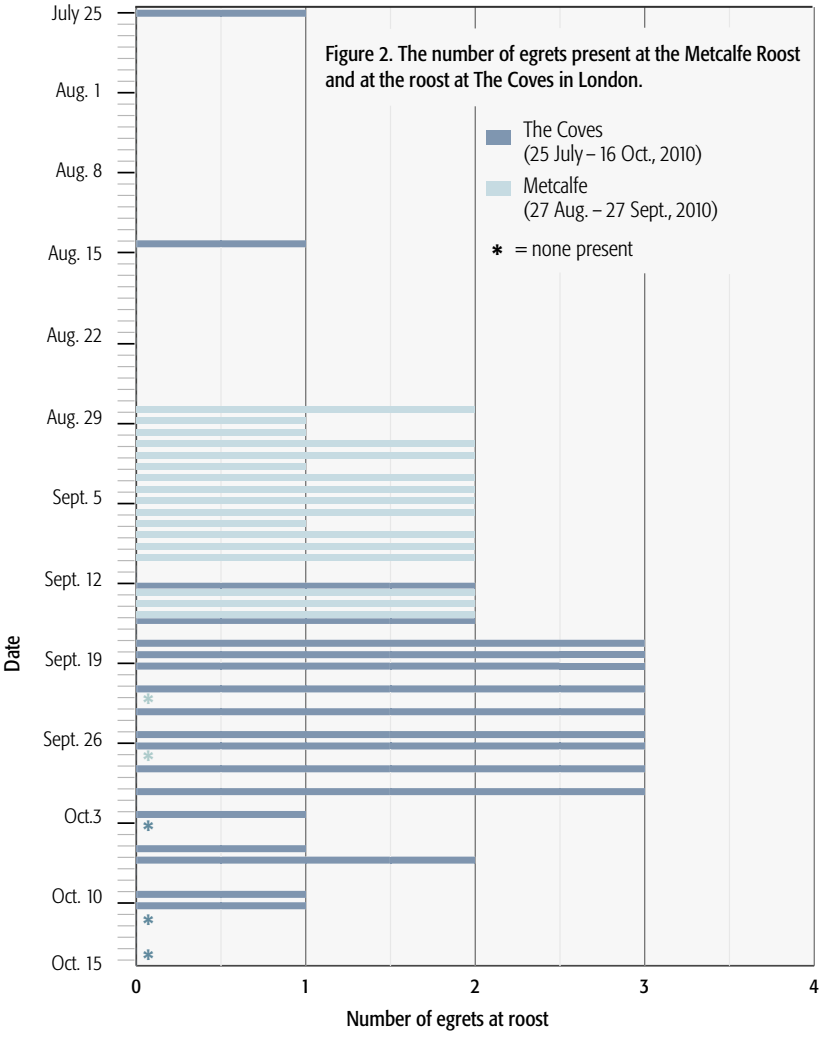
The roosting habits of the Great Egret (*Ardea alba*) in Ontario have been the subject of increasing recent interest. The large autumn roost of up to 304 individuals at Luther Marsh (Grand Valley, ON) has been noted for the last three years on Ontbirds, the listserv of the Ontario Field Ornithologists. That roost, and the large breeding colony near Collingwood, ON (only 100 km distant), are believed to be the largest such aggregations of Great Egrets in Canada (DVCW, unpubl. data). A detailed accounting of a smaller roost (76 birds) at Muddy Creek, near Wheatley, ON, has appeared in this journal (Weseloh *et al.* 2010). Also, during 2010 several subscribers to Ontbirds reported additional egret roosts to the author. Two of the driving forces behind this interest in roosting sites of Great Egrets are: 1. to identify sites where large numbers of egrets occur to facilitate the location of individually marked egrets (part of a larger study by the Canadian Wildlife Service), and 2. to identify specific areas of intense egret use and their potential as Important Bird Areas (IBAs)[1]. For example, Luther Marsh was identified as an IBA before its national significance as an egret roosting area was known. However, are there other significant egret roosting sites in Ontario, which should also be so recognized?

This paper reports on two very small egret roosts, one of two birds and the other of three birds, at Metcalfe and London, ON, respectively. The discovery of such small roosts was an unexpected outcome of the search for roosts. The occurrence of such small roosts of Great Egrets, a species known to roost communally in "large" roosts, has not been reported previously in the literature (Palmer 1962, Bent 1963, Hancock and Elliott 1978, Allen and Young 1982, McCrimmon *et al.* 2002). Further investigation into roosting sites of Great Egrets may yield important information on the stopover ecology of this species which has expanded its range in Ontario greatly during the last 25 years (Peck 1987, 2007).

Of the small roosts, the one at The Coves, in London, was tracked for 21 days over the period 25 July to 16 October and the one at Metcalfe (Figure 1) was tracked for 17 days over the period 21 August to 23 September. Counts of the number of egrets at the roosts usually were made in the evening once birds had arrived at the roost. Some counts at Metcalfe were made in the early, pre-sunrise morning.

During 2010, the first year the small roosts were known to the author, Len Manning, Anita Granger and Larry Gifford all made reports of egrets roosting at The Coves. The Coves are a series of small ponds in a wooded urban setting. On 25 July, Len Manning reported a single egret roosting in the North Pond of The Coves (Figure 2). Anita Granger further reported from one to three egrets present on 14 August and from 12 September to 10 October. During the August to September period, anecdotal observations

[1]. The Important Bird Areas Program is a science-based initiative to identify, conserve and monitor a network of sites that provide essential habitat for bird populations (see www.ibacanada.com).



suggest the birds were still present at The Coves (L. Manning, pers. comm.). On 3 October, no egrets appeared at the roost although two or three egrets were present both before and after that date (Figure 2). This may be a significant occurrence (see below). The last roosting egret was reported from The Coves on 10 October.

At Metcalfe, approximately 25 km SE of downtown Ottawa, Sarah Godoy and Jane Cooper reported a single egret roosting in dead trees surrounding a small rural pond, adjacent to their property on 21 August (Figure 2); this egret was marked with an orange wing-tag (Figure 3). A second egret roosted with the

wing-tagged bird on 27 August; it was later discovered that this egret was banded with a red plastic leg-band (both the orange wing-tag and red leg-band were part of the author's marking scheme). These two marked egrets were present at the Metcalfe roost on 13 of 17 nights (or mornings) when the roost was monitored between 27 August and 23 September. On the other four nights, only one of the marked egrets was present (Figure 2), always the leg-banded bird.

Discussion

The few egret roosts in southern Ontario which have been monitored intensively to date show a more or less bell-shaped curve with respect to the number of egrets using the roost overnight in the late summer to autumn period. They show a slow initial occupation, building up to a peak number and then a decline to zero when the birds leave for good (DVCW, unpubl. data). One of the things that is unique about the two small roosts described above is that their numbers started small, like most roosts, but they appear to have remained small throughout the season. Even the large roost at Luther Marsh starts out small, *e.g.* in 2009 there were three egrets in the roost on 25 June; it eventually built up to 304 by 21 August. In 2010, there was a single bird in the roost on 27 May; two birds on 10 June and by mid-September there were 235 (L. McLaren and DVCW, unpubl. data). In both years, the number of roosting egrets built up from one to three birds. Thus, the significant event at the two small roosts was the lack of an increased build-up in numbers as the season progressed. Why did these two small roosts not increase in numbers?

Figure 3. A wing-tagged Great Egret, similar to this one, was one of the birds present at the Metcalfe Roost. *Photo: Alan Wormington.*

There are at least two obvious potential reasons why these two roosts stayed small: there may not have been any other egrets in the immediate area or the other

egrets in the area went elsewhere to roost. Both of these possible answers beg the question of how far will an egret fly from its foraging area to where it will roost? Or, alternatively, how far will an egret fly from its roost to a foraging area such that in the evening it will return to the same roost it left in the morning? The size of the foraging area served by a given roost is probably influenced by the number of egrets that are using the roost at any one time. So the answer may be variable.

It is not known if there were other egrets in the immediate area of either of the small roosts. However, we can look at the location of the nearest other roost to each of the small ones. For the roost at Metcalfe, there were two other roosts about 20 to 25 km to the NW in Ottawa. From at least the second week of August until 6 September, there were up to 33 egrets using two sites in the Ottawa River: Conroy Island in the Deschene Rapids and a location on the west side of Shirley's Bay, about 7 to 8 km west of the Rapids (B. Di Labio, R. Dubois, pers. comm). The exact location of the latter roost could not be determined. Smaller numbers roosted at Conroy Island until at least 23 September (R. Dubois, pers. com.).

For the roost at The Coves in London, the nearest known other roost was at Wildwood Lake (near Harrington approximately 38 km NE). It has had as many as 14 egrets roost there in years past (J. Holdsworth, pers. comm.). On 30 September 2010, there were six egrets at that roost but numbers earlier in the season are unknown (A. Superina, pers. comm.). In three studies of foraging distances of breeding Great Egrets in the U.S., the authors found that birds flew an average of 6.3 km and 8.4 km and a range of 2.8 to 4.3 km from their breeding colonies (Bancroft *et al.* 1992, Thompson 1978, Custer and Osborn 1978, respectively). McCrimmon et al. (2001) concluded that the Great Egret "Typically forages <10km from [its] colony…." Whether the same distances apply to the post-breeding season and the egrets' roost sites is not known but it does suggest that it would be unlikely that birds would fly 20 to 25 km to roost. It turn, it would seem that egrets within a 5 to 10 km radius of a given roost would roost together. Thus the small numbers of egrets at these two roosts may have been the only egrets in those areas.

The pattern of occupation at these two very small roosts, and the fact that both birds at Metcalfe were colour-marked, prompts at least two other questions, or observations, about the roosting behaviour of Great Egrets. At Metcalfe, one bird showed extreme fidelity to the roost site being present every night the roost was checked. The other bird was away on four nights but always eventually came back to the Metcalfe roost. Where did it roost on those four other nights and how far did it go? Did it roost solitarily or with other egrets?

In the second case, at The Coves, no egrets roosted there on 3 October but there were one or two birds present after that date. Where did these birds come from? Were they the same birds that were there before the 3rd or were they entirely new birds, migrants in need of a roosting site/stopover location during their southward sojourn? If they were new birds, how did they know about the roost site at

The Coves? How did they know to roost in exactly the same area that other egrets had roosted in previously?

Although the coming autumn season is still four months away, readers are reminded to keep watch for roosting egrets at dusk, large numbers or small, and report them to the author.

Acknowledgements

This study of small roosts of Great Egrets would not have been possible without the counting efforts of Sarah Godoy and Jane Cooper at Metcalfe and Len Manning, Anita Granger and Larry Gifford at London. It would not have been possible to make comparisons to nearby roosts without the efforts of Bruce Di Labio and Rod Dubois in Ottawa and James Holdsworth and Annarita Superina, who provided information on the roost at Wildwood. Tyler Hoar and Dave Moore constructed the graphic Figures and Alan Wormington contributed the photo of the wing-tagged egret.

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FORSTER'S TERNS NESTING AT LAKE SIMCOE

A New Breeding Species for the Greater Toronto Area

Glenn Coady

Figure 1. Adult Forster's Tern at the nest, Cook's Bay, Lake Simcoe, York R.M., 19 June 2010.
Photo: Jennifer Howard

Introduction

Forster's Tern (*Sterna forsteri*) is an exclusively North American "marsh tern" species, breeding primarily in fresh, brackish and saltwater marshes, often in the marshy borders of lakes, islands and streams. Typically it selects large island-like stands or floating mats of vegetation in the deeper portions of wetlands with considerable open water (McNicholl *et al.* 2001).

Ontario lies at the eastern edge of this species' normal breeding range, which is concentrated in the Great Basin Desert and Prairie Pothole areas of North America. Forster's Tern has been a confirmed breeding species in Ontario since the late 1800s in the Lake St. Clair area (Collins 1880, Morden and Saunders 1882, McIlwraith 1894), although there was a period of no documentation of nesting in Ontario for more than 90 years (Baillie 1958, Moore *et al.* 2010) before it was discovered to be nesting in the Long Point area in 1976 (McCracken *et a*l. 1981, McCracken 1987). The vast majority of confirmed Forster's Tern nests in Ontario have been in southwestern Ontario, primarily in the Lake St. Clair marshes and the Long Point marshes, with smaller numbers at other Lake Erie marshes at Holiday Beach, Point Pelee National Park and Rondeau Bay and on Lake Huron at Kettle Point (Austen *et al.* 1994, Moore *et al.* 2010).

In the late 1990s, Forster's Tern was first confirmed as a nesting species in Cook's Bay on Lake Simcoe (Jermyn and Weseloh 2002, Weseloh 2007, Moore *et al.* 2010). These nests represent the first confirmed breeding evidence of this species for the Greater Toronto Area (GTA). The purpose of this paper is to review the history of Forster's Tern on Lake Simcoe and its status as a breeding species in the GTA.

History of Forster's Tern on Lake Simcoe

The first indication of Forster's Terns on Lake Simcoe came in the final year of the first Ontario Breeding Bird Atlas. On 22 June 1985, Bob Curry noted an adult Forster's Tern flying east to west off South Sand Island to the south of Georgina Island. The many potentially suitable marsh areas present along the south shore of Lake Simcoe allowed this observation to be accepted as possible breeding evidence for the atlas (McNicholl 1987).

Similar sightings of Forster's Terns occurred over the next decade during periods consistent with the timing of breeding. Alvaro Jaramillo found a Forster's Tern at the south end of Cook's Bay on 21 June 1991 while doing field work for the Ontario Rare Breeding Bird Program. On 22 April 1993, Gerry Bennett observed a Forster's Tern over Hwy 400 in Vaughan (the first in Vaughan in 28 years). This may have been a migrant headed for Lake Simcoe. Ron Pittaway and Jean Iron observed a Forster's Tern off Pefferlaw Creek on Lake Simcoe on 25 September 1994. On 31 May 1996, a pair was noted in western Cook's Bay at the east end of the 13th Concession of West Gwillimbury in Simcoe County (Toronto Ornithological Club database).

Forster's Tern was first confirmed as a breeding species in Cook's Bay in 1996 during a survey by the Canadian Wildlife Service (CWS) to study organochlorine contamination in the eggs of colonial water birds (Jermyn and Weseloh 2002). Although precise coordinates of the colony were not obtained at the time, the colony was found in the eastern (Regional Municipality of York – hereafter York R.M.) half of Cook's Bay in the eastern edge of the first large stand of emergent cattail (Typha sp.) west of the boat launch in Young's Harbour, York R.M. (D.V.C. Weseloh, pers. comm.). On 28 May 1996, four nests (each containing 3 eggs) were found. Two of these nests still contained 3 eggs on 31 May and the other two still contained 3 eggs on 3 June. Three of these four nests were checked on 10 June and one still had 3 eggs, another had 2 young, and the third had 3 young. Six additional nests (all with 3 eggs) were also discovered on 10 June. Three additional nests (for a total of 13 individually marked nests in 1996) were found on 21 June. Two of these contained 2 eggs and one had 2 young. Excellent photographic documentation of this colony was published by Glenn Barrett of Environment Canada (Moore *et al.* 2010).

In a follow-up 1997 CWS survey, 10 Forster's Tern nests were found in this same colony between 26 May and 6 June. On 6 June, seven of these nests contained 3 eggs, one contained 2 eggs and two were empty. In the 1998 CWS survey, two nests with 3 eggs were discovered on 12 June. In the 1999 survey, six nests were found (two with 1 egg, two with 2 eggs and two with 3 eggs) on 28 May and 14 June.

During the second Ontario Breeding Bird Atlas, Forster's Tern was confirmed as a breeding bird in the western (Simcoe County) portion of Cook's Bay (Weseloh 2007). On 24 June 2001, Rob Copeland and Anne Harkonen observed 8 adult Forster's Terns with 4 fledged young on a raft in a cattail marsh at mouth of the

Figure 2. Nest of Forster's Tern with one egg, Cook's Bay, Lake Simcoe, York R.M., 19 June 2010.
Photo: Jennifer Howard

Holland River in the Simcoe County portion of Cook's Bay (at GPS coordinates 17T 618700 4895600 NAD83) in atlas square 17PJ19. Copeland remarked in his atlas Rare/Colonial documentation form that he had been observing small numbers of Forster's Tern at this location since 1995.

On 19 June 2010, the author visited the south end of Cook's Bay along with Jennifer and Jeff Howard to search for breeding Forster's Terns. We first investigated the large areas of emergent cattails in the York R.M. portion of Cook's Bay, well to the east of the Holland River mouth. This is the same area where the CWS surveys were done from 1996 – 1999. In this area, we observed 18 adult birds flying over the marsh in defense of 12 separate territories and we found three active nests. The first nest we found (17T 620572 4894952 NAD83) contained a single egg (Figures 1 and 2). It was situated in the open, at the edge of a large stand of emergent cattails in about 2 m of water. The second nest we found (17T 620527 4894943 NAD83) was less than 50 m from the first nest. It was placed at one end of a large, raised mound of dead cattail, very close to the water's edge, within 3 m of an active Black Tern (*Chlidonias niger*) nest (Figure 3).

Figure 3. A pair of adult Forster's Terns at their nest, Cook's Bay, Lake Simcoe, York R.M., 19 June 2010.
Photo: Jennifer Howard

Figure 4. An adult Forster's Tern reaches the bottom of a diving flight in defense of its nest. Cook's Bay, Lake Simcoe, York R.M., 19 June 2010.
Photo: Jennifer Howard

Contents of this nest were not checked to minimize disturbance to this pair, although the presence of an adult sitting on the nest, along with the very aggressive defense of this nest site by the adults (Figure 4), was most suggestive of eggs or young being present. The third nest we found (17T 620444 4894939 NAD83) was in similar habitat (Figure 5) and contained two eggs and one recently hatched young (Figure 6). Only one adult was present at this nest and it showed little agitation, leaving the nest only briefly, and settling back on the nest contents while we were still less than 10 m away (Figure 7).

After we surveyed the eastern portion of Cook's Bay, we travelled over to the areas of extensive cattail in the western portion of Cook's Bay, within Simcoe County, near the mouth of the Holland River. Although we did not make any effort to penetrate the marsh there, in order to minimize disturbance, we did observe a minimum of 8 Forster's Terns flying over the area.

Based on the number of birds that were found in different territories, our observations suggest that there were possibly 20 or more pairs of Forster's Terns nesting in southern Cook's Bay on Lake Simcoe in 2010. Attempts to document additional nests were not made in order to keep disturbance to both Forster's Terns and Black Terns minimal. However, we only covered about a third of the suitable habitat that was present. An exhaustive search of the entire extent of suitable habitat would likely confirm an even larger colony size.

Breeding Status of Forster's Tern in the Greater Toronto Area

The GTA is comprised of the City of Toronto and the Regional Municipalities of Halton, Peel, York and Durham and all associated water boundaries (Coady and Smith 2000). Prior to 1996, there was no confirmed evidence of breeding for Forster's Tern within the GTA. Although CWS surveys from 1996 to 1999 had confirmed the nesting of Forster's Tern in southern Cook's Bay on Lake Simcoe, it was unclear until recently whether these nests were located in Simcoe County or York R.M. It is now clear that these nests were located in York R.M. and therefore represent the first confirmed breeding evidence of Forster's Tern in the Greater Toronto Area. The Forster's Tern nests found in the York R.M. portion of Cook's Bay in 2010 have associated location coordinates that certainly further confirm that nesting has occurred in York R.M. The all-time list of confirmed breeding birds within the GTA now includes 199 species.

Moore *et al.* (2010) refer to "nests" and "breeding" of Forster's Tern from four sites associated with the Lake Ontario shoreline (Cootes Paradise in Hamilton — 2 "nests"; Rouge Beach marsh in Scarborough/Pickering—1 "nest"; Frenchman's Bay marsh in Pickering — 4 "nests"; and Whitby Harbour—3 "nests") based upon results of the 2001 decadal survey of coastal Great Lakes wetlands conducted by Bird Studies Canada in conjunction with the second Ontario Breeding Bird Atlas (Graham *et al.* 2002). The methodology used to establish "breeding" and "nests" via this survey was

Figure 5. Nest of Forster's Tern with adult sitting on two eggs and one young, Cook's Bay, Lake Simcoe, York R.M., 19 June 2010.
Photo: Jennifer Howard

to divide the number of adult birds observed at each location in the breeding season by two, in order to infer the number of "nests" involved. No actual nests of Forster's Tern were ever observed or documented. This methodology might prove reasonably accurate and convenient for known and common colonial breeding species, but for rare species at the periphery of their range, this methodology is very problematic. The four areas on Lake Ontario where Forster's Terns are listed as "breeding" or "nesting" by Moore *et al.* (2010), in fact, all involved what were eventually shown to be quite doubtful observations.

To date, no Forster's Terns have ever been confirmed nesting in any of the coastal marshes associated with Lake Ontario. These four sites listed on Lake Ontario as "nesting" sites for Forster's Terns were all rejected by the atlas Significant Species Review Committee and were not added to the distribution maps for Forster's Tern in the second atlas (Weseloh 2007). The main reasons that these records were rejected were that: Forster's Terns had no nesting history at these sites; observers failed to adequately document that the birds involved were indeed Forster's Terns; some of the sites were known nesting locations for Common

Figure 6. Nest of Forster's Tern with two eggs and one recently hatched young, Cook's Bay, Lake Simcoe, York R.M., 19 June 2010. *Photo: Jennifer Howard*

Figure 7: Nest of Forster's Tern with only one adult present, Cook's Bay, Lake Simcoe, York R.M., 19 June 2010. *Photo: Jennifer Howard*

Terns (*Sterna hirundo*) nesting at artificial nesting rafts; there was no suitable Forster's Tern habitat at three of the four sites; and they were all intensively covered atlas squares and marshes where no other observer subsequently saw anything other than Common Terns.

Conclusion

Forster's Tern has been confirmed as nesting in southern Cook's Bay, Lake Simcoe since at least 1996 (and possibly as early as 1985). Nests of Forster's Terns were found in 1996 – 1999 and 2010 which confirm breeding within the York R.M. portion of the Greater Toronto Area. This is the only location within the GTA where Forster's Tern is known to breed.

Acknowledgements

Roy Smith provided records of Forster's Terns in Simcoe County and the Regional Municipality of York from the database of the Toronto Ornithological Club. Don Sutherland provided Forster's Tern records from the databases of the Natural Heritage Information Centre and the Ontario Breeding Bird Atlas.

Chip Weseloh provided unpublished data from Canadian Wildlife Service surveys of nesting Forster's Terns in Cook's Bay, Lake Simcoe from 1996 – 1999. Jennifer and Jeff Howard provided me with transit to the Cook's Bay Forster's Tern colony in their boat in June 2010. Jennifer Howard provided the photographs that accompany this article.

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Black Bear charges at American White Pelicans

By Misty Goodman

Figure 1. A group of American White Pelicans was charged by a Black Bear on 25 July 2010 on Lake Nipigon. *Photo by Ontario Ministry of Natural Resources.*

While conducting a fisheries index netting program, on 25 July 2010, on Lake Nipigon in Northwestern Ontario, I was fortunate to witness an interesting event. American White Pelicans (*Pelecanus erythrorhynchos*) (Figure 1) are quite numerous in this area. A flock of about 30 birds was regularly observed from our boat during our week-long netting survey. Pelicans sometimes hunt communally for prey, which consists mostly of amphibians and fish. One evening, after having their fill of fish, the pelicans settled onto the shoreline. Shortly after, I saw a lone black bear (*Ursus americanus*) come out from the trees and wander along the shoreline, not far from the birds. Once the bear noticed the flock, it made a beeline directly for them. The bear quickly spooked the group of about 15 birds, who quickly retreated into deeper water, while the charging bear plunged a short distance into the water after them! It then made another charge at a second group of pelicans who were settled a little further along the shore. This group of birds also dispersed quickly.

The bear then returned to the shore and hung around for a few moments, as if waiting for another group to materialize. When that did not happen, it continued ambling along its way. I have worked on Lake Nipigon for the past nine years, but this is the first time I have encountered a bear apparently attempting to catch a pelican. Black bears will eat carrion, insects, fish, and they are also opportunistic predators, but the bulk of their diet is plant material.

In Ontario, breeding American White Pelicans are found only in four places: Lake Nipigon, Lake of the Woods Provincial Park, James Bay and in the Thunder Bay District on Lake Superior. The number of breeding pairs of American White Pelicans in the Lake Nipigon and Lake of the Woods areas has increased over the last 15 years. Nevertheless, they are still vulnerable to threats from high water levels, disturbance of nesting sites by recreational boaters, and disease. The American White Pelican is listed as threatened under Ontario's *Endangered Species Act,* 2007, which protects the species and its habitat.

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