



OFO NEWS

Newsletter of the Ontario Field Ornithologists

Volume 17 Number 3

October 1999

Fall Hawkwatching

Ron Pittaway

In response to the annual shooting of migrating birds of prey, the study of hawk migration began in September 1934 when the legendary Maurice Broun first climbed the newly established Hawk Mountain Sanctuary in Pennsylvania. Interest in hawkwatching has grown rapidly in recent years and has spread worldwide. Hawks are magnificent to watch, especially in flight, as they stream by Ontario's top watches. There are 23 species of diurnal raptors on the Ontario checklist. This guide treats the fall migration period of vultures, ospreys, hawks, kites, falcons and eagles in southern Ontario, including directions to the best hawkwatches.

When to See Hawks

The following chronology applies to watches along Lakes Ontario and Erie. See Table 1. Fall migration begins slowly in mid-August with most species peaking in September and October; the migration ends gradually after mid-November into December. In late August, Ospreys, Northern Harriers, Sharp-shinned Hawks, Broad-winged Hawks, Merlins and American Kestrels begin migration with bigger movements of these species in September. Most Broad-winged Hawks surge south in spectacular numbers within the space of a week on a few lucky days in mid-September. A few Bald Eagles are regular throughout the whole migration period. After mid-September increasing numbers of Turkey Vultures, Cooper's Hawks and Red-tailed Hawks join the flow. Tundra Peregrine Falcons peak in late September and early October. Cooper's Hawks peak in early to mid-October. Red-shouldered Hawks peak from the middle to late October. Red-tailed Hawks peak in late October and early November. Rough-legged Hawks, Northern Goshawks and Golden Eagles are regular in small numbers from mid-October to early November. There is the occasional good flight after mid-November, but numbers are usually much lower. Some raptors continue to migrate into December. *Note:* Keep in mind that most of the above raptors also winter in southern Ontario.

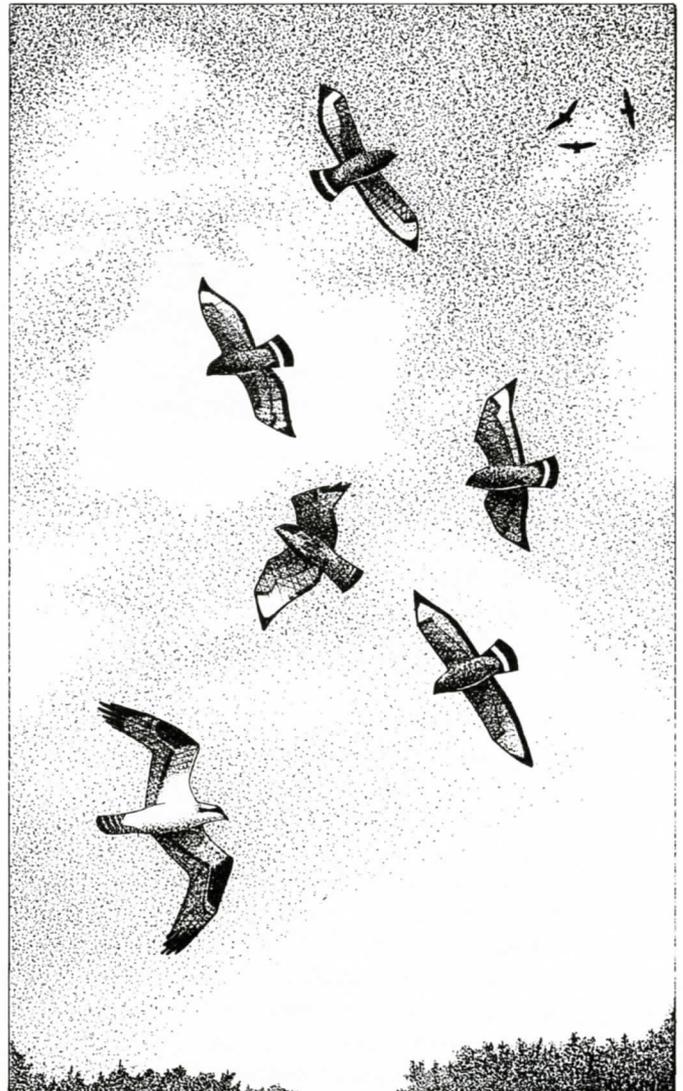
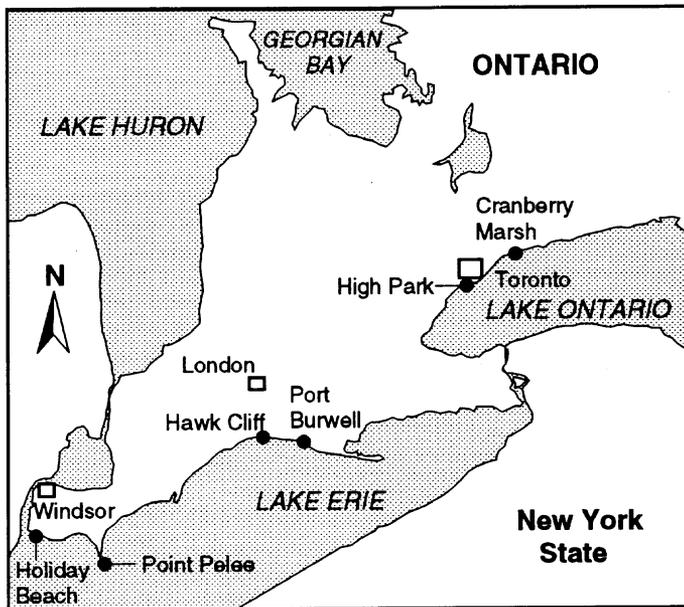


Figure 1. Kettle of Broad-winged Hawks and Osprey by Michael King

Weather: The best viewing conditions for fall flights occur during cold fronts with northwesterly and north winds. Cold fronts trigger migration and the associated northwesterly winds cause hawks to pile up and fly lower along the north shorelines of the Great Lakes. Indicators of an upcoming flight are: (1) the recent passage of a low pressure system (hawks are held up by bad weather), (2) a rapidly rising barometer indicating an approaching high pressure system, (3) decreasing temperature and humidity, (4) northwest and north winds. *Note:* Hawks migrate during most weather conditions except heavy rain, but are often missed because they fly higher on a broad front in warm weather away from shorelines. The strategy used by most migrating hawks is to glide from thermal to thermal. Wind direction also affects where the migration path will be on a given day. Hawks fly along shorelines in calm conditions and light winds from most directions, but strong onshore winds keep the birds well inland. Some hawkwatchers monitor the marine weather forecasts on Channel A of Environment Canada, which gives continuous updates of wind speed and direction. Inexpensive weather radios are available at Radio Shack.

Where to see Hawks



Map 1. Major hawkwatching locations in southern Ontario
Michael King

Southern Ontario has some of the finest fall hawkwatching sites in North America. A glance at Map 1 shows the funneling effect of southwestern Ontario between Lakes Huron, Ontario and Erie. Most migrating hawks exit the province across the Detroit River south of Windsor. The best sites are located along the shorelines of the Great Lakes because most hawks are reluctant to fly over the Great Lakes. When hawks migrating south on a broad front encounter the north shores, they parallel the shorelines until they can turn south again. Most hawks move west along Lakes Ontario and Erie. North and northwest winds help concentrate the flight lines in a narrow corridor close to the lakes. Flights are smaller going east from Cranberry Marsh along Lake Ontario, except at Prince Edward Point at the east end of the lake, where flights are associated with strong north-

westerly winds. Hawks going around the west end of Lake Ontario move southwest and appear to reach Lake Erie just east of Port Burwell. Further east, such as at Long Point, not many hawks are seen. Hawk numbers increase going west along Lake Erie from Port Burwell to Holiday Beach. See Map 1 for relative positions of the major fall hawkwatching sites in southern Ontario. Directions to these site locations are given below. Also keep Clive Goodwin's (1995) *Bird-Finding Guide to Ontario* and the official Ontario highway map in your car.

Cranberry Marsh: Situated in Lynde Shores Conservation Area in Whitby about 40 km east of Toronto. From Toronto exit Highway 401 at Harwood Avenue, go right (south) about one km to Bayly Road, turn left (east) and go about 4 km to just past Lakeridge Road. Take Halls Road (dirt) on the right, go 1.6 km and park on roadside. Walk east on a narrow trail about 100 metres to the south platform overlooking Cranberry Marsh. From the east, exit 401 at Brock Street in Whitby, go south (left) 0.5 km to Victoria, then go west (right) 3.3 km to Halls Road on your left just past the main entrance to Lynde Shores Conservation Area.

High Park: This fabulous site in Toronto's famed High Park is in the city's west end between the Gardiner Expressway and Bloor Street. Go to parking lot of Grenadier Restaurant from Bloor Street via West Road or take the east entrance off Parkside. *Note:* On Sundays and holidays from 1 May to 1 October, vehicle entrance to High Park is from Bloor only. Hawks are viewed from the small knoll known as Hawk Hill just to the north of the restaurant. High Park offers excellent birding throughout the year. See Bob Yukich's (1995) site guide to Toronto's High Park in *OFO News* 13(3):2-3.

Port Burwell: Located on Lake Erie midway between Port Stanley (Hawk Cliff) and Long Point. This new site has comparable numbers to Hawk Cliff. From Highway 401, exit south at Ingersoll to Tillsonburg on Highway 19 and proceed to Port Burwell Provincial Park. There is a small fee to enter. Go to the westernmost parking lot of the day use area, which has a great view to the north and east. Another spot is the flats along both sides of the mouth of Otter Creek with lots of parking and open views to the west, north and east. See Martin (1998).

Hawk Cliff: Located just east of Port Stanley on the shore of Lake Erie. Go south from St. Thomas on Fairview Avenue, which becomes County Road 22, until you reach the lake. Hawk Cliff was once the most famous hawkwatching site in Canada. In recent years, access has been restricted and a row of fast growing trees has made viewing difficult. It is recommended that you now use Port Burwell with its excellent public access. See Martin (1998) for background information on Hawk Cliff and Port Burwell. To find your own hawkwatch site along Lake Erie, Dave Martin says to look for the following features: (1) A road that dead ends at the lakeshore, (2) a clear view from the southeast to the northeast, (3) one where you can see the cliff edge because Ospreys, falcons and harriers like to catch the updrafts, and (4) one with nearby woods because accipiters like to follow a wooded corridor.

Point Pelee: The best spots are the Tip, the Sparrow Field, parking lot at the Visitor Centre and Delaurier Trail parking

lot. Sharp-shinned Hawks are common in September, keeping most small landbirds well hidden! You will get fabulous views of Peregrines in late September and early October. Golden Eagles are regular from mid-October to early November. See Tom Hince's (1999) *A Guide to Point Pelee* and surrounding region, published by the author and available in the park. There is a fee to enter Point Pelee National Park.

Holiday Beach: Holiday Beach Conservation Area is located between Pelee and Windsor near Malden Centre on Essex County Road 50. There is a small fee to enter. Follow the signs to the viewing tower. Huge flights of Broadwings occur in mid-September. Holiday Beach tallies the highest hawk numbers in Canada. See the excellent guide by Chartier and Stimac (1993).

Lake Huron: Good flights have been seen along shores of Lake Huron at Pinery Provincial Park and Sarnia during east winds. Moderate hawk flights have been reported along the east shore of Georgian Bay associated with northeast winds (Morrison 1995). Good flights of Sharp-shinned Hawk in September, associated with northwesterly winds, have been observed at Great Duck Island 15 km south of Manitoulin Island in Lake Huron. Most of these Sharpies, after flying southeast over open water, returned to Manitoulin Island, possibly "island-hopping" to the Bruce Peninsula. Another hawk flight moves northwest at Mississagi Light at the western end of Manitoulin, probably "island-hopping" into Michigan. New sites wait to be discovered.

Lake Superior: On the north shore of Lake Superior there are several hawk lookouts and some yet to be discovered in this vast wild area: (1) Craig's Bluff near Marathon is good in September and the second half of October brings Rough-legged Hawks and a few Golden Eagles. Walk east from Marathon along the railway tracks about 3 km or 45 minutes to a large sand bluff. Climb to the top of the bluff for a good view of Lake Superior. (2) Thunder Cape is good for Sharp-shinned Hawks in September and Rough-legged Hawks in October and November with a mix of other species in smaller numbers. Thunder Cape Bird Observatory is a 13 km hike from Silver Islet down the Lake Superior shore. South of Thunder Bay, the Ontario shoreline of Lake Superior is too irregular and indented to produce a good funnelling effect. In fact, big flights usually are not encountered until you reach Hawk Ridge in Duluth, Minnesota.

How to See Hawks

The following contains information on seeing and enjoying the hawk migration. See also definitions in the Glossary and recommended reading in the Literature Cited.

Aging Eagles: Bald Eagles take five or more years to reach adult (definitive) plumage. Golden Eagles probably require four years. Very few hawkwatchers really know how to precisely age eagles. Many of the ages assigned to predefinitive (immature) eagles are pure guesswork, especially distant birds. Keep in mind that adults and juveniles (first year) form the bulk of the population. Second year, third year and fourth year birds are increasingly rare in the population.

Hawk ID: Identifying hawks correctly takes considerable prac-

tice. Experienced birders use a combination of *jizz* (general impression and shape) and *field marks*. Most distant jizz identifications of common hawks by experienced observers are highly reliable. However, the ID of rare and out of season species should *not* be based solely on jizz. Make sure that you see field marks that are 100% diagnostic. First, group raptors into accipiters, buteos, falcons, harrier, osprey, kites, eagles and vultures. Second, keep in mind that hawks often change their shapes depending upon the type of flight: soaring, gliding, flapping and sailing, power flight in pursuit of prey and so on. Almost all raptors can appear like another species depending on flight style and size illusions. Accipiters and falcons in a full soar can look like buteos; accipiters in power flight look like falcons and so forth. Concentrate on proportions, body size, wing and tail length, wing width versus tail length, amount of flapping, fast or slow flapping, tight or wide soaring circles and so on. Hawks are easier to spot against clouds than clear skies. However, the same hawk will appear more washed out against clouds versus a bright blue sky. *Tip:* To learn what hawks look like at a distance, practice following close birds of known identity to the limits of sight.

Hawk Time: Hawk watchers record hourly totals of each hawk observed using Eastern Standard Time, even when Eastern Daylight Time is in force.

Healthy Eyes and Skin : Watching hawks exposes your eyes and skin to damaging sunlight. Cover up and wear a wide hat and sunscreen. To protect your eyes wear sunglasses or prescription glasses with ultraviolet protection.

Hybrids and Exotics: Hawk hybrids in nature are almost unknown. However, falconers keep exotic species and hybrids. This list includes hybrid Cooper's x Harris's Hawk, Merlin x Gyrfalcon, Saker Falcon (Gyrfalcon-like), Ferruginous Hawk, European Kestrel and so on. When these birds escape, they are likely to be misidentified and/or considered a wild birds.

Juveniles First: In most hawk species, the juveniles migrate earlier in the fall than the adults, with some exceptions being the Osprey, Peregrine Falcon and probably the Golden Eagle. Juvenile hawks in fall are migrating for the first time. Juveniles may fly lower than adults because they are not as skilled at using thermals.

Lawn Chair: An essential comfort item along with a lunch and thermos of coffee.

Male or Female: In most diurnal raptors, but not all, the sexes are similar in coloration. In all species, however, the females are larger than the males, but only in a few species such as the accipiters can extremes be reliably sexed by size in the field.

Noonday Lulls: There is often a noticeable lull in numbers at midday at many watches. Most hawks are probably just too high to see in the bright sky and heat of midday.

Ozone Bird: A high bird barely visible even with binoculars! Also known as a bird in the stratosphere. The altitude of migrating hawks generally increases from morning to afternoon. Many hawks migrate above the visible range.

Plumages: Hawks come in two main plumages: juvenile and adult. In most species, the juvenal plumage is retained about a

year before the prolonged molt to adult plumage during the summer of its second calendar year. Adults also molt during the summer. Some species interrupt (stop) their molt before migration and finish it on the winter grounds. Aging hawks is easy in fall. Most birds are clearly either juvenile or adult.

Population Changes: It is important to keep in mind that most raptors have good and bad breeding years depending on weather and prey cycles. The ratio of juveniles to adults of each species seen at hawk watches often gives a measure of breeding success. Weather is the single biggest factor affecting total hawk numbers seen from year to year. Like Snowy Owls, Rough-legged Hawk numbers fluctuate because of lemming cycles in the Arctic. Northern Goshawks breeding in the boreal forest irrupt southward in numbers about every 10 years when there are declines in Ruffed Grouse and Snowshoe Hares. Some species, such as the Osprey, Bald Eagle and Peregrine Falcon, are increasing since the banning of DDT. Mainly because of different weather patterns affecting flight lines and how high hawks fly, expect to see wide yearly fluctuations in hawk numbers. The importance of long term counts, including the ratios of juveniles to adults, is that population trends become evident, particularly when correlated with other watches.

Reference Points: At each hawkwatch, there are reference points that spotters use to tell others where to look for hawks. These include silos, towers, trees and cloud formations. Also every hawkwatch has its own particular flight lines with certain species consistently appearing in the same part of the sky. Observers often use the clock method to point out the location of a hawk, for example, referring to the sky as 12 o'clock for midway between the two horizons, thus 10 o'clock, 2 o'clock and so on.

Scanning Tip: Experts usually spot the hawks first. Why? They scan with their binoculars the usual flight lines and the bases of cumulus clouds where kettles often form.

Telescopes: Many top hawkwatchers use a telescope. A scope

on a sturdy tripod is essential for distant birds. Make sure your tripod has a fluid head for easy panning. A 22x wide angle or a zoom 20-60x lens is ideal; higher fixed powers such as 40x and 60x make it difficult to locate birds in a cloudless sky!

Annotated List

Black Vulture: (BV) Very rare. Black Vultures are increasing and spreading north. For ID and status in Ontario, see Duncan (1990).

Turkey Vulture: (TV) Common to abundant. The Turkey Vulture continues to increase and spread north as a breeder. Holiday Beach recorded a yearly average of 8246 from 1973-1985 whereas the 1986-1995 average increased to 13523. The Turkey Vulture will soon pass the Sharp-shinned Hawk as the second most common raptor at southern Ontario hawkwatches. Peak flights come in October. TVs often fly in lines like squadrons of enemy bombers. They also form large kettles. They occasionally flap with deep wingbeats. TVs are almost the size of an eagle; they are best told from eagles by their tiny head, strong V dihedral and usually rocking flight. For ID and status in Ontario, see Duncan (1990).

Osprey: (OS) Uncommon migrant. Numbers have increased rapidly since the banning of DDT in the early 1970s. For example, there were about five pairs nesting in the Kawartha Lakes north of Lake Ontario in 1975 versus more than 100 pairs in 1999. The increase was assisted by the erection of nesting platforms and the Osprey's greater use of hydro poles for nesting. Adult Ospreys start wandering southwards in mid-August. A record 29 Ospreys passed Cranberry Marsh on 28 August 1999. Numbers usually peak in mid-September with a rapid drop off in early October and virtually none later.

Swallow-tailed Kite: (ST) Casual. A very early fall migrant so this species is extremely unlikely to be seen in Ontario after early September.

Table 1. Fall Migration Period and Peak Numbers of 16 Diurnal Raptors in Southern Ontario

Species	Migration Periods and (Late Dates)	Peak Numbers
Turkey Vulture	Mid-September to mid-November (rare winter)	Early to mid-October
Osprey	Mid-August to late October (early December)	Early to mid-September
Bald Eagle	September to December (rare winter)	September
Northern Harrier	Late August to late November (winters)	September
Sharp-shinned Hawk	Late August to late November (winters)	September
Cooper's Hawk	Mid-September to early November (rare winter)	Early to mid-October
Northern Goshawk	Early October to late November (winters)	Late October to early November
Red-shouldered Hawk	Early October to mid-November (rare winter)	Mid to late October
Broad-winged Hawk	Late August to early October (early November)	Mid-September
Swainson's Hawk	Early September to late October	Mid-September to mid October
Red-tailed Hawk	Mid-September to early December (winters)	Mid-October to early November
Rough-legged Hawk	Early October to early December (winters)	Late October to early November
Golden Eagle	Late September to December (rare winter)	Late October to early November
American Kestrel	Late August to mid-November (winters)	September
Merlin	Late August to early November (rare winter)	September
Peregrine Falcon	Early September to late October (rare winter)	Late September to early October (<i>tundrius</i>)

Mississippi Kite: (MK) Very rare. Slowly expanding range northwards. This very early fall migrant is extremely unlikely to occur in Ontario after early September. Watch for it on days of big dragonfly movements.

Bald Eagle: (BE) Rare. Another success story, the Bald Eagle is increasing nicely since the banning of DDT. Numbers often peak in September, but scattered individuals are seen over the entire migration period. Bald Eagles soar and glide on horizontal wings for long periods without flapping. Flap is slow and heavy. Head projects out more than half the tail length. Trailing edge of wings is straight. Goldens usually soar and glide with a slight dihedral, appearing like a huge buteo with their smaller head. Trailing edge of wings on Goldens shows a bulge in the secondaries and narrowing at the base of the wings. *Caution:* Juvenile Balds are often confused with adult Goldens. It is better to put "unidentified eagle" on your list if there is any uncertainty. For ID and status in Ontario, see Duncan (1990).

Northern Harrier: (NH) Fairly common from late August to November. Juvenile numbers peak in mid-September. Late season birds are mostly adult males. Migrating harriers often fly very high, presenting an ID challenge to those used to seeing them flying low.

Sharp-shinned Hawk: (SS) Common to abundant. After the Broad-winged Hawk, the Sharpie is usually the second most common hawk at watches in Ontario. Juveniles predominate through September with increasing numbers of adults in October. At southern Ontario hawkwatches, the ratio of Sharp-shinned to Cooper's ranges from about 40:1 to 20:1. Compared to Cooper's, many Sharpies can be identified at a distance by the combination of their smaller heads, more rapid and fluttery wingbeats followed by shorter glides. Migrating Sharpies are often seen in early morning with a bulge in their crop, indicating that they have just eaten. Most hawks feed on migration. For accipiter ID in Ontario, see Duncan (1983).

Cooper's Hawk: (CH) Uncommon to fairly common migrant. Numbers are increasing slowly following the ban on DDT in the early 1970s. Cooper's peak in October, somewhat later than Sharpies. There are more debates about whether a bird is a Cooper's or a Sharp-shinned than between any other two similar species. In the past, some small male Cooper's were counted as Sharp-shinned Hawks. Compared to Sharp-shinned, a typical Cooper's has a bigger and longer head projecting farther ahead of straighter forward edges of the wings, the wingbeats are slower and glides longer, the tail is longer and distinctly rounded with a wider white tip. Cooper's jizz is like a "flying cross". For accipiter ID in Ontario, see Duncan (1983). For ID of juvenile Cooper's, see Duncan (1987).

Northern Goshawk: (NG) Rare migrant in very small numbers. Slowly increasing as a breeder in the south. Most goshawks arrive after mid-October usually peaking late October to early November. Big flights come about once in 10 years; however, the large numbers seen at Hawk Ridge (Duluth, Minnesota) are not seen in southern Ontario. Holiday Beach's record day was 28 on 10 November 1991. Juveniles usually predominate. Small juvenile male goshawks are sometimes very difficult to separate from big female Cooper's at a distance. Unlike

most other hawks, the goshawk has a recognizable first basic (second year) plumage. First basic birds are like adults but browner above and more coarsely barred below; some are identifiable at close range. For accipiter ID in Ontario, see Duncan (1983). For ID of juvenile Northern Goshawk, see Duncan (1987).

Red-shouldered Hawk: (RS) Uncommon to fairly common migrant. Most Red-shouldered Hawks migrate in October well after the Broadwings have gone. They peak the second half of October. A distant Red-shouldered flapping and gliding with its tail folded can appear amazingly like a goshawk, but the latter has a longer tail and lacks the narrow translucent windows near the wingtips. *Caution:* Most juvenile buteos show wing windows, but they are squarer or more rectangular than on the Red-shouldered Hawk. For ID of juvenile Red-shouldered, see Duncan (1987). *Note:* Until the 1960s, the Red-shouldered Hawk nested commonly in southern Ontario. It gradually disappeared as woodlots were heavily thinned for larger trees. This allowed the Red-tailed Hawk, which prefers more open habitats, to displace the Red-shouldered Hawk from hundreds of small woodlots. Today the stronghold of breeding Red-shouldered Hawk in Ontario is the heavily forested (poor Redtail habitat) southern part of the Canadian Shield north to Parry Sound, Muskoka, Haliburton County and Renfrew County south on the Shield to Kingston. Numbers appear to be relatively stable in recent years. For more information on status and management, see Iron (1995).

Broad-winged Hawk: (BW) Common to abundant migrant. A few juvenile Broadwings begin drifting south in late August. Unlike other Ontario hawks, most Broadwings migrate through southern Ontario in about a week period in mid-September, usually during one to three big surges. Big flights have a mixture of juveniles and adults. One day high counts in the thousands are seen along Lake Ontario and in the tens of thousands along Lake Erie. For example, High Park in Toronto recorded an early high of 4477 Broadwings on 8 September 1998. Holiday Beach on Lake Erie recorded a record 95499 Broadwings on 15 September 1984. When you are watching a kettle, the hawks will at some point stream off to the next kettle. Studies indicate that Broadwings migrate close to Lake Ontario on northerly winds and more inland on southerly winds. It is a sad time when the big Broadwing flights have passed for another year. A few BWs are seen into October, but most November reports are likely misidentifications. Dark morphs are exceedingly rare; be cautious of backlit birds that appear dark below. For ID of juvenile Broad-winged, see Duncan (1987).

Swainson's Hawk: (SW) Very rare migrant in southern Ontario with records ranging from 5 September to 22 October. Best time to look for Swainson's Hawk is mid-September to mid-October. Swainson's appears like a cross between a Red-tail and a harrier. Watch for it with Broadwings and Turkey Vultures, but one could be with any group of hawks or by itself. Most are light morph individuals. Both juveniles and adults occur. *Caution:* High flying juvenile and female Northern Harriers can look like a Swainson's. See Duncan (1986) on the occurrence and identification of Swainson's Hawk in Ontario.

Red-tailed Hawk: (RT) The Redtail is the most common big hawk breeding in Ontario. Its migration peaks mid-October to

early November. Redtails come in a variety of subspecies and morphs. Eastern Redtails occur in two common forms. Southern Redtails breeding in southern Ontario are white below with lightly marked belly bands and lightly streaked to unmarked throats. Northern Redtails (*abieticola*) are more buffy below with heavily streaked belly bands and darker streaked throats. Most Southern and Northern Redtails are easily separated in the field with practice. Dark morph birds are very rare in Ontario; it is questionable whether they are Western Redtails (*calurus*) or very dark Northern Redtails. Harlan's Red-tails are even rarer than other dark Redtails. A few pale Krider's Redtails are seen most years. Albinism is frequent in Red-tailed Hawks, although full albinos are exceptionally rare. See Pittaway (1993) for status and identification of Red-tailed Hawk subspecies and morphs.

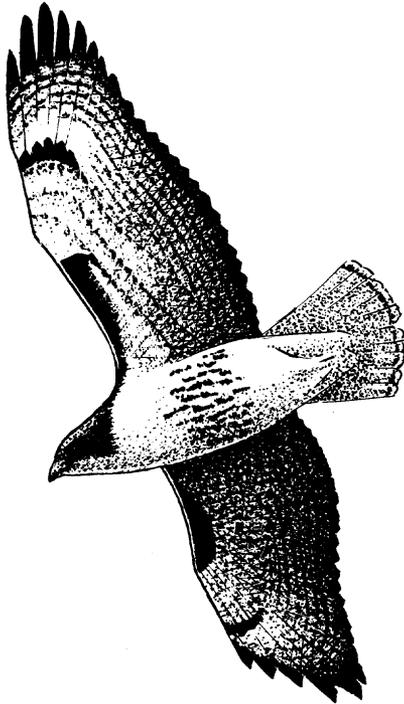


Figure 2. Adult Red-tailed Hawk by Michael King

Ferruginous Hawk: (FH) Casual. Before claiming a Ferruginous Hawk, be absolutely certain that you have ruled out Krider's Red-tailed Hawk and Rough-legged Hawk. Most correctly identified birds reported in Ontario are probably released or escaped birds. Dark morph birds (no Ontario records) are much rarer than light morph birds.

Rough-legged Hawk: (RL) Uncommon. Rarely seen before mid-October, peaking late October to early November. Roughleg numbers vary from year to year, probably related to lemming numbers on their arctic breeding grounds. Most birds seen are light morph juveniles with their big dark belly bands. Dark morphs comprise about 20% of the migrants in most years.

Golden Eagle: (GE) Rare. Best time to see Golden Eagles is late October and early November. Holiday Beach's record day of 24 was on 10 November 1991. *Caution:* All dark juvenile Bald Eagles and distant Turkey Vultures are often called adult Golden Eagles by inexperienced observers. Beware of Goldens

reported before mid-October! Watch for Goldens with flights of Red-tailed Hawks and Turkey Vultures. Goldens often fly with a very slight dihedral, but they are bigger headed and do not rock from side to side like a Turkey Vulture. Very few Golden Eagles breed in Ontario; most migrants seen in southern Ontario probably breed in northern Quebec and Labrador. A Golden Eagle was tracked by satellite from its nest near Hudson Bay in Quebec. It crossed the mouth of James Bay into Ontario and apparently crossed Lake Ontario into New York State on its journey south. Two Goldens banded at Hawk Cliff were recovered in New Brunswick. Another success story, Golden Eagles have been increasing slowly in recent years. In the past, Golden Eagles were poisoned by eating strychnine baits used to kill wolves and coyotes. Poison is now banned to kill wildlife in Ontario. Golden Eagles are also caught in traps set for furbearing animals, but the incidences have lessened in recent years with more restrictions on leg hold traps. However, some eagles are still caught in Conibear traps and wolf snares. Fewer eagles are shot now because of education, greater restrictions on firearms and better enforcement of illegal hunting. For ID and status in Ontario, see Duncan (1990).

Crested Caracara: (CC) Accidental. Two accepted records. They might have been escapees from captivity.

American Kestrel: (AK) Our most common falcon. Numbers peak in September. The kestrel and the sharpie are the two most common small hawks seen at hawkwatches. Sharpies appear like kestrels at times and they often fly at the same time and in the same air space. Many migrant kestrels seen in southern Ontario probably originate from the large clearcuts in the boreal forest which have benefited this open country species.

Merlin: (ML) Uncommon migrant. Numbers have increased dramatically since the banning of DDT in the early 1970s. Merlins begin migration in mid-August with numbers peaking before mid-September. They are sporadic through October and rare in November. Most birds seen are brown-backed juveniles and adult females. Blue-backed adult males are rarer. Merlins usually streak by, often not seen until they are past you. The occasional Merlin seen in Ontario is extremely dark, suggesting the Black Merlin subspecies *suckleyi* of the Pacific Northwest, which is extremely unlikely here. These dark Merlins may originate in Labrador where humid conditions have induced darker feather pigments in several species such as the Gyrfalcon, "Labrador" Great Horned Owl and Parasitic Jaeger. The Richardson's Merlin, a pale subspecies breeding on the prairies, occurs very rarely in Ontario. For status and identification of Merlin subspecies, see Pittaway (1994).

Gyrfalcon: (GY) A very rare migrant and winter visitor, not likely to be seen before mid-October. Identify it with caution. Sometimes confused with a goshawk, which has pointed wings during power flight. Most Gyrfalcons are either gray or dark morph individuals, but their respective juveniles are more brownish. Most Gyrfalcons seen in southern Ontario are juveniles.

Peregrine Falcon: (PG) Rare. Peregrines are making a dramatic recovery following the banning of DDT in the early 1970s. The migration peak of *tundrius* Peregrines comes during the last week of September and first week of October. Tun-

dra Peregrines often appear quite different from local birds. They are smaller and paler with reduced sideburns and a pale forehead creating a less hooded appearance. Some juvenile *tundrius* are very sandy coloured suggesting a Prairie Falcon, but they lack the Prairie's blackish wingpits and usually blackish centre of inner underwings.

Prairie Falcon: (PF) Casual. A short distance migrant that is not expected in southern Ontario.

Other Species

Many birders go hawkwatching for more than just hawks. Dave Martin finds the other "visible migration" fascinating and thrilling. Dave enjoys the challenge and fun of identifying birds in flight by jizz and flight calls. Here is a sample of Dave's highlights at hawkwatches along Lake Erie: 25000+ Blue Jays on a good day in September is guaranteed; 5000+ American Crows a day in mid-October is not unusual; 100+ Ruby-throated Hummingbirds per day in early September; 500+ American Goldfinches per day; Evening Grosbeaks and Purple Finches every year; starlings and blackbirds create a wonderful sight when migrating in flocks of 100s and 1000s, often alerting sleepy watchers to a Cooper's, Peregrine or Merlin; American Pipits and Lapland Longspurs are much more common than birders think with 500+ pipits some days; check big flocks of Cedar Waxwings for Bohemians; up to 100 Eastern Bluebirds passing in groups of 10 to 20 birds in mid-October; Sandhill Cranes are often seen on days when Golden Eagles migrate; one day over 600 Snow Geese flew south so high that they were nearly missed; a good day can have Tundra Swans moving east, Common Loons and Canada Geese going south and hawks moving southwest; one slow day for hawks in 1997 had 3000+ Monarchs passing per hour; dragonflies such as Green Darners pass in good numbers and are caught and eaten by American Kestrels in flight. See Jean Iron's (1998) note on "Kestrels and Green Darners" in *OFO News* 16(1):12 You can expect more than hawks at a hawkwatch!

Glossary

Abbreviations: Raptor counters use a system of two letter abbreviations: Black Vulture (BV), Turkey Vulture (TV), Osprey (OS), Swallow-tailed Kite (ST), Mississippi Kite (MK), Bald Eagle (BE), Northern Harrier (NH), Sharp-shinned Hawk (SS), Cooper's Hawk (CH), Northern Goshawk (NG), Red-shouldered Hawk (RS), Broad-winged Hawk (BW), Swainson's Hawk (SW), Red-tailed Hawk (RT), Ferruginous Hawk (FH), Rough-legged Hawk (RL), Golden Eagle (GE), Crested Caracara (CC), American Kestrel (AK), Merlin (ML), Gyrfalcon (GY), Peregrine Falcon (PG), Prairie Falcon (PF), and these for unidentified birds, UA = unidentified accipiter, UB = unidentified buteo, UE = unidentified eagle, UF = unidentified falcon, UR = unidentified raptor. See other names under Nicknames below.

Albinism: The absence of all pigments produces the very rare total albino. Partial albinos are more frequent. Albinistic individuals are seen more often in Red-tailed Hawks than in all other hawks combined.

DDT: Abbreviation for the pesticide dichlorodiphenyltrichlo-

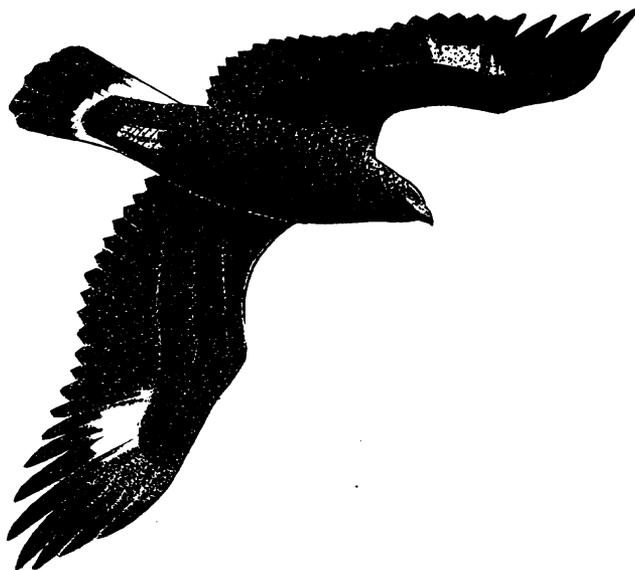


Figure 3. Juvenile Golden Eagle by Michael King

roethane. DDT in birds such as the Bald Eagle caused eggshell thinning and reproductive failures. DDT was banned in Canada in 1971 and the United States in 1972. Birds of prey are now showing a remarkable recovery from the effects of DDT.

Dihedral: Wings held above the horizontal forming a V-shaped outline. Dihedrals are pronounced in the Turkey Vulture and Northern Harrier, whereas dihedrals are less inclined in the Rough-legged Hawk and Golden Eagle. *Caution:* Many other species fly with slight dihedrals.

Immature: Generally has the same meaning as juvenile in species that have only one plumage before adult plumage. Juvenile is the preferred term. Immature is best used for eagles when exact age before adult is unknown.

Intergrade: An individual or population showing intermediate characters between two subspecies (races).

Juvenile: Generally has the same meaning as the term immature. Juvenile is a more precise term indicating a bird in its first full plumage. Juvenile plumage in most hawks is held for about a year before the molt to adult plumage begins.

Kettle: A kettle is group of hawks soaring in a thermal. Apparently the term kettle originated at Hawk Mountain in Pennsylvania. Observers there often referred to hawks soaring over the "kettle", a local land formation and the word kettle gradually gained its current meaning. Kettle is called a *boil* at some watches.

Kiting: A more or less stationary hawk in flight that is facing into a wind with an updraft.

Legal Protection: In Canada, birds of prey are under provincial jurisdiction. In Ontario, all birds of prey are protected and regulated by the provincial Fish and Wildlife Conservation Act. Additional protection is given to the Bald Eagle, Golden Eagle and Peregrine Falcon by the provincial Endangered Species Act. Both statutes are enforced by the Ministry of Natural Resources (MNR). Laws prohibiting the shooting, pole trapping and unlawful possession of birds of prey in Ontario are now strictly enforced. To report violations, contact the nearest MNR office listed in the phone book or report it to the OPP

who will contact the Ministry.

Leucism: A reduction or absence of some dark pigments producing a grayish, buffy or pale individual that has a "washed out" appearance compared to normal individuals in the population.

Melanism: An excess of dark pigments producing the dark morph in many species.

Morph: This more accurate term replaces the term *phase*. Morphs are distinct colour types that coexist in the same interbreeding population. Morphs usually are not correlated with age, sex, subspecies or season. Unlike subspecies (races), morphs do not have scientific names.

Nicknames: BW = Broad-winged Hawk; TV = Turkey Vulture; Gray Ghost = adult male Northern Harrier; Gos = Northern Goshawk; Sharpie and Shin = Sharp-shinned Hawk; Tail = Red-tailed Hawk; Shoulder = Red-shouldered Hawk; Gyr = Gyrfalcon; Fish Hawk = Osprey.

Phase or Colour Phase: An older term now generally replaced by the preferred term morph.

Raptor: Not a taxonomic term. Refers to the diurnal birds of prey such as those covered in this article and the nocturnal raptors or owls. In recent years, however, the term raptor has become more and more associated with the diurnal birds of prey. Diurnal raptors comprise three families in North America. See discussion under Taxonomy below.

Soar: Circling with primaries spread and tail fully fanned, usually at a great height, with little flapping.

Subadult: Used mainly for eagles to indicate birds that are almost in full adult plumage, but showing traces of immature plumage.

Subspecies: A form of a species having a separate breeding range and differing in size, colour and appearance. Subspecies and race are interchangeable. Compare with morph.

Taxonomy: All the diurnal birds of prey, except the vultures, are in the order Falconiformes which includes the families Accipitridae (Hawks, Ospreys, Kites and Eagles) and Falconidae (Caracaras and Falcons). In the most recent American Ornithologists' Union Checklist (AOU 1998), the family Cathartidae (New World Vultures and Condors) was removed from Falconiformes and placed in the order Ciconiiformes after the Storks. However, a recent DNA molecular sequencing study indicated that vultures and condors should be returned to the Falconiformes, but more detailed studies are needed before a reversal is done.

Thermal: A rising column of warm air in which hawks soar to gain altitude. Watch for kettles forming under billowing cumulus clouds, which mark the tops of thermals.

Tuck: Raptors in a fast glide *tuck* (narrow) their wings and tail in a distinctive manner. The wingtips of even rounded winged species are swept back and become more pointed with many species taking on a characteristic shape.

Updraft: Wind that is turned upward along cliffs and steep shorelines used by hawks to glide.

Water Crossings: Most slow flying hawks, especially accipi-

ters and buteos, are reluctant to cross large bodies of water where there are no thermals. They drop low to keep from being blown offshore. Hawks caught over water are subject to exhaustion from frequent flapping and to being lost in sudden fogs. Hundreds of hawks probably drown every year in the Great Lakes.

Acknowledgements

For comments and valuable information, I am grateful to John Barker, Don Barnett, Allen Chartier, Bruce Duncan, Nick Escott, Michel Gosselin, Tom Hince, Michael King, Jean Iron, Dave Martin, Ron Tozer and Mike Turner. Michael King's art and map are most appreciated.

Suggested References

- Barker, J.** 1999. *Greater Toronto Raptor Watch*. Published by the author.
- Chartier, A. and D. Stimac.** 1993. *Hawks of Holiday Beach. A guide to their identification, occurrence, and habits at Holiday Beach Conservation Area, Ontario, Canada*. Published by the Holiday Beach Migration Observatory.
- Clark, W.S. and B.K. Wheeler.** 1987. *A Field Guide to the Hawks of North America*. Peterson Series. Houghton Mifflin Company, Boston.
- Duncan, B.W.** 1983. Identification of Accipiters in Ontario. *Ontario Birds* 1(2):43-49.
- Duncan, B.** 1986. The Occurrence and Identification of Swainson's Hawk in Ontario. *Ontario Birds* 4(2):43-61.
- Duncan, B.W.** 1987. Identification of Red-shouldered, Broad-winged, Cooper's and Northern Goshawks in Immature Plumage. *Ontario Birds* 5(3):106-111.
- Duncan, B.** 1990. Identification and status of Bald Eagles, Golden Eagles, Turkey Vultures, and Black Vultures in Ontario. *Ontario Birds* 8(2):61-69.
- Dunne, P., Sibley, D. and Clay Sutton.** 1988. *Hawks in Flight*. Houghton Mifflin Company, Boston. My favourite hawk guide.
- Goodwin, C.** 1995. *Bird-Finding Guide to Ontario*. University of Toronto Press. Essential reference.
- Hince, T.** 1999. *A Guide to Point Pelee and surrounding region*. Published by the author. Wild Rose Guest House, Wheatley, Ontario.
- Iron, J.** 1995. Red-shouldered Hawk Update. *OFO News* 13(2):8.
- Iron, J.** 1998. Kestrels and Green Darners. *OFO News* 16(1):12.
- Johnsgard, P.A.** 1990. *Hawks, Eagles, and Falcons of North America*. Smithsonian Institution Press, Washington and London.
- Kerlinger, P.** 1989. *Flight Strategies of Migrating Hawks*. The University of Chicago Press. Recommended for advanced watchers.
- Martin, D.** 1998. Hawk Cliff: Where do we go from here? *OFO News* 16(2):8-9.
- Morrison, K.P.** 1995. Sharp-shinned Hawk and Common Crow migration along Georgian Bay. *Ontario Birds* 13(2):74-76.
- Palmer, R.S. (Editor).** 1998. *Handbook of North American Birds*. Volumes 4 and 5. Yale University Press, New Haven and London. The most authoritative scientific reference on diurnal raptors.
- Pittaway, R.** 1993. Recognizable Forms: Subspecies and morphs of the Red-tailed Hawk. *Ontario Birds* 11(1):23-29.
- Pittaway, R.** 1994. Recognizable Forms: Merlin. *Ontario Birds* 12(2):74-80.
- Wheeler, B.K. and W.S. Clark.** 1995. *A Photographic Guide to North American Raptors*. Academic Press. Fabulous ID photos. See book review (Pittaway 1995) in *Ontario Birds* 13(2):84-86.
- Yukich, B.** 1995. Toronto's High Park. Favourite Birding Hotspots. *OFO News* 13(3):2-3.

Ron Pittaway, Box 619, Minden ON K0M 2K0

Young Ornithologists Workshop

Chris Kimber

This summer I was lucky enough to attend the Doug Tarry Young Ornithologists' Workshop at the Long Point Bird Observatory. This program is designed to educate young people about various aspects of ornithology. The workshop has been running since the mid 70s and is made possible by the generosity of the late Doug Tarry, who left a substantial amount of money to the Long Point Bird Observatory to be used in the education of young people. The program is for boys and girls aged 13 to 17, and is cost-free except for transportation to and from the workshop.

The workshop was held at the Old Cut Field Station, near Long Point Provincial Park at the base of Long Point from 30 July through 6 August. The participants stay in rooms at the Old Cut Field Station, so there is no "roughing it" in tents. This year's group of kids was chosen from 12 applicants, and, as always, there were only 6 spots, so there is never any guarantee of getting in. This year's group was all male, which was a great disappointment for those of us who were there not just for the birding. The group was fairly close in age, and consisted of the following: Kenny Burell, who was 13 from Heidelberg, Ontario, Dan Furino, 14 from Waterloo, Ontario, Andrew Ross, 14 from London Ontario, Nikolas Romaniuk, 14 from Edmonton, Alberta, Rob Salisbury, 15 from Saskatoon, Saskatchewan and me, Chris Kimber, 14 from Toronto, Ontario.

The experience of the workshop is phenomenal, because having a chance to bird with and talk to people your age who share your interest is very rare in a hobby that has a very small number of youth involved in it. The activities that you take part in are unique, and for many people are once-in-a-lifetime opportunities. The chance to visit Long Point's tip is one very few people ever have, as is the chance to prepare a study skin. For many people, this would be their first exposure to bird banding, and even for a self-confessed banding addict like myself, the chance to view and handle birds in the hand is always an exciting one. Getting to see vegetation studies in the field was another enlightening experience.

The camp provides good birding as well. Previous camps have had such thrilling rarities as Scissor-tailed Flycatcher and Chuck-will's-widow. Though we had nothing like that, Nikolas and I did discover an adult female Dickcissel at the lighthouse. Unfortunately, this bird was not seen by the others, who remain skeptical of its identity. Maybe they're just jealous! Other good birds included a Barred Owl calling in Backus Woods and an Acadian Flycatcher that Andrew and I heard calling at the Old Cut Field Station. Again, nobody else heard this bird, so they all remain skeptical. Isn't that always the way with rare birds?

Among my most memorable moments were:

- ◆ having to run around every day closing and then opening nets due to the constant parade of 10 minute showers, which will now permit me to do this in my sleep
- ◆ standing in the middle of a large patch of two-metre tall shrubbery trying to determine the height of a tree
- ◆ actually hearing a Barred Owl call in real life
- ◆ Finally, reading the amount of ossification (growth of a



Chris Kimber holding a Yellow-rumped Warbler in breeding plumage
Selkirk Provincial Park, Spring 1999

second layer of bone) on a bird's skull correctly, a skill that I believe requires a great amount of sorcery.

The single most important fact this experience taught me was that field ornithology isn't always fun, as vegetation work quickly proved to me. Having to measure foliage density, check canopy cover, average tree heights and widths, and dominant shrubs and trees in an area quickly began to wear down the participants. This does not discourage me from pursuing field ornithology as a career, but it does give me an idea of what to expect.

This experience will help me with a career in field ornithology, in addition to the ways I already mentioned, in another very important way. People in various branches of biology have told me that it is essential to do as much volunteer work as possible, and to build up as many contacts as you possibly can, because in addition to what you know, who you know is very important. Having completed this workshop, I will now be able to return in coming summers and intern as a volunteer bander, which is a perfect chance to gain experience, and another excellent chance to meet people who share my interest in birds.

In conclusion, the Doug Tarry Young Ornithologists' Workshop is an excellent chance to do interesting activities, meet fascinating people, both adults and kids, and a perfect place to kick off a promising career in ornithology. A word of caution, however, if you are not a social person, this experience may not be right for you as the best part of the camp is the chance to have fun with others. Not taking part in the many pillow fights and amusing conversations would negate the purpose of being there, as this workshop is as much about meeting people as it is about doing things, so you should be prepared to have fun with others if you wish to make the best of this wonderful experience. I would like to thank Jul Wojnowski and Christine Jamieson for their excellent job in leading this workshop.

Little Gull

in

The Birds of North America

D.V. Chip Weseloh

"Have you seen any Little Gulls?" a stranger with binoculars around his neck asked me late one September afternoon in 1972 as we accidentally ran into one another at Toronto's Sunnyside. "Hummmmm," I thought. "does he mean little gulls or does he maybe mean Little Gulls?" I was a Westerner in Toronto for the first time; I had just completed my Ph.D. fieldwork on the urban ecology of gulls in Calgary, Alberta, and was here on a short-term contract with LGL Ltd. to help assess the role of gulls as a potential hazard to aircraft at the then proposed Pickering Airport. I had, of course, heard of Little Gulls...but were they so common that one might see them right here at Sunnyside? At any rate, with that initial question, Red Mason introduced me to the world of Little Gulls. During the early 1980s, my interest in Little Gulls (LIGUs) took a major leap forward. While working on the Great Lakes as a colonial bird biologist/wildlife toxicologist for the Canadian Wildlife Service, I found Little Gulls nesting on North Limestone Island in Georgian Bay. Now I was hooked—a real Little Gullophile. A decade later I had an opportunity to summarize the gull's history in Ontario when *Ornithology in Ontario* was being compiled. When *The Birds of North America* (BNA) series began, Pete Ewins and I decided to collaborate on writing the account for the Little Gull.

The biology of the Little Gull in North America is not very well known. With a few exceptions, the bird is not seen very often or predictably in North America. It is probably most predictable on the Great Lakes, at Churchill, Manitoba and Moosonee, Ontario in the Arctic and along the Atlantic coast. Fewer than 10 birds have been banded in North America and none of those has been recovered. There have never been more than seven nests reported in one year and none, to my knowledge, in the 1990s. That is not a lot of information on which to write a continental account!

Fortunately, the Little Gull is eagerly sought after by bird-watchers and probably most sightings, nestings or other significant occurrences are, I believe, recorded in *American Birds* or on regional listserves, e.g. Ontbirds. In compiling the BNA account, Pete Ewins and I used these resources extensively and located 67 confirmed and probable nesting attempts by Little Gulls in North America. Ninety-five percent of these occurred in or immediately adjacent to the Great Lakes-St. Lawrence River Basin (in Ontario, Michigan, Wisconsin, Minnesota and Quebec) and 5% were in the Arctic. The peak 5-year period for nesting was 1976-80 when 21 nests were reported. The most consistent nesting locations were eastern Georgian Bay, Lake Huron, where 13-18 nests were located and/or estimated over an 11-year period from 1979-1989; the marshes east of Toronto, where there were 11 nests in 11 years, 1962-1972; and in Green Bay, Lake Michigan, where there were 22 nests, 1972-1980. In terms of productivity, Little Gulls reproduce very poorly in North America (not unlike their situation in

Europe)—of 36 North American nests with known outcomes, 50% failed to hatch any eggs.

One of the most intriguing questions about Little Gulls in North America is, where do they nest in sufficient numbers to account for all the sightings here over the course of a year? The largest single sighting of Little Gulls, of which I am aware, was made from the pier at Port Rowan, Ontario, on 7 November 1988, when Ron Ridout and Donald Sutherland tallied 266 birds flying west during a couple of hours that afternoon. There are other reports of relatively large one day or single sightings: 117 Little Gulls were reported on the 1991 Long Point (Ontario) Christmas Bird Count; 104 birds flying east at Turkey Point (Ontario) on 28 April 1999; 91 individuals were reported off the outer banks of North Carolina on 5-6 February 1994; at the gull flyby at the mouth of the Niagara River, Gordon Bellerby reported up to 78 Little Gulls during one evening's roost flights. Elsewhere, on the New England coast, there are multiple sightings from Cape May (New Jersey). Clearly, the North American population of Little Gulls must number in the low hundreds but probably less than a thousand.

There are two theories on the origin of Little Gulls in North America: one, that there is a substantial undiscovered breeding population somewhere on the continent, and two, that birds in North America are overshoots, or wind-assisted vagrants from Europe. The theory on where they breed, says they are in the Arctic (Alan Wormington and Doug McRae, pers. comm.) where, in the Hudson Bay Lowlands, there is a multitude of wetlands. They are reported from Moosonee and Churchill nearly every year, and, during the Ontario Breeding Bird Atlas years, 1981-1985, there were two known breeding records there: one by Geoff Carpentier and one by George Fairfield.

How often do Little Gulls arrive in North America from Europe? No one knows the answer to this and it is easy to assume that during the first half of this century, when Little Gulls were reported only every few years, that all sightings may have been of vagrants from Europe. The main migration of Little Gulls in Europe occurs July-October, which corresponds to the main period of sighting in North America. There is recent direct support for this in that a first summer Little Gull, banded as a chick in Sweden, was recovered in Pennsylvania in June 1996. Personally, I think there are too many Little Gull records annually in North America for all of them to be vagrants from Europe. There must be a substantial undiscovered breeding population, probably in the Arctic—because known breeding records (and locations) could not account for all the annual sightings.

Another intriguing aspect of the biology of the Little Gull in North America is the predictability with which they show up in some areas and from this we can speculate on their North American migration routes. In the spring, birds are present at

The Importance of Nature

Sandra Eadie



Adult Little Gull in flight
Canadian Wildlife Service file photo

Cape May in March and April, they arrive on the north shore of Lake Ontario and west shore of Lake Michigan in late April and at Moosonee by mid to late May. The first wave of autumn migrants is evident in southern Lake Michigan and western Lake Erie by mid to late July and at Long Point (Lake Erie) and the Niagara River by mid to late August. A second wave arrives at Niagara by mid-November; birds are evident along the mid-southern Atlantic coast during most of the late autumn and early winter. It could be argued that these are all random events, i.e. birds that appear in Lake Michigan and Lake Erie are not the same ones that appear later at the Niagara River, the New England coast or off the outer banks of North Carolina, but I doubt that is true. It is interesting to try to piece together the migration route from the scattered sightings that are turned in.

There are many areas in which birdwatchers could contribute to the biology of Little Gulls in North America. Presently, I am trying to compile all sightings from northern Canada, with the hope of pinpointing search centres for Ontario's next atlassing effort. Further documentation of dates and areas of regular occurrence will increase our knowledge of migration routes and staging areas.

D.V. Chip Weseloh, a wildlife biologist with the Canadian Wildlife Service, is a leading authority on gulls and other colonial waterbirds.

Almost half (44.9%) of Canadians spend time enjoying wildlife, most of them by observing birds near the home. These figures come from the 1996 *Survey on The Importance of Nature to Canadians*, prepared by Statistics Canada for the provincial and federal governments. It was released in June.

The largest group of wildlife observers is the more than one-third (38.3%) of Canadians who observed or cared for wildlife around the home. On average, they spent 140 days a year doing this. As well as watching, 57% of that group fed wildlife and 52.6% maintained plants, shrubs, or birdhouses for them (some did both). More than 90% of these people were birdwatchers. In Ontario, 42.8% of the population—3.8 million residents—spent an average of 145 days on wildlife activities at home. All survey figures refer to people 15 years of age and over.

One-fifth (18.6%) of Canadians viewed wildlife (mostly birds) away from home, spending an average 17.6 days a year on 12.5 trips. In Ontario, 17.5% of the population—1.6 million people—spent an average of 16.6 days on 11.5 wildlife trips, below the Canadian average. In contrast, 17.7% of the population took part in recreational fishing and 5.1% in hunting.

In 1996, 1.5 million Canadians—6.2% of the population—participated in wildlife viewing away from home, as the main activity, whereas 3.7 million Canadians—15.5% of the population—participated in wildlife viewing as a secondary activity. The reason the total of 21.7% exceeds the figure of 18.6% in the third paragraph is that some people did this as the main activity on some trips and as the secondary activity on others. Statistics are like that.

These results do not include trips that were primarily for business or vacation, but do include trips that were combined with other kinds of nature activities.

Wildlife viewers were similar to the general population in ratios of men to women and city to rural population. However, wildlife viewing was more popular among Canadians between the ages of 20 and 55, particularly 25 to 44. This activity was also more popular among Canadians with post-secondary education and those with incomes over \$30,000.

In Ontario, 529,000 people reported joining or contributing to nature-related organizations.

This survey is conducted every five years. Unfortunately, since some of the questions were changed from previous surveys, it is difficult to discern trends from the data.

A note of explanation is in order. The survey highlights refer mostly to wildlife watching, which includes birdwatching as the largest group. The published data does not break out birdwatching directly. However, unpublished analysis of the data by the Environmental Economics Branch of Environment Canada say that in 1996, 1.1 million Canadians 15 years and over went on trips specifically to birdwatch, 8.4 million people watched birds around the home and 930,000 people watched birds on nature-related trips taken primarily for other purposes than birding (such as boating, hunting, fishing, etc.). Altogether 9.6 million Canadians 15 years and over watched birds on nature-related trips or around their homes in 1996.

The Importance of Nature to Canadians: Survey Highlights is available from Environment Canada (1-800-668-6767 or enviroinfo@ec.gc.ca). They will mail you a free copy or you can view it online at:

<http://www.ec.gc.ca/nature/survey.htm>

Site Guide Update: Amherst and Wolfe Islands

Paul Mackenzie and Ron Weir

This article is meant to update but not replace *A Birding Site Guide to Amherst and Wolfe Islands* by Weir and Mackenzie (*Ontario Birds* April 1984, 2: 30-33). The suggestions on where to go and the driving directions are still valid and will not be repeated. Clive Goodwin in *A Bird Finding Guide to Ontario* (1995) devotes pages 229-232 to Amherst and Wolfe Islands with a map of each island. Two changes are that Gray Partridge have not been seen on the Wolfe Island for some years now, and Henslow's Sparrows are now seldom found on Amherst Island. Birders are reminded that all land on Amherst and Wolfe Islands is private.

Amherst Island

The Ferry

The ferry costs \$3.50 per car round trip and passengers are free. Crossing takes about 20 minutes.

From Millhaven on Highway 33 the first ferry leaves at 06:20 daily except Wednesday, then on the half hour from 07:30 to 23:30. It returns hourly on the hour from Stella on Amherst Island from 06:00 to midnight.

The KFN Property

The Kingston Field Naturalists owns 250 acres of property on the southeast corner of the island. Steps over the fences allow access to the marsh and sand/gravel bar. The marsh has been expanded with the assistance of Ducks Unlimited, by a dike along which one can walk. Nesting birds include Northern Shoveler, Northern Pintail, Common Moorhen, Wilson's Phalarope, Upland Sandpiper, Common Snipe and Marsh Wren. Osprey platforms and nest boxes have attracted Osprey, Purple Martin and Tree Swallow. Red Knot, White-rumped Sandpiper, Dunlin, Ruddy Turnstone and Sanderling may rest on the bar in late May. Baird's Sandpipers are regular in August and with luck Buff-breasted Sandpiper and Whimbrel may be found in the fields. Visitors since the 1984 article have included Great Cormorant, Tricolored Heron, Snowy Egret, Laughing Gull, Franklin's Gull, Arctic Tern, Forster's Tern, Willet, Hudsonian Godwit, Long-billed Dowitcher, Curlew Sandpiper, Northern Wheatear and Smith's Longspur. In winter the fields are favorite places for Rough-legged Hawk, Snowy Owl, Short-eared Owl, and a Gyrfalcon in 1996.

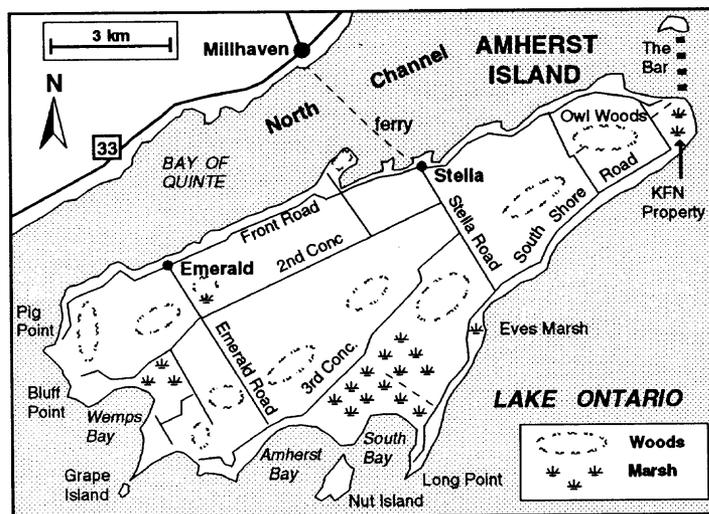
Other Marshes

Past Eves Marsh, which is private, the south road runs west toward Long Point. A huge marsh at the base of Long Point has been improved by the creation of a long dike. Parking at a gate seen on your right soon after the road leaves the shoreline allows access. Another very productive marsh can be scanned from the road near the west end of the Second Concession.

Owls

Owls are chief attraction of Amherst Island for visiting birders, and some years are far better than others. Saw-whet Owls peak in late October; but some are found each winter. They are lo-

cated by careful searching of all conifers. Boreal Owls are occasionally found this way. Great Gray Owls are sporadic and prefer tall deciduous woods. Peak numbers occur in February in years when they erupt such as 1996. The fate of the *Owl Woods* is currently unclear due to possible changes in ownership. Snowy Owls may be found in suitable open areas such as the KFN property and the flat fields on the Emerald Road, south of the "four corners" made by the Second Concession.



Map of Amherst Island by Michael King

Wolfe Island

The Ferry

The Wolfe Island ferry from downtown Kingston to Marysville on Wolfe Island remains free, but this may change, as the province is trying to download costs. There is a winter dock to the east of Marysville, used only when the ice is thick (late January to March) when a compressed air bubble system keeps the channel open. In summer one may need to be in line at least an hour before departure, and this applies to return trips too. Another option is to park at the dock and take a bicycle over.

Ferries leave Kingston at 06:15, 7:15, 8:30, 9:30, 10:30, 11:30 and 12:30, 14:00, 15:00, and on the hour until 22:00. Return ferries leave Wolfe Island at 09:00, 10:00, 11:00, 12:00, 13:15, 14:30, and on the half hour until 21:30. In winter the ferry schedule may change. Phone 613-548-7227 for information.

Birding

The main attraction of Wolfe Island for birders is waterfowl and winter birding. The sites of waterfowl concentration shift depending on food sources, and zebra mussels have led to some recent shifts. Canada Geese use Wolfe Island as a major staging area from March to May, and use the cornfields for rest and feeding. It is not unusual to see 50-100 flocks pass over in a few hours when winds are west or northwest. Small numbers

of Snow Geese accompany these flocks in early spring and late fall. Gray Partridge are no longer present. Horned Larks, Snow Buntings and Lapland Longspurs may be found in open fields. Wolfe Island is the most reliable place in Ontario to find Snowy Owls in most winters.

Bayfield Bay

In the past few years a tightly packed flock of diving ducks has been feeding in Bayfield Bay as soon as there is open water in March, and in the same area in late fall (peaking about mid-November). The flock often consists of thousands of Greater Scaup, mixed with Canvasback, Redhead, Lesser Scaup, Ring-necked Duck, Bufflehead, and sometimes Ruddy Ducks. There are often Bald Eagles in the area when the ducks are present, and if the flock takes flight, look for an eagle in the air. Bayfield Bay may be viewed from the north by taking County Road 96 east to the 12th Line Road then south (right) to a road that overlooks the bay. However, the ducks may be far out, and the light may be bad. With the aid of a map, it is possible to approach Bayfield Bay from the south and drive along the south-west side but do not enter the private hunting property at the end of the road. Tundra Swans may feed close along the rocky shore. Oldsquaw, White-winged Scoters and Black Scoters are more often seen off the Hornes ferry dock.

Reeds Bay

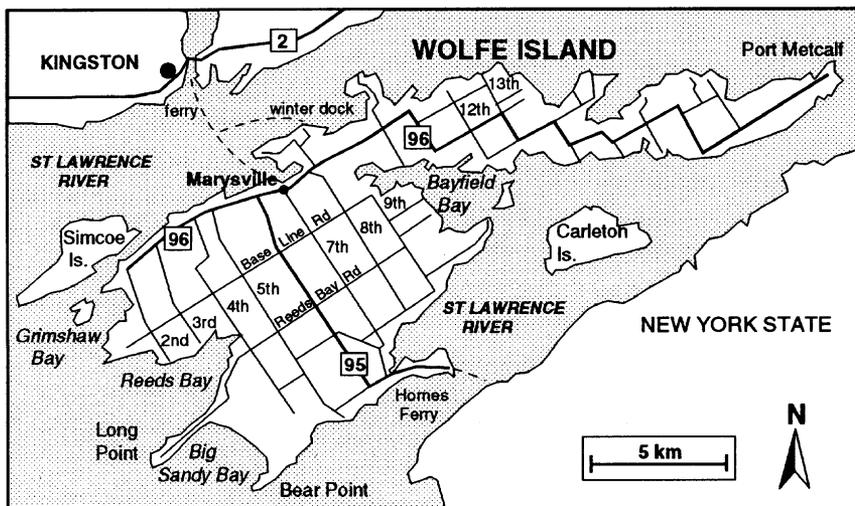
Reeds Bay may be viewed from the Reeds Bay Road just west of the 4th Line Road. Gulls and plovers often roost on the rocky spit where the road curves south. On occasion Little, Franklin's and Sabine's Gulls have been seen there. Tundra Swans may be found in November and December at the east end of Reeds Bay. In winter, flocks of Common Goldeneye and Common Mergansers are scattered around the island. King Eiders and less often Common Eiders have been seen in November and December, and Barrow's Goldeneye in March. Please avoid approaching duck blinds on hunting days.

Snowy Owls

Snowy Owls can often be seen from County Road 95 on telephone poles, isolated trees or fence posts. The rectangle bounded by Base Line Road, Reeds Bay Road and the 4th and 9th Line Roads has much suitable habitat. The fields along the 11th to 14th Line Roads on both sides of County Road 96 may also have Snowy Owls. Rough-legged Hawks, Short-eared Owls and Snow Buntings, and Lapland Longspurs also frequent these locations.

Reports and Information on Sightings

Please phone the KFN information line 613-549-8023 to report birds seen and to hear reports of recent sightings. Written reports may be mailed to: Kingston Field Naturalists, P.O. Box 831, Kingston ON K7L 4X6



Map of Wolfe Island by Michael King

Goose Quiz

Ken Abraham

These questions refer to North America's goose species.

1. What species, which nests in Canada, regularly winters in Europe?
2. What is the only subspecies listed under the US Endangered Species Act? Hint: it does not regularly occur in Canada.
3. What is Ontario's most numerous nesting species? A bonus for naming the populations or subspecies that occur (not just nesting) in Ontario.
4. What is the only North American species that does not now annually occur in Ontario?
5. What Ontario species have plumage polymorphism?

Answers page 14

Membership Renewal 2000

Please renew your OFO membership right away by completing the enclosed pink form and sending it to:

Eleanor Beagan, OFO Memberships
Box 455, Station R
Toronto ON M4G 4E1

Questions about your membership or to send change of address:

E-mail: etbeagan@wiznet.ca
Phone: 416-423-3535

Gift Membership

Give an OFO membership to a birder this holiday season. Send us the recipient's name, address and phone number, along with your cheque for \$22.00 (single membership in Canada) payable to the Ontario Field Ornithologists to Eleanor Beagan (address above). Please specify the message you would like on the gift card. Questions? Contact Eleanor Beagan.

1-800-327-BAND

If you find a dead bird with a band, you can use this toll free number for reporting bird bands, 1-800-327-BAND, from Canada, the United States and most of the Caribbean. After they trace your bird using the reports submitted by banders, you will receive a letter telling you about where your bird was banded, its sex, age, etc.

Answers to Goose Quiz *from page 13*

Ken Abraham

1. Brant, specifically the light-bellied Brant of the eastern high arctic islands. This stock nests on islands of the eastern high Arctic and Greenland and migrates via Greenland and Iceland to winter mainly in Ireland (where it is called Brent). The seasonal migration covers a total distance of 4500 km. Source: *The Birds of North America* account, A. Reed *et al.*

2. The Aleutian subspecies of Canada Goose. This subspecies is noted for its small size and wide white neck ring. It nests only on a few islands in the Aleutian chain of southwestern Alaska and was the object of one of the first recovery plans in the U.S. The restoration to other islands, including control of exotic foxes, has led to its recovery and pending removal from the endangered list. Source: US Fish and Wildlife Service

3. Canada Goose. Two populations of the interior subspecies nest in northern Ontario—the Mississippi Valley Population with a spring population of 600-900,000 birds and the Southern James Bay Population (formerly known as the Tennessee Valley Population) with a spring population of 100-135,000 birds. The southern Ontario nesting Canada Goose belongs to the subspecies *maxima* and numbers about 250,000 in spring. Also occurring in Ontario are the Richardson's Canada Goose (subspecies *hutchinsii*) and small numbers of two other interior populations—the Atlantic Population and the Eastern Prairie Population, which occur in migration. Source: *The Ducks, Geese and Swans of North America* by Bellrose, and Canadian Wildlife Service and Ontario Ministry of Natural Resources reports.

4. The Emperor Goose is the only North American species that has never occurred in Ontario as a wild bird. Besides the numerous Lesser Snow Geese, Canada Geese and Brant, the Greater White-fronted Goose and the Ross's Goose now occur annually during migration in small numbers, probably because of large increases in their more western centred populations. Of course, there are several subspecies of Canada Geese, white-fronted geese and Brant Goose that do not occur in Ontario. Source: *The Ducks, Geese and Swans of North America* and Ontario Bird Record Committee Annual Reports in *Ontario Birds*.

5. Arguably, they all have some plumage polymorphism, but the most notable is the Lesser Snow Goose, with its variable blue and white morphs. Ontario's nesting Snow Geese favour the blue-gray morph by about two to one. The Greater Snow Goose also has regular blue and white morphs, with blue representing less than 2% of the world population. The Ross's Goose also has regular dimorphism in the goslings and blue adult Ross's Geese have been discovered in the last three decades, although these are still rare in the population. Canada Geese have the most variability in form and appearance, although the plumage polymorphism is more subtle than that of Snow Geese and confined to shades of brown and gray and amounts of white at the base of the black neck. Brant have polymorphism of breast and abdomen and necklace. White-fronted Geese have variable amounts of dark feathers on the abdomen and varying shades of brown body feathers. Source: *Handbook of the Birds of North America* by Palmer.

Ken Abraham, a waterfowl biologist with the Ontario Ministry of Natural Resources, is a leading North American expert on geese.

Eye Disease now in Evening and Pine Grosbeaks

Jean Iron

Mycoplasmosis, the eye disease that affects House Finches and American Goldfinches in eastern North America has now been found in Pine and Evening Grosbeaks. An epidemic of mycoplasmosis affected Evening and Pine Grosbeaks at feeding stations in Quebec last winter. The first cases were observed on 7 February 1999 in the Saguenay region (northeastern Quebec), and repeatedly in the same region and in the Mauricie region (northcentral Quebec). Sick birds were still present in May in the Saguenay region. Observers reported that 10 to 20% of individuals from these two species were sick at 14 feeding stations, which represents more than 100 sick birds. The disease was not reported from other areas of Quebec.

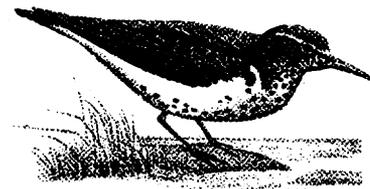
Biologists were able to capture some birds with ease. These had severe lesions and behaved as if blind. They were thin and had other medical complications.

The bacterium *Mycoplasma gallisepticum* in Pine and Evening Grosbeaks proved to be the same as the one that causes similar lesions in House Finches and American Goldfinches.

What are the chances that this eye disease will spread among other species and into Ontario populations? Watch both species carefully at Ontario feeders this winter, paying special attention to the birds' eyes. This disease can go undetected because birds tend to look out with their better eye (if they have one!) when they perch on a feeder.

This information first appeared in *Wildlife Health Centre Newsletter* 6(1): 6, Summer 1999, the newsletter of the Canadian Cooperative Wildlife Health Centre.

Federation of Ontario Naturalists
and Ontario Field Ornithologists
**Field Checklist
of Ontario Birds
1999**



Each checklist costs \$0.50 +\$0.50 postage

Questions? Call Maris: 905-338-0318

To order extra copies, send a cheque payable to Ontario Field Ornithologists to:

Maris Apse
511 Chamberlain Lane
Oakville ON L6J 6A2

Bruce Peninsula

John Miles

On Saturday 19 June 1999, twenty-nine OFO members and friends met at the entrance to Spirit Rock Conservation Area along Highway 6 just north of Wiarton at 8:00 a.m. for our trip up and down the Bruce Peninsula. While waiting, we heard or saw several species of warblers on territory, Cedar Waxwings and several other species.

Our first stop on the way into Issac Lake produced a pair of Eastern Bluebirds and a cooperative Eastern Phoebe. These bluebirds were just the start of many we saw the rest of the day. Down the road a Red-eyed Vireo sang constantly in the treetops.

At the beginning of the Issac Lake marsh meadow, a Common Snipe buzzed the group when not high in the sky winnowing. Two Black Terns worked the small ponds and a Virginia Rail came within two metres of the group, completely out in the open. In the background a Willow Flycatcher sang constantly. At the bend in the road a female Northern Harrier sat on a fence post across the meadow. Amongst the numerous swallows a couple of Cliff Swallows were spotted.

At the Issac Lake boat launching ramp, a Common Loon was on the water. Several male Bobolinks were on the hillside north of the parking lot. We also spotted an Osprey sitting on a nest platform and a Green Heron.

Along the road to Red Bay west of Marr we stopped to inspect the drumlin field. At Sky Lake there were a Pied-billed Grebe, numerous singing Marsh Wrens and an American Bittern. Also seen was a Black-crowned Night-Heron.

We stopped at the Petrel Point Reserve to admire the display of flowering plants including several native orchids which were slightly ahead of season. A Yellow-rumped Warbler was heard and seen. While waiting on the road for one member who was busy photographing the flowers on the boardwalk, a Pileated Woodpecker flew low over the group.

Proceeding along the shoreline road we stopped at Sucker Creek. Here we saw several Wood Ducks, a Caspian Tern, a Common Tern and a Spotted Sandpiper.

Retracing our route we headed inland along Howdenvale Road and up the West Road. At Sucker Creek we had good views of a male Indigo Bunting sitting on a dead branch in good light. A Ruby-throated Hummingbird sat nearby and a singing Alder Flycatcher kept popping up. Several Mourning Warblers sang along the wood edge. Just up the road, numerous Cliff Swallows and Barn Swallows flew into a barn, the Cliff Swallows swooping up under the eaves. A Red-shouldered Hawk and a Sharp-shinned Hawk were high in the sky.

Proceeding north we turned east onto Pike Bay Road out onto the Ferndale flats. Here three Brewer's Blackbirds were quickly spotted along the roadside on the fences and hydro lines. In the distance Common Ravens were calling. As we wound our way through the flats we saw many Bobolinks and Savannah Sparrows flying off the fences.

Our next stop was at Black Creek Provincial Park. We walked back through the middle of old beaver ponds where we heard and saw a Red-breasted Nuthatch and an American Woodcock. At a beaver pond we spotted a female Hooded Merganser and an East-

ern Kingbird nest on top of a stump standing out of the water. A Broad-winged Hawk flew over.

Back at the cars we took a few minutes for lunch. Here several members left the group and will regret leaving so soon, as the next stop just a couple of kilometres up the road produced our best bird of the trip. As we proceeded past an old beaver meadow a dark cap on an angle was noticed on top of a dead tall tree stump. Closer examination revealed it to be dark grayish feathers with bright yellow eyes—a Great Gray Owl! It was very cooperative, allowing the group to observe it and take photos. It flew once to another dead tree. Some locals said the owl had been there for some time. Just before we left, our only Red-tailed Hawk passed over.

On the sideroad east of the Miller Lake General Store, after looking at some Male Fern, a Cooper's Hawk was high in the sky, then disappeared into the woods after performing a spectacular stoop. We walked on the alvar at the Dyer's Bay junction examining the vegetation on the dry exposed limestone, including Green and Maidenhair Spleenworts. We heard Yellow-bellied Sapsucker. On an outcropping along the highway on the way to the Crane River picnic grounds we saw a small group of Purple-stemmed Cliffbreak. At the picnic grounds we examined the "fern" wall with its several species including Slender Cliffbreak and there were a few Nodding Trilliums nearby. Proceeding towards the sparrow fields west of Larkwhistle, we stopped to see the Wal Rue Fern.

A couple of stops before the sparrow fields produced Rose-breasted Grosbeak and a Downy Woodpecker. One woodlot had several samples of the small undergrowth shrub known as "Rubber Tree" with its flexible branches. Good views of butterflies included White Admirals and Tiger Swallowtails.

At the sparrow fields an Indigo Bunting chased a couple of Purple Finches. Field Sparrows were singing and we heard a Yellow-billed Cuckoo. In the distance we heard the "buzz" of Clay-colored Sparrows and some members saw them.

Proceeding through Dyer's Bay some keen-eared members picked out the song of a Northern Parula. Along the shoreline towards Cabot's Head, besides the spectacular scenery, a female Common Merganser was on the rocks while a couple of Common Loons were further off shore. A female Oldsquaw in breeding plumage was a surprise swimming close to shore while overhead a Northern Rough-winged Swallow flew by.

After a walk to the lighthouse we went back along the Dyer's Bay Road to the East Road (known locally as the 40 Hills Road) and headed south. The lead car heard a Sora call from a roadside marsh and had a Black-billed Cuckoo fly by. Stopping in Lion's Head for a bit of supper, Chimney Swifts were cruising over the village. Emerging from the restaurant we picked up our 108th species for the day, House Sparrow!

At our last stop, Colpoys Bay, were several Common Mergansers including one female with 8 ducklings. It drove two other females away from her brood. As we were heading back to the cars at dusk, a Northern Cardinal was singing from behind the houses, our 110th species for the day.

Because of the success of the 1999 trip to the Bruce Peninsula, John will lead a two-day outing in June 2000.

Notes from the OBRC

Bob Curry

On Saturday 11 September the Records Committee met at the FON Locke House in Toronto to discuss a variety of issues that were not covered at the annual meeting last March. While birders struggled with hawk identification high overhead we attempted to resolve problems pertaining to our role and function.

Unfortunately, Dave Beadle has declined serving for the period 2000 - 2002 due to personal and work commitments. We are, however, pleased to welcome another artist and tour leader, Peter Burke, back for a second three-year term.

As most readers will know, the identification criteria for Bullock's Oriole have been in flux. Burke summarized these, and some previously accepted and deferred records of this species will be circulated and re-voted on using these new criteria. The results will appear in next year's annual report.

American Avocet has been reported with increasing frequency over the last few years. This species may be removed from the Review List for Southern Ontario beginning in 2000 pending research of the literature.

A query about whether the birds in James and Hudson Bays or on islands therein (these are part of Nunavut) are reportable prompted us to clarify. All review list birds observed up to the mid-point between the Hudson and James Bay shores of Ontario and islands in the bays will be deemed to be within the purview of the OBRC. This means that birds on Akimiski Island, for example, will not be considered by the committee. The editors of *Ontario Birds*, however, are still keenly interested in publishing material from these adjacent areas as they are very relevant to the status of birds in this province.

Careful readers of the Annual Report will have noted that for the past few years we have used the Humphrey and Parkes terminology for molts and plumages (see *Auk* 76:1-31 and Ron Pittaway in *OFO News* 13 (1):4-5) This is now official policy and will be added to the Operating Guidelines at the next revision.

The most exciting news is that Chris Escott of Toronto made a presentation on an elegant database system for storage, retrieval and printing of all OBRC records. He continues to work many hours at this. Rob Dobos will test the system by inputting the data from recent annual reports. If we can get the bugs out then we can enter the new century on a hi-tech note by using this for all aspects of adjudicating records and reporting to our members. The mammoth task will be to input all previous records dating back to 1982. We may need volunteers for this down the road.

Secretary Kayo Roy urges you to keep submitting your observations of rarities. The annual rarity report is only as interesting as your reports, drawings and photos make it. Visit the OFO Web Page for a report form and see the Review List:

www.interlog.com/~ofo

Please send reports to:

Kayo Roy, OBRC Secretary
13 Kinsman Court
Fonthill ON L0S 1E3
E-mail: kayoroy@niagara.com

OFO NEWS Editor

Jean Iron, 9 Lichen Place, Toronto ON M3A 1X3
416-445-9297 E-mail: jeaniron@globedirect.com
Editorial assistance: Michael King & Ron Pittaway

OFO Web Page: www.interlog.com/~ofo
OFO e-mail: of@interlog.com

Ontario Field Ornithologists
Box 455 Station R
Toronto ON M4G 4E1

OFO trips

Future Field Trips

October 9 (Saturday) Leslie Street Spit.
Leader: Norm Murr.

Meet at the base of The Spit parking lot at Leslie and Unwin Avenue at 8:00 a.m. Fall migrants and waterfowl.

October 23 (Saturday) Holiday Beach
Leader: Paul Pratt.

Meet at the hawk viewing tower at Holiday Beach Conservation Area on County Road 50 (3 km south of Malden Centre, 30 km west of Kingsville) at 9:00 a.m. Migrating raptors.

October 24 (Sunday) Grand Bend Area
Leaders: Tom and Jill Hayman.

Meet at Colonial Hotel on Hwy 21 in Grand Bend at 9:00 a.m. Fall migrants, also possible: Red-throated Loon, Brant, jaegers and rare gulls.

November 21 (Sunday) Niagara River Gull Watch. **Leader: Ron Scovell.**

Meet in Niagara-on-the-Lake at the mouth of the river at 9:00 a.m. for a trip to this premier gull watching area.

January 9 (Sunday) Petroglyphs Provincial Park, Peterborough. **Leader Geoff Carpentier.**

Meet at 8:30 a.m. in the parking lot at the north end of Riverview Zoo. Bald and Golden Eagles, Common Raven, Gray Jay, winter finches, possible Bohemian Waxwings.

February 13 (Saturday) Fisherville Area, Haldimand-Norfolk County. **Leader: John Miles.** Meet at 9:00 a.m. in the parking lot of the high school in the north end of Cayuga on County Road 54. Hawks and owls.

Ontbirds

Ontbirds, with over 650 subscribers, is OFO's successful listserv for reporting and receiving bird sightings. In just one year, *Ontbirds* has proved to be very popular with Ontario birders and birders from many other places.

To subscribe, send an e-mail to:

majordomo@hwc.org

Skip the subject line and in the body of the e-mail, type:

subscribe ontbirds

Skip another line and type:

end

Send the e-mail. That's all it takes!

Questions: contact Mike Street
mikestreet@hwc.org