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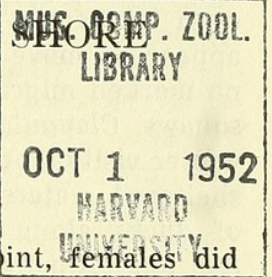
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BIRD MIGRATION ALONG THE LAKE ONTARIO SHORE OF THE NIAGARA PENINSULA¹

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IT HAS long been known that the Great Lakes affect bird migration, both by affording channels for waterfowl and by diverting the paths of land birds. The following notes are offered in the hope that someone will eventually correlate all the scattered data to give a more complete picture of migration routes through this region. They are based on approximately fifteen years' observations in the Niagara Peninsula, mostly at the Horticultural Experiment Station, Vineland Station, on the southern shore of Lake Ontario in Lincoln County, approximately 17 miles west of the mouth of the Niagara River and 20 miles from the western end of the lake. Except where some other locality is mentioned, all observations that follow refer to this vicinity.

WATERFOWL

Migrating water birds generally pass westward along the shore in spring and eastward in the fall. The Red-breasted Merganser, *Mergus serrator* L., outnumbering the combined totals of all other waterfowl, is the most conspicuous example. From late March until well into May and often in diminishing numbers until nearly the end of the month, many thousands pass to the west. Especially on dull rainy mornings, flock after flock will stream along for hours. This movement is interrupted from time to time when large numbers remain more or less stationary for several days, and on these occasions there may be much local movement either way or even for short periods in a predominantly eastward direction, as on April 9, 1945, when over 700 flew eastward during 40 minutes in the evening to join a large aggregation near Port Dalhousie where they presumably spent the night.

The earlier flocks are composed almost entirely of males. In 1949, when more at-

tention was given to this point, females did not appear in any numbers until after the middle of April and never at any time exceeded the males; in that spring at least, there was apparently a considerable excess of males among the local migrants.

Large numbers of Red-breasted Mergansers pass eastward during November, although the autumn migration is never as conspicuous as the spring one.

American Mergansers, *Mergus merganser* L., while by no means uncommon, are much less numerous than the red-breasted species; both follow the same routes in spring and fall.

Next to Red-breasted Mergansers, scaups are the most abundant ducks during the migration seasons, going west in large flocks in the spring and returning eastward in the fall. Both the Greater Scaup, *Aythya marila* (L.), and the Lesser Scaup Duck, *Aythya affinis* (Eyton), are represented, but the difficulty of distinguishing them has prevented any reliable estimate of their relative numbers.

The Pintail, *Anas acuta* L., is the only marsh duck that has been noticed migrating regularly in any numbers. Nearly every spring, flocks often of considerable size pass to the west in late March or early April. None have been observed in the fall.

Several other ducks, including Redheads, *Aythya americana* (Eyton); White-winged Scoters, *Melanitta fusca* (L.); Hooded Mergansers, *Lophodytes cucullatus* (L.); Baldpates, *Mareca americana* (Gmelin); and Mallards, *Anas platyrhynchos* L., appear to follow the same routes, particularly in the spring. All these species are not seen every year and their numbers are few, but in the aggregate they give additional evidence of the local directions of migration among waterfowl.

¹ Received for publication May 3, 1951.

The lack of any observed unidirectional movement by some species may or may not be significant. For example, Golden-eyes, *Bucephala clangula* (L.), are common on the open lake from November to April, yet they appear to move at random at all times and no marked migratory flights are evident. Oldsquaws, *Clangula hyemalis* (L.), are common winter visitors on the Niagara River and other sheltered waters, but are among the rarest of ducks along the open lake at Vineland Station. Among some species the longer flights are probably made at night. This is undoubtedly true of the Black Duck, *Anas rubripes* Brewster, Blue-winged Teal, *Anas discors* (L.), and a number of others that are known to pass through the Peninsula.

Until 1949, overland flights of ducks from the south had been noted on only two occasions: a flock of nine White-winged Scoters at Vineland Station on May 9, 1936, and 22 Pintails at Grimsby on March 2, 1948. However, on March 20, 1949, a dull cloudy day, many flocks kept coming from the south, reaching the lake just west of Jordan where most of them swung westward and continued over the lake parallel to the shore. The majority were too distant to be identified but they included pintails, mergansers (probably red-breasted), and scaups. The first flocks were noticed about 8:30 a.m. and continued at irregular intervals until about 5:00 p.m. More than 15 flocks containing a minimum of 300 birds were noted during an intermittent watch, the greater number being seen in the forenoon. The following day heavy snow obscured any movement during most of the day but a flock of unidentified ducks came from the south as soon as the weather cleared in the late afternoon. It is altogether likely that transpeninsular migration is much more common than these few records would suggest; most of it probably takes place at night.

The lake has no obvious effect on the migration of Canada Geese, *Branta canadensis* L., except in affording a resting place for occasional flocks. They pass over the Vineland district in a generally northerly direction in the spring and southward in the fall.

The flocks of Whistling Swans, *Cygnus columbianus* (Ord.), that visit the Niagara River each spring are seldom seen in the Vineland area, either because they continue on a more northerly course or because they migrate largely at night. In 1938 a flock of

20 swans flew westward over Grimsby on March 20, and on March 29 two more passed in the same direction at Vineland Station.

GULLS

The migration of Herring Gulls, *Larus argentatus* Pontopp., and Ring-billed Gulls, *Larus delawarensis* Ord., is very noticeable in some years in the spring; for days at a time during March or early April loose flocks or single birds aggregating many thousands may move predominantly to the west, but in other years their flight is less conspicuous. The return migration in the fall is usually not very evident although considerable numbers of Ring-billed Gulls have been seen travelling east in late November. The passage of gulls in both spring and fall is obscured by the large numbers that patrol the beach at all seasons and change the direction of their flight according to the weather. Both Herring and Ring-billed Gulls move freely overland between the two lakes.

The larger flocks of Bonaparte's Gulls, *Larus philadelphia* (Ord.), move westward offshore in the spring and eastward in the fall, but small groups have a greater tendency to move in either direction. This species has never been seen to travel overland across the Peninsula.

HAWKS

The spring migration of hawks is one of the most interesting features of local bird life. From early March until past the middle of May the different species pass to the west in varying numbers, sometimes as solitary birds and again in mass flights on days when the weather is particularly favourable. The numbers seen by the writer vary widely from year to year, to a great extent because many pass over during office hours; he has often been told that "the sky was full of hawks", yet he may not have seen one that day. Nevertheless there appears to be an actual variation in the numbers passing through this particular locality, especially of those species whose flight is most influenced by weather conditions. Although this migration has been known for a long time it is only within the past few years that the writer has felt competent to name the majority of those seen, and many still pass unidentified. Anyone who has tried to hold his glasses still with aching arms while focussing on a distant speck in the

sky will realize the difficulty of identifying hawks during a major flight.

Most of the hawks have been seen from the vicinity of Port Dalhousie to Grimsby, within a mile of the lake shore, but during large flights several species have been noted as far as five miles from the lake. On April 4, 1948, when numbers of Red-tailed Hawks, *Buteo jamaicensis* (Gmelin), were passing over Grimsby, the writer drove west in an endeavour to trace their route in that direction and especially to learn whether they continued to the head of the lake or took a short cut to the opposite shore somewhere along the narrowing western extremity of the lake. Nine hawks were noticed along the Queen Elizabeth Way between Grimsby and the eastern end of Hamilton Beach, and a total of seven were sighted during short stops along the Beach. The last was noted at the canal bridge within about half a mile of the northwestern shore. By that time a storm was threatening and the flight was at an end. Hamilton Beach (or Burlington Beach) is a narrow sandbar about five miles long running in a general southeast-northwesterly direction, cutting off the western end of the lake and affording a convenient route between the two opposite shores. Although other species have not been followed much farther west than Grimsby, it is likely that they follow the same course as the Red-tailed Hawks. There has never been an opportunity to trace the source of the flight east of the old Welland Canal near Port Dalhousie, so that the course followed through the eastern end of the Peninsula is not known.

Broad-winged Hawks, *Buteo platypterus* (Vieillot), although probably not as numerous as Sharp-shinned Hawks, are the most conspicuous of the local migrants because of their habit of travelling in flocks. In most seasons they have been seen on only one day, some time between April 22 and May 5, the only exceptions among the last 11 years being 1949 when flight was noticed on April 25 and 27 and May 1; and 1950 when a few were seen on April 22 in addition to a large flock on May 5. Although some undoubtedly passed through unobserved on other days in previous years, the spring migration of this species is nevertheless limited to a very short period. It is also greatly affected by weather, the major flights always occurring on calm, warm and sunny days which produce the ascending

convection currents in which these soaring hawks can fly most efficiently. If the sky becomes overcast or a strong wind arises the flight soon comes to an end. In cold wet springs, days favourable for soaring may not occur during the migration period, and few or none may be seen in such seasons. Possibly they move on a broader front in these years, for even in very bad weather an occasional straggler has been seen flying low and heavily against the wind.

Some idea of the numbers of broad-wings that pass through the district may be given by the following counts: 1944.—May 1, more than 120 from 10.30 to 11:30 a.m. 1945.—May 1, 2 or 3, the exact date unfortunately not recorded, 95 from about 2:30 to 3:00 p.m. (only a fraction of the number reported to have passed that day). 1946.—April 22, Grimsby, 88 between 10.15 a.m. and 1.30 p.m. 1947.—The weather throughout the flight period that year was very cold and wet; April 25, three; May 5, three flying low. 1948.—None seen, the weather again very unfavourable. 1949.—April 25, 94 between 12:30 and 1:30 p.m.; April 27, 93 between 12:45 and 1:30 p.m., many more during the rest of the day; May 1, Grimsby, 11 about 4:00 p.m. 1950.—May 3, Jordan Station, more than 70 within ten minutes, about 12:30 p.m. The great majority of the Broad-winged Hawks must pass through this district without stopping as they are very rarely seen perched even on days of heavy migration.

The spring flight of Red-tailed Hawks is usually somewhat smaller than that of the broad-wings but extends over a much longer period. The date when the first were seen ranged from March 7 to 29 during the past 7 years, but it is very unlikely that these were actually the earliest migrants in all years. The last may pass through as late as the first of May, usually in company with Broad-winged Hawks. A few red-tails may appear at any time during the migration period, but the great majority, like the Broad-winged Hawks, are concentrated in one to three major flights on calm warm days, although Red-tailed Hawks seem somewhat less exacting in their weather requirements and sometimes migrate in considerable numbers on overcast days. On March 30, 1950, numbers were seen following the edge of the Niagara Escarpment at Grimsby, soaring in the updraft from a cold northerly wind blowing against the cliff.

The following are records of typical flights: 1945.—March 30, 12 between 2:00 and 4:00 p.m.; April 1, five between 11:00 a.m. and 12:30 p.m.; April 9, 12 between 1:00-1:25 p.m. 1946.—March 10, 12 observed during an intermittent watch. 1948.—March 20, a total of 69 counted at various points from Grimsby to Jordan Harbour, 55 of them between 2:30 and 4:00 p.m.; April 4, Grimsby, 15 from 1:30 to 1:45 p.m., others seen later west to Hamilton Beach. 1949.—March 29, 29 between 12:45 and 1:30 p.m. 1950.—March 30, Grimsby, 18 from 10:45 to 12:00 a.m. On April 12, 1949, a casual look through eight-power binoculars revealed a red-tail directly overhead, so high that it was quite invisible to the unaided eye. This was the only hawk observed that day. Whether any numbers pass unnoticed at such a height is of course not known, but it is at least an interesting possibility.

The Red-shouldered Hawk, *Buteo lineatus* (Gmelin), is a comparatively scarce migrant. The only occasion when any numbers have been seen was on March 25, 1944, when 30 were counted going west at Grimsby during about an hour in the afternoon. In most years seldom more than three or four have been noticed, usually between March 10 and April 25.

The Sharp-shinned Hawk, *Accipiter striatus* Vieillot, is probably the most abundant of the migrant species. Although the numbers actually seen in most springs are considerably fewer than those of the Broad-winged Hawk, they continue over a longer period and many fly so low that they cannot be seen at any distance. Getting records of the migration has been difficult because the flights are often confined to the working hours of the forenoon, so that even when they are noticed it has usually been impossible to make accurate counts. Sharp-shins are influenced by weather to a much lesser extent than the soaring hawks. They frequently fly quite low, ascending to pass over woods and groups of trees and descending again over open spaces; against strong winds they may fly only three or four feet above the ground. However, they are quick to take advantage of thermal currents and in favorable weather will soar upward in spirals to a great height in the same manner as the Broad-winged Hawks, which they often accompany. Flight generally begins early in the day, sometimes by 8:00 a.m., and often ends by noon, although it may

continue until considerably later, especially on days suitable for soaring. Late in the afternoon after the main movement to the west has ended for the day, sharp-shins are often found resting in trees or making short erratic feeding flights.

The time when this species appears in the spring has been difficult to ascertain because its migration overlaps that of Cooper's Hawk, and many birds are seen under such circumstances that they cannot be distinguished. A few Sharp-shinned Hawks have been definitely identified in several seasons early in April; a few still earlier records may possibly have been wintering birds. From about April 20 to May 10 migrants pass through more or less continually in varying numbers, with stragglers continuing until past the middle of May and rarely to the end of the month. The peak of the migration is usually on one or more days between April 25 and May 6. On May 6, 1948, 16 were seen during one hour in the forenoon. On May 3, 1944, eight passed within 10 minutes shortly after 1:00 p.m. In 1945, on one of the days from May 1 to 3, 28 were counted within half an hour in the afternoon, during the flight of Broad-winged Hawks described previously. In 1949 the major flights of the sharp-shins again coincided with those of the broad-wings; 23 Sharp-shinned Hawks were seen between 12:30 and 1:30 p.m. on April 25, and 37 from 12:45 to 1:30 p.m. on April 27.

Cooper's Hawk is a regular spring migrant but is much less numerous than the Sharp-shinned Hawk. Migration appears to begin in late March; individuals have often been seen earlier but they did not follow any consistent course and had probably wintered in the vicinity. Seldom have more than one been seen in a day, but on April 1, 1945, six were recorded between 11:00 a.m. and 12:30 p.m., and on March 29, 1949, nine accompanied a flight of Red-tailed Hawks between 12:45 and 1:30 p.m. and a few more were noticed later in the day. They continue to pass through the district during the greater part of April but during the latter half of the month are hard to distinguish from the much more numerous Sharp-shinned Hawks. The manner of flight of the two species appears to be identical; Cooper's Hawks usually fly low but on days suitable for soaring they may fly high along with red-tails in the same manner as the sharp-shins often accompany Broad-winged Hawks.

A few Marsh Hawks, *Circus cyaneus* (L.), follow the westward route through the Vineland district each spring, usually flying low, but like the accipiters, at times rising to a considerable height under suitable weather conditions. The greatest number seen during one day was four, between 1:00 and 1:25 on April 9, 1945, when they were accompanying Red-tailed Hawks. Migration extends from about the last week of March to the first week in May, the last migrants passing through at least two weeks after local breeding birds have occupied territory on their nesting grounds.

On March 31, 1937, a Marsh Hawk left the shore of Vineland Station and continued due north over the lake until out of sight, the only occasion on which a hawk of any kind has been seen to do so. If many Marsh Hawks cross the lake directly it may explain their relative scarcity along the westward route followed by other species.

Sparrow Hawks, *Falco sparverius* L., are the earliest to appear in the spring, the greater part of the migration taking place in March, but its duration is difficult to determine because migrants of this species are relatively few and it is a fairly common local resident in both summer and winter.

A single Pigeon Hawk, *Falco columbarius* L., going west on April 13, 1938, and another during a flight of Red-tailed Hawks on April 1, 1945, are the only positive spring records, although others seen at a distance on several occasions were probably this falcon. There are also only two spring records of the Rough-legged Hawk, *Buteo lagopus* (Pontopp.), on March 11, 1938, and April 10, 1949 despite a special watch for this hawk. Two Bald Eagles, *Haliaeetus leucocephalus* (L.), an adult and an immature bird, accompanying a large flight of Broad-winged and Sharp-shinned Hawks on April 26, 1949 were the sole representatives of the species that appeared to be definitely migrating in a westward direction; five others seen in spring during the past 12 years have been loitering or in at least one case going eastward. Five Ospreys, *Pandion haliaetus* (L.), recorded over a still longer period were likewise going in both directions.

An interesting and quite unexpected sight was a flock of five Turkey Vultures, *Cathartes aura* (L.), going west at Vineland Station on April 14, 1946, during a flight of Red-tailed Hawks. Another group of three, also with Red-tailed Hawks, was seen west

of Grimsby on April 4, 1948. On both occasions the vultures were flying much lower than the hawks. In 1950, one was seen at Grimsby and another south of Beamsville on March 30, and one at Vineland Station on April 16; all were moving west.

Hawks of any kind are quite scarce in the Vineland district in the fall. A few of the locally breeding species may occur from time to time but they do not follow any particular route. Broad-winged Hawks have never been observed at this season. Bald eagles and Ospreys occasionally appear along the lake or at Jordan Harbour late in the fall.

OTHER LAND BIRDS

There is some evidence that a few diurnal migrants among the passerines travel westward along the same spring route as the hawks. The first few Crows, *Corvus brachyrhynchos* Brehm, at the beginning of the spring migration in late February and early March, usually come from the east, but very soon they form temporary roosts and their daily comings and goings make such a confusing pattern that later migration could be detected only by more careful watch than it has been possible to keep.

While the writer was on holidays at Grimsby during the week of March 21 to 27, 1948, he noticed that the majority of the Starlings, *Sturnus vulgaris* L., were going westward. This movement was most noticeable along the lake shore, where small groups of about 3 to 20 passed every few minutes on some mornings, flying quite low. In 1949 more attention was paid to starlings, as far as time permitted, and a very definite westward movement took place from the middle to the end of March, and possibly before and after this period. As with crows, directional migration of starlings is hard to distinguish from their daily movements to and from their communal roosts. In 1950, migratory flight was not obvious until April 4; as the weather cleared after a heavy rain during the night, many flocks of Starlings, together with great numbers of Cowbirds, *Molothrus ater* (Boddaert), Red-winged Blackbirds, *Agelaius phoeniceus* (L.), and Bronzed Grackles, *Quiscalus quiscula* (L.), continued to pass west throughout the morning. No return flight occurred in the evening.

Swallows are well-known day migrants and might be expected in considerable numbers during the spring migration; actually they are relatively inconspicuous. Some Barn

Swallows, *Hirundo rustica* L., Tree Swallows, *Iridoprocne bicolor* (Vieillot), and Purple Martins, *Progne subis* (L.), are seen proceeding westward with steady level flight each spring but their numbers seem small in comparison with the local breeding populations, except in the case of the Tree Swallows which are very rare breeders in this district.

The presence of the lake has no apparent influence on the numbers of nocturnal migrants; the writer has had no experience elsewhere but there is little or no evidence that the number of most species of small land birds that migrate through the Niagara Peninsula differs greatly from that in other comparable parts of Ontario. One obvious effect of the lake, however, is on the time of night when southbound migrants first pass over. When the writer was in Toronto in 1938 he frequently heard birds over the University campus during October shortly after 10 p.m.; at Vineland Station they are generally not heard during fall migration until about midnight.

DESTINATION OF LOCAL MIGRANTS

A fuller explanation of how the local paths fit into the general pattern of migration in the Great Lakes Region must be left to someone who can assemble the data from other observers and from the literature, but the immediate source and destination of the migrants passing through the Vineland district is reasonably clear. The local movements of waterfowl conform to the general northwestern trend of the spring migration in Eastern North America along recognized flyways. The ducks may reach Lake Ontario either overland directly from the Atlantic coast or indirectly from western Lake Erie by way of the Niagara River, long known as a favourite rendezvous for ducks. Those

seen at Vineland Station presumably follow the southern shore to the head of Lake Ontario and thence toward the northwest. The fall migration is the reverse of the spring one.

Hawks and possibly other land birds that avoid crossing large bodies of water are probably diverted around the eastern end of Lake Erie by the northeast-southwest trend of that lake. A short distance farther north Lake Ontario lies across their path; here the stream of migrants divides. Part of them proceed eastward, as Eaton (Birds of New York) reports that large concentrations of hawks occur in spring at Rochester and other points along the southern shore of the lake in New York State. Other turn to the west and pass through the Niagara Peninsula to the western end of the lake before again continuing northward.

In the fall, the large flights of hawks that are a well-known feature of the Toronto region miss the Vineland district completely, as they apparently continue south from the western end of Lake Ontario. Swallows likely take the same route at that season.

SUMMARY

Most ducks migrating along the northern shore of the Niagara Peninsula move westward in the spring and eastward in the fall. The fall migration is generally less conspicuous. The Red-breasted Merganser is the most abundant species. Gulls follow the same route. Canada Geese do not usually follow the shore. Hawks, chiefly Broad-winged, Red-tailed, and Sharp-shinned Hawks, migrate westward parallel to the shore in the spring but the autumn migration misses this district. Some other land birds, including crows, starlings, and swallows, follow the same route as the hawks in the spring but their migrations are less obvious.

NOTES ON THE BIRDS OF THE NORTH SHORE OF THE GULF OF ST. LAWRENCE¹

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AT 6:00 a.m., June 4, 1947, our party (Dr. Harrison Lewis, Mrs. Gabrielson and myself) arrived on the Steamer "Matane" at Seven Islands on the north shore of the Gulf of St. Lawrence. This village is a few miles

northeast of the point where the 50th parallel crosses the shore of the gulf which geographers consider the westernmost point on the gulf coast of the Labrador peninsula. We travelled from there to Blanc Sablon, the furthest east point in Canadian Labrador, a

¹ Received for publication November 6, 1951.



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