

## BONAPARTE'S GULL ON THE NIAGARA RIVER AND EASTERN LAKE ERIE

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THE Niagara River forms an important part of the fly-way of the Bonaparte's Gull (*Larus philadelphia*) on both the spring and fall migration flights. Since the river offers open water and adequate food at every season, and particularly since it acts as a bottle neck in the overland route between the Atlantic and the species' breeding grounds, it affords a rare opportunity to observe these gulls in large numbers.

My interest in the Bonaparte's Gull was aroused immediately after my moving to Buffalo in the spring of 1921, and my study of their habits during the succeeding years has brought out some points which seem worth recording. The present paper deals only with group movements, dates of molting, and variant plumages, as observable on the Niagara River and eastern Lake Erie.

*March.* Insofar as western New York is concerned, a calendar of the Bonaparte's Gull properly starts with the month of March. The arrival of the earliest migrants varies somewhat with the weather, but a few gulls usually appear soon after March 20, and more follow during the last days of the month. These early flocks are normally composed entirely of adults in winter plumage.

*April.* Early in the month Bonaparte's Gulls become abundant. These migrants are adults, and the assumption of the black hood is approximately coincident with their arrival. The dates on which winter- and nuptial-plumage birds are present in equal numbers—in other words, the dates for the height of the prenuptial molt—average April 11, the earliest being April 6 (1939) and the latest April 17 (1935). Individual birds may occasionally be found in full nuptial plumage as early as April 2. It is impossible to determine when the most tardy individuals assume the hood, for in very rare instances it is not assumed at all. In an average year, 10 per cent of the gulls will have the black hood on April 7, and 90 per cent ten days later, indicating that the complete process in the individual is a matter of a few days only, and almost certainly requires less than a week. Immature birds are uncommon throughout the month, although I have noted a slight increase in their numbers during the last week of April in several years when the weather was mild. They appear to be entirely in winter plumage at this season. No signs of molting in immatures is visible to the field observer in western New York during April, the dark feathers about the head being acquired, if at all, after the middle of May (see below).

*May.* Most of the adults leave our waters during the first half of May, large numbers often congregating in flocks preparatory to the flight to their breeding grounds. I have seen flocks of several thousand birds on numerous occasions during the first week of May, and once (May 3, 1930) observed a single flock of more than 10,000 adults floating down the Ontario side of the river a short distance above the falls. Coincident with the adults' departure, the immatures begin to arrive in some numbers. There are always a good many present soon after May 1, but they ordinarily do not reach their peak of abundance until the middle of the month, by which time there are generally several hundred immatures on the river. They remain here for a much shorter period than the adults. Although arriving in our waters about a month later than the older birds, they follow them northward fairly closely, and by the month's end are usually scarce.

*June.* Occasional adults may be encountered after June 1, but they are rare, and I have never seen one after the first week. Immatures are more often seen, but in a normal year they are not present in numbers, and after mid-month only the few individuals which summer here can be found.

*July.* Only summering immatures are found here during the first half of July. During the third week, the earliest adults (still in nuptial plumage) return from their breeding grounds. They are in small groups easily overlooked, but I have seen them once (1943) as early as July 15 and several times almost as early. Their numbers are gradually augmented during the remainder of the month, but I have never found as many as 100 in a flock until early August.

*August.* The complete postnuptial molt of the adult, all stages of which are observable here, takes place in August. After the first few days of the month, Bonaparte's Gulls are abundant on the Niagara River, particularly off Bird Island from the International Bridge up to a point opposite the northern portion of the Buffalo sewage disposal property. The immense flocks which often congregate in that area afford an ideal opportunity for estimating relative numbers of the different plumages accurately. Individual adults exhibiting signs of molt about the head<sup>1</sup> may be seen as early as August 5, and by August 15 the molt is usually at its height. The date for the height of the molt is somewhat variable (earliest, August 13, 1930; latest, August 20, 1940). The flocks are composed predominantly of adults, with immatures (second-year birds and juveniles) averaging perhaps 10 per cent. Sometimes in early August one encounters flocks of a thousand or more gulls, all adults; but the large mid-August flocks may contain as high as 15 per cent second-year birds and a few (maximum 5 per cent) juveniles. The second-year birds have a later and slower molt than the adults. In the course of this molt they assume adult plumage

<sup>1</sup> The molt starts on the forehead and chin and works back, but proceeds most rapidly over the crown.

for the first time. We therefore find that during August all of the adults and many of the second-year birds are changing to an identical plumage. For this reason the decreasing proportion of birds in immature plumage during the latter half of the month does not indicate that the second-year birds are leaving for the south. By the month's end only one or two gulls in the black-headed plumage can be found among a flock of two thousand birds, although two or three per cent still show a slight trace of the hood. Birds in immature plumage (mainly second-year birds) now compose only six or seven per cent of the total, though still present in numbers sufficient to impress the observer with the fact that their molt, as a group, is much more prolonged than that of the adults.

*September.* After the first of September, adults in the black-headed plumage are very rare, my latest date being September 3 (1940). By that time about two per cent of the gulls still exhibit signs of incomplete molt, and about five per cent are in immature plumage. This five per cent diminishes gradually throughout the month as the molt proceeds. During September Bonaparte's Gulls are more locally concentrated than at other seasons of the year. They feed almost exclusively off Bird Island and in a number of favored haunts along the Canadian shores of Lake Erie and the upper Niagara River. Usually hundreds or even thousands may be found in each of these areas, whereas on many trips to Dunkirk, Erie (Pennsylvania), and Niagara Falls during September I have seen not a single individual, or only one or two very small groups. I have found several hundred birds present at the Falls and at Dunkirk in September, but only rarely. A considerable number of the gulls leave late in the month.

*October.* Bonaparte's Gulls are less common throughout October than they are in either the preceding or the succeeding months. It is actually unusual to find any at Niagara Falls, and even at Bird Island their numbers are much reduced. In 1933 there were never more than three or four individuals off Bird Island during the entire month. Admittedly 1933 was abnormal, but even during an average October the flocks of Bonaparte's Gulls encountered on the upper Niagara River, from Buffalo to the Falls, are comparatively small. They are composed mainly of adults, but a few birds in immature plumage can usually be noted. Since a bird of the previous year that has not yet molted, and a bird of the year that has assumed the first winter plumage, are practically identical in appearance, it is difficult in the fall to recognize and classify the immatures. I believe, however, that any bird of the previous year has assumed adult plumage by the first of October. This seems reasonable, for whereas their molt is more extended than that of the adult, it may be expected to be complete one month after the adults have all molted. Acting on this assumption, I conclude that the few immatures which are present after October 1 are birds of the year. Their numbers are very small.

*November.* The second phase of the fall migration occurs in November, the date of its maximum intensity varying with the weather. In general it takes the form of a southward drift which gradually augments the population already present. I have found flocks of a thousand or more in some years as early as November 10, any period of subnormal temperature during the month seeming to bring a few hundred more individuals southward. This November movement is, however, subject to considerable variation from year to year, and some years there appears to be no concentration at any time during the month. An example was the year 1933. In fourteen days of observing during November of that year, the largest number seen was 150, found off Bird Island on November 13. On November 10 and 17, however, I saw only two individuals there; on five trips down the river to Niagara Falls I saw Bonaparte's Gulls only twice, and ten was the maximum observed. November is the best time to look for birds of the year. As stated above, a very few usually appear in August, but if there is any concentration of them at all, it occurs during the first half of November. Even at this season their numbers are not large. Such a flock as I saw November 3, 1941, containing 150 gulls, of which 125 were birds of the year, is very unusual. That particular flock grew to a total of 800 birds by November 10 and 11, and then contained 160 birds of the year, the largest number I ever saw in the fall. The young birds do not tarry long. After November 20 it is difficult to find more than one or two in even the largest flocks, which are now over 99 per cent adults. When we consider that many thousands of Bonaparte's Gulls use the Niagara River as part of their migration route in the fall, the scarcity of juveniles is striking. I estimate that more than 15,000 adults and second-year birds pass through here each fall, yet I seriously doubt that juveniles have ever been represented by as many as three per cent of that number in any one of the more than twenty years during which I have studied them. An interesting conclusion emerges: the juveniles migrate southward over a different route.

*December.* This is the month of the third phase of the fall migration, which begins with the advent of severe cold weather. Usually the first cold snap occurs between the first and tenth of December, and brings the gulls to the Niagara frontier in flocks of several thousand birds. If the cold spell is of short duration, many of the gulls linger for a time, and considerable numbers are here at Christmas, or even later. If the period of cold is prolonged, however, the gulls continue southward. In 1940, near zero temperature was recorded on December 1, and on December 2 and 3 there were 2,000 gulls off Bird Island. On December 4 the extreme cold showed no sign of abating, and had covered the canal behind Bird Island with ice. On that day not a Bonaparte's Gull was to be found on the upper river. As the cold continued, I observed 100 gulls at Niagara Falls on December 5, and on the following day, 80 were off Bird Island. This number was increased

to 200 by December 10, but even though higher temperatures prevailed, the flocks thereafter were small and scattered. It is always both interesting and instructive to study the effect of December weather on the gull population, but just as a thirty-day period of weather never duplicates itself, so the size of the gull population is variable from year to year. The December flocks are normally composed entirely of adults, but an occasional immature may be noted.

*January.* Usually Bonaparte's Gulls are entirely absent during most or all of January. Often a few linger into the early days of the month; less frequently large numbers are still present (for example, a flock of 1,600 was observed January 1, 1931, at Bridgeburg, Ontario). Generally it is difficult or impossible to locate any Bonaparte's Gulls here after the first week of January. In 1931, I found 30 along the Canadian shore of the river on January 22, and in 1932 and 1937, they were here throughout the month, 200 being counted January 31, 1937, on a trip along the Canadian shore of Lake Erie as far as Port Colborne. Normally these January flocks are composed entirely of adult birds. In the exceptionally mild winter of 1932, however, there were not only large flocks present (1000, for example, on January 22 at Dunkirk), but each flock contained several immature birds.

*February.* In only two years have I seen Bonaparte's Gulls here in the month of February: in 1937, when I observed a few on February 1 and 2; and in the mild winter of 1932, when groups of from 60 to 350 were present at various points from Dunkirk to Niagara Falls, not only through February, but also throughout March until the spring migrants arrived.

#### NOTES ON PLUMAGE

Bonaparte's Gulls reach maturity more quickly than the Herring (*Larus argentatus*) and Ring-billed (*L. delawarensis*) Gulls,<sup>2</sup> which are also abundant here. Furthermore, there is less variation in plumage between individuals of the same age group. Certain differences can be noted, however.

1. *First nuptial plumage.* Dwight stated (1901:57) that in the first prenuptial molt "the deep plumbeous hood is partly, and probably in many birds fully acquired," and later (1925:308): "an imperfect cap of dull grayish black is assumed, sometimes more advanced." This suggests that these gulls in their first nuptial plumage always exhibit at least a partial hood. But in the field, where an observer can examine over a period of years thousands of young gulls in spring, I believe that the individual with even a partial hood will be found to be exceptional. Immatures displaying the full hood are rare—I have seen only two. Regarding the time of molt, Dwight stated that the first prenuptial molt takes place "during March and April on the Atlantic

<sup>2</sup> Herring Gulls have a four-year plumage cycle, Ring-billed Gulls a three-year cycle, Bonaparte's Gulls a two-year cycle (Dwight, 1920:268).

coast" (1901:57), "late winter" (1920:266), and "April and May" (1925:308). As stated above, I have seen no signs of molting in immatures until May.

2. Winter plumage. After the postnuptial molt, band-headed individuals are rather common. In these birds the usual winter dress is modified by a band of gray extending up over the top of the head from eye to eye, usually accompanied by a similar streak joining the dark ear patches. The intensity of these bands varies greatly, from faint gray to a gray so dark that it appears black, but even when faint, the posterior band is quite noticeable when the bird is facing away from the observer. On November 10, 1941, I observed a bird of the year with both bands present, though rather faint, and with the entire back of the neck brownish-gray. This latter is a vestige of the juvenal plumage. Band-headed individuals may be found among both adults and immatures in their winter plumage. When seen in early April it might be mistakenly supposed to be an indication of the incidence of the prenuptial molt, but I have observed this plumage not only through early winter, but also on March 4, 1932 (in both adults and immatures).

#### SUMMARY

A study was made of the group movements, dates of molting, and variant plumages of Bonaparte's Gulls on the Niagara River and eastern Lake Erie from the spring of 1921 to 1943.

The adults arrive in late March and early April, leave during May, return in late July and August, and depart in September, October, and November.

The young of the previous year arrive in May, drift northward in late May and early June, and probably compose a large portion of the great November and December flocks.

Juveniles are surprisingly rare in fall, and it seems necessary to conclude that they follow a different route southward.

Dates of prenuptial and postnuptial molts are given.

The band-headed plumage of adults and immatures is described.

#### LITERATURE CITED

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