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COLOR-BANDED IMMATURE HERRING GULLS IN THE NEW YORK REGION

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BRIEF HISTORY OF THE COLOR-BANDING PROJECT

IN 1937 Mr. Joseph J. Hickey suggested in *Bird-Banding* (Hickey, 1937) the merits of color-banding Herring Gulls (*Larus argentatus smithsonianus*) in a cooperative study by banders and field observers. It was hoped that observers, by reporting observations of color-banded birds to a central committee, would furnish data on migration, age of first breeding, return for breeding to natal colony or other colony, and changes in plumage and soft parts.

Response to Mr. Hickey's suggestion was immediate (Hickey and Allen, 1937), and a committee was formed comprising Dr. Alfred O. Gross (chairman), and Messrs. Richard J. Eaton and Benjamin Shreve to direct banding activities in New England. Dr. Harrison F. Lewis organized banding of gulls in Canada. The task of assembling and coordinating the records was undertaken by the Linnaean Society of New York, which supplied the first shipment of celluloid bands. The Fish and Wildlife Service kindly furnished the colored bands in subsequent seasons, as well as the aluminum bands with which each bird was marked.

During 1937, 1938, and 1939 a total of 21,561 juvenile Herring Gulls were banded at eleven colonies, as summarized in Table 2. Birds from each colony had a distinctive combination of colored celluloid bands on the legs, the combinations being different each year. Observations of bands on a gull thus fixed its natal colony and year of hatching. The combinations used are listed in *Bird-Banding* 10: 126 (1939), with the exception of the combination two black bands on one leg, used on 500 Kent Island juveniles banded in 1940, and not considered in this paper.

Colonies at which banding was undertaken are the following (see Fig. 1):

Wicopesset Island, New York—South of Stonington, Conn., close to the extreme eastern tip of Fishers Island, New York. Lat. 41° 18' N., Long. 71° 55' W.

Penikese Island, Mass.—One of the Elizabeth Islands bounding Buzzards Bay. Lat. 41° 27' N., Long. 70° 55' W.

Isles of Shoals, New Hampshire—Duck Island in the Isles of Shoals group, off

- the coast of New Hampshire. Lat. $43^{\circ} 00' N.$, Long. $70^{\circ} 36' W.$
 Heron Islands, Maine—Off Cape Small, Maine. Lat. $43^{\circ} 43' N.$, Long. $69^{\circ} 48' W.$
 Muscongus Bay, Maine—A number of small islands in Muscongus Bay. Lat. $43^{\circ} 52' N.$, Long. $69^{\circ} 23' W.$
 Duck Islands, Maine—Great and Little Duck Islands ten miles south of Northeast Harbor, Mount Desert Island, Maine. Lat. $44^{\circ} 10' N.$, Long. $68^{\circ} 15' W.$
 Kent Island, New Brunswick—"One of a group known as Three Islands located in the Bay of Fundy about twelve miles southeast of Grand Manan . . ." (Gross, 1940) Lat. $44^{\circ} 35' N.$, Long. $66^{\circ} 45' W.$
 Bonaventure Island, Quebec—Eastern tip of the Gaspé Peninsula, near Percé. Lat. $48^{\circ} 30' N.$, Long. $64^{\circ} 09' W.$
 St. Mary Islands, Quebec—North shore of the Gulf of St. Lawrence. Lat. $50^{\circ} 19' N.$, Long. $59^{\circ} 39' W.$
 Razades Islands, Quebec—Two islands in the St. Lawrence River. Lat. $48^{\circ} 12' N.$, Long. $69^{\circ} 08' W.$
 Four Brothers Islands, New York—Four islands in Lake Champlain near Willsboro, New York. Lat. $44^{\circ} 26' N.$, Long. $73^{\circ} 20' W.$

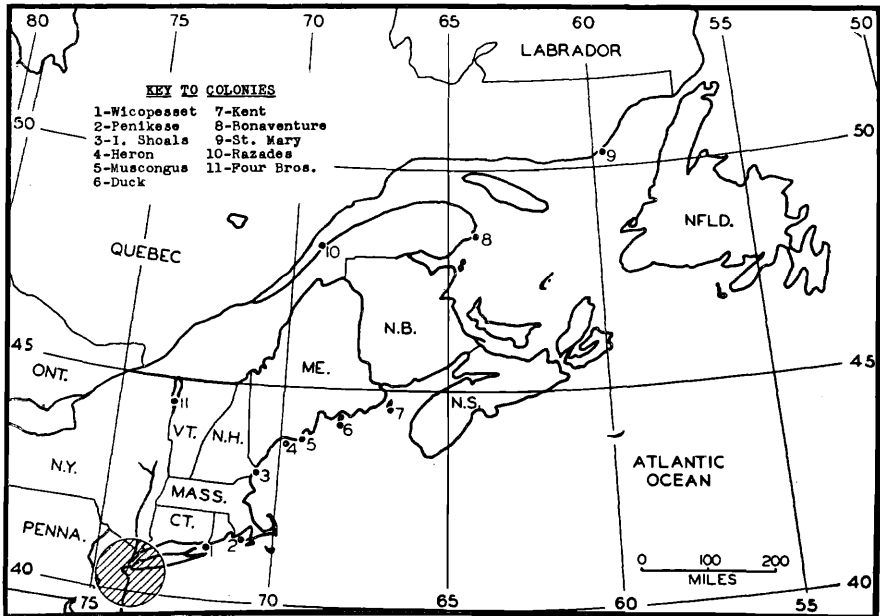


FIG. 1. Locations of the banding colonies and the New York region.

A similar color-banding project was initiated on the Pacific Coast in 1938. Its development is outlined in a succession of notes and articles in *News from the Bird-Banders*, starting in the May, 1937, issue. Summaries of the west-coast banding program and move-

ments of immature gulls are given by [Sargent (1942a, 1942b 1942c).

TABLE I
RECORDS OF FIRST-YEAR BIRDS OF ALL COLONIES
(Records per 10,000 banded; all years taken together)

July.....	0	January.....	42
August.....	0	February.....	17
September.....	18	March.....	11
October.....	52	April.....	8
November.....	157	May.....	7
December.....	103	June.....	9

ACKNOWLEDGMENTS

It is impossible to acknowledge the assistance of all the collaborators who made the gull-banding project successful. However, there are certain persons whose outstanding contributions merit special mention.

Mr. C. L. Whittle, editor of *Bird-Banding* at the time this project was proposed, gave the program the enthusiastic backing which assured its initial success. Messrs. J. J. Hickey, R. P. Allen, and S. C. Harriot actively sponsored the program and maintained the records for the Linnaean Society. Particular thanks are due the banders, upon whose efforts the very existence of the project depended.

Finally, it is hoped that the many observers who provided the basic data for this report will find in it sufficient information of interest to repay their efforts.

SCOPE

The present paper is concerned with records of immature color-banded Herring Gulls in the region around New York, New York. The area considered is that included in a circle of 53 miles radius centered at Ambrose Lightship at the entrance to New York Harbor, Lat. 40° 27' N., Long. 73° 49' W. It embraces Long Island west of Bellport and the eastern end of Smithtown Bay, the Connecticut shore west of East Norwalk, the Hudson River south of Croton, and the New Jersey coast north of Barnegat Inlet.

All records from this region have been reviewed. Due to the scarcity of records of immature birds after January of their third winter, analyses are restricted to birds in approximately the first thirty months of their life. There are 1624 such records, nearly two-thirds of the total from the whole continent exclusive of juveniles dead on their breeding colony.

Reports based on preliminary data have previously been published (e.g., Hickey and Allen, 1938; Allen and Hickey, 1940). This

paper is the first based on complete data, and deals with seasonal changes in the Herring Gull population in the New York region. Other aspects of the project will be treated in subsequent articles.

RELIABILITY OF THE DATA

Factors of undeterminable magnitude affect the data upon which the analyses are based, reducing in number and impairing in accuracy the conclusions which are drawn.

Most observers are amateurs who can be afield only on Sundays and holidays. A series of rainy weekends in any one month would, therefore, reduce the number of records in that month.

General interest in the banded-gull project began to wane after a year or two, so that by 1941 only a few "die-hards" were still acutely band-conscious. This is illustrated by the fact that 1071 per 10,000 birds banded in 1937 were recorded, the number dropping to 882 per 10,000 for the 1938 birds and 374 for the 1939 birds. Comparisons of one year with another are, therefore, unsatisfactory.

As seasons change, there is variation in the locales chosen for "birding." In spring, the attention of observers is focused upon land-bird migrations. In winter, interest centers along the shore, and birding is sufficiently slack to invite such activities as looking for banded gulls. Also, because gulls are then most abundant and tame, rewards for such activity are greatest at this season, and band observation is stimulated.

Another variable is the habits of the gulls. In winter they frequent garbage dumps and piers (cf. Harriot, 1939); with the coming of spring, they withdraw to the outer beaches, where they are much less approachable. Also, young birds are disproportionately common at some of the places where observation is easiest.

Other factors affect comparisons of the abundance of birds of different ages. Mortality is one, the mortality rate being highest in the first year (Gross 1940). Another is the fact that the celluloid bands are not altogether permanent, and as time goes on an increasing number of birds have lost one or both bands. Hickey has pointed out (*in litt.*) that the durability of the bands varied from one shipment to another, being better in 1937 and 1938 than in 1939.

ANALYSES BASES

Records have been analyzed on a monthly basis. A month is a time interval small enough to give a good picture of seasonal distribution, yet large enough to include a statistically significant number of records.

It was found convenient to assume arbitrarily that all gulls were hatched on July first, and to compute ages from that date. Eaton

(1933), Gross (1940)*, and others have also used this assumption.

In treating "All Colonies," records from all eleven colonies are combined. Five colonies each yielding more than 160 records are referred to as the "major" colonies; the remaining six, each yielding fewer than 75 records, are referred to as the "minor" colonies.

Since different numbers of gulls were color-banded at the various colonies in different years, comparison of actual numbers of records without some adjustment is misleading. A comparison basis of "records per 10,000 birds banded" was selected. It is obtained by dividing the number of records by the number of birds banded in the classification considered (year of banding, colony, etc.) and multiplying the result by ten thousand.

Another comparison basis, useful for comparing one colony with another, is "percentage of normal expectancy." This is the ratio of records per 10,000 banded for a particular colony to records per 10,000 banded for all colonies taken together, expressed in per cent. It indicates the deviation of the number of records for an individual colony from the normal expectancy as indicated by the average of all colonies.

CONCLUSIONS—ALL COLONIES

Of the 21,561 juveniles banded in all three years, there is no record for the New York region in July of the year of banding.

Cruickshank (1942) states: "Migrants, the large majority immature, regularly arrive along our coast in late August." Griscom (1923) and Helmuth (1940) also place the beginning of fall migration through New York in August, although none of them specifically refers to first-year birds. There is but one August record of a color-banded first-year gull, and that is at the extreme end of the month, August 30th. The continued southward extension of the breeding range, which has now reached Long Island, may change this situation.

There are 37 records for September, the earliest September 3rd. Two-thirds of them are in the last half of the month. Numbers increase rapidly to a peak in November, drop sharply in December and January, then decrease more slowly to low values in the summer. Figures based on all three years taken together are presented on a birds-per-10,000-banded basis in Table I and Fig. 2. They confirm the results of censuses at the Fulton Fish Pier (Manhattan, N. Y.) by Harriot, who states (1939): "Perhaps the most interesting feature of our observations was the small number of first year banded gulls seen in January as compared with the relatively larger number seen in November . . ."

* All subsequent references to Eaton and Gross refer to these papers.

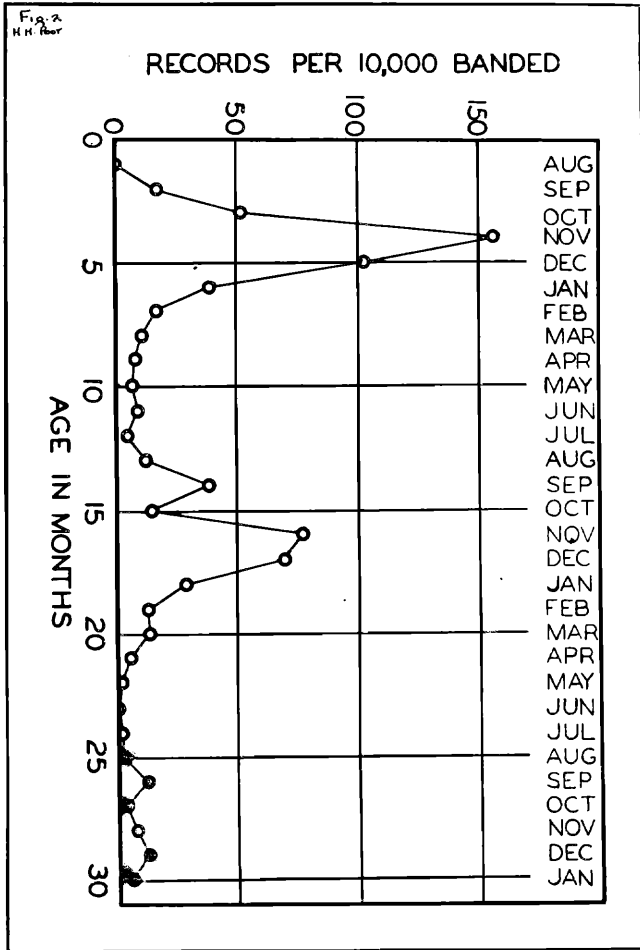


FIG. 2. New York region records per 10,000 gulls banded plotted against age of the birds.

As shown by Eaton and others, many first-year Herring Gulls winter along the Gulf Coast. It is not surprising, therefore, to find their numbers rising to a peak in the autumn and dropping off as the season advances.

The data show no corresponding resurgence in numbers in the spring. We may attribute some of the scarcity of spring records to

the shifting of popular birding interest from winter seacoast to inland land-bird flyway. Also, we may expect the spring migration to involve fewer birds, as winter mortality will have reduced the available stock of birds, and many survivors pass the summer south of New York. Helmuth (1940) noted a spring peak in late April and early May in his records from 1910 to 1920.

From a low point in July, the number of observations increases (with an unexplained drop in October) until the peak of second-winter birds is attained in November, with 77 birds per 10,000 banded. This figure is approximately half of the 157 per 10,000 recorded for first-year birds in their November maximum. Whether the fall peak of second-year birds represents entirely a southward movement of birds which passed north unobserved in spring, or partially a northward flight of birds summering farther south, remains unknown.

The numbers of second-winter birds remain high through December before falling off in January and February. Low values are reached in June and July.

Records of third-year birds merely substantiate the fact that the local population is greater in winter than in summer.

CONCLUSIONS—COMPARISON OF COLONIES

The 1624 records from the New York region are distributed among all eleven colonies. A tabular summary of these records on several different comparison bases is presented in Table 2.

As tabulated for each year, the first column, headed "Rec.," gives the actual number of records. The second, headed "Band," lists the number of birds banded at the particular colony. The third, headed " 10^{-4} ," gives records per 10,000 banded. The fourth, headed "%," lists the percentage of normal expectancy. In Table 2 the five major colonies are listed first and the six minor colonies next, the arrangement in each group being in the order of decreasing percentage of normal expectancy.

The numbers of records from the six minor colonies are insufficient to warrant inclusion in the discussion which follows:

A month-by-month comparison for first-year southbound major-colony migrants is presented in tabular form in Table 3, and graphically in Fig. 3. Coastal distances given are approximate. In measuring them it was arbitrarily assumed that Razades Islands birds crossed the isthmus at the base of Nova Scotia.

As might be expected, the first-year gulls which arrive earliest in autumn are those hatched at the colonies nearest New York, and in the early stages of migration birds from the nearest colonies are disproportionately common.

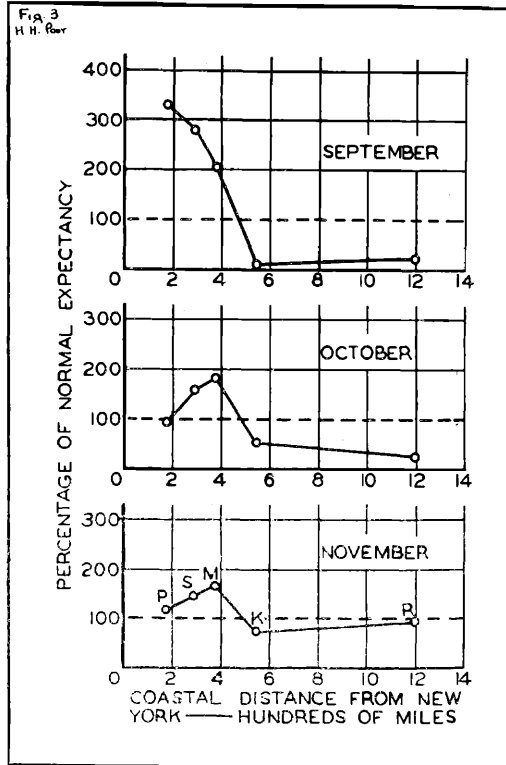


Fig 3. Percentage of normal expectancy plotted against distance of the banding colony from New York for the five major colonies. (P=Penikese, S=Isles of Shoals, M=Muscongus Bay, K=Kent, R=Razades.)

The only August first-year record is a bird from Penikese, nearest major colony, seen August 30th.

In September the highest percentage of normal expectancy is associated with Penikese, and the other colonies range downward in order of distance from New York, the sole exception being the Razades Islands. Since there are only two Kent Island records and one Razades record in September, their transposition in the sequence is not significant.

In October the percentage of normal expectancy for Penikese drops to average, and Isles of Shoals also drops, so that Muscongus Bay, although decreasing slightly, now leads. Kent Island moves up considerably, and the Razades Islands remain unchanged.

In November, Penikese Island rises a little, Isles of Shoals and Muscongus Bay drop, and Kent and Razades Islands gain. This trend continues in December.

MUSCONGUS

Muscongus Bay birds were banded on a number of small islands, chiefly Eastern Egg Rock, Western Egg Rock, and Old Hump Ledge, and secondarily on Jones' Garden, Wreck Island Ledge, Franklin Long Ledge, and others (Cruickshank, *in litt.*).

The 385 records of Muscongus gulls are almost one-quarter of the New York region total. Third-nearest of the major colonies, Muscongus ranks third in percentage of normal expectancy in September. As more birds arrive in October, Muscongus moves into first place, remaining there during November, then dropping slightly below Kent and Razades.

PENIKESE

Birds from Penikese, nearest of the major colonies, arrive earlier than any others. The only August record of a first-winter color-banded gull is a Penikese bird. Also, the earliest records in September are shown by Penikese, two birds on September 3rd.

In September, the first month of appreciable movement of first-winter gulls into the region, Penikese birds are more than three times as abundant as the average of all colonies. This preeminence is soon lost, the colony dropping to normal expectancy in October, November, and December.

ISLES OF SHOALS

The Isles of Shoals colony is second-nearest of the major colonies. Correspondingly, when migration through this region begins in September, Isles of Shoals gulls show the second-highest percentage of normal expectancy (282%), being exceeded only by Penikese.

Eaton considered 84 records from this colony. From seven records grouped in New Jersey around December 1st, he concluded that while most first-year gulls from this colony winter on the Gulf Coast, ". . . the Long Island-New Jersey region is a secondary *winter* range for the first-year birds from the Isles of Shoals colony." Eaton pointed out that concentration of human activity in this area could occasion such a grouping of records, but he discounted this cause since there was no evidence of such a grouping in 55 recoveries of Essex County, Massachusetts, gulls.

Color-banding records do not support in this respect the banding data available to Eaton. The New York region includes five of his seven records, thus appearing to be geographically satisfactory for testing his conclusion. There are 53 November records of Isles

of Shoals birds, 13 December records, 6 for January, and 3 for February. Comparison with all other colonies indicates 147% of normal expectancy in November, 55% in December, 67% in January, and 76% in February, indicating subnormal rather than hypernormal abundance of Isles of Shoals birds after the height of the migration season has passed.

RAZADES

Records of Razades Islands gulls are of particular interest. They show 93% of normal expectancy, thus refuting Eaton's contention relative to his "Laurentian Population":

"Characterized by a breeding-distribution along the St. Lawrence River (lower Lake region?) to the Gulf of St. Lawrence (Labrador?). This population apparently possesses no habit of true migration to a southern wintering-ground during the first winter. The movements of immature and adult birds are indistinguishable, are highly localized, and are restricted to the general region of the breeding-range and the Maritime Provinces."

Although St. Mary birds (*q. v.*) show only one-fourth the expected number of records, it is evident that they do migrate south. The 161 Razades records, close to normal expectancy, indicate that Laurentian gulls are nearly as migratory as Atlantic coast colonies. Eaton's conclusion was logical, but the data available to him were misleading.

There are many records (a considerable proportion being birds found dead) of Razades gulls from eastern Quebec, Nova Scotia, New Brunswick, and most of the Atlantic and Gulf states. There are only a few upstream from the breeding colony, one at Ogdensburg, New York, being the sole record west of the international boundary. We may therefore conclude that Razades birds migrate northeast from the breeding colonies to the Gulf of St. Lawrence, thence southward along the Atlantic coast, and not westward to the Great Lakes and Mississippi basin, nor through the Lake Champlain and Hudson River valleys.

The only acceptable September record is September 24th, appreciable numbers of Razades gulls not appearing until October.

In view of the long route which must be traversed from the Razades to New York we would expect these gulls to pass through New York later than those from any other colony. They are later than most, but seem to follow a schedule close to that of Kent Island birds, as can be noted from the relations of Fig. 3, and the first-arrival dates of Table 3. It will also be noted that their peak comes in November, ahead of the Kent Island December peak. The young birds must therefore travel faster or leave the breeding ground earlier than Kent Island gulls.

According to Mr. R. Meredith of Quebec (*in litt.*) repeated visits to the Razades between June 4th and 7th have shown "... Herring Gulls hatching out in great numbers; in fact, the whole place looks about like an incubator, with the greater part of them either chipping the eggs, just out, or not hatched more than one or two days." It is his experience that optimum banding conditions obtain about July 4th.

Dr. Harrison F. Lewis states (*in litt.*) that on May 24th, 1936, laying at the Razades was "in full progress." On May 15th, 1932, laying on the nearby Biquette Islands had just begun. The first eggs on the Razades Islands hatched on or just before June 6th in 1931.

According to Gross, although eggs from the earliest nests on Kent Island in 1939 and 1940 hatched June 15th, "... nesting and egg laying does not reach its peak until well into June. A few young may be banded the last of June but at Kent Island mass banding cannot be carried on to an advantage until the middle, preferably the latter part, of July and August when the island is virtually alive with young."

Apparently the earliest Razades nests are about 10 days in advance of the earliest Kent Island nests, while the breeding activities of most of the Razades gulls precede those of Kent Island by several weeks.

KENT

On Kent Island, site of the Bowdoin Scientific Station, is the largest Herring Gull colony on the Atlantic coast. Intensive banding directed by Dr. A. O. Gross has yielded a wealth of information on the migratory habits of its gulls. (Gross, 1940.)

More than one-third of all color-banded gulls were marked at Kent Island and yielded one-third of the New York region records.

First-winter Kent Island gulls do not reach the region in appreciable numbers until October. There are only two September records, the earliest September 28th, compared with 23 records in October. This colony does not attain normal expectancy nor reach its peak until December, whereas other major colonies do so in November (*cf.* Table 3). Probably the lateness of Kent Island gulls is due to the distance of Kent Island from New York.

BONAVENTURE

The 100 gulls banded at Bonaventure in 1937 yielded 12 New York region records, 112% of the normal expectancy for 1937 birds. No peculiarities of this colony are disclosed.

HERON

The color-banding of 700 gulls on Heron Island in 1937 yielded 72 records, 96% of normal expectancy for 1937 birds.

WICOPESET

Wicopesset is the "youngest" of the colonies, 21 nests found in June, 1933 by R. P. Allen (1933) being at that time the farthest south ever recorded on the Atlantic coast. By 1939 the colony had grown to about 750 pairs, and other breeding stations had been established on nearby Fishers Island and at several points on Long Island (McKeever, 1940).

There are 43 New York region records of Wicopesset gulls. Nearest of all colonies, Wicopesset is the only minor colony recorded in September.

DUCK

Thirty-three records of Duck Island gulls are available. Returns for 1938 birds show approximately normal expectancy, but for 1939 birds only half-normal. It is not known which condition is usual for this colony.

ST. MARY

As shown in Table 2, there are only one-fourth as many New York region records of gulls from the St. Mary colony as would be anticipated on the basis of records from the other colonies. Only the Four Brothers Islands show a lower percentage of normal expectancy.

Eaton's discussion of 31 recoveries of banded gulls from the "Saguenay County, Quebec, Colonies," a group of islands including St. Mary, showed 29 of these recoveries from Labrador to Nova Scotia, with two spring records from Georgia and Maryland. The low proportion of United States recoveries, and the complete lack of first-winter records anywhere between November 12th and March 8th led Eaton to the conclusion that movements of birds from St. Lawrence colonies were restricted to the Maritime Provinces.

Examination of records of color-banded St. Mary gulls reveals reports ranging from Massachusetts and Kentucky to Florida and Texas. Obviously St. Mary birds are not restricted to the Gulf of St. Lawrence region, although the low percentage of normal expectancy suggests that they may be considerably less migratory than most other colonies.

FOUR BROTHERS

The lowest percentage of normal expectancy is shown by the Four Brothers Islands, with only three records from the 253 birds banded.

TABLE 2

Colony	1937			1938			1939			All Years						
	Rec.	Band. 10 ⁻⁴	%	Rec.	Band. 10 ⁻⁴	%	Rec.	Band. 10 ⁻⁴	%	Rec.	Band. 10 ⁻⁴	%				
	Muscongus.....	107	683	1567	193	1491	1294	147	85	1512	562	150	385	3686	1044	139
Penikese.....	62	500	1240	78	500	1560	177	27	600	450	120	167	1600	1043	139	
Isles of Shoals.....	47	500	940	85	788	1078	122	55	1000	550	147	187	2288	818	109	
Razades.....	75	727	1031	96	800	863	98	17	780	218	58	161	2307	696	93	
Kent.....	248	2250	1102	103	200	3059	74	93	2900	321	86	541	8209	659	88	
Bonaventure.....	12	100	1200	112	0	...	...	...	0	...	...	12	100	1200	159
Heron.....	72	700	1028	96	...	...	...	...	0	...	...	72	700	1028	137
Wipeopset.....	14	75	1867	174	25	492	569	67	0	...	...	43	567	738	101
Duck.....	...	0	...	24	285	842	95	9	463	194	52	33	748	441	59	
St. Mary.....	10	505	198	18	7	175	400	45	3	423	71	19	1103	181	24	
Four Bros.....	...	0	...	3	209	144	16	0	44	0	0	3	253	119	16	
All Colonies.....	647	6040	1071	100	688	7799	882	100	289	7722	374	100	1634	21561	753	100

TABLE 3

Colony	Penikese		I. Shoals		Muscongus		Kent		Razades						
	Rec.	10 ⁻⁴	%	Rec.	10 ⁻⁴	%	Rec.	10 ⁻⁴	%	Rec.	10 ⁻⁴	%			
Distance—Air line.....	165	mi.	...	240	mi.	...	325	mi.	...	460	mi.	...			
Distance—Coastal.....	175	mi.	...	290	mi.	...	380	mi.	...	550	mi.	...			
First Arrival.....	Aug. 30	...	...	Sept. 8	...	...	Sept. 6	...	...	Sept. 28	...	...	
Avg. First Arrival.....	Sept. 13	...	...	Sept. 19	...	...	Sept. 13	...	...	Oct. 8	...	...	
Total Banded.....	1600	...	...	2288	...	...	3686	...	...	8209	...	...	
September.....	9	56	329	11	48	282	13	35	206	2	2	12	1	4	23
October.....	8	60	196	10	83	180	25	95	183	23	28	54	3	13	25
November.....	30	187	119	53	221	147	98	966	169	108	120	76	35	152	97
December.....	14	88	55	13	57	55	44	119	115	105	128	124	29	126	122

TABLE 2. Summary of records of young birds (1 to 30 months old).

TABLE 3. Comparison of major colonies.

Since only one-sixth of the normal number of gulls appears in the New York region, it seems likely that the bulk of their migration is directed away from rather than toward New York. In this connection it may be noted that the three recoveries of Four Brothers gulls considered by Eaton are from Quebec.

The only other color-banded records away from Lake Champlain are a first-winter bird from Cape May, N. J., and a first-winter and a third-winter bird from Boston, Mass. These data are too few to determine the migration pattern of this colony.

SUMMARY

This paper discusses seasonal changes in the population of immature Herring Gulls in the New York region. It is based on 1624 records of color-banded gulls resulting from a program in which 21,561 Herring Gulls were color-banded at eleven breeding colonies in eastern North America. The following conclusions are reached:

- (1) First-year Herring Gulls do not reach the New York region from the breeding grounds in appreciable numbers until September.
- (2) In the early stages of migration (*i.e.*, September) gulls from colonies near New York are relatively more abundant than those from more distant colonies, the order of abundance being the same as the order of proximity to New York.
- (3) In the later stages of migration the above situation no longer prevails.
- (4) The local population of first-year Herring Gulls increases rapidly from the arrival of the first individuals in September to a peak in November, then rapidly decreases.
- (5) The data fail to show any rise in numbers in spring.
- (6) The existence of a secondary winter range in the New York region for first-winter Isles of Shoals gulls, as postulated by Eaton, is not substantiated.
- (7) Gulls from the Razades Islands migrate northeast to the Gulf of St. Lawrence, then south along the Atlantic Coast.
- (8) The breeding season on the Razades is earlier than on coastal colonies, the height of the nesting activities preceding that on Kent Island by several weeks.
- (9) Eaton's hypothesis that "Laurentian" gulls are essentially non-migratory is incorrect.
- (10) Kent Island gulls pass through New York somewhat later than those from other colonies, not appearing in appreciable numbers until October, and reaching their peak in December rather than in November.
- (11) The majority of gulls from the Four Brothers Islands do not migrate through the New York region.

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