

The Laughing Gull In The Northeast

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"If the northeastern populations of Laughing Gulls are to survive, it will be necessary to maintain their preferred islands free of both sheep and large gulls. It may already be too late . . ."

The Laughing Gull (*Larus atricilla*) is a predominantly southern species, with large breeding colonies in the Caribbean Sea and the Gulf of Mexico, and along the east coast of the United States north to New Jersey. North of New York City it has only scattered colonies. These northern colonies were almost extirpated in the late nineteenth century, but recovered with the help of protection and increased rapidly to a peak about 1940. Since 1940 they have decreased steadily, and are now once again in a precarious state. This paper traces the history of the decline and discusses its probable causes. Problems of conserving the dwindling colonies have been discussed separately (Nisbet, 1971).

Laughing Gulls are difficult to count at their breeding colonies because their nests are usually hidden in dense vegetation. At Muskeget, Massachusetts, the largest colony in the region, estimates obtained by Gross and his co-workers were consistently lower than those obtained by Bent, Hagar and others (Table 1). The estimates given by Gross were based on counts of nests, which are difficult to make complete, whereas Hagar's estimates were obtained by mapping the colony and counting nests in sample quadrats. Hagar has kindly shown me his notes on these surveys, and I believe that his figures are more reliable than those of Gross.

In Maine, few (if any) estimates have been based on counts of nests: most have been obtained from counts of adults at the colony. In the late evening, one can expect to see two adults per nest, but in the daytime Laughing Gulls spend much time foraging away from the colonies: at times there may be only one adult on the island per nest, or even fewer after the young are hatched. Estimates

made by Drury and myself in recent years have been obtained by dividing the number of adults seen by a factor of between 1.2 and 1.8, depending on our evaluation of the number present but not incubating. It is not clear that other observers have always taken this factor into account, and some published estimates may be too low.

Clearly, not all the figures quoted in this paper are equally reliable, but it is likely that most were correct within a factor of two.

NEW YORK, CONNECTICUT AND RHODE ISLAND

The Laughing Gull was extirpated as a breeding bird on Long Island in 1890 and has not been known to breed in New York State since, although it is still numerous in summer on Long Island (Bull, 1964 and pers. comm.). I have not traced any breeding records for Connecticut or Rhode Island, even for the nineteenth century (Sage et al., 1913, Dater, 1969, Clement and Woodruff, 1961).

MASSACHUSETTS

The only established breeding colony in Massachusetts is on Muskeget Island, west of Nantucket. The spectacular ups and downs of this colony are summarized in Table 1.

Elsewhere in Massachusetts there have been no generally accepted breeding records. Forbush (1925) cited a record of a few pairs nesting on Monomoy in 1919, but this was not accepted by Griscom and Snyder (1955), nor by Bailey (1968). There is a vague and probably erroneous record of nesting on the Weepectet Islands in 1922 (Alexander 1923). During the 1940's numbers were seen in summer at Nahant, Lynn and Manchester (Table 2), and on 6 July 1945 a newly

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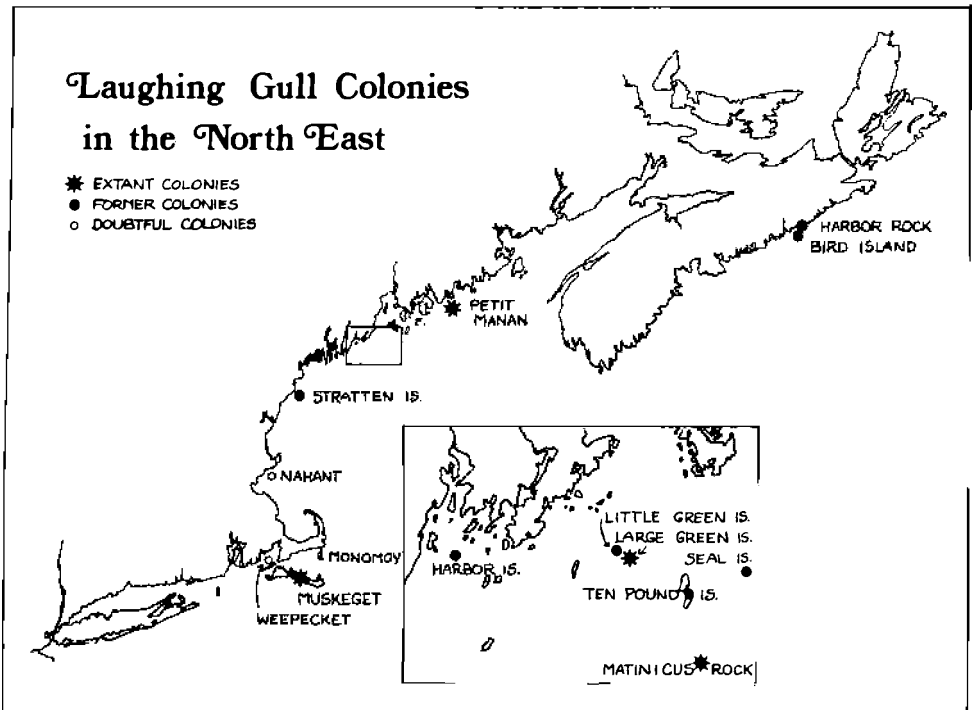


Figure 1. Localities mentioned in the text.

fledged young bird was seen there (Walcott in Cottrell and Cottrell, 1945). It seems likely that Laughing Gulls were breeding on one of the islands off Marblehead at that period.

NEW HAMPSHIRE

I have traced no breeding records.

MAINE

The history of Laughing Gulls in Maine down to 1944 was summarized by Gross (1945a) and Palmer (1949). By 1895 it had been reduced to one colony (Western Egg Rock in Muscongus Bay), numbering only 14 birds, but had increased to several hundred birds by 1920. In 1937 about 300 pairs were found on two islands, and in 1940 about 300 pairs nested on the only remaining colony, Little Green Island in Penobscot Bay. This was reduced to 50 pairs in 1941 and to none by 1944. Although Gross worked along the entire coast of Maine each year and landed on many gull islands, he saw no more than 25 Laughing Gulls in 1943 and 1944 and only 6 in 1945 (Gross, 1945a,b); he was convinced that the species no longer nested in Maine. However, it was re-established by 1949 and its subsequent history is outlined below.

Stratten Island. Laughing Gulls were first recorded nesting in 1949 and there were 60 birds in May 1950 (Pratt in Cottrell and Emery, 1949; Parker, et al. 1950). Gross (1951) estimated 125 pairs in 1951 and the colony was flourishing in 1952 (Gross, 1952). There were no further records until 1965, when Kadlec and Drury (pers. comm.) estimated 200-250 pairs nesting. However, Drury and I found the colony deserted in 1969 and 1970.

Little Green Island. This colony, abandoned before 1944 (see above) was reoccupied in 1951 and 1952, when about 125 pairs were present (Hebard, 1952, 1959).

Seal Island. A few were reported nesting in 1958 (Roberts and Earle in Stackpole and Emery, 1958).

Ten Pound Island. Bred in 1958: "a careful search . . . on July 18 did not disclose a nest, just 2 broken eggs and over 100 adult Laughing Gulls" (Hebard, 1959).

Harbor Island. One pair nested in 1965 (Transue in Bagg and Emery, 1965).

Matinicus Rock. The species was not recorded nesting here in the 1950's (Hebard, 1952, 1959; Courson, 1957), but about 20 pairs were nesting in 1965-67 (Drury, pers. comm.), increasing to 100-150 pairs in 1968

(Drury and Buchheister, pers. comm.; Packard, 1970). Drury and I found none in 1969, but there were 3 or 4 pairs again in 1970 (Drury, Nisbet and Buchheister).

Petit Manan. It is not known when this colony was founded, but there were evidently no Laughing Gulls in 1937, when Lockhart reported to Palmer (1938) on the tern colony there. Gross did not land on Petit Manan in the 'forties, but he passed the island repeatedly without seeing any Laughing Gulls. Drury similarly sailed past the island in 1967 and counted Herring Gulls and Common Eiders (*Somateria mollissima*), but did not see any Laughing Gulls. However, Hatch (1970) found about 20 pairs nesting there in 1968, and there were 50-55 pairs in 1969 (Hatch,

pers. comm.) and in 1970 (Drury and Nisbet).

Large Green Island. Drury and I found a small colony in 1969 (7 flying young in early August) and this had increased to about 38 pairs in 1970. Drury is reasonably certain that Laughing Gulls were not nesting there in 1963-68.

Drury and I searched the entire coast of Maine during the summers of 1969 and 1970, and examined almost all suitable islands in one year or the other. Although we might have missed a colony occupied in only one of these two years, we are reasonably certain that no other sizeable colony was occupied in both. We did not see more than two birds together outside a radius of 30 km from the three known colonies.

Table 1

Estimates of Laughing Gull pairs breeding at Muskeget, Massachusetts

Year	Number of pairs	Source
1850	abundant	in Mackay 1893
1870	50	Brewster in Griscom and Folger 1948
1874	1 (3 birds)	Brewster in Griscom and Folger 1948
1880-89	few	Mackay 1893
1890	increase (4 nests)	Mackay 1893
1891-92	about the same	Mackay 1893
1893	12	Mackay 1895
1894	23	Mackay 1895
1895	48	Mackay 1896
1896	32	Mackay 1897
1897	26	Mackay 1898
1898	55	Mackay 1899
1902	100	Bent (unpublished letter)
1903	100	Bent (unpublished letter)
1908	at least 500	Forbush 1908
1910	nearly 500	Gross 1948a
1919	at least 1,000	Gross 1948a
1919	3,000	Bent (unpublished letter)
1923	thousands	Forbush 1925
1925	1,500	Mackay in Mackay 1925
1927	thousands	Keniston 1927
1936	22,800	Hagar (unpublished data)
1938	13,900	Hagar (unpublished data)
1939	20,700	Hagar (unpublished data)
1940	over 20,000	Noble and Wurm 1943
1945	21,800	Hagar (unpublished data)
1947	2,450	Gross 1948a
1948	3,575	Norris in Gross 1948b
1948	7,800	Hagar (unpublished data)
1949	5,956	Gross 1949
1951	2,500	Whittles in Bailey 1955
1952	4,400	Hagar (unpublished data)
1954	1,000	Church, Shaub and Shaub 1954
1960	350	Morgan in Gross 1960
1965	700	Sheldon <i>in litt.</i>
1969	200	Wetherbee <i>in litt.</i>
1970	50	Andrews in Finch 1970

NEW BRUNSWICK

One or two pairs nested at Machias Seal Island occasionally between 1948 and 1966 (Palmer, 1949; Squires, *in litt.*). The lighthouse keeper reported two pairs in 1967, but none in 1968-1970 (Hatch, pers. comm.). Otherwise the species is rare in New Brunswick (Squires, 1952; Huntington, 1959; Gobeil, 1968).

NOVA SCOTIA

A colony at the Bird Islands numbered hundreds at the turn of the century, about 50 pairs in 1939 and about 25 pairs in 1941, but was empty by 1960 (Snyder, 1940; Tufts, 1962). There was another small colony at Harbor Rock in 1939 (Snyder, 1940). The species is now rare in Nova Scotia (Dobson, 1967), except when brought up by autumn hurricanes (Mills, 1969).

INTERRELATIONS BETWEEN COLONIES

Between 1880 and 1940 the average rate of growth of the Muskeget colony was about 19% per annum (compound interest), so that, on average, the numbers doubled about every four years. Between 1890 and 1910 the average rate of increase was about 27% per an-

num, corresponding to a doubling period of about 2.9 years. These rates of increase are much larger than those of the northeastern Herring Gulls (*L. argentatus*), which have doubled every 12-15 years (Kadlec and Drury, 1968) or Great Black-backed Gulls (*L. marinus*), which have doubled every 9-10 years (unpublished data). I have found no published records of breeding success or mortality rates of Laughing Gulls, but it seems unlikely that such high rates of increase could be maintained by a closed population. Certainly the 12-fold increase from 1892 to 1895 must have been generated by immigration, presumably from colonies to the south. It seems likely that immigration must have continued at least until 1910.

Between 1945 and 1970 the average rate of decrease of the Muskeget colony was about 17% per annum, corresponding to a halving-period of about 3.7 years. 17% is a reasonable figure for annual adult mortality in medium-sized gulls (cf. Onno, 1968), so the decline could have resulted simply from adult losses if chick production had been negligible throughout this period. However, birds in immature plumage are seen in fair numbers each year in Long Island (Bull, pers. comm.), Connecticut (Dater, 1969) and southern Massachusetts (personal observation). Unless there



Photograph by Allan D. Cruickshank from N.A.S.

was some extraordinary increase in adult mortality from 1940 onwards, it thus seems likely that at least part of the decline at Muskeget was due to emigration of adults.

It seems remarkable in these circumstances that birds from Muskeget have not formed any new colonies, although there still appear to be a number of suitable sites in the region (e.g. Monomoy, No Mans Land and islands in bays in southern Long Island).

In contrast to the apparent conservatism of the Muskeget birds, the Laughing Gulls north of Cape Cod have shifted their colonies frequently. At least 11 islands have been used since 1950, but there is no definite evidence that more than three were occupied in any one year. Between about 1942 and 1947 the population appeared to be extirpated, at least in Maine waters, but it is probable that some remained breeding in Nova Scotia, and it is likely that others were breeding at that time in northeastern Massachusetts (see above). In any case, by 1951-52 some 250 pairs can be accounted for in Maine, in comparison with 300 known in 1940. Hence it seems likely that the northern population was maintained through this period, even if some birds may not have bred for several years.

There is no clear evidence that birds from Muskeget moved north to restock the Maine colonies. The population crash between 1940 and 1948 affected both areas simultaneously, and Gross (1949) thought that the numbers

at Muskeget were up in 1949, when Maine was recolonized. Dates of spring arrival and egg-laying are 7-15 days later in Maine than in Massachusetts (Forbush, 1925; Palmer, 1949). It seems likely that the northern birds comprise a fairly discrete population adapted to the cold waters of the Gulf of Maine.

CAUSES OF THE RECENT DECLINE

There can be no doubt that the decline of the Laughing Gull in the late nineteenth century (in common with that of the other gulls, terns, alcids and shorebirds of the northeast) was due primarily to human persecution, and that its reversal can be attributed directly to protection (Mackay, 1893-1899; Forbush, 1925; Palmer, 1949; Gross, 1948a). However, protection has continued since 1940, and other causes have to be sought for the abrupt decline since then. Four main causes have been suggested.

Pollution

Accumulation of persistent pesticides has been associated with declining reproduction in fish-eating birds, including Herring Gulls (Keith, 1966). Pesticide residues in Laughing Gulls have not yet been measured, but they utilize human waste much less than Herring Gulls and their food is generally from lower in food chains (Mendall, 1935), so it is unlikely that they accumulate as much pesticides as Herring Gulls. At least in Maine, eggshell thickness in Herring Gulls has so far been affected only very slightly by pesticides (Hickey and Anderson, 1968), and the species continues to raise good numbers of young (Drury and Nisbet, 1971). At least at Large Green Island, Laughing Gulls raise young successfully (Drury and Nisbet, unpublished data).

Hurricanes

Finch (1969) suggested that the abandonment of the colonies at Stratten Island and Matinicus Rock, discovered in 1969, might be attributable to Hurricane 'Gladys', which brought thousands of Laughing Gulls to Nova Scotia in October 1968 (Mills, 1969). However, the track of 'Gladys' was similar to that of Hurricane 'Helene', which similarly brought thousands of Laughing Gulls to Newfoundland in September 1958 (Tuck, 1968). The latter incident involved banded Laughing Gulls from New Jersey, Virginia and North Carolina (Tuck, 1968), and it seems likely that in both cases the birds were picked up by the hurri-

Table 2

Highest counts of Laughing Gulls at Nahant and Lynn, Massachusetts in May and June, 1940-1952

Year	May	June
1940	300	—
1941	200	—
1942	500	—
1943	250	—
1944	60	—
1945	700	56
1946	450	65
1947	250	225
1948	350	60
1949	150	—
1950	400	2
1951	150	—
1952	53	—

Sources: 'Bulletin of New England Bird Life', vols. 4-8; 'Records of New England Birds', vols. 1-8.

—, not recorded.

canes in the region of Cape Hatteras. By late October Laughing Gulls from Maine should have been scattered widely along the Atlantic coast, and would not be expected to be concentrated near Cape Hatteras. It is quite likely that some birds from Maine were involved in both incidents, but it is unlikely that either was a major cause of the long-continued decline. The known population of Laughing Gulls in Maine declined only from about 150 pairs to 95 pairs between 1968 and 1970, and there was no evidence of a marked decline in 1959.

Vegetational changes

Laughing Gulls prefer dense vegetation for nesting, and their increase on Muskeget was at least facilitated by the development of poison ivy and other ground cover (Forbush, 1925). Their abandonment of Little Green Island followed immediately after the introduction in 1940 of sheep, which grazed away the cover (Gross, 1945a; Palmer, 1949), and its recolonization in 1951 followed soon after the removal of the sheep in 1948 (Hebard, 1959). (The sheep were re-introduced in 1964, but the Laughing Gulls had almost certainly left before then.) Similarly, at nearby Large Green Island, the settlement of Laughing Gulls in 1969 followed the removal of sheep in 1967 or 1968. Clearly sheep are an important factor in causing movements between colonies, but there remain many unoccupied islands in Maine with sufficiently dense vegetation, and another cause must be sought for the general decline.

Large gulls

Many writers have pointed out the coincidence between the decline of the Laughing Gull at Muskeget and a corresponding increase in the numbers of Herring Gulls there (Griscom and Folger, 1948; Gross, 1948a, 1955; Church *et al.*, 1954). Earlier the Laughing Gulls had similarly displaced terns (*Sterna* spp.) and now Great Black-backed Gulls are starting to encroach on the Herring Gulls (Gross, 1955). As the Herring Gulls increased and took over more and more of the island, the Laughing Gulls were progressively restricted to patches and strips unoccupied by the Herring Gulls (Gross, 1947, 1948a, 1949; Hagar, pers. comm.). By 1969 only one patch remained, and this has been maintained only by deterring Herring Gulls from settling around its edge (Sheldon and Wetherbee, *in litt.*).

In Maine, the colonization of Stratten Island in 1949 followed control measures which had reduced the Herring Gull population from about 600 pairs in 1945-46 to about 300 pairs in 1951-52 (Gross, 1951). Subsequently the Herring Gulls increased again and numbered 1200-1500 pairs by 1969: their occupation of the swampy center of the island between 1965 and 1969 coincided with the disappearance of the Laughing Gulls (Drury and Nisbet, unpublished observations).

At the remaining three colonies in Maine (Petit Manan, Large Green Island and Matinicus Rock), the Laughing Gulls are physically separated from Herring and Great Black-backed Gulls: in each case the large gulls occupy only part of the island (as at Stratten Island in 1949-1965). Each of these three islands has human residents in summer, whose presence (at least at Petit Manan) appears to have prevented the large gulls from overrunning areas occupied by the Laughing Gulls. However, the large gulls are increasing on all three islands, and their spread to the edge of the Laughing Gulls' area on Matinicus Rock in 1968 was followed by its abandonment in 1969 (Buchheister, pers. comm.).

Large gulls interact with Laughing Gulls in two main ways. They occupy territory before the Laughing Gulls arrive in spring: the smaller Laughing Gulls seem unable or unwilling to contest the larger gulls for the space and appear to withdraw spontaneously. Secondly, some large gulls (probably mainly Great Black-backed Gulls) prey on Laughing Gull chicks. Hagar has not seen predation at Muskeget, but Buchheister (pers. comm.) reports that many chicks were killed at Matinicus Rock in 1968 when they were nearly ready to fly and started to emerge from the protective cover. Drury and I similarly found well-grown chicks killed and eaten on Large Green Island in 1970.

I conclude that the increase of the large gulls is the main (but not the only) cause of the decline in the Laughing Gulls in the northeast. The increase was checked and even reversed in Maine by Gross's (1945-52) control program (Kadlec and Drury, 1968), but the program was abandoned in 1952 before it could take effect in Massachusetts (Gross, 1952). Subsequently the large gulls have increased again in both states and are now pressing on the last islands suitable for the Laughing Gull.

The history of events on Muskeget shows that the demise of the Laughing Gull can be

delayed by human intervention. The history of events on Stratten Island shows that control of the large gulls can reverse their population increase and lead to re-establishment of Laughing Gulls. However, the history of events on Muskeget and Matinicus Rock shows that it is not sufficient simply to separate the species physically: control must be effective enough to reduce predation also. If the northeastern populations of Laughing Gulls are to survive, it will be necessary to maintain their preferred islands free of both sheep and large gulls. It may already be too late (Nisbet, 1971).

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