DISPERSAL OF HERRING GULLS FROM THE WITLESS BAY SEA BIRD SANCTUARY, NEWFOUNDLAND

By William Threlfall

The Herring Gull (*Larus argentatus*) has been the object of many studies throughout its entire range. Its breeding biology has received particular attention, some of the more recent works being those of Drent (1970), Haycock and Threlfall (1975), MacRoberts and MacRoberts (1972), and Parsons (1971), with less emphasis being placed on its movements and seasonal fluctuations (Cooke and Ross, 1972; Dexter, 1970; Forsythe, 1972; Jorgensen, 1973; Moore, 1976; Schreiber, 1968; Southern, 1968). Several works on the movement of Herring Gulls banded in eastern Canada and the northeastern region of the United States have been published, the most important being those of Drury and Nisbet (1972), Gross (1940), Kadlec and Drury (1968), and Paynter (1947, 1966). To date, however, no papers dealing with the movement of Herring Gulls banded in Newfoundland have been published.

During a broadly based survey (started in 1966) of various aspects of the biology of the avifauna of the Witless Bay Sea Bird Sanctuary, Newfoundland (Bradley and Threlfall, 1974; Eveleigh and Threlfall, 1974; Haycock and Threlfall, 1975; Maunder and Threlfall, 1972; Threlfall, 1968, 1969; Threlfall et al., 1974). Herring Gulls were banded to determine their movements within and from the Province. Included here are data provided by the Canadian Wildlife Service on the Herring Gulls banded in mainland Canada and the United States and recovered in Newfoundland during the period 1924–1971.

MATERIALS AND METHODS

During the period 1966–1972, Herring Gull chicks were banded in a rapidly growing colony in the Witless Bay Sea Bird Sanctuary (47° 15'N, 52°46'W) which lies approximately 23 miles south of St. John's, Newfoundland. An indication of the rapid growth is illustrated by reference to the numbers of Herring Gull nests found on Gull Island where the most intensive surveys were carried out. In 1967, approximately 1,500 nests were present with the numbers in succeeding years being as follows: 1968, 1,983 nests; 1969, 2,033 nests; 1970, 2,544 nests; 1971, 2,539 nests; 1972, 2,663 nests.

The sanctuary is composed of three islands (Gull, Green, Great: Fig. 1) that lie in an approximately N–S line. Descriptions of the islands have been provided by Haycock (1973), Nettleship (1972) and Threlfall (1973, 1974a,b).

Table 1 details the number of birds banded each year and also shows the number of bands "destroyed," i.e., those that were removed from birds that had died in the same 10° block within 3 months of banding and the total number recovered to date. L. M. Tuck banded 1,196 Herring Gulls in the same sanctuary in the years 1955–1971 and kindly

supplied details of his work and band returns for inclusion in this paper. Virtually all the chicks banded were in the chick classes 3b and 4 of Kadlec, Drury, and Onion (1969), i.e., chicks were well developed and from 24 days of age to fledging age.

Throughout this paper the following terms are used: first-year bird, from year of hatching to the following 31 May; second-year bird, from end of 1st year (1 June) to 31 May of succeeding year; third-year bird, from end of 2nd year (1 June) to 31 May of succeeding year; adult bird any bird after 3rd year. Other terminology in the paper follows that of

TABLE 1

Numbers of Herring Gulls banded in the Witless Bay Sea Bird Sanctuary during the period 1966–1972 and the numbers of bands destroyed and recovered (direct and indirect).[1]

Year	Total		
	Number	Bands destroyed[2]	Bands recovered[3]
1966	756	7	23
1967	365	4	14
1968	1,712	64	34
1969	2,666	58	45
1970	2,505	50	42
1971	3,139	45	40
1972	1,642	2	29
Total	12,785	230	227
% Total	100	1.8	1.8

[1] Terminology as in "North American Bird Banding" prepared by the Canadian Wildlife Service (1976).

[2] Band destroyed: birds found dead before the banding schedule reporting the bird's original banding has been submitted to the Bird Banding Office, normally birds found dead within 90 days of banding in the same 10° block of latitude and longitude.

[3] (a) Direct recoveries: a banded bird killed or found dead before, during or immediately following the first period of migratory movement following banding and before return migration would likely have occurred. (b) Indirect recoveries: a banded bird killed or found dead during or after its second migration season following banding.

the North American Bird Banding Manual (Environment Canada, Canadian Wildlife Service).

The year is divided into quarters, namely summer (June–August), fall (September–November), winter (December–February) and spring (March–May). Distances and direction from the banding colony were calculated, using a Hewlett Packard HP65 calculator and the Great Circle Navigation programme card.

RESULTS AND DISCUSSION

The dispersal patterns of young Herring Gulls from the Witless Bay Sea Bird Sanctuary are shown in Figures 1–3. A total of 240 birds (in-

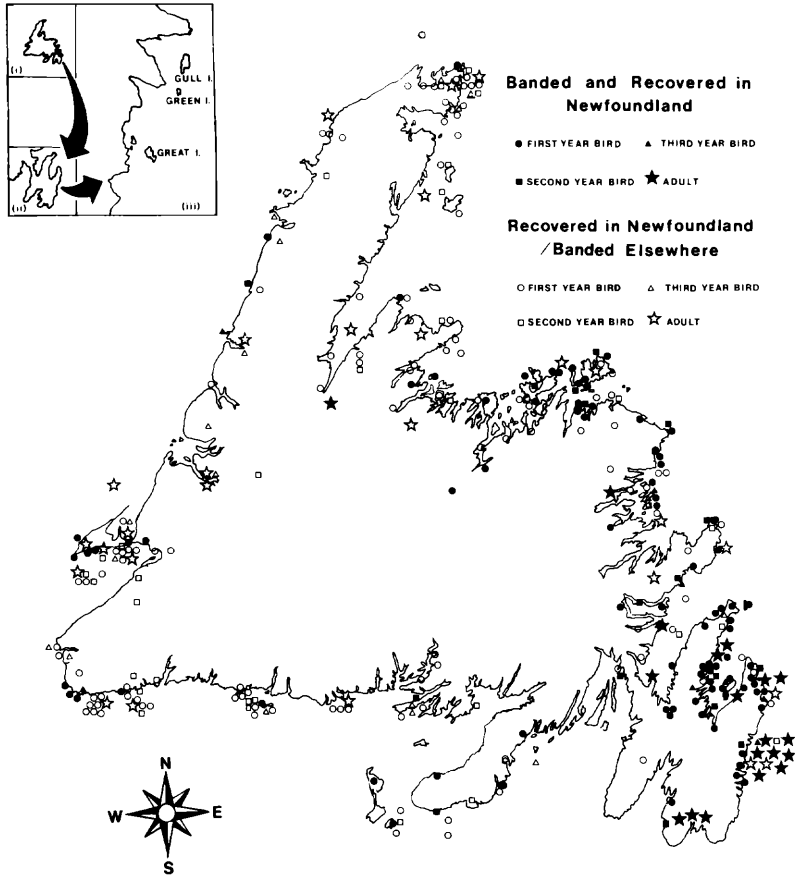

FIGURE 1. Inset shows (i) the island of Newfoundland, (ii) the Avalon Peninsula, (iii) the Witless Bay Sea Bird Sanctuary. Main map shows the location of recoveries of birds banded in Newfoundland, with regard to age of the bird at the time of recovery. Also shown are locations of recoveries of birds banded outside Newfoundland. Each symbol represents a single recovery.

cluding 13 banded by LMT) have been recovered to date, including 147 first-year birds (61% total birds recovered), 45 second-year birds (19%), 17 third-year birds (7%), and 31 adults (13%). Fifty-eight percent (140) of the birds were recovered in Newfoundland (Fig. 1) whereas the rest (42% = 100 birds) were taken in other Canadian Provinces and the United States (Fig. 2). No significant difference was found in the number of birds recovered from each island (Gull 1.9%; Green 1.1%; Great 1.3%).

First-year Birds

Herring Gull chicks start to leave the colony in late summer (Fig. 3) at which time there appears to be a general dispersal with many birds

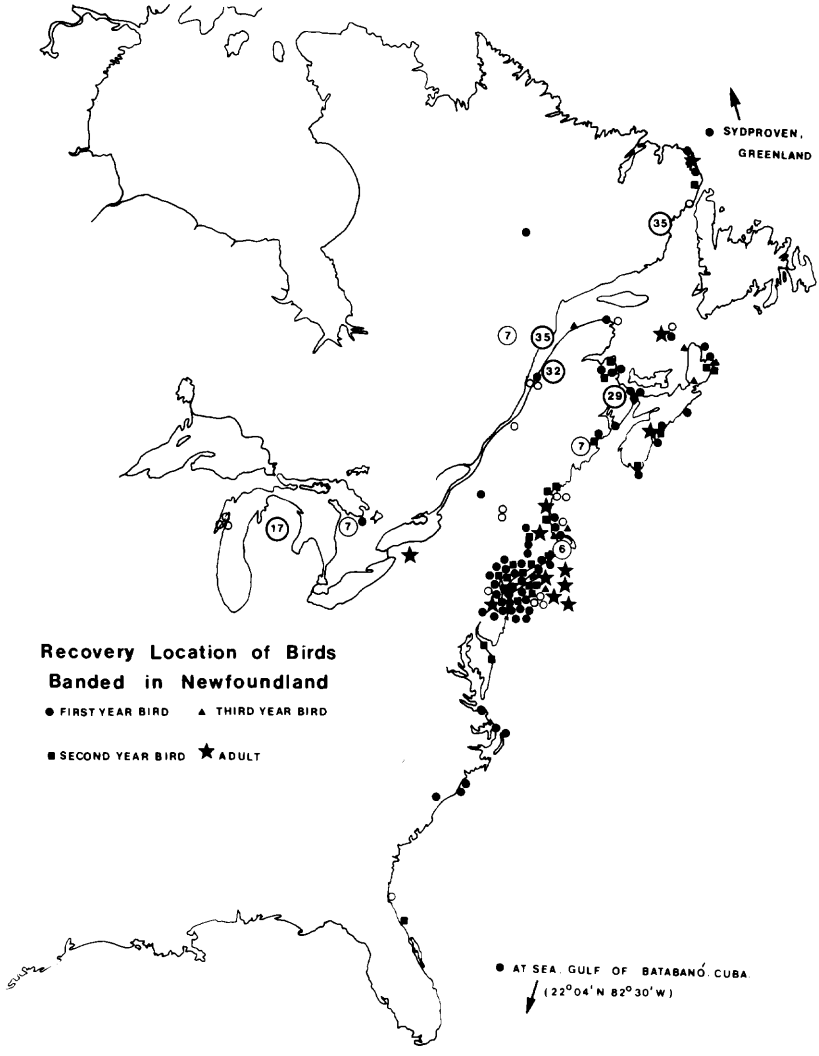

FIGURE 2. Details of recovery locations of Newfoundland banded Herring Gulls (recoveries of birds banded in the Province are omitted because they are detailed in Fig. 1). Each symbol represents a single recovery. The small open circles show the location of banding of a bird that was banded outside Newfoundland but recovered therein. Large open circles, plus a number, indicate the number of birds from a particular area that have been recovered in Newfoundland.

moving northward (one bird recovered in Sydproven, Greenland). Smith (1959) and Moore (1976) both noticed a trend for northward movements of juvenile and 1-year-old Herring Gulls, with the latter author relating the trend to the existence of numerous lakes and rivers in the area. Templeman (1948) notes that caplin (*Mallotus villosus*) spawn

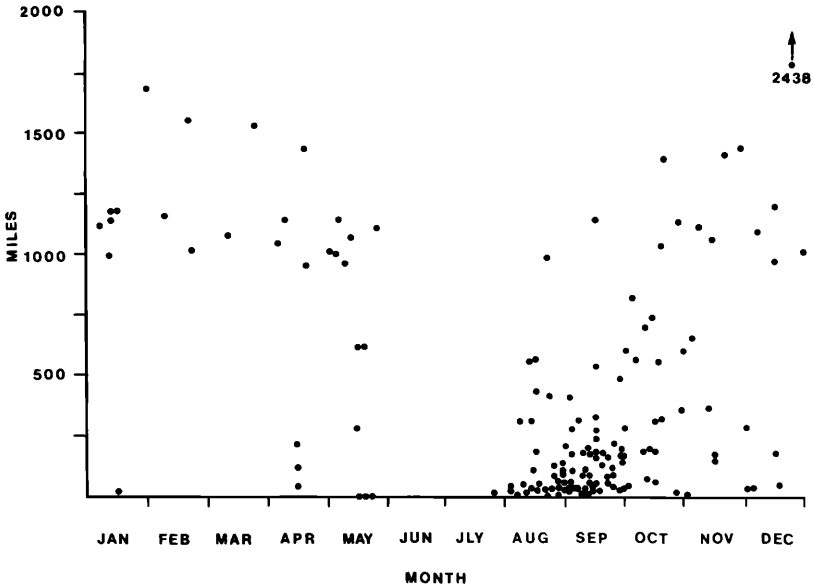

FIGURE 3. Distance of recovery of first-year Herring Gulls from colony where banded, as related to time of year.

in northern Newfoundland and Labrador from mid- to late June until the end of August. Possibly young gulls from Witless Bay move northward when they leave the colony to utilize this abundant and easily obtained source of food. By winter the birds are on the average 900 miles away from the colony (Table 2), the majority being in the New York Region. In the following spring many birds were recovered at distances in excess of 1,000 miles from the colony, the mean distance being somewhat lower (808 miles) due to the inclusion of seven birds that were recovered within 500 miles of the colony. The latter specimens probably perished the previous fall but were not found until the spring. Seventy-four percent of the recovered birds in this age class were recovered within six months of banding. Few first-year birds are seen in the vicinity of the colony after the second week in August; possibly these birds move to the eastern seaboard of the United States where they remain for a period of up to three years before returning to breed in the colony where they were reared.

Second-year Birds

Only one banded second-year bird was recovered in the colony, the next nearest being a bird taken some 35 miles from the area. Table 3 details the mean distances of recovery, as related to direction (in degrees from True North), from the banding site.

TABLE 2

By season, the mean direction (in degrees from True North) and mean distance (miles) from Witless Bay of first-year Herring Gulls that were recovered.

Time of year	Mean direction[1] (mean distance)					Mean distance (miles) from banding site
	0–45°	180–225°	225–270°	270–315°	315–360°	
Summer	0 (25)[2]	214 (21)	261 (435)	292 (142)	337 (159)	221
Fall	11 (23)	190 (24)	229 (726)	282 (394)	333 (128)	329
Winter	0.22 (23)	— (—)	232 (1,271)	282 (169)	328 (110)	900
Spring	0 (0)	— (—)	253 (1,138)	274 (480)	328 (234)	808

[1] None recovered in the 45°–180° block.
[2] One specimen recovered Sydproven, Greenland (962 miles, 14° heading) not included.

Third-year Birds

Relatively few birds in this age class were recovered and none were taken in the colony at Witless Bay. Table 3 shows that birds of this age group were recovered an average 410 miles from the colony. Casual observations indicate that the proportion of birds in this category that are present in the sanctuary during the months May–September, rose from approximately 2% of the total population in 1966 to 10% in 1972. The reasons for this phenomenon are unclear, but perhaps are a reflection of the rapid growth of the colony.

Adults

Adult birds were recovered in two main areas, namely within a 40-mile radius of the colony, during the months March–September, and

TABLE 3

The mean direction (in degrees from True North) and mean distance (miles) from Witless Bay of second-year, third-year, and adult Herring Gulls.

Age of bird (yr)	Mean direction[1] (mean distance)					Mean distance (miles) from banding site
	0–45°	180–225°	225–270°	270–315°	315–360°	
2	0 (15)	— (—)	253 (983)	290 (281)	334 (169)	640
3	0 (11)	— (—)	257 (787)	291 (394)	334 (76)	410
Ad	2 (2)	223 (47)	256 (879)	294 (246)	333 (129)	361

[1] None recovered in the 45°–180° block.

the Massachusetts/New York/New Jersey region in the November–May period. Fifteen birds (50% of this age class recovered) were recovered in the first area (six actually within the colony in which they were banded) and seven birds (23%) in the latter area. The mean distance of this age class from the colony (361 miles, Table 3) is lower than for any of the other classes. These results indicate that adult birds do migrate long distances each year but not as far as other age classes, and return to the colony where they were reared.

General Comments

It is of interest to note that of the 192 birds (116 first-year, 32 second-year, 18 third-year, 26 adults) that were banded in the Gulf of St. Lawrence and the Great Lakes Region colonies and were subsequently recovered in Newfoundland (Figs. 1 and 2), the majority were reported in the months of August, September, and October with smaller numbers being found from November to May. The evidence presented above supports Moore's (1976) suggestion of the existence of an easterly directional preference for birds from the Great Lakes Region. At this time (late summer and early fall) Newfoundland birds are moving out of the province to points that lie approximately WSW of the banding site. It is not unreasonable to suspect that the majority of the wintering population of Herring Gulls present in Newfoundland during the winter and spring are mainly birds from other regions and in particular from the aforementioned areas.

Further studies in this region will be carried out to determine the extent of immigration and emigration in the colonies and to note whether birds from colonies in different parts of the Province disperse to the same or different wintering areas.

SUMMARY

During the period 1966–1972, a total of 12,785 Herring Gulls were banded in the Witless Bay Sea Bird Sanctuary. Details of the numbers of birds recovered and their place of recovery are given. Data supplied by the Canadian Wildlife Service are also included. The movements of gulls within and away from the Province are discussed, as are differences in distribution related to age. Foreign-banded Herring Gulls recovered in Newfoundland are noted and discussed, with a suggestion being made that the wintering population of Herring Gulls in Newfoundland is composed essentially of birds from the Gulf of St. Lawrence and Great Lakes Region.

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ADDENDUM

Since this manuscript was written 21 more adult gulls and one third-year bird have been recovered. Three of the adult birds were taken outside the Province of Newfoundland as was the third-year bird. Eighteen adults were recovered within the Province, three actually within the colony. This new information adds to the comments concerning adults in the main body of the paper.

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REQUEST FOR INFORMATION

SHOREBIRD COLOR-MARKING

In 1978, the Canadian Wildlife Service will be continuing a large-scale program of banding and color-marking shorebirds in James Bay. During the past three years, over 30,000 shorebirds have been captured, resulting in more than 1,200 'bird days' of sightings of dyed birds ranging from eastern Canada to South America. Much valuable information on migration routes and strategies is being obtained and observers are again asked to look out for and report any color-dyed *or* color-banded shorebirds that they see. Reports should include details of species (with age if possible), place, date, color-marks and, if possible, notes on the numbers of other shorebirds present. For color-dyed birds, please record the color and area of the bird that was dyed. For color bands and standard metal leg bands, please record which leg the bands were on, whether they were above or below the "knee," the colors involved (yellow or light blue), and the relative position of the bands if more than one was on a leg (e.g., right lower leg, blue over metal, etc.). All reports will be acknowledged and should be sent to: DR. R. I. G. MORRISON, *Canadian Wildlife Service, 2721 Highway 31, Ottawa, Ontario Canada K1G 3Z7.*