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Fall Migration and Wintering Areas of First Year Herring Gulls from the Western Basin of Lake Erie

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ABSTRACT

Herring Gull (Larus argentatus) populations in the lower Great Lakes are declining. Knowledge of the migration patterns and wintering areas of gulls may provide insight to where management efforts may be best applied. Nesting Herring Gulls were banded in three colonies in the western basin of Lake Erie from 1981 to 2015 to determine their migration patterns and wintering areas. The main wintering areas for the gulls was located in eastern Lake Erie. Two other areas were noted along the Chesapeake Bay to New Jersey coast line and the western part of the Gulf of Mexico. Band recoveries showed three possible migration routes: the Saint Lawrence Seaway, overland through central New York, and the Ohio/ Mississippi River system. Efforts to stabilize the Lake Erie Herring Gull population should be focused on the Lake Erie breeding colonies.

INTRODUCTION

Herring Gull (*Larus argentatus*) populations in the lower Great Lakes and Saint Lawrence plain have decreased approximately 3.9 % per year from 1966 - 2013 (Sauer et al. 2014). Since the late 1990s I have seen the Herring Gull colonies in the western basin of Lake Erie decline due to changes in vegetation and predation at the colonies. Trees have invaded former open areas and clutches have disappeared before completion. The Clinton Reef colony and Cedar Point sites are still active to a lesser degree but fledge almost no gulls. Knowledge on dispersal and areas used by these gulls throughout the life cycle are important for their management. Numerous studies on Herring Gull migration, primarily from the upper Great Lakes, have been completed (Smith 1959, Moore 1976, Weseloh 1984, Gabrey 1996) yet little is known about select

colonies, especially those in Lake Erie. I report on the fall migration and winter band returns resulting from a long-term banding study conducted at three Herring Gull colonies in Lake Erie in order to give insight as to where these gulls spend the winter.

METHODS

Nestling Herring Gulls were banded at three colonies in the western basin of Lake Erie (Clinton Reef [413-0825], Sandusky Bay Turning Point [412-0824] and Cedar Point [412-0824]) from 1981 to 2015. All three colonies are on man-made locations, one an island and two stone break walls (Buckingham and Bacak 2011). Two colonies, Sandusky Bay Turning Point and Cedar Point, are located near Sandusky, OH. The Clinton Reef colony is located near Port Clinton, OH.

Nestling Herring Gulls, one- to three-weeks-old, were banded with size 6 U.S. Geological Survey (USGS) bands on their right leg during the breeding season of May and June of each year. Only recoveries of gulls going through their first winter were used in the analysis. Recoveries during September through November were assumed to reflect migration routes (hereafter referred to as fall migration) and recoveries from Dec, Jan and Feb (hereafter referred to as the wintering area) were used to define the wintering areas. Gull recoveries with a USGS Bird Banding Laboratory "How obtained" code of 50, 56, 70, and 98 were not used due to the lack of reliable data. Gulls recovered within 10 mi [= 16.1 km] of the shoreline of Lake Erie were considered part of the lake's recovery zone.

RESULTS

A total of 25,237 nestling Herring Gulls were banded at the three nesting colonies. Recoveries throughout the study were reported on 366 gulls (1.45%) of all ages of which 99 were banded as nestlings (0.4%) and recovered during their first migration and first winter. Recoveries of Hatching- Year gulls were located up to

1870 km from their natal colony. During migration, a total of 75 encounters occurred in September (32), Oct (27) and November (16). Recoveries during the winter months accounted for 24 reports.

In September, 72% (23) of the recoveries were in Lake Erie, with most gulls found in the west end of the lake. Gulls were also found on the south side of Lake Ontario (3), central New York State (2), the Vermont / New Hampshire boarder (1), New York City (1), the New Jersey shore (1) and the interior of Nova Scotia (1).

During Oct, 63% (17) of the recoveries were located mainly in the east end of Lake Erie. Five gulls were located on the north side of Lake Ontario; in addition, one gull was reported in the city of Ottawa, Ontario. Three additional gulls were found inland, one in Ohio and two in Ontario, and one gull was found in the north end of Chesapeake Bay.

In November, 12 gulls (75%) were recovered on Lake Erie with the majority being located in the western end of the lake. One gull was found in the west end of Lake Ontario and another was found along the St. Lawrence Seaway at Montreal, Quebec. A single gull was found near the Ohio River in southwest Ohio and one on the east shore of Lake Huron.

The winter recoveries were concentrated in the following three areas: eastern Lake Erie (11 birds), the west end of the Gulf of Mexico (4 birds) and the Chesapeake Bay/ New Jersey coast (3 birds; see Fig. 1). Although recoveries were concentrated in these areas, gulls within these areas were encountered randomly throughout the 34 years of data collection. The remaining six birds were recovered one each in Florida, Texas, Arkansas, and Ohio and plus two in Michigan. All recoveries were associated with large bodies of water, such as oceans, the Great Lakes or large lakes or rivers.

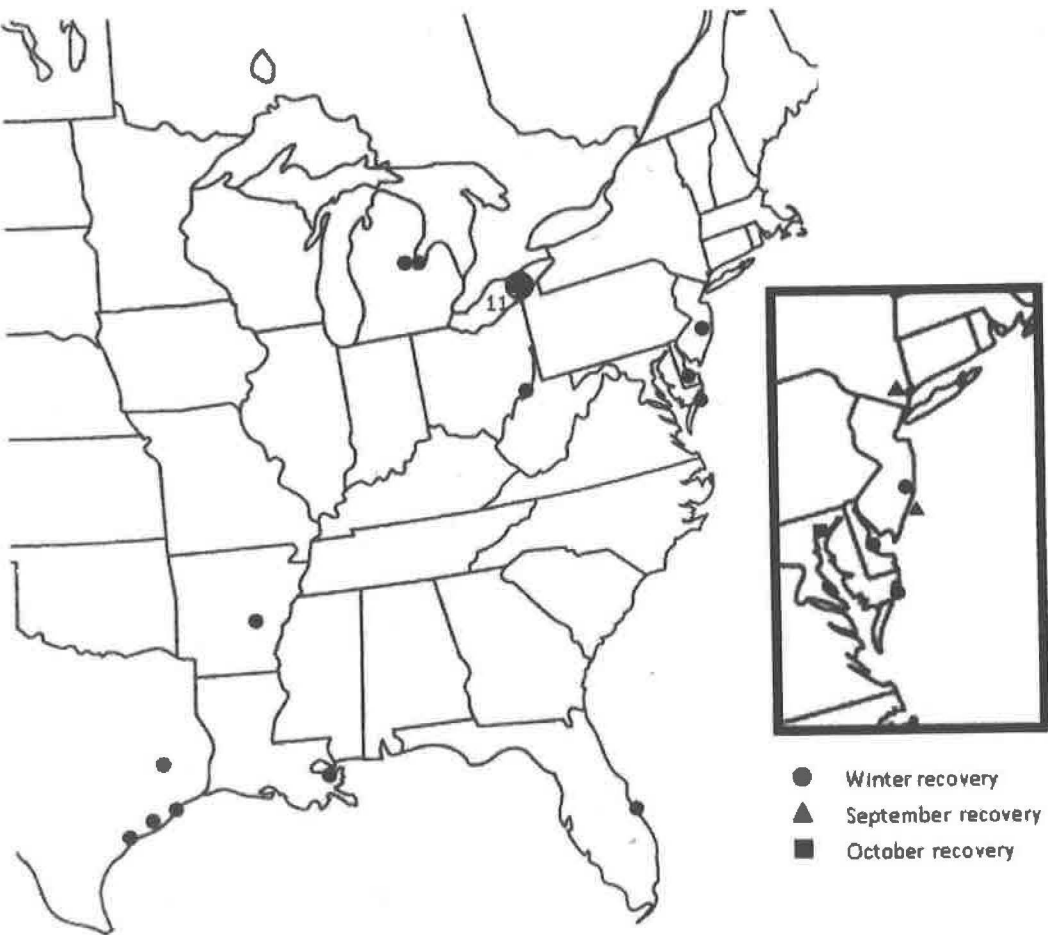


Fig. 1. Winter recoveries and select migration recoveries of Herring Gulls banded at Lake Erie.

DISCUSSION

Food availability, winter severity, and landfills can affect fall migration and where a gull spends the winter (Kihlman and Larsson 1974, Patton 1988, Hebert 1998). In a typical winter, Lake Erie is predominately ice free in the eastern end where deeper water, major tributaries, and a dominant southwest wind offer open water and feeding areas. Most adult gulls remain in Lake Erie, whereas first year gulls tend to migrate away from the lake (unpublished data, Gabrey 1996). However, Lake Erie remains an important wintering area for hatching-year gulls as I have had a 46% recovery rate, while others have reported lower rates of recovery (36% by Moore 1976; 44% by Gabrey 1996).

Some studies suggest fall migration starts in November (Moore 1976, Gabrey 1996) but data from this study shows some migration starting as early as September. Over 28% (9 gulls) of the September recoveries were outside of Lake Erie with three of the nine migrating gulls making it to the Atlantic coast.

Within Lake Erie, I noted a departure from the west end of Lake Erie during early September, as some gulls moved to the east end of the lake, a distance of about 220 km. In addition, some moved to the south side of Lake Ontario. September recoveries outside of Lake Erie had an average distance of 649 km. Recovery data suggest some juveniles have an early migration out of the Lake Erie/Lake Ontario area via an overland route through New York state to the Atlantic coast. The large rivers and lakes of this area offer good corridors for migration. Studies have shown that most inland recoveries are associated with large river systems (Gross 1940, Smith 1959). Two juveniles were found in September on the same central New York lake system that supported an adult during the breeding season (Buckingham and Bacak 2011). Another juvenile gull recovered in September was located on the Hudson River in New York City.

The 386 km long Mid-Atlantic coast spanning from Chesapeake Bay to New York City also had recoveries during September and October suggesting that some gulls migrate here but do not survive to the winter months (see inset of Fig. 1). Assuming that the September and October recoveries in this area were

traveling here to winter, this coast line would account for 25% of the wintering gulls. Except for one gull found south of Cape Canaveral, FL, all recoveries from September to the end of February on the Atlantic coast were reported in this corridor. Since Herring Gulls feed primarily on bodies of water, the Atlantic coast line offers an ideal wintering area. Threlfall (1978), in a study of Herring Gulls dispersal from Newfoundland, also found a large concentration of recoveries within the Delaware to New York City region.

The west end of the Gulf of Mexico from Texas to Louisiana was another wintering concentration for Lake Erie gulls. In addition to the four gulls recovered in this area, there were two inland recoveries in Texas and eastern Arkansas that while not on the Gulf coast, also supports a movement toward the western Gulf. I also had two recoveries at South Padre Island, TX, that were on skeletons; therefore, I did not use them in my analysis but they do indicate that the gulls had visited the Texas coast. If you add in the all the extra reports near the gulf, the west end of the Gulf of Mexico shows this is an import wintering area. Both of these inland reports were in areas of large lakes. Again, these reports were spread out over the duration of the study. Other studies (Gross 1940, Moore 1976, Threlfall 1978, Gabrey 1996) have shown the Gulf of Mexico as an important wintering area with no one area showing a concentration of recoveries. No recoveries were reported during the fall migration that would suggest a route to the gulf. However, since four different gulls were recovered in October, November and January on rivers that lead into either the Ohio or Mississippi River which may indicate they are likely corridors for gulls traveling to their wintering grounds of the Gulf of Mexico.

The Saint Lawrence Seaway offers a natural migration route to the Atlantic coast from Lake Erie. Studies have shown recoveries along this water path and its tributaries (Hofslund 1959, Smith 1959, Threlfall 1978). Threlfall (1978) reported that most recoveries occurred in this region between August and October. I found a similar pattern with four recoveries beginning in October on the north side of Lake Ontario as well as one on the Ottawa River near the Saint Lawrence River.

Despite the low numbers of recoveries in this study, data from my banding program generally corroborates that

from other studies examining Herring Gull migration from the Great Lakes. Although over half of the Hatching-Year gulls migrate out of the Lake Erie region, a sizeable proportion of the Lake Erie bred birds remain in this region, thus management efforts to stabilize the population may best be applied within this area. Wintering areas along the Saint Lawrence River, Mid-Atlantic and Gulf of Mexico coast not only play host to a much smaller number of Lake Erie gulls but the area of use is spread throughout the associated regions thereby making management efforts more difficult to implement.

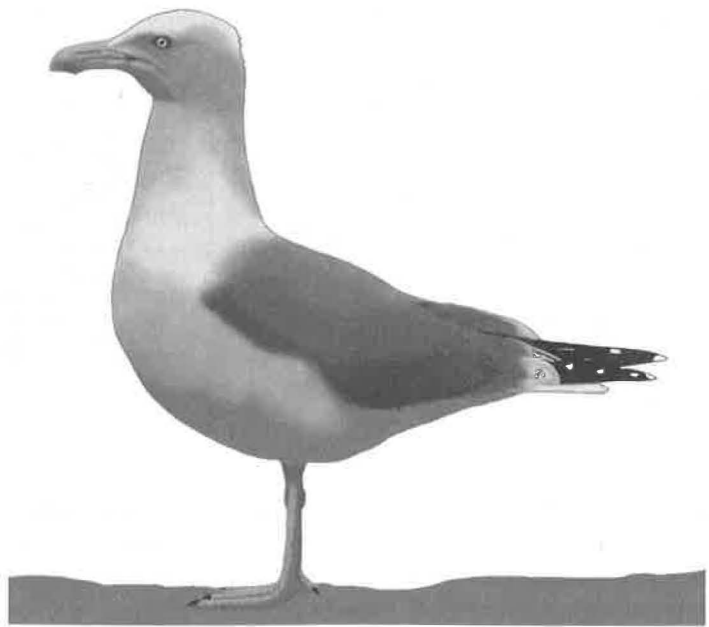
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Herring Gull
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