

The Piping Plover in the Great Lakes Region

*A review of the current status and historical population of this
Blue-listed species*

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IN RECENT DECADES the Piping Plover (*Charadrius melodus*) has disappeared from much of its range in the Great Lakes region. At one time the species bred from Thunder Bay and Duluth on Lake Superior locally as far east as the headwaters of the St. Lawrence River and south to the Indiana Dunes and Ohio shore. Currently, viable but apparently decreasing populations exist only in Michigan's Upper Peninsula, at Wilderness State Park on the Straits of Mackinac, and on some of the offshore islands in northern Lake Michigan. The species is nearing extirpation in the Duluth-Superior region of western Lake Superior and recently disappeared as a breeding species from southern Ontario.

The Piping Plover readily lends itself to censusing during the breeding season. Normally it occupies wide, open beaches with little brush, debris, or coastal vegetation and is usually absent from narrow bluff-lined beaches, shingle, rocky, or clay shores, and heavily disturbed sites. Several researchers have recently undertaken Piping Plover breeding counts and have published the results (Ontario - Miller, 1977; Lambert and Nol, 1978; Michigan - Lambert, 1981; Saskatchewan - Renaud, 1979; Atlantic coast - Cairns and McLaren, 1980).

The Great Lakes and Atlantic coastal surveys found that the plovers are now gone from large areas of their former range including southern Gaspé, Sable Island off Nova Scotia, and sections of Long Island, New York, North Carolina, and much of Ontario. Clearly a review of the species' status in the entire Great Lakes region was warranted.

Current breeding figures are based upon recent surveys and correspondence with knowledgeable persons with historical figures based upon counts taken at known breeding sites and an estimation of the number of pairs breeding in suitable habitat where breeding documenta-

tion was absent. Suitable habitat was based upon observations from periodic field trips in the 1963-1982 period, through correspondence, and through maps and aerial photography of the U.S. Geological Survey and the Department of Energy, Mines, and Resources in Ottawa, Canada.

Compared with recent population esti-

mates (Cairns and McLaren, 1980) my estimates may appear to be unduly conservative. However, large segments of Great Lakes shoreline, while apparently suitable plover habitat are, for some unknown reasons, quite sterile for shorebirds. The eastern shore of Lake Michigan has always impressed me with its paucity of migratory shorebirds as com-



Piping Plover. Photo/Harry N. Darrow.

pared to the western shore I believe some of the answers to this can be found in the physical structure of the beaches, and in the prevailing westerly winds which may, at times, dump large quantities of food-filled aquatic vegetation on the eastern shore, but which more often sweep the beaches clean of apparent food. Lambert (1979, *pers. comm.*) noted that the presence of river or stream outlets, lagoons, or coastal storm ponds increases attractiveness of sites for breeding plovers. Many of these sites are no longer present along the Great Lakes owing to draining and filling by man.

Historical estimates are for the period before 1940 when recreational usage of beaches was less in most areas. That the plover had by this time recovered from the impact of 19th century hunting is likely but debatable.

MINNESOTA

MINNESOTA'S SMALL Lake Superior population in the vicinity of Duluth harbor leads an increasingly tenuous existence. Port terminal development is currently eating away the main breeding habitat (perhaps the only site) and may be the primary cause of the population's recent decline. During the 1970s the Duluth breeding population ranged from three to seven pairs annually with about five pairs the average. The peak count recorded in recent years was 19 in May 1976 (*The Loon*, 1977). Since that time a steady decline has occurred with only 1-2 pairs present in 1982, neither of which was known to be successful. A proposal attempting to establish a population on an artificial island in the harbor has recently been studied but such an effort may already be too late to save this isolated population.

On rare occasions a pair may breed on the Lake Superior or even the harbor beaches of nearby Park Point but high water levels and recreational use in recent years may have eliminated this possibility. Historically, this species was not known to nest along the Lake Superior shoreline before 1926 when Roberts (1932) found a few birds at Duluth Harbor. The plover's presence in this area may be entirely an artifact of the man-made environments in the harbor region. A significant number of Piping Plovers breed far inland on Lake-of-the-Woods and scattered pairs are known to have bred elsewhere on shores of some of the larger northern lakes. The majority of

this population is far separated from the Great Lakes' population and more properly belongs to the healthy northern Great Plains population.

WISCONSIN

THE PIPING PLOVER is nearly extirpated in Wisconsin. According to Ruth L. Hine (D.N.R. Endangered Species Chairperson, *pers. comm.*, 1979), two and possibly three pairs nested along the Lake Superior shoreline in 1977 but apparently only one pair in 1978. In 1979, three nests were found in the Ashland area. Since 1980 the population has remained at 2-3 pairs in two widely separated localities with never more than one nest found annually since 1980. A single bird at another locale may indicate a third breeding site but the total state population probably does not exceed 10 birds. The species' continued presence in the state appears extremely tenuous.

Historical information is sketchy for most of Wisconsin but scattered pairs apparently bred along the Lake Superior shoreline from the Illinois state line north to the Door County peninsula and along sections of Green Bay. There are known breeding records from Door County, Green Bay, Milwaukee, and Terry Andrae State Park near Sheboygan. Plovers have nested in the past on Lake Superior in the general vicinity of Ashland (mainly Apostle Islands) and in the Superior region where a pair has occasionally been present in recent years, probably strays from the Duluth Harbor population. Human disturbance along the Lake Michigan shore is extremely heavy from Door County south to the Illinois line but is still localized along Lake Superior. High water levels now maintained by the U.S. Army Corps of Engineers for shipping at Sault St. Marie, Michigan have caused heavy clay bluff erosion along the south shore of the lake, eliminating miles of what may have been only marginal habitat.

An estimate of the historical population along Lake Superior is difficult and an educated guess at best. Perhaps 10 pairs bred in the Ashland-Long Island-Chequamegon Point area, two pairs in the Superior-Wisconsin Point complex, and a scattered few pairs at river mouth-lagoon sites in between the known two sites, for a total estimated Lake Superior population of no more than 20 pairs.

Concentrations of breeding pairs on the Lake Michigan shoreline were known

only from Terry Andrae State Park. The seldom-birded and formerly very undisturbed shoreline south of Menominee offered numerous lagoons and river mouth bar sites attractive to plovers but few actual records exist. Many of these sites are shingle beaches and the extent to which plovers utilized this habitat is largely unknown. A "guesstimate" for this shoreline north of Green Bay is 25 pairs.

Inland in southern Wisconsin a small isolated population existed in the late 1800s at Lake Koshkonong, a once-famous waterfowl and shorebird area located where the Rock River widened. This site became unsuitable when the river was dammed many decades ago (Kumlein and Hollister, 1903).

Along the Lake Michigan shoreline suitable habitat was likely limited to river mouths, the dunes region at Terry Andrae State Park, and possibly in extreme southeast Kenosha County where marginal habitat existed. Elsewhere suitable breeding habitat seems limited by the narrow bluff-lined beaches and forested shore. A maximum of 25 to 50 pairs seems a reasonable "guesstimate" for this section of the state. The total estimated population for the state would be on the order of 70 to 95 pairs.

ILLINOIS

SUITABLE BREEDING habitat in coastal Illinois was perhaps limited to the Illinois Dunes region ranging from the city of Waukegan north to the Wisconsin border, and in the vicinity of the great marshy lakes, Wolf and Calumet, that flowed into Lake Michigan near the Indiana border. Some plovers may also have bred at the mouth of the Chicago River and in the Rogers Park section of Chicago's northside as early photographs and accounts of these sites depict dune-lands and broad sandy beaches, but these areas were developed long before adequate ornithological investigations occurred. Other Illinois beaches were bluff-lined and too narrow for suitable plover habitat.

According to Nelson (1876) "It is a very common summer resident along the lakeshore, breeding on the flat pebbly beach between the sand dunes and shore . . . Some 30 pairs were breeding along the beach at this place (Waukegan) April 24, 1876, within a space of two miles, and I afterwards found the birds as numerous at several points along the shore."

By 1956, Edward R. Ford was calling the species an "uncommon summer resi-

dent'' but Ford's manuscript was published posthumously and the Piping Plover was already near extirpation. According to local birders, dramatic declines in the Illinois Dunes population occurred in the 1940s, closely paralleling both military and recreational buildups in this area. By about 1955 the species had disappeared from the Illinois Dunes region. It persisted for a few more years in the heavily industrialized Lake Calumet-Wolf Lake region until fill and diking operations destroyed the little remaining habitat. A pair may have bred as late as 1961 at Wolf Lake where I observed two birds during July. In 1973 a pair nested at Waukegan, the first positive nesting in the state since 1955. The birds bred at least one time since then but normally only single individuals have summered and no breeding population now exists within the state. Several miles of suitable beach habitat remain in the southern part of Illinois Dunes State Park but a large population of summering gulls and lack of recruitment possibilities may preclude any plovers from establishing a breeding population.

The size of the historical population may seem high considering the localized habitat but the low dunes and broad beaches are optimum habitat for this species and Nelson's (1876) estimates were likely accurate. Perhaps 100 pairs bred in the Illinois Dunes region, five to ten pairs at Wolf Lake-Lake Calumet, and 20 pairs elsewhere along Lake Michigan for an estimated 125 to 130 pairs in the state.

INDIANA

FORD (1956) NOTED the plover as an "uncommon summer resident." Nesting records exist for the Indiana Dunes and Miller. Other historical information is sketchy but Indiana had some of the best plover habitat on southern Lake Michigan with numerous dune areas, wide beaches, and in some sections coastal lagoons and ponds (formerly, at least). It is possible that the Piping Plover was present along the entire shoreline from the Illinois state line eastward to the Michigan state line but likely did not concentrate along this very regular stretch. An average along such a shore might minimally be about two pairs per mile or somewhat over 100 pairs for the state.

The major decline in the breeding population apparently occurred in the 1940s and 1950s with the species nearly extirpated by 1960. A possible nesting oc-

curred near Dune Acres as late as 1963 (Robert Pringle, *pers. comm.*). The plover was apparently able to coexist with moderate numbers of human residents in the 1940s and 50s but by the late 1950s recreational usage, particularly by Chica-goans, had become increasingly heavy. There is little chance the species will return to the area despite establishment of the Indiana Dunes National Lakeshore which preserves some fine habitat, but where no steps have been taken to set aside any beach for "non-human" use.

MICHIGAN

THIS STATE'S SHORELINE, bordering upon four of the five Great Lakes, historically provided habitat for large numbers of Piping Plovers. Only a remnant population now exists with most of it confined to offshore islands, lonely beaches, and state parks in the northern third of the state. Islands in Lake Huron where the species once bred, no longer have populations and the species has abandoned the excellent duneland habitat of the Sleeping Bear region on the Leelanau Peninsula and the Ludington Dunes.

A 1979 breeding survey of perhaps 95% of potential Michigan habitat found a population of 31 pairs and 14 single non-breeding adults (Lambert, 1979, *pers. comm.*). Most of this remnant population was restricted to Wilderness State Park near the Mackinac Bridge, on offshore islands in Lake Michigan, and along the Lake Superior shore of the Upper Peninsula. Most of these birds were found in typical habitat for the species, fairly wide, sandy, unvegetated beaches. At least ten of the pairs showed a preference for habitat within 50 meters of a beach pool, lagoon, or channel, probably because of the additional food resources available.

Since 1979 a steady decline has been observed in the Michigan population. D.N.R. personnel recorded 17 pairs in 1981 and only 14 pairs in 1982. Breeding success at the Wilderness State Park has not been high. Conflicts between beachgoers, their dogs, and the plovers have been noted and the state seems reluctant to take the necessary step of closing a portion of the beach to human entry to protect the breeding plovers.

An estimate of the historical population size is exceedingly difficult owing to the large areas of potential or once probable habitat. In the Upper Peninsula potential habitat existed from the Wisconsin

border along the northwestern Lake Michigan shoreline as far east as the Straits of Mackinac and along the Lake Superior shore from Whitefish Point west to the Pictured Rocks region. Perhaps 25 to 50 pairs bred historically in the Upper Peninsula. Breeding records exist from Delta, Schoolcraft, Mackinac, Chippewa, Luce, and Alger Counties (Cottrille, 1957; Lambert, 1979, *pers. comm.*).

In the Lower Peninsula offshore islands in Saginaw Bay, northern lake Michigan, and on Lake Huron in Alcona County once provided good refuges but only a remnant island population now remains in northern Lake Michigan. This island population may have numbered 25 pairs at one time but no evidence exists to show that major populations once occurred there. On the Lower Peninsula mainland several hundred miles of potential habitat once existed. Much of this area may now have too high a human summer population to be suitable for breeding plovers, but certainly may have been inhabited by the birds in the past. Breeding records are known for the following Lower Peninsula counties: Berrien, Muskegon, Benzie, Charlevoix, Emmet, Cheboygan, Presque Isle, Alcona, Tuscola, Huron, Macomb, and Monroe (Cottrille, 1957; Lambert, 1979, *pers. comm.*; Kelley, 1978; and Wood, 1951).

The only major concentration site known was Wilderness State Park in Emmet County. Elsewhere scattered pairs of plover likely bred in much of the available habitat. The Lake Huron population may have been in the 30-40 pair range while the Lake Michigan population could have been as high as 75-100 pairs, perhaps much higher. Barrows (1912) noted that "this little plover is found everywhere along the shores of the Great Lakes during summer, and probably breeds wherever conditions are suitable."

The decline in the Michigan population certainly seems related to increased usage of the beaches by humans. Cottrille (1957) noted that such impact eliminated Detroit's Metro Beach as a nesting site and Lambert and Ratcliff (1979) noted "We conclude that human disturbance of breeding activity is probably responsible for the plover's decline." The latter authors found evidence of low reproductive success at Wilderness State Park where the nesting habitat received the highest frequency of human usage of any of the breeding sites encountered on their 1979 survey.

Much of the Piping Plover population decline occurred in the 1940s and 1950s when vacation beach homes were built by the thousands and the Piping Plover retreated either to large peninsulas such as Long Point, Ontario or to northern, perhaps marginal habitats where cold waters and air temperatures discourage beach visits before early June, such as at Wilderness State Park. In such areas plovers have a better chance to bring off a first brood than in more southerly latitudes.

Additional factors detrimental to the species are no doubt contributing to the recent decline. Increasing gull populations (mainly Great Black-backed and Ring-billed) and high populations of raccoons, particularly at state parks which once offered a modicum of protection for the species, are often mentioned as major problems. State and provincial conservation departments, only recently concerned with the preservation of nongame species, seem particularly reluctant to deal with a species that may require beach closures during the breeding season and an interpretive program to explain such action to the general public. Recognition of the plover's status has come very late, if at all. For example, in Michigan the species was only recently designated a threatened species while its status is quite clearly endangered statewide.

OHIO

THE PIPING PLOVER disappeared from southern Lake Erie's shores somewhat earlier than from the other lakes. Heavy industrialization and a high human population in the area left no undisturbed beaches within the state by the 1940s. In addition, high populations of summering gulls might have contributed to the demise of the species which has been noted at Long Point, Ontario (Lambert, 1979, *pers. comm.*). Breeding records are known from Lucas, Ottawa, Erie, Lorain, Lake, and Ashtabula Counties along the Lake Erie shoreline and on the Lake Erie islands (Bent, 1928; Kelley, 1979, *pers. comm.*).

Few descriptions of past population levels exist but the mostly regular shoreline and lack of significant dunelands precluded any major concentrations. Nevertheless, the wide distribution of breeding records indicates that the plover was historically a breeding species along much of the Ohio shoreline. Ohio at one time had a fairly broad stretch of beach along much of the shoreline. Hicks

(1935) noted that the plover was "most numerous on the sand dunes and beaches of the mainland and islands . . . where perhaps as many as 25 pairs have nested in some years."

Campbell (1940) noted that a small colony on Little Cedar Point comprised three pairs in June of 1935 and he noted two nests with eggs in 1938. No evidence exists that the plover persisted as a breeder after the latter date.

The recent drastic decline of the species in the Pt. Pelee-Long Point area on Lake Erie's northern shores and the continued heavy recreational activity along Ohio beaches would seem to eliminate any future reestablishment.

An estimate of the historical population is difficult owing to the lack of quantitative data from the past, but the wide distribution and the similarity of the shoreline to Indiana's might put the former population in the range of 50-100 pairs. No plovers are known to breed in Ohio at present.

PENNSYLVANIA

TODD (1940) NOTED that "About 15 pairs of this interesting little plover nest annually on the outer shores of Presque Isle, where I have often met with it in May and June." However, when Poole (1964) published his checklist, the species had been extirpated from the state, apparently disappearing in the 1950s. Presque Isle is now a high usage recreation area in summer and there is nearly a total absence of source birds on the eastern Great Lakes from which a new colony might be established. Presque Isle was the only known Pennsylvania breeding locale on the very short Great Lakes shoreline and thus the population noted by Todd was probably a reasonable estimate for the state.

NEW YORK

BULL (1974) SUMMARIZED the history of the species on Lake Ontario: "The history of the bird as a breeder on Lake Ontario is restricted to three localities: (1) *North Pond*, Oswego County—in 1935, Hyde found 14 nests, each with four eggs, on bare sand in the hollows among the dunes. It last bred at that locality in 1948 according to Goodwin. (2) *Sandy Pond*, also Oswego County in 1935—Hyde found 12 breeding pairs. The last known nesting at that locality was in 1955. (3) *Little Sodus Bay*, Cayuga County—the only known breeding evi-

dence was procured by the indefatigable Sydney Hyde who discovered a single nest containing four eggs on a "shingle" (pebble) beach, June 18, 1936." I know of no recent breeding records and it appears that the Piping Plover may never return to Lake Ontario's shores except as a rare migrant. Although the habitat remains largely unchanged, heavy recreational usage continues (including four-wheel drive vehicles allowed on the beaches!) and the plover has been largely extirpated from the eastern Great Lakes

ONTARIO

THE PIPING PLOVER is classified as an endangered species within the province and has disappeared from most of its known breeding range (Lambert, 1979, *pers. comm.*). Nesting records exist for six sites in the Lake Ontario region, for eight sites on Lake Erie, and for at least four sites on Lake Huron. Scattered pairs likely bred elsewhere but disappeared before ornithologists visited the area. Inland, on Lake-of-the-Woods, in the far western section of the province, a few pairs of an apparently stable and thriving population live on sandy islands with a larger population on islands in the Minnesota section of the lake. This group is better considered as part of the Great Plains breeding population.

The last stand of the province's Great Lakes population occurred on the beaches of Long Point on Lake Erie. There, an estimated 1927 population of 100 pairs (perhaps high, as it was based upon an extrapolation for a 3-mile stretch of beach, Snyder, 1931) had dwindled to four pairs in 1972, 3-5 pairs in 1976, one pair in 1977 and six unmated males, three unmated males in 1978, and only occasional unmated birds since then. A search of beaches on Lake Huron and Ontario including the Bruce Peninsula and Manitoulin Island regions found no evidence of breeding or summering in 1980 and it is thought that the Lake-of-the-Woods population represents the last viable population in the province (Lambert, 1981, *pers. comm.*).

The recent downfall of the Long Point population was partially because of egg loss from gull predation (Miller, 1977), possible loss of eggs and young from raccoons and mustelids and an inability in the latter years of this population to recruit mates (Lambert and Nol, 1978). The decline in other areas is poorly documented, but it is probably more than coincidence that the species persisted long-

er in areas where human impacts were less severe than in beach areas adjacent to major metropolitan regions such as Toronto and Hamilton. While some controversy exists over whether human usage of a beach directly contributes to plover population courses, little doubt exists that large human populations are not compatible with a large plover population and some human-related impacts are detrimental including the presence of dogs and over-beach vehicles.

Historically, the Piping Plover was likely a common summer resident in the rather limited habitat along the four Great Lakes in the province with a few scattered pairs on inland lakes. Whether inland lakes ever supported a major population is unknown but likely doubtful (Quilliam, 1973). Perhaps the few inland records represented either an overflow population from the Great Lakes or an overshooting of the primary range in spring migration.

On Lake Superior a very few pairs likely bred in the Thunder Bay region. A few birds were known to nest on Manitoulin Island (Nicholson, 1981), on the Bruce Peninsula, and at Ipperwash Beach northeast of Sarnia, perhaps 10 pairs on Lake Huron. On Lake Erie breeding areas included Point Pelee, Rondeau Provincial Park, Long Point, and at several beaches between Niagara Falls and Dunnville. This area likely represented the stronghold of the Ontario population, possibly as many as 125 pairs at one time with most at Long Point. On Lake Ontario shores scattered pairs were known from Hamilton, Toronto, Presqu'ile Point, Consecon, and Rockport on the St. Lawrence River, probably no more than 15-25 pairs historically (Godfrey, 1966; Quilliam, 1973; McRae, 1982). A total estimate of the Ontario population is thus in the neighborhood of 152-162 pairs which may be slightly low but early ornithological investigations in the province were spotty with only a rough estimate now possible.

CONCLUSION

VARIABLE POPULATIONS of Piping Plovers on the Great Lakes now exist only in Michigan. The species appears to be extirpated from most of Ontario and on the verge of extirpation in Wisconsin and Minnesota. A few scattered pairs may still await discovery in Ontario and Michigan but recent surveys have likely found the bulk of the population. From an estimated historical Great Lakes breeding

Table 1. Breeding pairs of Piping Plovers in the Great Lakes region

State or Province	Estimated Historical Population (pairs)	1979 Census (pairs)	1982 Census (pairs)
Minnesota	0?	5-7	1-2
Wisconsin	70-95	2-3	2-3
Illinois	125-130	1	0
Indiana	50-100	0	0
Michigan	155-215 +	31	14
Ohio	50-100	0	0
Pennsylvania	15	0	0
New York	27	0	0
Ontario ¹	152-162	0	0
		unmated ♂s only	unmated ♂s only
Total pairs	492-682	38-42	17-19

¹q.v. McCracken, Bradstreet, and Holroyd, 1981, on the recent decline of the Long Point population.

population of 644-802 pairs, the population has drastically shrunk to a known breeding population of approximately 38 pairs in 1979 and only 17-19 pairs in 1982. The species has been extirpated from its once most concentrated breeding areas including the Illinois Dunes, Indiana Dunes, and Long Point, Ontario. Unless immediate measures are taken to afford more than minimal protection to the remaining birds, the Great Lakes population of Piping Plovers faces extirpation within the next decade.

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