

ST. LOUIS RIVER ESTUARY

COLONIAL BIRD PROGRAM

1988

Prepared for: Minnesota Department of Natural Resources
Nongame Wildlife Program

Prepared by: William L. Penning
Graduate Student
Dept. Fisheries and Wildlife
University of Minnesota
St. Paul, MN 55108
and
Francesca J. Cuthbert
Assistant Professor
Dept. Fisheries and Wildlife
University of Minnesota
St. Paul, MN 55108

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BACKGROUND

This is the sixth in a series of annual reports on the St. Louis River Estuary Colonial Bird Program. The purpose of this program is to provide long term nesting areas for Common Terns (*Sterna hirundo*) and Piping Plovers (*Charadrius melodus*) in the St. Louis River Estuary that are safe and secure and to establish breeding populations of terns and plovers that are self-sustaining. This program has been implemented by the Minnesota Department of Natural Resources (MDNR) and the Wisconsin Department of Natural Resources (WDNR), and is a cooperative project between the two states, as well as with other government and private groups.

The Piping Plover is Endangered in both states as well as federally. The Common Tern is listed as a species of Special Concern in Minnesota, Endangered in Wisconsin, and a species of Special Emphasis by the U.S. Fish and Wildlife Service.

It is assumed that the reader is somewhat familiar with this program; for that reason this report delves only briefly into the antecedent for, and the history of, the program. For more detailed information please refer to the earlier reports (Davis 1980, 1982, 1983, 1984, 1985, 1986, 1987). In 1977 a monitoring program of Piping Plovers, Common Terns, and Ring-billed Gulls (*Larus delawarensis*) was implemented to follow population trends of these species. A tern relocation program was formulated in 1978. By 1981 habitat management began on Barkers Island with the clearing of 8 acres. In 1983 13 acres were cleared on Herding Island. Habitat management began on Interstate Island in 1984 and has continued up to the present. In 1987 an eight acre portion of Wisconsin Point was acquired; Barkers Island was dropped from the management program due to failure of terns and plovers to use the island.

Another focus of the program has been activities to encourage the use of the prepared sites by Common Terns. To this end a complement of tern decoys and sound systems with recorded tern vocalizations were placed at each management site beginning in 1983 (Herding and Barkers Islands), and at Interstate Island in 1985 and Wisconsin Point in 1987.

Common Terns and Piping Plovers have nested at the Port Terminal for most years from 1970 to present. Unfortunately, breeding success has been extremely low at this site and probably will continue to be so because of problems with human disturbance and predation. Since 1985 terns have been actively discouraged from nesting at the Port Terminal as well as the Erie Pier Dredge Disposal site. Erie Pier is a non-traditional, yet very attractive site, with a high human disturbance factor. Because the incidence of tern-airplane collisions was increasing at an alarming rate tern discouragement activities were initiated at the Sky Harbor Airport site in 1986.

OBJECTIVES

The specific goals for the 1988 season were:

1. To coordinate program activities between the MDNR, WDNR, local government, Port Terminal Staff, U.S. Army Corps of Engineers, U.S. Coast Guard, U.S. Fish and Wildlife Service, and local interest groups and citizens.

2. To assist the MDNR and WDNR in implementing plans for the Herding Island, Interstate Island, and Wisconsin Point management areas.
 - a. To provide recommendations to the MDNR and WDNR regarding on-site vegetation management.
 - b. To implement plans to attract breeding Common Terns and Piping Plovers to the management areas.
 - c. To implement plans, if necessary, to discourage breeding by Ring-billed Gulls on the management areas.
 - d. To advise the MDNR and WDNR of need for predator control on the management areas and to assist in efforts to remove problem animals.
3. To discourage Common Tern use of traditional nesting sites that are highly disturbed and/or developed and where chance of breeding success is quite low (e.g., Port Terminal, Erie Pier, Sky Harbor Airport).
4. To census the Common Tern, Piping Plover and Ring-billed Gull nesting populations in the St. Louis River Estuary.

METHODS

The methods used this year were essentially the same as those used in 1987; exceptions included more intensive discouragement activities and the use of electric anti-predator fences at the Wisconsin Point site.

Discouragement Activities

Terns were discouraged from using the Duluth Port Authority, the Erie Pier Dredge Disposal site and Sky Harbor Airport. Discouragement was carried out by using two methods: human presence at potential nest sites during courtship and nest selection phases of the breeding cycle, and the use of Great Horned Owl (*Bubo virginianus*) decoys to compliment these efforts when investigators were not present.

The investigators walked, ran or drove to areas where the terns were congregating or attempting to land. Owl decoys were placed at difficult to reach areas or favorite landing places. Placing Ring-billed Gull carcasses in the "talons" of the decoys increased their effectiveness considerably. To minimize habituation by the terns to the decoys, the decoys were moved frequently.

Discouragement was initiated about 05:00 and continued until the terns left the site for the day, (about 10:00). Discouragement was started again in the late afternoon (16:00), and continued until dark (21:00). Most of these activities were carried out at the Port Terminal. Daily checks were made at Erie Pier and Sky Harbor Airport morning and evening throughout the

courtship period. However, the terns did not show much interest at these sites this year. Short periods of very intense discouragement were all that was necessary to prevent terns from using these areas.

Predator Control

Predator control was handled with a three phase approach: removal of Great Horned Owls and mammalian predators, and construction of electric fences to prevent access to tern nests. The MDNR and WDNR obtained permits to shoot Great Horned Owls from the Wisconsin Point/Minnesota Point areas, where problem owls lived in the past. A trapper was contracted to trap Wisconsin Point and Herding and Interstate islands prior to and during the nesting season. Herding and Interstate islands were not trapped this year as it was deemed unnecessary. Trapping was initiated on Wisconsin Point on 4 May and discontinued in early June; it was re-instated on 14 June after a cache of 20 Common Tern eggs was discovered.

This year prior to the arrival of the terns, the WDNR provided and installed a series of three electric fences of the type used for predator exclusion from duck nesting grounds. Two fences extended across the sand spit approach to the nesting area on Wisconsin Point; a third enclosed the primary nesting area on the tip of the spit. Each fence had three strands of "hot" wire and one ground. They were 30 to 60 cm high with the strands separated by approximately 5 to 15 cm gaps. Two 12 v marine batteries were used to operate the fences. Recharging was necessary every three to four weeks.

Attraction Activities

Attraction activities were carried out as in previous years. Common Tern decoys and solar activated sound systems which played tern vocalizations were placed at Interstate and Herding Islands and Wisconsin Point just after the terns arrived. The decoys were left in place the entire season. The sound system used to play tern vocalizations was stolen from Herding Island in late May and was not replaced. The other sound systems were in place until late June; they were removed after the terns settled on Wisconsin Point. Batteries were changed every ten days. It was necessary to keep extra batteries on hand and to stagger the changing times to ensure that the systems were running as much of the time as possible. Davis (1984) provides details on the operation of this system.

Censuses

On 27 May the Port Terminal and Minnesota Power Hibbard Plant Ring-billed Gull nesting colonies were surveyed using direct nest counts (Pettingill, 1985). Direct nest counts were also used to survey the tern nesting sites during peak incubation. For the second year there were no reports of Piping Plovers in the estuary, therefore no census was carried out. Other, traditional plover nesting areas were searched but no birds were sighted.

Observations

Throughout the nesting season all potential tern and plover sites were visited at least once a week. Active sites were visited at least every three days. Brief visits to the Wisconsin Point

colony were made weekly to check the contents of each nest.

RESULTS AND DISCUSSION

As occurred in the past several years, no terns fledged from any sites in the St. Louis River Estuary. Despite these results, we believe that progress is being made toward the goal of a self-sustaining population of Common Terns in the estuary. For example, this year, for the first time, terns were totally excluded from the unwanted sites, and most of the terns attempted to nest at the Wisconsin Point site for the second year in a row. In addition, headway was made in the area of predator control as it was not a major factor in nest failure this year. Unfortunately severe weather and fluctuating water levels played the primary role in eliminating the terns reproductive efforts.

Discouragement Activities

Ring-billed Gull

Once again no discouragement activities were conducted as no gulls attempted to nest at any of the management areas. However, a close watch was kept on the beaches in these areas as the use of these areas by gulls is rapidly increasing. As many as 1000 gulls were observed on Herding Island at one time; obviously this is a potential problem which warrants close monitoring in future years.

Common Tern

Due to implementation of both morning and evening discouragement activities this year, terns were prevented from using the Port Terminal, Erie Pier or Sky Harbor for the first time. This method is very labor intensive, but we believe that the benefits of keeping the terns out of these areas (where recent nesting success has been zero) definitely out-weigh the extra effort and cost. When terns become attached to the new sites, discouragement activities gradually will be phased out as birds will no longer attempt to nest at the old nesting locations. This seems to be the trend at Sky Harbor Airport; discouragement activities are minimal as long as they are initiated at the onset of tern courtship.

Predator Control

Great Horned Owl

In many of the previous years there have been problems with owls, either from direct predation or nocturnal disturbances which keep terns off nests for extended periods. Removal of two owls before the terns arrived completely eliminated these problems this year.

Trapping

A mink (Mustela vison), which was taking eggs at Wisconsin Point, was caught on 16 June, but only after it had cached and partially eaten 20 eggs. This individual seems to have been the only problem animal present. However, the unexplained disappearance of several nests from Herding Island may have been caused by mammalian predation.

Trapping efforts should be started earlier in future years, as early as mid-April if possible. For example, mink use the areas very sporadically and it may take several weeks to catch one.

Electric Fences

I believe they were very successful even though the mink was able to penetrate the electric fence system. Based on track observations the fences did turn back white-tailed deer (Odocoileus virginianus), domestic dogs (Canis familiaris), people (the fences are highly visible and look very official), and in one case a river otter (Lutra canadensis).

Attraction Activities

This year the decoys and sound systems did not appear instrumental in the final nest site selection by the terns. Again this year the birds nested at Wisconsin Point in the same area where they attempted to breed last year when there were no decoys or sound system. As was true last year, the terns appeared very attached to this site.

Censuses

During 1988, the study species nested at four locations in the St. Louis River estuary: Port Terminal, Minnesota Power Hibbard Plant, Wisconsin Point and Herding Island. The first two locations were occupied exclusively by gulls, and the second two, exclusively terns. Significant observations include the following: (1) for the third consecutive year no Piping Plovers nested in the estuary; (2) for the second consecutive year most of the Common Terns nested at Wisconsin Point; and (3) there was no successful nesting of Common Terns in the estuary. However, severe weather, not predation was the major factor limiting tern reproductive success in 1988.

Ring-billed Gull

In 1988 Ring-billed Gulls nested at their traditional sites; the Port Terminal and the Minnesota Power Hibbard Plant. This year there were 13656 breeding individuals (based on nest counts) at the Port Terminal colony (Table 1, Figure 1) and 1278 breeding individuals at the Minnesota Power colony, this figure is up from the 1986 population (784 breeding individuals) which had probably declined because of extensive disturbances caused by construction of the nearby Bong Bridge. These sites have been used by the gulls since the early 1970's.

The Port Terminal colony appears to be at or near its maximum potential and will soon be limited by lack of suitable nest sites. There was an increase in the number of gulls using Herding and Interstate Islands as loafing areas. Last year there were maximum numbers of around one hundred gulls seen loafing at Herding. This year that number was approximately 1000. A ten fold increase suggests that the colony may split in the near future, possibly as early as next year. Herding Island would be the most likely place for a new colony to start and there are several reasons for carefully monitoring this situation in future years. First, in the past there has been intense competition between Common Terns and Ring-billed Gulls for nest sites at the Port Terminal; terns typically have been exluded from the prime nesting areas by earlier arriving gulls. Second, If the nest site limiting factor is removed (by the establishment of a new colony), there may be another Ring-billed Gull population explosion in the harbor as occured in the mid 1970's. If this occurs, Ring-billed Gulls may establish colonies at sites currently planned for Common Terns.

Before a colony split occurs, decisions need to be made on this issue. Public relations, current and potentially available habitat for terns and plovers, and cost will all need to be addressed.

Piping Plover

Not only was this the third consecutive year that no Piping Plovers nested in the estuary, it was the first year in the history of this program that no Piping Plovers were even sighted in the estuary. The data for the last several years are summarized in Table 2 and Figure 2.

Common Tern

This year at the Herding Island Common Tern colony there was a maximum of 16 birds present, none of which were ever able to become firmly established. Despite our best efforts, the nests on Herding Island were quickly destroyed by children and an unknown predator (e.g. Ring-billed Gull, Northern Crow (Corvus brachyrhynchos), mammal).

The rest of this year's activities centered around the Wisconsin Point colony. Due to frequent storms and many seiches, direct nest counts were not accurate in determining the total number of breeding individuals present at this colony because nests continually were being destroyed and replaced. A maximum count of 60 nests indicates 120 breeding Common Terns. However, based on many visits and counts, we believe that 160 breeding individuals is a more accurate number (Table 3, Figure 3).

Severe storms were the major factor in this year's total nest failure. On two occasions the Wisconsin Point colony was swept by storm generated waves. The first storm occurred on 28 June and caused nests to decrease from 60 to 18; the second storm, on 12 July, destroyed all but 5 of 31 nests. Because the birds nested on very low areas this year, seiches eliminated many of the peripheral nests. This is why we believe that nest counts did not accurately reflect the number of breeding birds at this colony.

Fortunately, the birds continued to show strong interest in the Wisconsin Point site and attempted to renest many times.

Table 1. Number of individuals of Ring-billed Gulls at sites in the St. Louis River Estuary, 1983-1988.

	1983	1984	1985	1986	1987	1988
Port Terminal	11216	14206	14030	15938	no data	13656
MN Power	1502	1524	1480	784	no data	1278
Hibbard Plant						
Total	12718	15730	15510	16722	no data	14934

Table 2. Number of individuals of Piping Plovers at sites in the St. Louis River Estuary, 1983-1988.

	1983	1984	1985	1986	1987	1988
Sky Harbor	0	0	2	0	0	0
Port Terminal	6	4	2	0	0	0
Erie Pier	4	4	2	0	0	0
Total	10	8	6	0	0	0

Table 3. Number of individuals of Common Terns at sites in the St. Louis River Estuary, 1983-1988.

	1983	1984	1985	1986	1987	1988
Sky Harbor	58	58	158	66	0	0
Port Terminal	244	226	4	8	60	0
Erie Pier	24	8	2	0	0	0
Grassy Point Islets	44	0	0	0	0	0
Wisconsin Point	no data	30	0	0	114	160
Interstate Island	0	0	100	0	0	0
Herding Island	2	0	16	62	0	16
Total	396	322	280	136	154	176

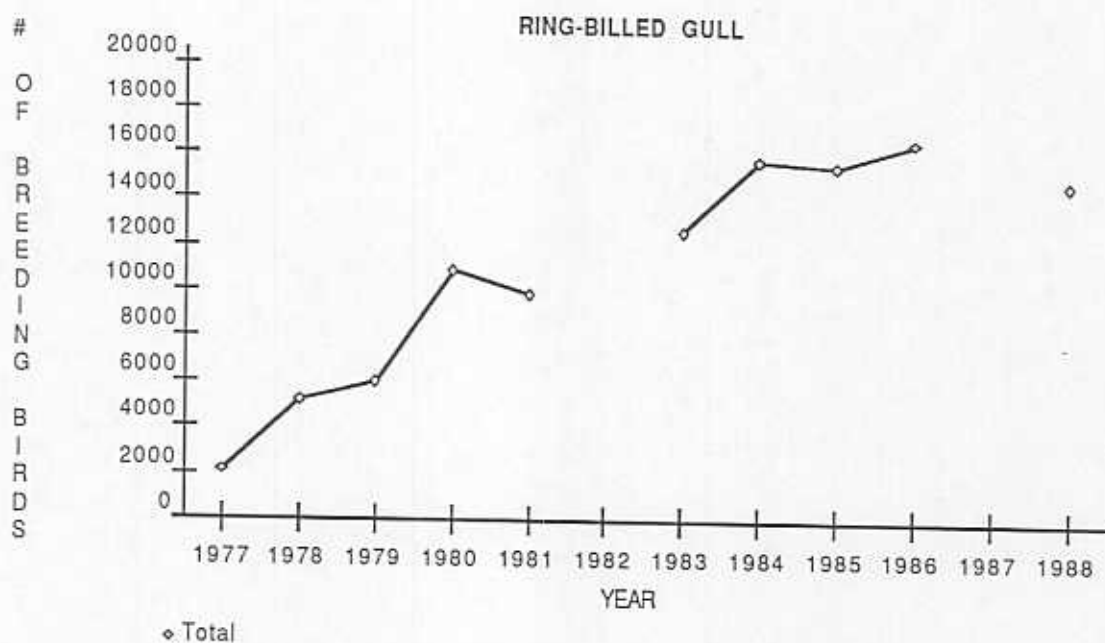


Fig. 1 Number of individual Ring-billed Gulls Breeding in the St. Louis River Estuary from 1977 to 1988.

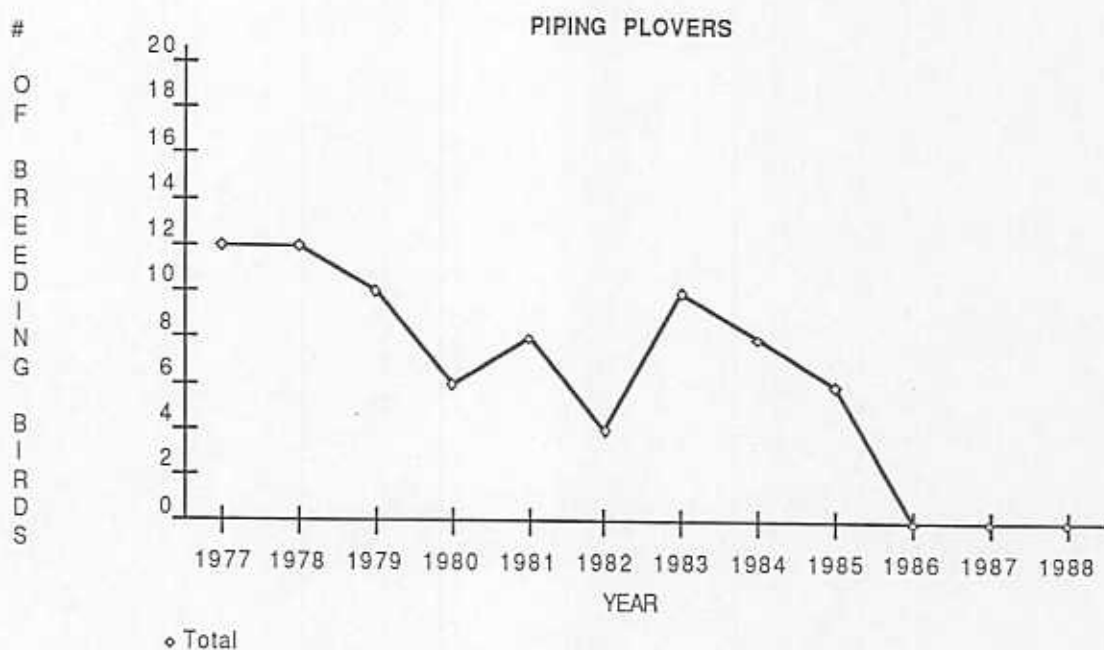


Fig 2. Number of individual Piping Plovers Breeding in St. Louis River Estuary from 1977 to 1988.

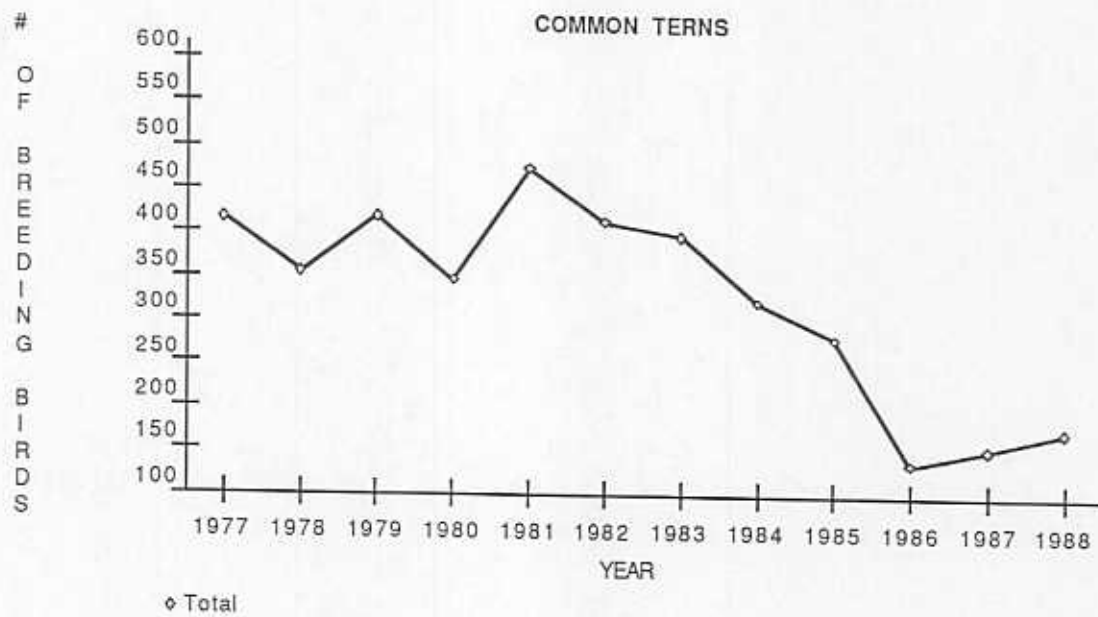


Fig. 3. Number of Individual Common Terns Breeding in St. Louis River Estuary from 1977 to 1988.

Management Recommendations

The long-term recommendations made in 1985 and 1986 by Davis remain pertinent. This years recommendations are largely derived from them.

1. Censuses: Continue using present methods.
2. Attraction Program: Continue using current methods; the addition of Piping Plover decoys may be desirable in the future depending upon the success of the Ashland experiment.
3. Discouragement Activities : Discouragement should be conducted in both the morning and the evening using current methods.
4. Banding: Banding of adults or chicks is not recommended until birds become established.
5. Liason: As in the past.
6. Public Relations: Every method of obtaining positive support for this program should be considered, including seeking the support of the local interest groups, citizens and media.

7. Predation: Trapping by a professional throughout the nesting season is recommended at active sites. Early removal of Great Horned Owls should continue. Investigators and supporting agencies should be prepared to respond to negative criticism and mediate.
8. Herding Island: Because of continued problems with, and lack of support from, Park Point residents, as well as predation problems and the impending expansion of the Port Terminal gull colony, it is recommended that Common Tern and Piping Plover attraction activities at Herding Island be discontinued until such a time that these problems can be solved. However, it is recommended that as much of the beach be maintained as possible for use as loafing and stop over areas for terns, plovers, gulls and other beach plants and animals.
9. Interstate Island: As recommended by Davis in 1985 and 1986. No trespassing signs should be posted upon the completion of work. The island should be listed as off limits on aeronautical charts as a helicopter has been observed landing on the island.
10. Wisconsin Point: This site should be of the highest priority. Continued removal of vegetation, particularly the brush at the end of the point is critical. Beach stabilization and enrichment need to be investigated.
11. Enrichment/Creation Of Islands: With the new "Maintenance Dredge Material Disposal Plan For The Duluth-Superior Harbor" on the horizon these possibilities need to be explored once again. Emphasis should be placed on the creation of a new island and the enrichment of Interstate Island and especially the Wisconsin Point site.
12. Sky Harbor Airport: Request airport to delay mowing until 1 July as mowing exposes large tracts of sand to the scrutiny of passing terns.

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DULUTH-SUPERIOR HARBOR MANAGEMENT PROGRAM

AN INTERAGENCY INITIATIVE
OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY,
THE U.S. ARMY CORPS OF ENGINEERS, AND THE
STATE OF MINNESOTA

Map
RING-BILLED GULL, COMMON TERN,
AND PIPING PLOVER NESTING SITES
AND MANAGED AREAS

