

1992 STATUS AND BREEDING SUMMARY
OF PIPING PLOVERS AND COMMON TERNS
AT LAKE OF THE WOODS, MINNESOTA

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PIPING PLOVERS

Methods

In 1992 we increased our monitoring and management efforts on Pine and Curry Island SNA by hiring an MCC worker (Karin Tetzlaff) to help disrupt ring-billed gull breeding attempts and to make general observations on piping plovers and common terns. Consequently, observations and/or management activities took place on 33 days between 6 May - 13 August. To reduce disturbance to plovers and terns, Karin made most of her observations from a blind on "Tern Island" or from a boat anchored offshore.

Potential crow/raptor perch trees were cut down on "Tern Island," "West End plus," and "Middle Curry" on 6 April and 6 May. On 12, 15 and 20 May some hand-pulling of residual herbaceous vegetation was done to open up plover habitats on "Tern Island," Oak Point, and Morris Point. On 20 July, after plovers had departed, young trees and some willow shrubs encroaching on beach habitats were cut at Oak Point. We also hand-pulled some herbaceous vegetation to further open up the area. Air photos were taken of Pine/Curry Island, Morris Point, Zippel Bay, and Rocky Point on 19 June. Data on Lake of the Woods (LOTW) water levels were obtained from the U.S. Army Corp of Engineers, St. Paul.

Regular observations of piping plovers were made at Pine/Curry Island and Morris Point. Rocky Point, Zippel Bay (22 June) and Long Point (23 June) were surveyed once. All piping plovers observed were checked for bands and their breeding status was determined. Nests were

located and a wire mesh predator exclosure was placed around each. Exclosures were constructed of 5 x 10 cm mesh welded wire 1.3 m tall. A 3 m diameter circle of wire was placed around the nest and was fastened to three steel rods driven into the ground. The bottom edge of the fence was buried approximately 15 cm deep to inhibit predators from digging under the barrier. Heavy string was tied across the top in a criss-cross pattern to discourage avian predators. Installation of an exclosure took about 15 minutes. Plovers could easily pass through the openings in the mesh. We attempted to nest trap and band unbanded adults or birds in need of new color bands once incubation was well underway. When possible, chicks were captured with a butterfly net when 7-10 days old and banded with a USFWS aluminum band.

Results

The summer of 1992 was one of the coldest on record. LOTW water levels were high all season (Table 1) which substantially reduced beach sizes and resulted in continued beach erosion. "2nd Island" has completely disappeared. The sand spit at "West End" has broken into three segments and erosion along the wooded portion caused 30 large trees to fall. Virtually no beach was present at "West End plus" and a small gap has opened up between "West End" and "West End plus." Additional erosion occurred at Oak Point and the northeast side of "Tern Island." The erosion, particularly at the western end of Pine/Curry Island SNA, since 1988 has been dramatic (Fig.1). Almost 0.5 mile of island (i.e., piping plover breeding habitat) no longer exists and the erosion continues whenever water levels are relatively high. Substantial portions of "West End" and "West End plus" may be in danger of disappearing in the next several years if water levels remain high.

In 1992 one adult and four piping plover chicks were banded. One additional adult was recaptured and given new color bands (see Table 2 and attached banding schedule).

A total of 13 adult piping plovers (10 breeders, 3 nonbreeders) were present this year thus continuing the downward trend in population numbers (Table 3). No plovers bred at Morris Point, Zippel Bay, Rocky Point or Long Point. The three nonbreeders (2 banded, 1 unbanded) were each observed on only one day at Pine/Curry Island or Morris Point. Five piping plover nests were found between 1-8 June (Fig.2, Table 4). Three of these hatched. One "Tern Island" nest was abandoned for unknown reasons and neither adult was seen thereafter. The nest at Oak Point apparently was depredated despite the predator exclosure though there was no evidence at the site to indicate what type of predator was responsible. This pair of plovers was later seen together at Rocky Point and "Tern Island."

Most plover chicks survived an extended period of cold, rainy weather in late June/early July shortly after nests hatched. Each of the three broods still contained at least three chicks on 5-6 July. Karin observed one "Tern Island" brood with three chicks for 1.5 hr on the evening of 5 July. However, neither the chicks or adults were seen the following morning or thereafter and the chicks presumably were preyed upon. The remaining two broods each fledged two chicks resulting in a fledge rate of 0.8 chicks per breeding pair (Table 5).

COMMON TERNS

Pine/Curry Island

"Tern Island" - 1992 was another unsuccessful year for nesting common terns (Table 6). The colony was located on the eastern two thirds of "Tern Island" somewhat farther east than in previous years. Terns arrived and began nesting later than last year. In 1991 we censused 270 nests on 7 June. This year, on 5 June, only about 100 terns were present and only a few nests contained eggs. A 23 June census tallied 186 nests (18 - 1 egg, 41 - 2 egg, 125 - 3 egg, 2 - 4 egg). At that time we noted no signs of depredated eggs although eggs had been washed out of several nests by storm waves.

As of 30 June, no nest predation was noted and a few eggs were pipping. However, by 6-7 July we found a number of eggs in which the chicks had apparently died during the hatching process. Another 6-8 small dead chicks were also noted. Most of these were still in their nests. No live chicks were seen. On 20 July we found only 6 live chicks and all were very young. Another 12-15 small dead chicks were noted. We conducted a second census on 29 July and tallied 167 active nests (45 - 1 egg, 71 - 2 egg, 51 - 3 egg) all of which had to be late nests or renests. We also found 30 eggs that had been depredated or had died during hatching, 23 abandoned eggs, 9 dead chicks, and only 3 small live chicks. Some of the dead chicks appeared to have been preyed upon and we noted mink tracks on several parts of the island that day. No terns remained on the island during a final check on 13 August. All remaining nests had been deserted and three crows were in the colony area feeding on the abandoned eggs.

In summary, no tern chicks fledged from "Tern Island" in 1992. In fact, no chicks were ever seen that were older than about four days. Several factors could have contributed to this nesting failure. First, the fact that 1992 was one of the coldest summers on record may have had a negative impact on breeding. Food levels for adults and chicks could also have played a role in nesting failure, but we have no information to substantiate this. Last year we suspected that blackbirds may have been involved in tern egg predation. This year, just prior to our 23 June colony census, a number of yellow-headed blackbirds were present on the island and were persistent in occupying the area where terns were nesting. During a 45 minute observation period, terns were seen chasing yellow-headed blackbirds 40 times suggesting that terns view these birds as a threat. However, during our ensuing census we noted no signs of depredated eggs. Another possibility is that there may have been nocturnal disturbance by a predator causing terns to abandon the colony overnight thereby exposing eggs and chicks to the elements. However, Karin observed the colony from a tent on Morris Point during the evening of 14 July. She continued the observation until 2 a.m. and noted no signs of nocturnal disturbance that night. A fifth possibility is that a contaminant or disease caused the reproductive failure. On 20 July we collected 6 dead chicks and six eggs and sent them to the National Wildlife Health Research Center in Madison, Wisconsin for analysis. To date, we have not received results from these tests.

Oak Point - This year about 30 common terns attempted to nest at Oak Point. Although no thorough census was conducted, five nests containing eggs plus a number of scrapes were noted on 5 June. However, on 22 June only one tern was present in the colony and only a single active nest remained. The others had been depredated, but only one small piece of egg shell

could be found in the colony area. Subsequently, scattered shell fragments were found 20-30 m from the colony site and some of these contained tooth puncture holes. The remaining tern nest had been depredated by 29 June and otter tracks were noted nearby that day. During our final visit to Oak Point on 20 July we found a single tern nest in the process of hatching.

Rocky Point

No common terns were present during our 22 June survey.

Fourblock Island and Techout Island

These islands were not surveyed in 1992.

PREDATOR MANAGEMENT

Mammals

In 1992 Jim Walton continued trapping mammalian predators on Pine/Curry Island and Morris Point. An average of 11 traps (8 mink, 3 fox/skunk) were set each night from 7 May - 15 July for a total of 759 trap nights. Two mink, three foxes, and one skunk were captured. Despite these efforts, fox tracks were seen near "Middle Curry" on 29 June. Skunk tracks were seen at "Middle Curry" on several occasions. Likewise, otter tracks were seen at "Middle Curry" and Oak Point several times. Mink tracks were noted on "Tern Island" on 29 July. On

30 June we found a set of herring gull wings at the east end and a pair of ring-billed gull wings at the west end of "Tern Island." On 6 July a single blue-winged teal wing was found near the west end of "Tern Island". In each case, the bones appeared to have been chewed through by a mammal to remove the wings from the rest of the carcass which was not found. No tracks or other predator sign was evident near these wings.

Crows/Ravens

We attempted to disrupt crow nesting attempts on Pine/Curry Island and Morris Point this year. One 3 egg nest at Morris Point was destroyed on 12 May. Another pair nested persistently near "Middle Curry". We destroyed a 3 egg nest on 6 May, empty nests on 12 and 15 May, and a 2 egg nest on 11 June. On 7 July we found a fifth nest with two small chicks.

On 7 July, and several times thereafter, we observed a family group of ravens foraging on the ground among the dunes at "Middle Curry." The adult piping plovers responded to the presence of ravens by becoming excited, giving alarm calls, and by moving the brood away from the area.

Gulls

One of our primary objectives in 1992 was to prevent ring-billed gulls from nesting on "Tern Island." Gulls compete with plovers and terns for breeding space and are a potential source of nest and chick predation. Ring-billed gulls have attempted to nest at this site since

1985 despite the fact that we have systematically destroyed all gull nests established during the past seven years. Typically, several hundred ring-billed gulls have persistently re-nested and occupied the colony area plus adjacent beaches throughout the nesting season.

This year ring-billed gulls again returned to their traditional colony area and by 15 May about 60 birds were occupying the site and were starting to make nest scrapes. In a new approach to gull harassment, we placed three dozen 1.3 m tall electric fence posts in the ground within the colony area. Heavy yellow nylon string was strung between posts (about 0.8 m off the ground) in parallel rows about 2 m apart. We purposely chose a highly visible string to prevent birds such as plovers and terns from accidentally colliding with it. At night or on days when we were not present, as a further measure to prevent accidental collisions, the string was simply slid down the posts to ground level. At times we also set up a blind nearby to observe the string network and to flush any gulls returning to the colony. However, this proved unnecessary as the string was remarkably effective. Following the initial setup of the string on 15 May, no gull was ever seen in the colony area the remainder of the season regardless of whether the string was at the top of the posts or at ground level. This was in marked contrast to previous years when gulls immediately returned to the colony after we destroyed their nests. The few ring-billed gulls that were seen on "Tern Island" between 20-31 May (Table 7) were loafing on beaches rather than attempting to nest in the island interior.

Abruptly, during 1-3 June, a group of about 150 ring-billed gulls attempted to establish a new colony about 50 m east of the traditional spot. On 2 June Karin set up the blind next to the new site. All the gulls flew off and did not return during the time (10:45 - 16:10) she

occupied the blind. She found one fresh gull egg that day. On 3 June she occupied the blind from 09:45 - 14:15. Again the gulls left and did not return. Thereafter, no further breeding attempts were made by ring-billed gulls on "Tern Island." Whereas the presence of the blind was very disturbing to gulls, terns and plovers virtually ignored it within minutes after it was erected.

In late June and early July, as in previous years, large numbers of ring-billed and Franklin's gulls arrived and began loafing on "Tern Island" beaches (Table 7). At times these birds occupied all the beach areas on "Tern Island." Numbers peaked on 22 July when some 3,500 gulls were present on "Tern Island" and another 1,000 were loafing at Morris Point and "West End." We had difficulty keeping these gulls off of "Tern Island" beaches for any length of time. At times we walked around the island to flush gulls while on other occasions we flushed them by approaching beaches closely with the boat. Typically, gulls landed at Morris Point, "West End" or in the water offshore. However, these loafing flocks were easily disturbed by passing boats and would fly up in large groups - some of which would settle back on "Tern Island." On 13 July SJM and Karin spent an hour constantly chasing gulls off "Tern Island" beaches with the boat, but at the end of that time there were about as many gulls present as when we started. This means of gull harassment was also disruptive to the terns so we subsequently scaled back our efforts to a relatively minor level.

RECOMMENDATIONS

1. Continue to trap mammalian predators during May-July on Pine/Curry Island and Morris Point.
2. Prevent ring-billed gulls from nesting on "Tern Island" by use of a grid of elevated string and/or a blind, as necessary.
3. Experiment with elevated string as a deterrent to prevent loafing flocks of gulls from landing on beaches used by piping plover broods.
4. Continue to destroy crow nests on Pine/Curry Island and Morris Point.
5. Continue to use wire mesh predator exclosures around piping plover nests.
6. Continue to distribute brochures and information to resort owners and DNR personnel in the vicinity of LOTW to encourage compliance with sanctuary regulations.
7. Cut trees and shrubs, as needed, in areas occupied by piping plovers to eliminate raptor perches and to maintain relatively open habitat conditions.

ACKNOWLEDGEMENTS

We thank Karin Tetzlaff, Bruce Lenning, and Sharon Glidden for assistance in the field. Jeff Dittrich and Mike Haws posted the sanctuary areas in early May. Edward Eaton supplied us with LOTW water depth data.

LITERATURE CITED

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- Wiens, T. P. 1986. Nest site tenacity and mate retention in the piping plover (Charadrius melodus). M.S. Thesis, University of Minnesota - Duluth, 34 pp.

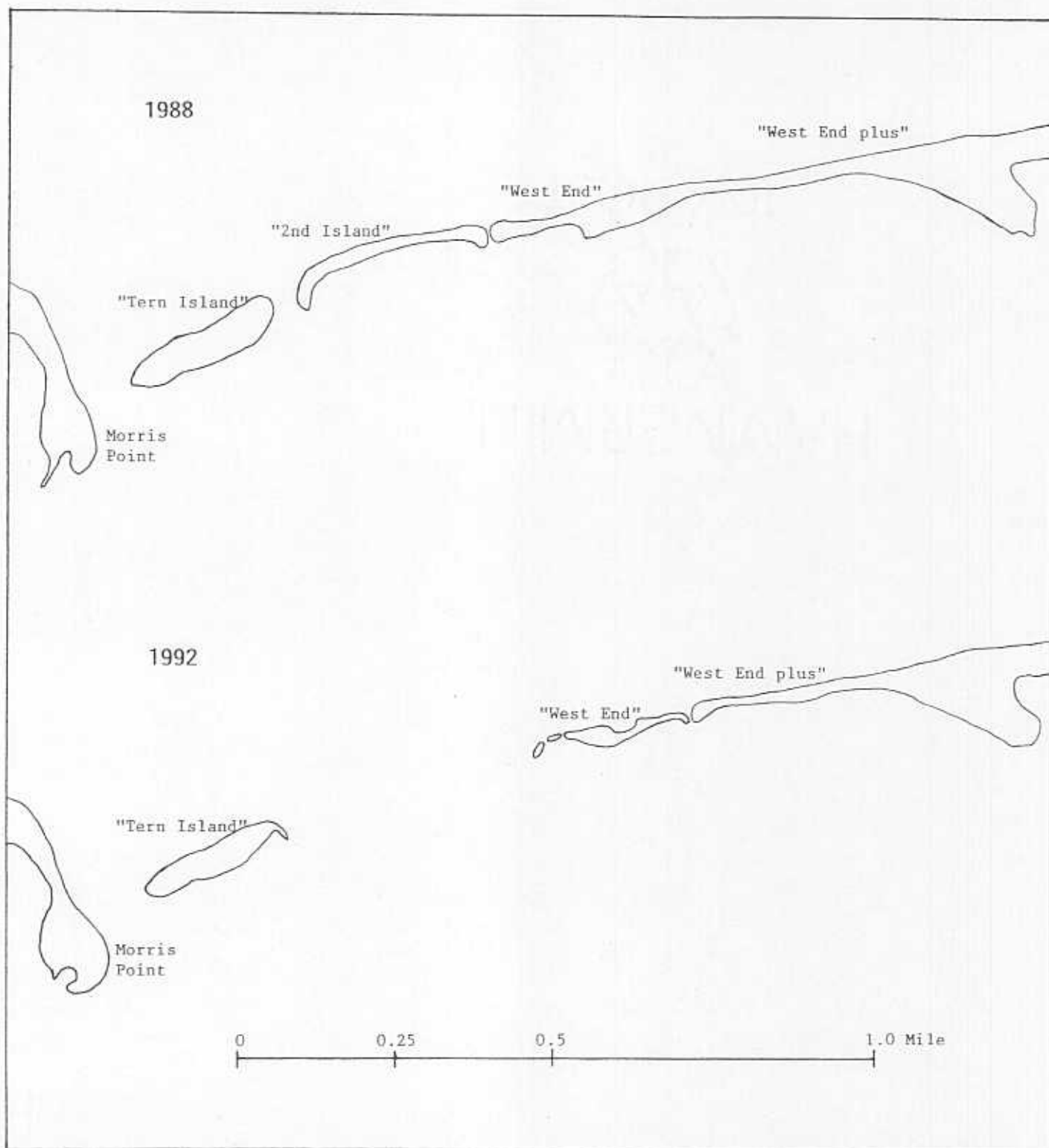
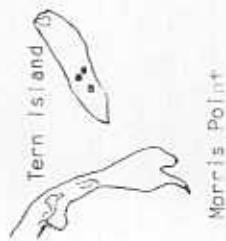


Figure 1. Extent of erosion at the western end of Pine/Curry Island SNA between 1988 and 1992 (based on aerial photography).

PINE AND CURRY ISLAND SNA



• = nest

Figure 2. Piping plover nest site locations, 1992.

Table 1. Monthly mean water levels (ft. above sea level) at Lake of the Woods, 1982-1992.

	May	June	July	August	Mean
1982	1059.3	1060.0	1060.1	1060.3	1059.9
1983	1058.7	1059.0	1059.8	1059.7	1059.3
1984	1058.9	1059.6	1060.5	1060.6	1059.9
1985	1060.3	1061.0	1061.5	1061.0	1060.9
1986	1060.6	1060.6	1060.5	1060.1	1060.4
1987 /1	--	--	--	--	
1988	1057.8	1057.9	--	1057.9	1057.9
1989	1059.6	1060.5	1061.5	1060.9	1060.6
1990	1058.1	1059.3	1060.0	1059.4	1059.2
1991	1058.5	1059.4	1060.0	1059.7	1059.4
1992	1060.3	1060.3	1060.5	1060.4	1060.4
Mean	1059.2	1059.8	1060.5	1060.0	

/1 1987 data are not available.

Table 2. Adult piping plovers given new band combinations in 1992.

Band Number	Old band combination	New band combination	Location	Date
901-39447 /1	BA:-/2	FA:RdB	Tern Island	15 June 92

/1 This bird was banded as a chick on Oak Point in 1988.

/2 Bands are read left leg top to bottom: right leg top to bottom. A = USFWS band, F = green international flag, dB = dark blue, R = red.

Master Permit No. 08035

Banding Schedule
3-860 (Rev. 1985)

Master Permittee L. W. Oring, Dr.

Pine and Curry Island, 4 mi. N. Hackett
A Lake of the Woods Co., MN

—Banding Locations—

B

E

C

F

INCLUSIVE BAND NOS.
FROM 901-39472
THROUGH 39476
REPORT ONLY CONTIGUOUS
BAND NUMBERS

BAND PREFIX:	COMMON NAME	AOU #	STATUS	AGE-SEX	REGION	LAT-LONG	LOC	DATE MO DAY YR
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73			300	L-U				06-29-92
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REMARKS: Color code is read - left leg top to bottom: right leg top to bottom. Colors are as follows - F=green international flag, A=USFWS band, dB=dark blue, R=red.

Table 3. Population summary of piping plovers from 1982-92 at Lake of the Woods, Minnesota. /1

Year	Breeding Birds				Non-breeders	Total
	Pine/Curry Island	Morris Point	Zippel Bay	Rocky Point		
1982	24	4	0	2	14	44
1983	32	6	2	2	7	49
1984	36	8	0	0	3-6	47-50
1985	19-36	4	0	-	1-2	24-42
1986	18	4	0	1	9-10	32-33
1987	12	2	0	-	12	26
1988	18	4	0	4	4	30
1989	14	2	0	4	2	22
1990	8	2	-	2	4	16
1991	12	0	0	0	2	14
1992	10	0	0	0	3	13

/1 1982-84 data from Wiens 1986.

1985-87 data from Haig and Oring 1987.

Table 4. Reproductive success by breeding location for piping plovers, 1992.

	Tern Island	Middle Curry	Oak Point	Total
No. nests	3	1	1	5
No. eggs hatched	8	4	0	12
No. chicks fledged	2	2	0	4

Table 5. Reproductive success of piping plovers at Lake of the Woods, Minnesota from 1982-1992. /1

Year	Chicks fledged	Chicks fledged/pair
1982	26	1.7
1983	44	2.1
1984	13	0.6
1985	7-10	0.4-0.5
1986	9	0.8
1987	2-21	0.3-3
1988	12-15	1.0-1.25
1989	1	0.1
1990	4	0.7
1991	2-4	0.3-0.7
1992	4	0.8

/1 1982-1984 data from Wiens 1986.

1985-1987 data from Haig and Oring 1987.

Table 6. Number of nests and estimated fledging success of common terns at Pine/Curry Island SNA, 1988-1992.

Year	No. of nests	No. of chicks fledged
1988	52	0
1989	120	1
1990	180	70
1991	274	9
1992	191	0

Table 7. Total gulls present on "Tern Island," 1992.

Date	Estimated number of gulls present			
	Ring-billed	Franklin's	Herring	Total
May	6	8	0	8
	12	50	0	50
	15	60	0	60
	20	12	0	12
	21	15	0	20
	25	19	0	44
	26	7	0	21
	27	40	0	35
	28	6	0	54
	31	35	0	7
June	1	75	0	1
	2	100	0	0
	3	150	0	0
	4	3	0	0
	5	30	0	0
	7	10	0	43
	8	36	25	0
	9	42	14	1
	15	20	1	13
	16	2	0	8
	22	4	3	0
	23	46	72	5
	29	58	600	2
	30	2	18	0
July	5	150	300	0
	6	106	400	2
	7	16	70	9
	13	300	1250	13
	20	700	1280	6
	21	1350	650	1
	22	900	2590	1
	29	27	0	25
August	13	0	0	100