

2005 SHOREBIRD NESTING REPORT
Dead Neck Sampsons Island, Osterville, Massachusetts

Prepared by

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Introduction

Before the early 1900's, Dead Neck and Sampsons Island were two separate pieces of land; Dead Neck being connected to Osterville, and Sampsons Island lying a few miles to the west. Sampsons Island joined to the mainland in the early part of the 20th century, and now connects to Dead Neck by a thin arm of land that forms a cove on the northwestern part of the island. Shortly after Sampsons Island joined to Dead Neck a channel was dredged across Dead Neck connecting Nantucket Sound to East Bay. As a result, the dredging process created what is now collectively referred to as Dead Neck/Sampsons Island (DNSI).

Dead Neck/Sampsons Island is an important breeding site for nesting coastal waterbirds. At about 1.5 miles long, running east to west between the towns of Osterville and Cotuit, MA, DNSI is bordered on the south by Nantucket Sound and to the north by Great Island and a narrow channel (see Figure 1). Both the east and west ends of the island are defined by maintained dredge channels, making the island accessible to people only by boat.

The eastern portion of DNSI, referred to as Sampsons Island, has been owned and managed by the Massachusetts Audubon Society (MAS) since 1986. The western portion, referred to as Dead Neck, is owned and managed by Three Bays Preservation Association. The Coastal Waterbird Program (CWP) at MAS has monitored the entire site for nesting shorebirds since 1986. Although the island is owned by two separate organizations, there has been consistent collaboration between the MAS and Three Bays on the human-use and management of the island. As it stands currently, only members of MAS or Three Bays Preservation Association are permitted to access the island. All other people are asked to become members of either organization by the time of their next visit. DNSI receives moderate to heavy use by people, during the summer months of June through early September, mainly on the north side of the island.

Methods

In 2005, the CWP assigned two full-time seasonal staff, Jill Neilson and Caron Kotalik, to monitor the nesting coastal waterbirds on Dead Neck/Sampsons Island, as well as provide educational programs to visitors. Staff began working in the pre-breeding season (mid-April) and continued until post-breeding (late August). Sites were visited an average of six days per week from May 1st until August 20th. Beginning in late April, CWP staff recorded all observations of Piping Plovers; Least, Common, and Roseate Terns, and documented their location on the beach. Birds were monitored throughout the time they established nests, at which time CWP staff erected symbolic fencing (twine and posts) and posted signs around all nesting areas subject to disturbance by human traffic. In past years, Piping Plover nests that were in danger of being predated and were located in flat open areas had exclosures (circular, 10 foot-diameter metal cages with 2"x4" mesh, and a top made of bird netting) erected around them. This year, however, there were no nests in areas deemed "exclosable" and therefore no exclosures were erected.

This year, with funding provided by the Davis Foundation, CWP staff erected electric fencing on Sampsons Island after a Least Tern colony was established there. See section below for details on the electric fencing project.

Piping Plover pairs were monitored daily, weather permitting. After hatching, broods (adults with chicks) were monitored until chicks fledged (26 days from hatch date or until chicks can fly \geq 50ft.). At the end of the breeding season, the total number of chicks fledged can be considered an addition to the total population of Atlantic Coast Piping Plovers.

Unlike Piping Plovers, Least and Common Tern chicks are difficult to monitor after hatching and are far more susceptible to disturbance; therefore, terns were not monitored with the same rigor as plovers. Staff documented all nest attempts by all species of terns, and recorded approximate hatch dates and any chicks/fledglings observed. Staff also walked through the tern colonies on both Sampsons Island and Dead Neck on a weekly basis, recording the numbers of nests and eggs laid, and the number of chicks/fledglings as well as any incubating birds observed. An estimated count of adults was also taken on a weekly basis. This provided a qualitative record of overall productivity, with a range of very poor to excellent.

Results

Piping Plovers

Over the past two decades, DNSI has become an important site for nesting Piping Plovers in the state of Massachusetts. Since 1986, the total number of nesting pairs has increased from 1 – 3 pairs to a high of 18 pairs during 2005 (Figure 2). In addition, average productivity on the island has increased from an average of 0.8 chicks/pair to an average of 2.4 chicks/pair during 1993-2005. Since 1988, the plovers on DNSI have produced a total of 228 fledglings.

During the 2005 breeding season, 20 pairs of Piping Plovers established 26 nests on DNSI, laying a total of 101 eggs with 51% hatching success (% of eggs laid that hatched). Productivity was high; in fact, it was the highest in the state of Massachusetts for 2005, at an average of 2.4 chicks/pair. A breakdown of specific data for each of the two sites is provided in Table 1 (see Appendix).

Plovers were first observed on Dead Neck on April 13, and the first nests were found on May 5. The first hatch occurred on May 31. Thirteen pairs of Piping Plovers laid a total of 20 nests on Dead Neck, 8 of which were located on dredge spoil deposited during the winter of 1998-99. Five pairs of Piping Plovers laid a total of 6 nests on Sampsons Island, 1 of which was located on dredge spoil deposited in the winter of 2001-02 (see Figures 1, 2, Table 1).

A total of 12 out of 26 Piping Plover nests (46%) were lost on both Sampsons Island and Dead Neck. Six of the nests, five of which were located on Dead Neck and one on Sampsons Island, were predated by a canid species believed to be a coyote. All but one of the nests that were predated was located on dredge spoil. One nest on Dead Neck was abandoned and six nests, (five on DN and one on SI) were lost to extreme high tide during a series of very strong Nor'easters that hit the Cape between the months of May and June. On Sampsons Island, one Piping Plover nest was located within the electric fencing and experienced 100% hatching success.

Least and Common Terns

During the past 8 years, total numbers of Least and Common Terns nesting at DNSI increased, peaked, declined, and then peaked again (Table 2, Figures 5, 6). This year, MAS staff saw a dramatic increase in the number of Least Terns nesting and chicks fledged on Sampsons Island within electric fencing. Past densities of both tern species increased during the year after dredge spoils were deposited on both Dead Neck and Sampsons Island (see Figures 5, 6, Table 1).

In past seasons, coyotes appeared to be the major cause of tern nest and chick loss. This year, however, coyote predation did not pose much of a problem. Staff observed a total of five Least Tern nests predated by a canine species on DNSI this year. On Sampsons Island, coyote tracks were observed on a few occasions on the South side of the electric fencing, but once a second row of electric fencing was erected the coyote appeared to stay away from the colony. After the coyote tracks were first observed and a second layer of fencing erected, eighty to ninety fledglings were observed loafing on the South side of the island.

Least Terns

The first Least Tern was observed on May 10th. On Sampsons Island 218 nests were counted on June 18th: 203 nests were located within electric fencing and about 15 were located on the southwest of the electric fencing (see Figures 1, 3) The majority of the nests had at least two eggs and began to hatch around the 25th of June. Staff observed a very high majority of nests laid both inside and outside the electric fencing hatched, but survival of chicks to fledging that hatched outside the fencing is unknown.

On Dead Neck, 29 nests were counted on the 18th of June and the nests extended from the easternmost dredge down to the last Piping Plover nest on Dead Neck. The highest concentration of Least Tern nests were located on the 1998-99 dredge deposits (see 2004 CWP report).

Common Terns

Common Terns were first observed on Sampsons Island on May 10th, the first nest located on May 29th, and a total of 16 nests were counted on June 18th. Chicks and a few fledglings were observed on several occasions on Sampsons Island, but the exact number of chicks and fledglings is unknown; productivity was estimated to be low. On Dead Neck, there was only one pair of Common Terns that nested this year. The exact location of the nest was never found, but the pair had been seen defending territory on the dredge on the far eastern side since the 26th of June. Three chicks were first observed on July 1st and were observed flying ≥ 50 ft on July 20th and were considered fledged.

Electric fencing

Both electric fencing and symbolic fencing were installed on Sampsons Island on June 9th. The electric fencing was erected well before Least Terns began nesting and decoys were placed inside the perimeter. Symbolic fencing was erected around the electric fencing and warning signs were posted on both the symbolic fencing and electric fencing. A

buffer area was established in between the symbolic and electric fencing due to high human use in the area. As of June 15th the electric was officially up and running. The dimensions of fencing were approximately 1640 ft long, 3ft 6 inches high and covered a total are of roughly 200,000 ft². The fencing was powered by a solar panel and battery.

Least Terns chicks were observed staying within the electric fencing until they were almost fledged. As they grew older, Least Tern chicks were observed running through the electric fencing and into thicker grass when they were disturbed. As the Least Terns began to fledge they were no longer seen within electric fencing, instead they were observed on both the north and south sides of the dredge along the shore loafing with adults. CWP monitors determined that the fledging success rate of Least Terns inside the electric fencing was very good to excellent. The absence of predation on the island this year led to a very productive year.

One pair of Piping Plovers nested within the electric fencing, and experienced 100% hatching success, and fledged all chicks. In addition, one pair of Common Terns nested within the electric fencing, and also experienced 100% hatching success, though we cannot determine whether or not these 2 chicks fledged. 15 pairs of Common Terns nested outside the electric fencing, and were heavily predated upon by unknown predators; therefore overall productivity for the Common Terns on Sampsons Island was very low.

Recommendations

Monitoring of the increasing Piping Plover and tern populations on Dead Neck Sampsons Island requires at least two full time CWP staff dedicated to the island. In addition to 2 paid staff, this past season, we had the assistance of a part time intern. CWP staff aim to monitor the birds an average of 6 days/week, especially during the busiest part of the summer and provide weekend educational programs to island visitors. The addition of the electric fence, which we feel is necessary in order to protect tern nests from predation, requires more staff to be present on the beach to maintain the fencing and monitor bird activity within the fencing. Sampsons Island is an ideal location to conduct Least Tern studies and the CWP has applied for additional funding sources to conduct a study within the electric fence on Least Tern foraging patterns and productivity.

The most recently dredged area on Dead Neck Island is filling in with beach grass and starting to become least suitable nesting habitat for plovers and terns. This area or others could possibly benefit from additional renourishment. Renourishment projects on the island should be coordinated with CWP staff to ensure that they are designed appropriately to provide seabird and shorebird habitat, and also so that the long-term effects of dredging and renourishment are continually monitored.

Acknowledgements

We would like to thank Three Bays Preservation, Inc. for providing funding towards the costs of two CWP monitors on Dead Neck Sampsons Island. We would also like to thank the staff of Three Bays for assisting with beach cleanups and aiding in shorebird monitoring. Townie Hornor is thanked for housing the CWP boat over the winter,

winterizing the boat, preparing it for the field season, and providing a docking space over the summer. Harry is equally thanked for assisting with boat maintenance and winter storage. Davis Conservation Foundation provided the funding for the purchase of the electric fence. CWP intern, Tyler Maikath, is thanked for assisting with plover and tern monitoring on the island throughout the summer.

Appendix I

Site	Pair #	Nest ID	Cause of nest loss/failure	# eggs laid	# eggs hatched	# chicks fledged	GPS Location, Datum WGS 84	
							Latitude	Longitude
DN	1	01a §	Predation	4	0	-	N 41.60785	W 70.40906
DN	1	01b §		4	4	4	N 41.60795	W 70.40923
DN	2	02a	Washover	4	0	-	N 41.60774	W 70.41035
DN	2	02b		4	3	3	N 41.60795	W 70.40923
DN	3	03a	Washover	4	0	-	N 41.60772	W 70.41106
DN	3	03b		4	4	4	N 41.60753	W 70.41140
DN	4	04a		4	4	4	N 41.60761	W 70.41286
DN	5	05a		4	4	4	N 41.60640	W 70.41943
SI	6	06a		4	4	4	N 41.60615	W 70.43085
SI	7	07a		4	4	4	N 41.60692	W 70.43220
SI	8	08a	Washover	4	0	-	N 41.60841	W 70.43390
SI	8	08b	Predation	3	0	-	N 41.60762	W 70.43327
DN	9	09a §	Predation	4	0	-	N 41.60790	W 70.40849
DN	9	09b §		4	4	4	Unknown	Unknown
DN	10	10a	Washover	4	0	-	N 41.60625	W 70.42143
DN	10	10b		4	2	2	N 41.60628	W 70.42146
SI	11	11a §*		4	4	4	N 41.60723	W 70.43188
DN	12	12a §	Predation	4	0	-	N 41.60783	W 70.40623
DN	13	13a		4	4	4	N 41.60706	W 70.41556
DN	14	14a	Washover	4	0	-	N 41.60751	W 70.40582
DN	14	14b	Washover	3	0	-	Unknown	Unknown
DN	15	15a §	Abandoned	4	0	-	N 41.60775	W 70.40472
DN	16	16a §	Predation	4	0	-	N 41.60795	W 70.40897
DN	16	16b §		4	4	3	N 41.60778	W 70.40864
SI	17	17a		4	4	2	N 41.60540	W 70.42463
DN	18	18a §		3	3	2		
SI	19	Never nested						
DN	20	Never nested						
Total	20	26	10	101	52	48		

Table 1. Piping Plover nesting summary for Dead Neck/Sampsons Island in 2005. Each pair was numbered chronologically (Pair 1, 2, etc.) according to the date the nest was found: “a” and “b” designate first and second attempts respectively.

* indicates nest was located within electric fence

§ indicates nest was on dredge spoil

Year	# Least Tern Pairs		# Common Tern Pairs		Total # Tern Pairs	Productivity (excellent, good, average, poor, very poor)	Productivity (excellent, good, average, poor, very poor)
	<u>Dead Neck</u>	<u>Sampsons I.</u>	<u>Dead Neck</u>	<u>Sampsons I.</u>			
1998		40		16	56	No data	No data
1999	67	20	0	0	87	Excellent	0
2000	378	5	34	15	432	Good	Good
2001	237	30	131	2	400	Good	Poor
2002	283	168	203	20	674	Average	Average
2003	117	126	57	2	302	Poor	Very Poor
2004	85	54	5	0	144	Very Poor	Very Poor
2005	218	29	1	16	264	Excellent	Poor

Table 2. Numbers of nesting Least Tern and Common Tern pairs and qualitative estimates of productivity (chicks fledged/pair) at Dead Neck/Sampsons Island, Osterville, MA, 1998 – 2005.



Figure 1. Aerial view of Dead Neck/Sampsons Island, Osterville, MA, including nest locations of Piping Plovers and colony locations of Least Terns and Common Terns monitored by the Coastal Waterbird Program of Mass Audubon during 2005.

**Number of Breeding Piping Plover Pairs and Productivity at
Dead Neck Sampsons Island, Osterville, MA
1986 - 2005**

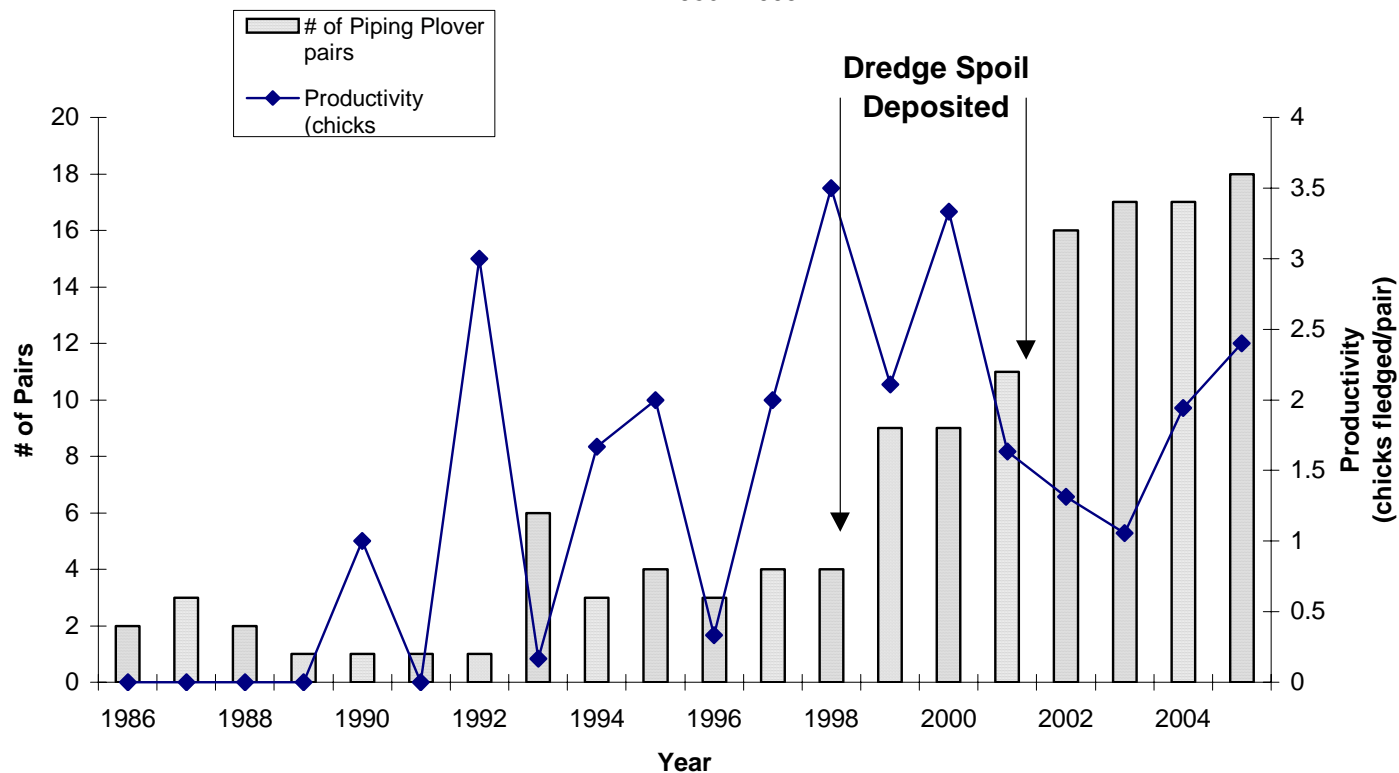


Figure 2. Abundance of Piping Plovers nesting at Dead Neck/Sampsons Island, and overall productivity (chicks fledged/breeding pair) monitored by the Coastal Waterbird Program at Mass Audubon during 1986 – 2005.



Figure 3. Aerial view of west end of Dead Neck/Sampsons Island, Osterville, MA, including nest locations of Piping Plovers and colony locations of Least Terns and Common Terns monitored by the Coastal Waterbird Program of Mass Audubon during 2005.

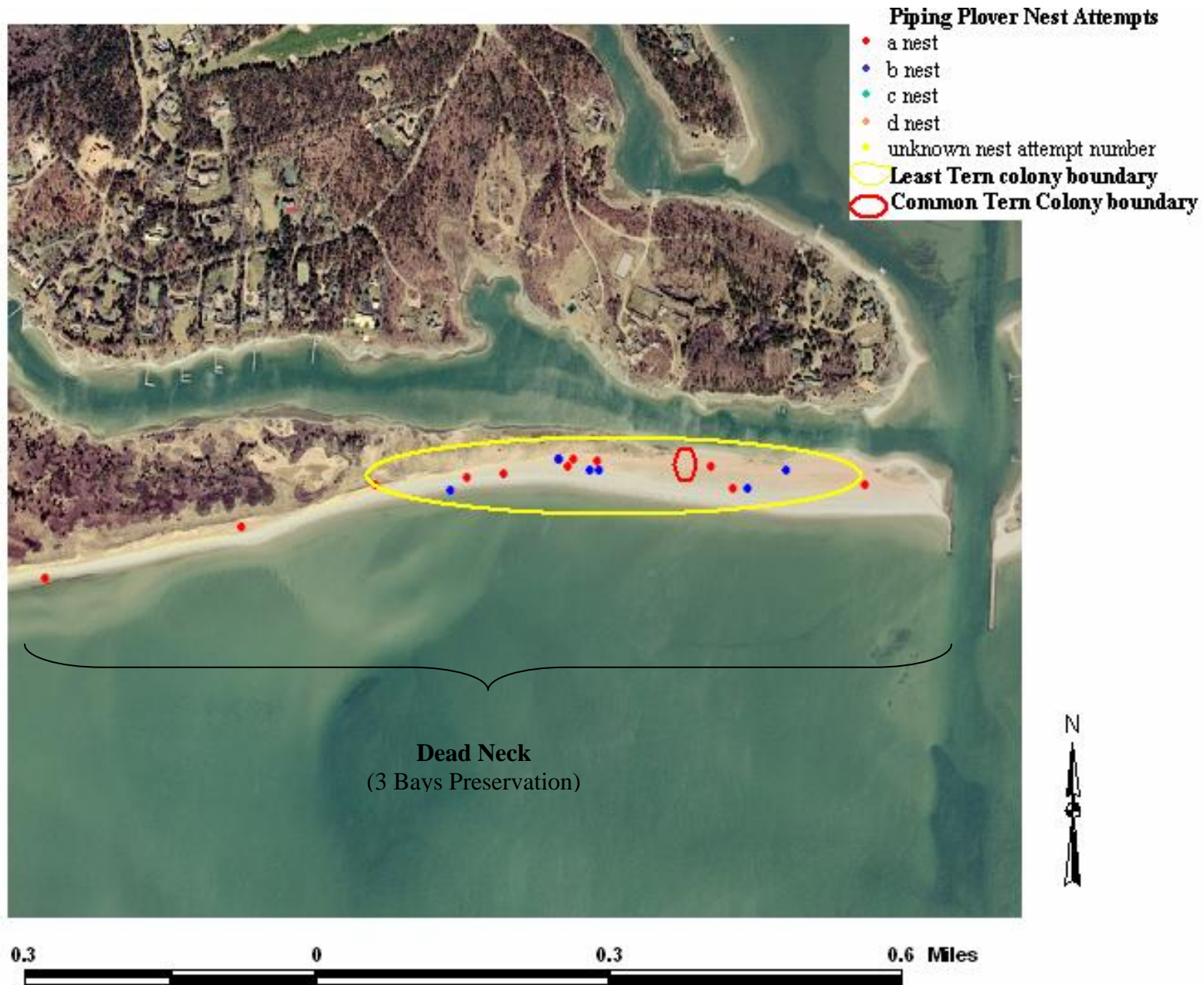


Figure 4. Aerial view of west end of Dead Neck/Sampsons Island, Osterville, MA, including nest locations of Piping Plovers and colony locations of Least Terns and Common Terns monitored by the Coastal Waterbird Program of Mass Audubon during 2005.

Number of Nesting Pairs of Least Terns and Common Terns on Dead Neck, Osterville, MA 1999 - 2005

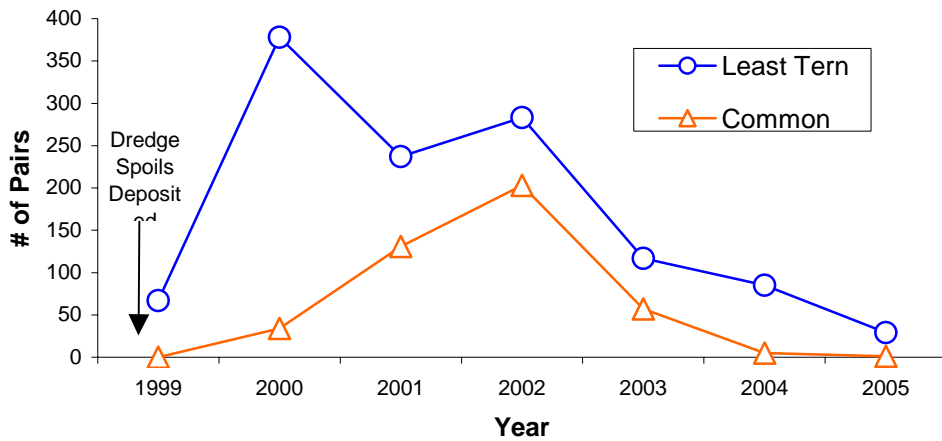


Figure 5. Abundance of Least and Common Terns nesting on the Dead Neck portion of Dead Neck Sampsons Island monitored by the Coastal Waterbird Program of Mass Audubon, 1999-2005.

Number of Nesting Pairs of Least Terns and Common Terns on Sampson's Island, Osterville, MA 1999 - 2005

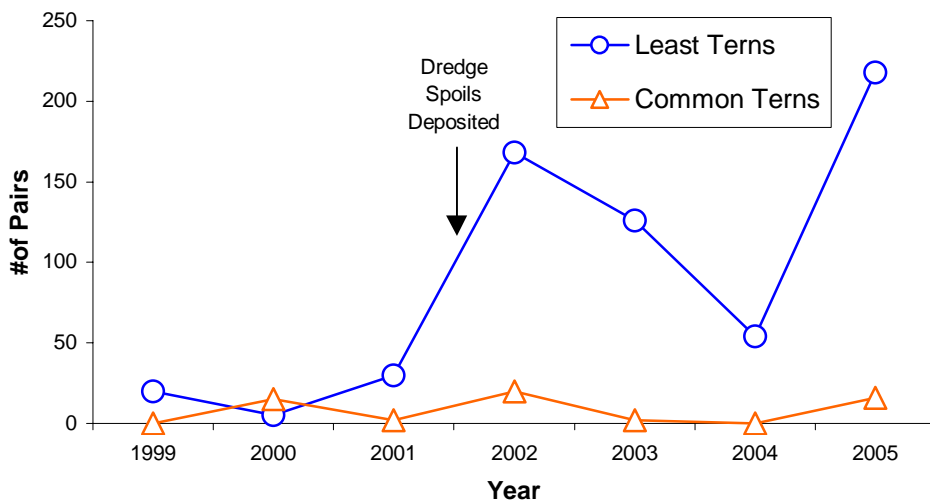


Figure 6. Abundance of Least and Common Terns nesting on the Sampsons Island portion of Dead Neck Sampsons Island monitored by the Coastal Waterbird Program of Mass Audubon, 1999-2005.