

2004 Shorebird Nesting Report
Dead Neck/Sampson's Island, Osterville, Massachusetts

prepared by
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Introduction

Dead Neck/Sampson's Island, located in Osterville, Massachusetts, is an important breeding site for nesting coastal waterbirds. The eastern portion, called Sampson's Island, is owned by the Mass Audubon (MAS). The western portion, Dead Neck, is owned by 3 Bays Preservation, recently donated by Rachel Mellon (Figure 1). The Coastal Waterbird Program (CWP) at Mass Audubon has monitored this site for nesting coastal shorebirds and seabirds since 1986.

In 2004, the Coastal Waterbird Program assigned two full-time seasonal staff (Phoebe Prather, Elyse Peterson) to monitor the nesting coastal waterbirds on Dead Neck/Sampson's Island, as well as provide educational programs to visitors. There were 17 pairs of Piping Plovers nesting on the island in 2004, 139 pairs of Least Terns and 5 pairs of Common Terns. Overall productivity of plovers was relatively high in 2004, and productivity for both species of terns was poor.

Mass Audubon staff recorded over 400 families on the Island Visitor Lists in 2004. Saturday Nature Walks were provided and well attended, particularly in July and August, with the opportunity for impromptu tours provided during the rest of the week. MAS staff also offered coordinated weekend educational games for children, which taught visiting children and their families about the local ecology of Sampson's Island and the nesting shorebirds.

Methods

Staff began working in the pre-breeding season (mid-April) and continued until post-breeding (early September). Sites were visited an average of six days/week from May 1 until Sep 6.

Beginning in April, CWP staff recorded all observations of Piping Plovers, American Oystercatchers, Least Terns, and Common Terns, and documented their location on the beach. Birds were monitored until they established nest sites, at which time CWP staff erected symbolic fencing (twine and posts) and signs around all nesting areas subject to human traffic. If deemed necessary, exclosures (circular, 10 ft diameter metal cages with 2 x 4" mesh, and a top made of bird netting) were erected around Piping Plover nests that were in danger of being predated. Exclosures were erected after the fourth and final egg was laid, and taken down upon hatching (exclosures are only utilized for plovers). In addition, CWP staff erected electric fencing on Sampson's Island (see below), with a grant provided by Davis Conservation Foundation.



LEGEND

- Piping Plover A nest
- Piping Plover A nest - estimated
- Piping Plover B nest
- Piping Plover B nest - estimated
- Estimated boundaries of Least and/or Common Tern Colony
- Estimated boundaries of electric fencing

Figure 1. Location of nesting Piping Plovers, Least Terns, and Common Terns on Dead Neck/Sampson's Island, Osterville, MA, in 2004. Circles with black circles inside indicate estimated locations (no GPS location data available). Satellite imagery is taken from 2001, therefore dredge spoils deposited on Sampson's Island in 2002 are not visible.

Piping Plover nests were monitored daily until hatching. After hatching, broods (family groups of adults and chicks) were monitored until chicks fledged (defined as 26 days old, or having the ability to fly >50 ft). 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 plovers, Least and Common Tern chicks are difficult to monitor after hatching, and 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. This provided a qualitative record of overall productivity (excellent to very poor).

Results

Piping Plovers

Over the past two decades, Dead Neck/Sampson’s Island has become an important site for nesting Piping Plovers nesting in Massachusetts (Figure 2). Since 1986, the total number of nesting pairs has increased from 1- 3 pairs to a high of 17 pairs during 2003 and 2004. In addition, average productivity on the island has increased from an average of 0.8 chicks/pair during 1986 – 1992, to an average of 1.74 chicks/pair during 1993 – 2004. Since 1988, the plovers on Dead Neck/Sampson’s have produced a total of 180 fledglings.

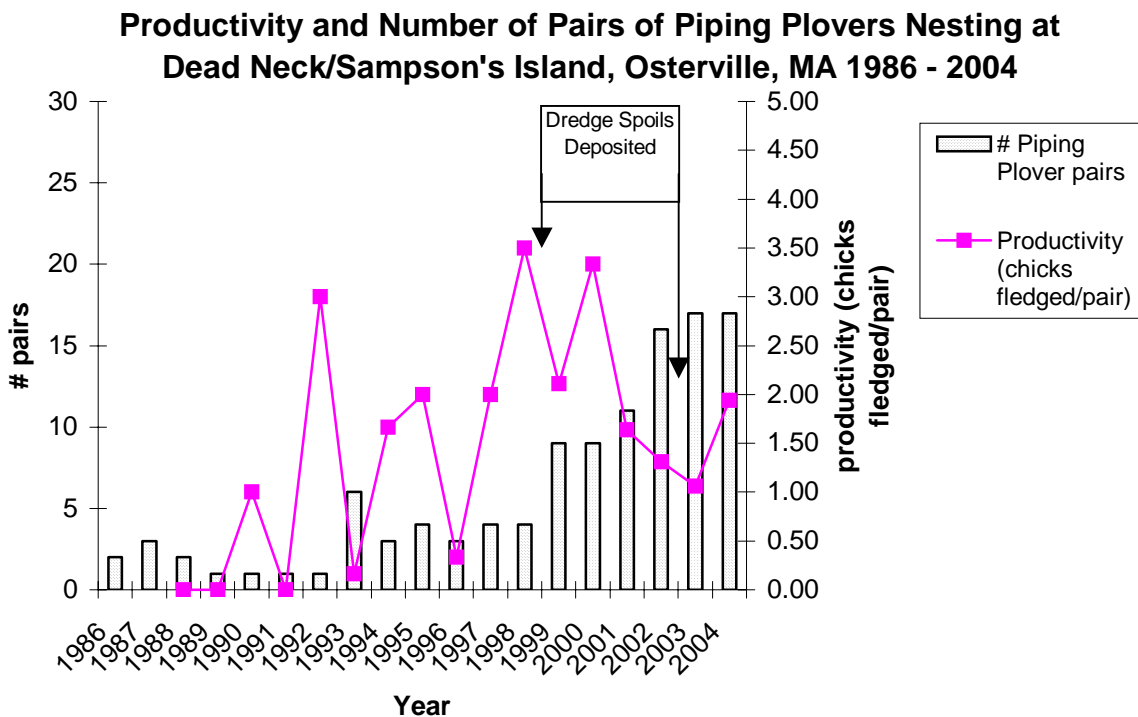


Figure 2. Abundance of Piping Plovers nesting at Dead Neck/Sampson’s Island, Osterville, MA and overall productivity (chicks fledged/breeding pair) during 1986 - 2004.

During the 2004 breeding season, 17 pairs of Piping Plovers established 20 nests on Dead Neck/Sampson’s Island, laying a total of 74 eggs with 70% hatching success (% of eggs laid that hatched). Productivity was high, at 1.94 chicks/pair. A breakdown of specific data for each of the two sites is provided in Table 1.

Site	Pair #	Nest ID	Cause of nest loss/failure	X = Exclosure erected	# eggs laid	# eggs hatched	# chicks fledged	GPS Location, Datum WGS 84	
								Northing	Easting
Dead Neck	1	DN01a §	Abandoned	X	4	0	0	N 41.60772	W 070.43336
	2	DN02a §		X	4	4	3	N 41.60707	W 070.43177
	3	DN03a §		X	4	2	0	N 41.60644	W 070.43076
	3	DN03b §			3	1	0	N 41.60727	W 070.43261
	4	DN04a §		X	4	4	2	N 41.60775	W 070.40337
	5	DN05a §	Abandoned, adult mortality, avian predator	X	4	0	0	N 41.60751	W 070.40322
	6	DN06a			4	3	3		
	7	DN07a §	Abandoned	X	4	0	0	N 41.60791	W 070.40906
	7	DN07b §			4	4	2	N 41.60781	W 070.40626
	8	DN08a	Predation American Crow		1	0	0	N 41.60774	W 070.40771
	8	DN08b		X	4	4	3	N 41.60755	W 070.41280
	9	DN09a	Washover		4	2	2	N 41.60778	W 070.40375
	Sampson's Island	10	DN10a §		X	4	4	2	
11		DN11a			2	2	2		
12		DN12a			4	4	1		
13		DN13a		X	4	4	3	N 41.60710	W 070.41483
1		SI01a		X	4	4	3	N 41.60771	W 070.41090
	2	SI02a §*		X	4	3	0		
	3	SI03a §		X	4	4	4	n/a found as chicks	n/a found as chicks
	4	SI04a*		X	4	3	3		
Total	17	20	5	9	74	52	23		

Table 1. Piping Plover nesting summary for Dead Neck/Sampson’s Island in 2004. Each pair was numbered chronologically (Pair 1, 2, etc.) according to the date the nest was found: “a” and “b” designate first and second nesting attempts, respectively.
 * indicates nest was located within electric fencing
 § indicates nest was located on dredge spoil

Plovers were first observed on both Dead Neck and Sampson’s Island on April 20, and the first nests were found on May 1. The first hatch occurred on June 27. For a pictorial timeline see Appendix I. Thirteen pairs of Piping Plovers laid a total of 16 nests on Dead Neck,

9 of which were located on dredge spoil deposited during the winter of 1998-99. 4 pairs of Piping Plovers laid a total of 4 nests on Sampson's Island, 2 of which were located on dredge spoil deposited in the winter of 2001-02.

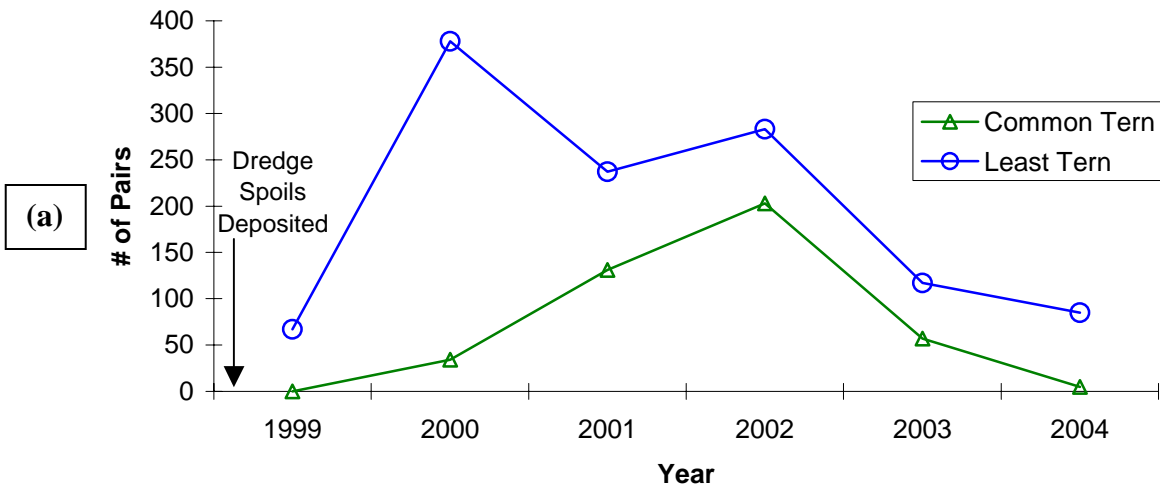
A total of 5 out of 20 Piping Plover nests (25%) were lost, all of which were located on Dead Neck. One nest was lost to predation by American Crow, and one to washover by an extreme tide. Three nests were abandoned, all of which were exclosed. In addition, one of the exclosed nests lost an adult to avian predation. On Sampson's Island, two of the Piping Plover nests were located within the electric fencing (see below), and also had exclosures erected around them. Both of these nests experienced 100% hatching success.

Least and Common Terns

During the past 7 years, total numbers of Least and Common terns nesting at Dead Neck/Sampson's Island increased, peaked, and subsequently declined. Past densities of both species of terns increased during the year after dredge spoils were deposited on both Dead Neck and Sampson's Island (Figure 3), however overall numbers of terns have declined on the Island during the past 3 years. In addition, productivity of terns has been particularly low for the past 3 years (for specific details of numbers of terns and qualitative productivity estimates, see Table 1, Appendix II).

Coyotes appeared to be the major cause of tern nest loss and chick loss during the 2004 season on Dead Neck/Sampson's Island. In response to high nest loss, CWP staff erected electric fencing (see below) on Sampson's Island. Although the terns that re-nested within the fencing experienced almost 100% hatching success, young chicks were rapidly lost after leaving the area into unprotected habitat within grass. Staff observed throughout the season that at least one or more coyotes regularly circled the area of electric fencing, and evidence was documented of one coyote attempting to jump the fence. Tracks indicated that the coyote became entangled, was likely shocked, and did not try to enter the fencing again. After this incident, the coyote(s) continued to circle the fencing on a regular basis. For a pictorial timeline of Least and Common Tern nesting chronology, see Appendix I.

**Number of Pairs of Nesting Least Terns and Common Terns
on Dead Neck ,Osterville, MA 1999 - 2004**



**Number of Pairs of Nesting Least Terns and Common Terns
on Sampson's Island, Osterville, MA 1999 - 2004**

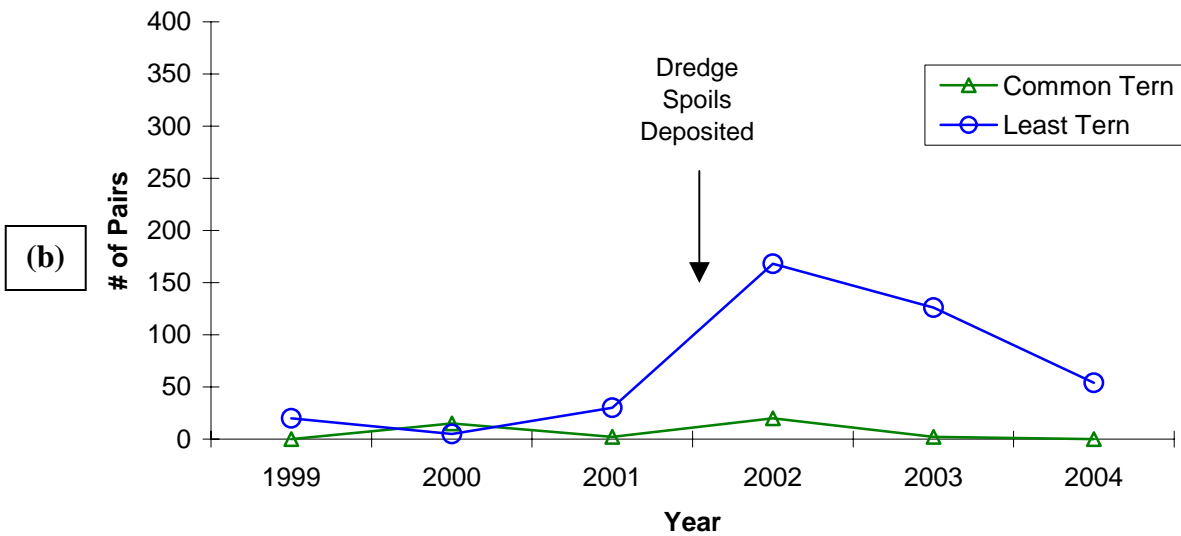


Figure 3. Numbers of pairs of nesting Common and Least Terns on Dead Neck (a) and Sampson's Island (b), 1999 – 2004. Arrow indicates when dredge spoils were deposited during the previous winter.

Least Terns

The first Least Terns were observed on Sampson's Island on May 11. On Sampson's Island, 46 nests were counted on June 8, 19 of which were established within the electric fencing, and 27 outside. The majority of these nests had at least 2 eggs, and were likely laid towards the end of May/early June. On June 18, the majority of the nests outside the fencing were predated, likely by coyote(s). The nests within the fencing were also lost, to an unknown predator. On June 26, a few pairs of Least Terns began renesting inside the electric fencing, after Least Tern decoys had been placed inside. On July 29, 16 Least Tern nests were documented inside the fencing, and on August 1, 33 nests and 10 chicks were found within the electric fencing. Staff observed that the majority of these nests hatched successfully and found one fledgling on July 18, however were unable to locate any other fledglings that may have hatched from this colony. Staff observations of coyote tracks throughout the area indicate that the Least Tern chicks that left the electric fencing were likely predated, and overall productivity of the colony was very poor.

On Dead Neck, the first Least Terns were observed on May 11, and a total of 85 nests were counted on June 8. The majority of these nests were lost to predation (at least in part due to coyote), and the overall productivity for this colony was also very poor.

Common Terns

The first Common Terns were observed on both Dead Neck and Sampson's on May 11. and the first nest was located on June 3. A total of 5 Common Tern nests were documented on the Dead Neck June 12. All nests were lost to predation, at least one of which was due to coyote. Although the pairs of Common Terns continued to renest, predation continued to be a problem, and 0 eggs hatched. Common Terns did not establish nests on Sampson's Island.

Electric Fencing

Electric fencing was installed on the Sampson's Island end of the island on May 31, and it was officially working on June 9. Symbolic fencing was installed around the electric fencing. Signs were posted on the symbolic fencing, as well as a buffer area in between the symbolic and electric fencing. Warning signs were posted at every other pole on the electric fencing itself (Figure 4), and the fencing was powered by a solar panel and battery. The dimensions of the fencing were approximately 2100 ft circumference, 3 ft 6 inches high, and covered a total area of roughly 250,000 ft².

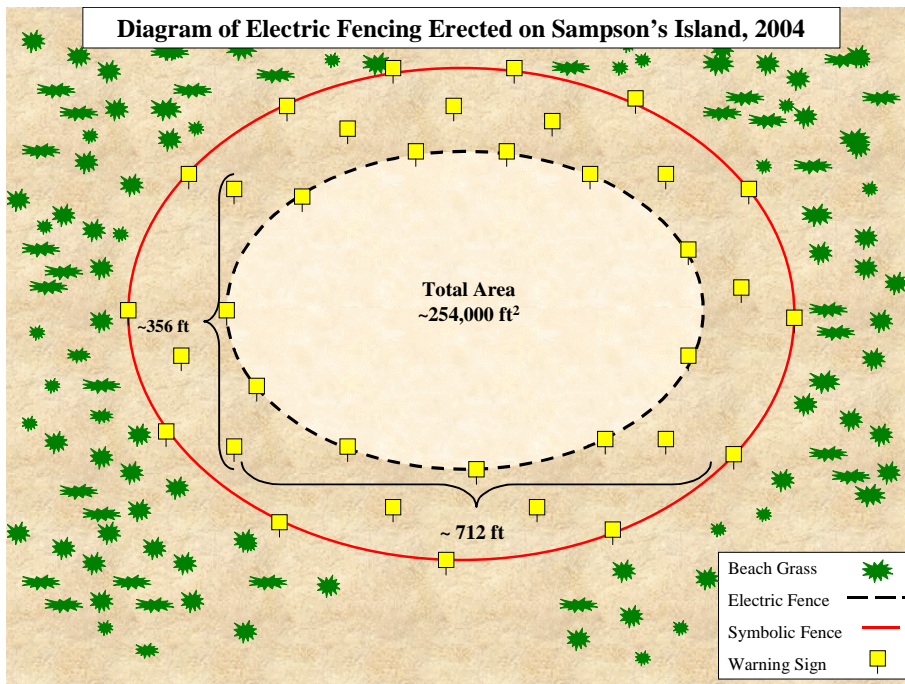


Figure 4. Diagram of approximate dimensions of electric fencing erected on the Sampson's Island portion of Dead Neck/Sampson's Island, 2004. For location of fencing on Sampson's Island, see Figure 5.

Because funding arrived late in the season, the electric fencing was assembled after Least Terns had started nesting in close proximity to water. Therefore, fencing was erected in an area north of the established nesting sites, in the event that additional terns would nest within the fencing later in the season given any nest failure. Least Tern decoys were placed inside the electric fencing, and some Least Terns established renests inside (see above). During late July, chicks were observed within the fencing. However, very few fledged Least Tern chicks were observed in late July/early August. In addition, two Piping Plover nests were located within the electric fencing, and after hatch plover broods exhibited limited use of the area.

Coyotes regularly circled the area of electric fencing; staff observed evidence of one coyote attempting to jump the fence. Tracks indicated that the coyote became entangled, was likely shocked, and did not try to enter the fencing again. After this incident, a regular trail worn into the ground indicated that the coyotes circled the fencing regularly throughout the season.

Monitors were unable to determine the fledging success rate of the Least Terns inside the electric fencing. However, it appeared that the majority of chicks may have been predated by coyotes; when Least Tern chicks were disturbed, staff observed that they frequently ran out of fencing into surrounding beach grass, where coyote tracks were observed daily.



*Area where
electric fencing
was erected on
Sampson's
Island, 2004*

Figure 5. Sampson's Island portion of Dead Neck/Sampson's Island, Osterville, MA. Circled area shows general area where electric fencing was erected in Piping Plover and Least Tern nesting areas in 2004.

Recommendations

In 2005, we recommend that current management practices for nesting coastal waterbirds be maintained, as well as to continue to educate the visitors Dead Neck/Sampson's Island on the ecology of the area.

Plovers

Piping Plovers experienced extremely high productivity this season, due to our continued cooperative management efforts with Three Bays Preservation as well as electric fencing provided by the Davis Conservation Foundation. The Coastal Waterbird Program is dedicated to the continued success of conservation and management of Piping Plovers on Dead Neck/Sampson's Island, and it is extremely important that we sustain current efforts on the island to maintain high productivity and site utilization by Piping Plovers.

In addition, 11 of the 20 nests established by plovers this year were located on dredge spoils. If beach grass encroachment continues, important plover habitat may be lost on the

Island. CWP staff will attempt to document any habitat encroachment by beach grass in 2005, and if necessary work in cooperation with Three Bays Preservation and the State of Massachusetts to determine whether management activities to increase the area of potential nesting habitat could be beneficial to the plovers on Dead Neck/Sampson's Island. In addition, CWP will also monitor exclosures closely in order to detect any trend of abandonment.

Terns

The declining trend in tern use of the Island as well as productivity is likely due to at least two factors: presence of predators, and new growth of vegetation over areas that were formerly sandy (i.e. dredge spoil sites).

To prevent predation on nests and chicks at tern colonies, the CWP plans to utilize electric fencing again in 2005 on Sampson's Island. Electric fencing will be erected early in the season, prior to tern arrival on site. Tern decoys will be placed within the fencing in order to attract terns to the area, and tern shelters (small wooden boxes in which chicks can hide) will also be placed inside the fencing. In addition, CWP may place unelectrified "decoy" fencing later in the season to prevent predation in additional areas, after mammalian predators have become familiar with electrified fencing, and have learned to stay away from it.

Regrowth of beach grass on tern habitat may also be a reason for the decline in total number of nesting tern pairs on the island. CWP staff will attempt to document any habitat encroachment by beach grass in 2005, and if necessary work in cooperation with Three Bays Preservation and the State of Massachusetts to determine whether management activities to increase the area of potential nesting habitat could be beneficial to terns on Dead Neck/Sampson's Island.

Acknowledgements

The Coastal Waterbird Program and Mass Audubon would like to thank Three Bays Preservation, Inc., particularly Lindsey Counsell, for continued support and funding. We look forward to our continued cooperative efforts in protecting the wildlife and the delicate ecosystem of Dead Neck/Sampson's Island.

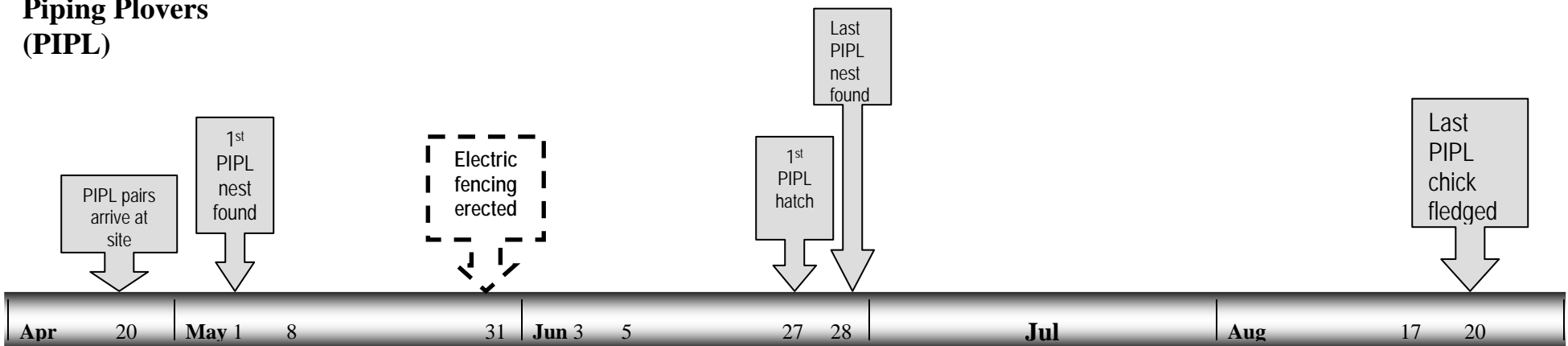
In addition, thank you to Townie Horner for his help bringing supplies out to the island, donating the use of his truck, as well as storing the CWP boat each winter.

We would also like to thank the Davis Conservation Foundation for their support and donation to provide electric fencing on Sampson's Island; we look forward to utilizing the fencing for future conservation efforts of Piping Plovers and Least Terns.

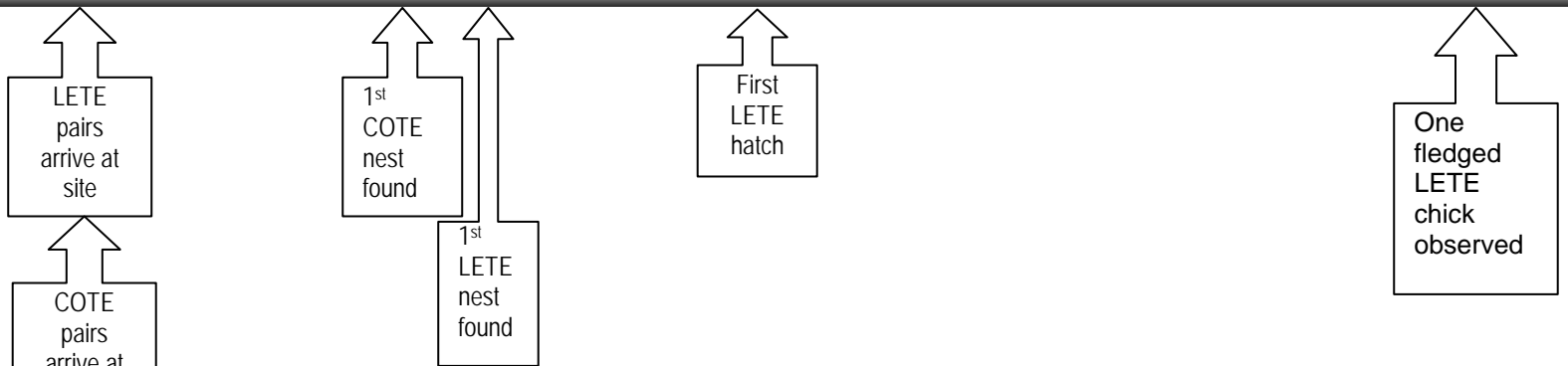
Appendix I

Piping Plover, Least Tern, and Common Tern Nesting Chronology, Dead Neck/Sampson's Island, 2004

Piping Plovers (PIPL)



Least (LETE) and Common Terns (COTE)



Extensive coyote predation in tern colonies external to electric fencing

Appendix II

Year	# Least Tern Pairs		# Common Tern Pairs		Total # Tern Pairs	Least Tern Productivity (excellent, good, average, poor, very poor)	Common Tern Productivity (excellent, good, average, poor, very poor)
	<u>Dead Neck</u>	<u>Sampson's I.</u>	<u>Dead Neck</u>	<u>Sampson's 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

Table 1. Numbers of nesting Least Tern and Common Tern pairs and qualitative estimates of productivity (chicks fledged/pair) at Dead Neck/Sampson's Island, Osterville, MA, 1998 – 2004.