

# Rhode Island Piping Plover Restoration Project: 2006



Submitted by:  
Wendy Edwards, Kate Iaquinto, Corrie Heinz, Sarah Shoppell, Sarah Maier  
Suzanne Paton and Abe Tompkins

Rhode Island National Wildlife Refuge Complex  
50 Bend Road  
Charlestown, RI 02813  
(401) 364-9124

In the 2006 breeding season, 58 pairs of piping plovers nesting along Rhode Islands' south coast were provided protection through the Rhode Island Piping Plover Restoration and Education Project. The U.S. Fish and Wildlife Service worked with support from the state Department of Environmental Management, various private landowners, towns, and non-governmental organizations to protect plovers on 11 beaches. The 11 sites utilized by plovers this year ranged from Napatree Point on the western border of RI across the south coast to Narragansett and across the bay to Sachuest Point NWR on Aquidneck Island. Additional RI nesting sites include beaches in Little Compton that were managed by The Nature Conservancy.

Storm tides over the winter of 2005-2006 were very large, dramatically changing beach habitat from sloping dunes to large overwash areas at the eastern ends of Quonochontaug and Ninigret Conservation Area. These overwash areas increased available nesting habitat on parts of the beach. Other parts of the beaches at Trustom Pond, Ninigret Conservation Area and Quonochontaug were changed from sloping dunes to sharp dunes drops creating less nesting habitat. The tides during the nesting season were also very high for the second year in a row. Excessive rainfall this year also likely contributed to young chick mortality.

The 58 pairs managed by the USFWS this year produced 63 chicks that survived to achieve fledging for a 1.09 productivity. This productivity is below the 1.24 estimate needed to maintain a stable population of piping plovers. However, over the past 15 years, productivity has averaged 1.57 (see Figure 2). Egg hatching success this year was 39.55% (see Table 2). This was a decrease over last years' egg hatching success rate of 56.33%. This decrease was due to increased rates of egg overwash and continued rates of egg predation. **Twenty three percent (23.47%)** of eggs overwashed this year (see Table 2). This was more the double the average number of eggs overwashed for the past 14 years of the project (1992-2005 average 11.1% overwash, 2005 plover report). Chick survival was 51.22%. This is slightly below the 14 year average of 53.96% (see Table 4).

## **NESTING AREAS**

Twelve mainland beaches (Napatree Point, East Beach in Watch Hill, Quonochontaug, Ninigret Conservation Area, Ninigret National Wildlife Refuge, Charlestown State Beach, Trustom Pond NWR, Green Hill, East Matunuck State Beach, Narrow River, Narragansett Town Beach, Sachuest Point NWR) that have been utilized by nesting plovers at least once during the past 10 years were initially surveyed beginning in April. Additionally, all suitable habitat on Block Island was checked twice a week beginning in mid spring. The Norman Bird Sanctuary for the second year continued taking the lead on monitoring their property and the town property at Third Beach in Middletown this year. Piping plovers were found nesting on 11 of the 15 sites, with Narragansett Town Beach, Green Hill, Norman Bird Sanctuary, and Block Island not used this year. No new nesting sites were established this year. This year 7 of the 11 sites directly managed by the Fish and Wildlife Service were either state or privately owned. Three sites were federal property and the eleventh site was town property at Third Beach.

## **MANAGEMENT TECHNIQUES**

### **Surveys**

One plover coordinator, one biological technician, one SCA intern, and two additional interns were hired for the 2006 nesting season. Additionally one bio-tech worked on Block Island 20 hours per week. Two interns were also hired at Sachuest Point who spent some of their time monitoring the plover pair at Sachuest Point. Volunteers and staff began searching for evidence of territorial males at the end of March, and beaches were checked at least twice each week during early April when most of the symbolic fencing was being constructed. Beginning on April 20 and continuing through August 13, each beach was monitored at least once daily, with few exceptions, to document incubation and chick survival.

## **Public Presentations**

In February a presentation was given to 1 URI class. In March two trainings were provided to the public, one at Sachuest Point National Wildlife Refuge and one at Kettle Pond visitors' center. Two lectures were given to Westerly high school and one talk was given at the Wethersfield nature center. All of these presentations were highly successful in educating the public and in recruiting volunteers.

## **Volunteer Program**

There were two volunteer trainings in late march this year. While the volunteer trainings are useful outreach events, I feel the majority of volunteer recruitment still takes places informally on the beaches throughout the summer as I meet people who are already on the beach interested in the birds. Throughout the summer, volunteers (including interns) contributed approximately 1920 hours in several capacities on refuge, state, and privately owned beaches.

During mid-season, volunteers were present at high volume public use beaches during the middle of the day to provide interpretive and educational outreach and at dawn and dusk to deter predation. Regular volunteers were at East Beach in Watch Hill, Quonochontaug, Trustom and Narrow River. This effort was crucial in combating predator problems for eggs and newly hatched chicks and for educating the public. (Volunteer help could be increased at Napatree, East Matunuck, and Ninigret).

## **Symbolic Fencing**

Breeding territories for both piping plovers and least terns were symbolically fenced in the same manner that they have been in the past. Narrow River was roped off at the end of March. East Beach in Watch Hill and Quonochontaug were roped the first weekend of April with help from 10 volunteers including students from the University of Rhode Island. Trustom Pond was roped off the same weekend by refuge staff. Ninigret Conservation and Napatree Point were roped off the follow week. A class from Chariho high school helped rope Ninigret and a class from URI helped roped Napatree point. East Matunuck was roped off mid April by pack 3 cub scouts from Hope Valley. Other sites were roped as necessary by staff. Fenced areas were removed as soon as chicks fledged from each site.

## **Predator Exclosures**

With a history of successfully exclosing nests and fledging chicks, nests at East Beach in Watch Hill, Trustom Pond NWR, East Matunuck, and Narrow River were again exclosed with 2x4 mesh round predator exclosures upon discovery of at least 2 eggs in the nest. Sachuest Point did not exclose again this year for fear of attracting more attention to the nest by the public and dogs, and a history of successful nest hatching without exclosure use. The nest monitored by the Norman Bird Sanctuary was also again not exclosed.

Exclosures were not used at Napatree, Quonnie or Ninigret this year due to the history of adult mortality associated with them. Quonnie has had high fledge rates without exclosures in past years. An increase in nest overwash and an increase in nest predation mid season associated with a medium to large canid resulted in low productivity for Quonnie this year. (Next year, if continued nest predation is evident at some point in the season it would be useful to attempt a few exclosures at Quonnie again while watching them closely to see if any predators are targeting in on them.)

The animal damage control division of the USDA was contracted to trap for 2 weeks early in the season at Ninigret. They did not catch any predators; but they did document a fox presence on the beach. This was confirmed throughout the nesting season as it seems the primary predator makeup of this beach has shifted this season from skunk to fox. This is the first year in recent years that any chicks fledged at Ninigret. However, the productivity is still incredibly low at this site and it is likely that further intervention from the USDA is necessary to help increase plover fledge rates.

## Dog Law enforcement

This year the westerly police started enforcing a no dog law on Napatree point. The police were also seen enforcing the no dog policy during the nesting season at east beach in watch hill.

Table 1: Dog on beach data from April 1<sup>st</sup> through August 15<sup>th</sup> 2006.

Beach	Dogs on Beach	Dogs off leash	Leashed dogs in closed area	Unleashed dogs in closed area
East Beach in Watch Hill	25	23	0	6
Napatree	76	37	0	0
Quonochontaug	20	16	0	2
Ninigret	4	3	0	0
Trustom	2	1	1	0
East Matunuck	4	2	0	0
Narrow River	24	16	4	0
<b>Total</b>	<b>155</b>	<b>98</b>	<b>5</b>	<b>8</b>

## Vehicles

### *East Beach in Watch Hill*

This year the beach was again closed to vehicles from May 1<sup>st</sup> through August according to the town ordinance. The East Beach Association trash crew monitored themselves past the ropes and this went well.

The Westerly police were noticed driving on the beach face to enforce dog laws. I spoke with them on the beach and requested that they not drive in front of the nesting sites after the chicks had hatched. No vehicles were noticed disturbing the nesting site after this time. It will be important to contact the Westerly police before the beginning of next season to reaffirm this for next year.

### *Quonochontaug*

The east end of Quonnie, just before the R.I.M.S. property, lost dune habitat and sand trail over the winter as a result of storms. At the beginning of the season the beachfront at the west end of the overwash area was roped off to the high tide mark alongside the RIMS property to discourage beach face driving. The overwash area was also roped off to the high tide line. In agreement with landowners, R.I.M.S. members accessed their property below the roped area.

Least terns nested in the overwash area. RIMS members drove below the roped area while nests were there. When least tern chicks hatched out RIMS members escorted themselves past the roped area with one person walking in front of the vehicle as the vehicle drove by only during the day. Vehicular access ceased at dark.

One pair of piping plovers nested in the overwash area. An agreement was established to stop vehicular access in this area when the plover chicks hatched; however, the nest was predated before it hatched.

### *Napatree*

The police were noticed driving on the beach face to enforce the new dog laws. We requested that they not drive in front of the nesting sites when the chicks were hatched. No vehicles were noticed disturbing the nesting site after the chicks hatched. It will be important to contact the Westerly police before the beginning of next season to reaffirm this for next year.

### *Ninigret Conservation Area*

The east end of Ninigret lost dune habitat and sand trail over the winter from storms. In meetings with the state, town, CRMC, and private property owners, it was agreed upon to close the sand trail past the second camping area for public safety reasons. Public response was very supportive of this and there were no incidents of vehicles on the beach past this area. The trail was closed from April 1<sup>st</sup> to Sept 15<sup>th</sup> 2006. Meetings are being scheduled to determine long-term vehicular access in this area.

It will be important to contact the Charlestown police before the beginning of next season to reaffirm this for next year.

### *Narrow River*

The Dunes Club continued to rake the beach as they have done for years. The staff that rakes the beach always keeps an eye out for the plover adults and chicks and they have been able to monitor themselves and avoid any disturbance to the birds.

### *East Matunuck State Beach*

East Matunuck generally rakes the beach east of where the plovers nest and feed. No chicks hatched out at East Matunuck this year so this was not a concern at this site.

### *Sachuest Point NWR*

While Sachuest Point doesn't rake the beach, second beach is typically raked up to the boundary of the refuge where the plovers nest. Sharon, the assistant refuge manager, and the interns at Sachuest handled monitoring the chicks when second beach was being raked this year.

## **Educational Displays**

### *Trustom Pond Interpretive Kiosk*

Interpretive signs were put up again this year.

### *Weekly Update Boxes*

Weekly update boxes were repaired over the winter and put out on all of the beaches again this year. The box at the parking lot at Quonnie was used as firewood. The update was put up on metal posts and signs for the rest of the season.

### *Interpretive Plover/Least Tern signs*

Interpretive plover signs were used again at every beach where plovers nested. This year new signs were used that explained the new funding and cooperative partnership with the state D.E.M. through the state wildlife grants. Least Tern signs were used at every beach where least terns nested.

## **Protected Feeding Area**

The only protected feeding area constructed this year was at the Narrow River site where we have provided this additional space, with a non-expiring letter of approval from CRMC, since 1997. The feeding area was put up a few days prior to the nest hatching and removed at day 25. The chick feeding area continues to be an effective management tool at this site.

## SURVEY RESULTS / DISCUSSION

A total of 58 pair nested on 11 beaches in South County, Aquidneck Island and Block Island this year. With 63 chicks surviving to achieve flight, we achieved a productivity of 1.09 chicks fledged per pair (see Table 6). Results from the season are summarized in the following section.

### Abundance / Distribution

Plovers are reported as pairs rather than individuals since they are in Rhode Island during the breeding season, and we very seldom document unmated individuals. For the third year in a row the number of nesting piping plover pairs in our area increased by 2. This year is was a 3.4% increase from 56 pairs in 2005 to 58 pairs in 2006. No new nesting sites were established this year. 51.7% of the pairs managed by USFWS nested on private land (including town land) while state and federal lands supported 22.4% and 25.9% of the population, respectively.

Figure 1: Number of nesting pairs on breeding beaches during 2006.

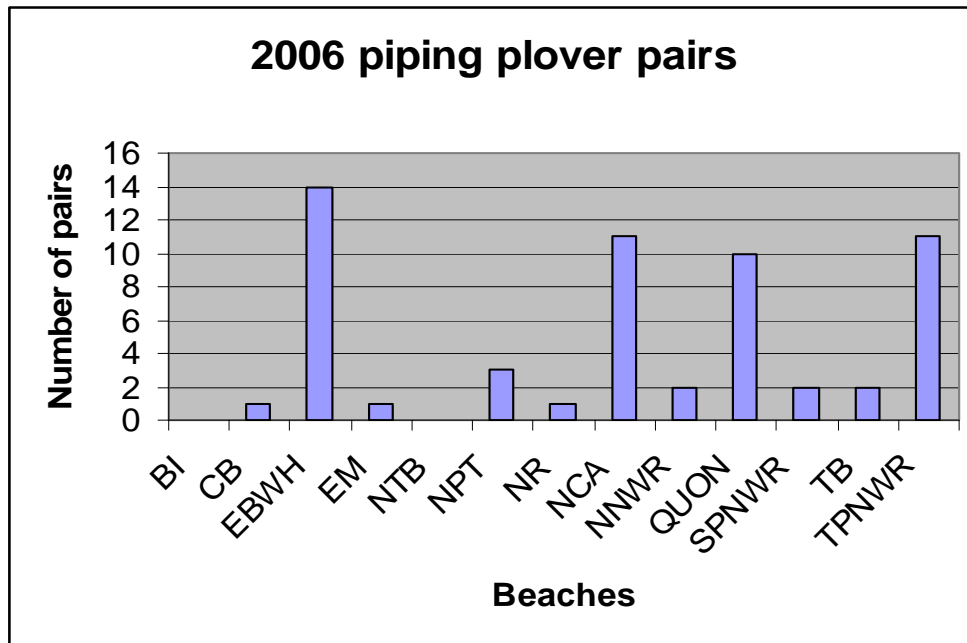




Table 2: Egg hatching success at each nesting beach in 2006.

<i>Beach</i>	<i># eggs</i>	<i># abandoned</i>	<i># overwashed</i>	<i># predated</i>	<i># unhatched</i>	<i>lost to humans</i>	<i># hatched</i>	<i>% hatched</i>
<i>Block Island</i>	0						0	<b>0.00%</b>
<i>Charlestown</i>	4				1		3	75.00%
<i>EBWH</i>	82	12	16	3	6		45	54.88%
<i>East Matunuck</i>	4	4					0	0.00%
<i>Napatree</i>	9		4	1	1		3	33.33%
<i>Narrow River</i>	4						4	100.00%
<i>NCA</i>	62		15	26			21	33.87%
<i>Ninigret NWR</i>	7			5			2	28.57%
<i>NTB</i>	0						0	0.00%
<i>Quonochontaug</i>	59		13	35	3		8	13.56%
<i>Sachuest NWR</i>	8						8	100.00%
<i>Third Beach</i>	8	4					4	50.00%
<i>Trustom NWR</i>	64	4	25	4	6		25	39.06%
<b>Total</b>	311	24	73	74	17	0	123	<b>39.55%</b>
Percentage		7.72%	<b>23.47%</b>	<b>23.79%</b>	5.47%	0.00%		
Total % eggs didn't hatch	<b>60.45%</b>							

### Egg Hatching Success

Egg hatching success for all sites was 39.55% this year (see Table 2). This year's rate is down from 2005's egg hatching success of 56.33%. This year we had high rates of egg hatching success at Narrow River (100%), Sachuest Point National Wildlife Refuge (100%), and at Charlestown Town Beach (75%). We also had good rates of egg hatching success this year at East Beach in Watch Hill (54.88%) and at Third Beach (50%).

### Egg Failure

In 2006, 60.45% of eggs did not hatch. This number is much higher than the 43.67% of eggs that did not hatch in 2005. Lower egg hatching was seen at Ninigret Conservation Area (33.87%), Napatree (33.33%), Ninigret National Wildlife Refuge (28.57%), Quonnie (13.56%) and East Matunuck (0%).

This year the percentage of nests overwashed (23.47%) and the percentage of nests predated (23.79%) were the two largest factors in egg hatching failure. These two numbers were practically identical this year. This is due to a dramatic increase in the number of nests overwashed this year. Percentage of eggs overwashed this year was more than twice the average percentage of eggs overwashed from 1992-2005 (11.1%). High tides as well as poor dune quality on some beaches likely combined to result in this dramatic increase in nests overwashed this year, adding to the high percentage of eggs that didn't hatch.

Predation was the other large factor in egg failure this year. Predation rate in 2006 (23.79%) was slightly higher than the predation rate in 2005 (19.67%). This is mainly due to the high rates of predation this year at Ninigret (41.9%) and Quonochontaug (59.3%). Combined these two sites accounted for 82.4% of all eggs predated in 2006. Ninigret has a historically high rate of egg predation. Predation at Ninigret seemed to shift from skunks in past years to mainly fox this year. Predation at Quonnie was a dramatic increase over past years and was mainly due to mid-large sized canines as indicated by tracks found around predated nests. Percentage of abandonment (7.72%) decreased slightly from last year and unhatched eggs (5.47%) increased slightly from last year (see Table 2).

## Nest Failure

This year 58 pairs had 88 nests (1.52 nests per pair) as compared to the 56 pairs that had 79 nests (1.41 nests per pair) in 2005. Over the past 15 years of plover management abandonment (13.8%), predation (14.4%), and overwash (13.0%) are responsible for similar percentages of nest failure (see Table 3).

Table 3: Number and percentage of nests lost to various causes for the previous 15 years.

<b>Year</b>	<i>Total # of nests</i>	<i>Abandoned</i>	<i>Overwash</i>	<i>Predation</i>	<i>Vandalism</i>	<i>Miscellaneous</i>	<i># of failed</i>	
							<i>nests</i>	<i>% failed</i>
<b>1992-2006</b>	646	89(13.8%)	84(13.0%)	<b>93(14.4%)</b>	2(.3%)	3(.5%)	271	42.0%

## Chick Survival

This year 51.22% of chicks that hatched survived (see Table 4). This is about the same as last years chick survival rate of 51.53% and this years' chick survival rate is just below the average of 53.96% recorded since 1992.

Looking at survival in 2006 by beach, Narrow River, East Beach in Watch Hill, and Charlestown Beach had the highest rates of chick survival. Narrow River, one of our smaller sites and as in most years, had all the chicks that hatched survive. East Beach in Watch Hill had 95.56% chick survival rate. This is a significant rate of success given the large number of plovers that nest here and this beach continues to fledge a significant amount of the seasons' plover chicks. Charlestown Beach, again on of our smaller sites, had a high chick survival rate of 66.67%.

## Chick Mortality

Percentage of chicks hatched that did not fledge was highest (100%) at Ninigret National Wildlife Refuge, Napatree, and Third Beach (see Table 5). It is likely that a combination of predation and intense rains when chicks were newly hatched combined to result in chick mortality at these sites. Sachuest Point also had a high rate of chick mortality this year at 87.5%. This was also likely due to intense rains in the first few days of the chicks' lives.

Ninigret Conservation Area (85.71%), Quonnie (75%), and Trustom Pond (68%) also had high rates of chick mortality this year. Chick mortality at these sites was likely due to high rates of predation.



Table 4: Annual piping plover chick survival 1992-2006.

<i>Year</i>	<i># Hatched</i>	<i># Fledged</i>	<i>% Annual Survival</i>
1992	22	19	86.36%
1993	67	30	44.78%
1994	52	31	59.62%
1995	77	38	49.35%
1996	93	51	54.84%
1997	91	34	37.36%
1998	72	37	51.39%
1999	94	50	53.19%
2000	101	48	47.52%
2001	110	63	57.27%
2002	141	90	63.83%
2003	111	58	52.25%
2004	136	88	64.71%
2005	163	84	51.53%
2006	123	63	51.22%
<b>Total</b>	1453	784	<b>53.96%</b>

Table 5: Piping Plover chick hatching and survival data for 2006.

<i>Beach</i>	<i># Hatched</i>	<i>% Total Hatched</i>	<i># Fledged</i>	<i>% Beach Fledged</i>	<i># Not Fledged</i>	<i>% Beach Not Fledged</i>
<i>Block Island</i>	0	0.00%	0	0.00%	0	0.00%
<i>Charlestown</i>	3	2.44%	2	<b>66.67%</b>	1	33.33%
<i>EBWH</i>	45	<b>36.59%</b>	43	<b>95.56%</b>	2	4.44%
<i>East Matunuck</i>	0	0.00%	0	0.00%	0	0.00%
<i>Napatree</i>	3	2.44%	0	0.00%	3	<b>100.00%</b>
<i>Narrow River</i>	4	3.25%	4	<b>100.00%</b>	0	0.00%
<i>NCA</i>	21	<b>17.07%</b>	3	14.29%	18	<b>85.71%</b>
<i>Ninigret NWR</i>	2	1.63%	0	0.00%	2	<b>100.00%</b>
<i>NTB</i>	0	0.00%	0	0.00%	0	0.00%
<i>Quonochontaug</i>	8	6.50%	2	25.00%	6	<b>75.00%</b>
<i>Sachuest NWR</i>	8	6.50%	1	12.50%	7	<b>87.50%</b>
<i>Third Beach</i>	4	3.25%	0	0.00%	4	<b>100.00%</b>
<i>Trustom NWR</i>	25	<b>20.33%</b>	8	32.00%	17	<b>68.00%</b>
<b>Total</b>	123		63		60	

### Productivity

The overall productivity for the 11 sites utilized this year was 1.09 (see Table 6). This years' productivity was again mainly attributed to East Beach in Watch Hill, where 14 nesting pairs fledged 43 chicks (68% of total chicks fledged in 2006) for the outstanding fledged rate of 3.07. Of our other large beaches, Trustom had lower than usual productivity with 11 pairs fledging 8 chicks for a 0.73 productivity. Quonochontaug also had unusually low productivity

compared to the past few years with 10 pairs fledging 2 chicks for a 0.2 productivity. Napatree had a low productivity year with no chicks being fledged. Ninigret had 3 chicks fledged. This was an increase over past years even though it was still very low productivity of 0.27. From our smaller sites Narrow River had its typical great productivity of a 4.0. Charlestown Beach had also had a great productivity of 2.0. The other smaller sites however had low productivity. Sachuest had a 0.5, and Third Beach and East Matunuck had no productivity. The total productivity for this year, 1.09, was less than the 1.24 needed to maintain an increasing population. Average productivity over the 15 years the project has been managing the birds is 1.57, greater than the 1.5 productivity needed to maintain an increasing population.

Figure 2: Annual productivity of piping plovers at all USFWS managed beaches combined from 1992-2006.

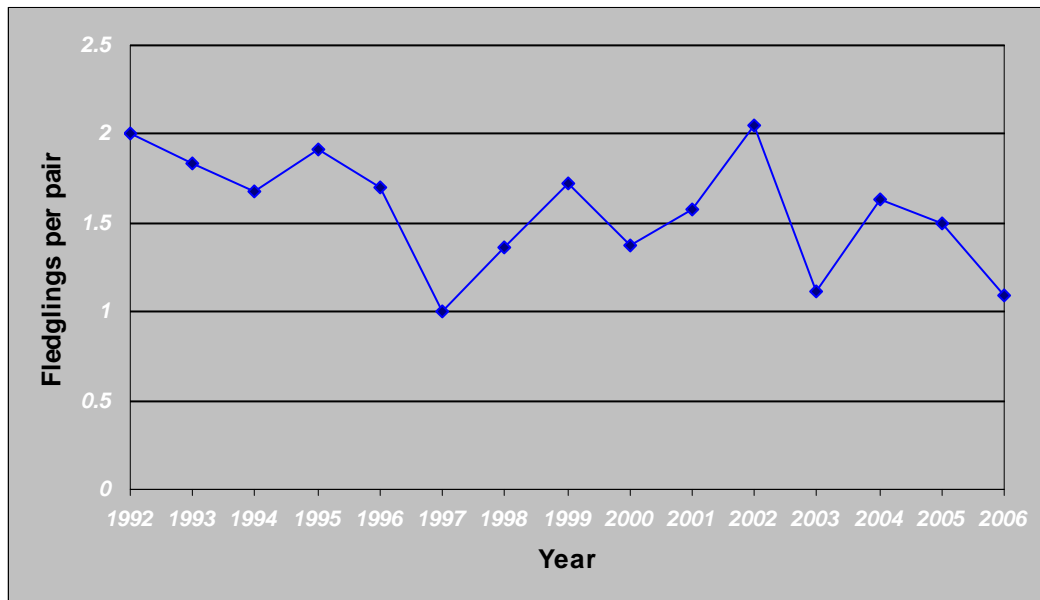


Table 6: Productivity of piping plover nesting at USFWS managed Rhode Island beaches in 2006.

<i>Beach</i>	<i>Index Adults</i>	<i>Index Pairs</i>	<i>Total Pairs</i>	<i>Fledged</i>	<i>Productivity</i>
<i>East Matunuck</i>	2	1	1	0	0.00
<i>Narrow River</i>	3	1	1	4	4.00
<i>Trustom</i>	26	11	11	8	0.73
<i>Napatree</i>	5	1	3	0	0.00
<i>EBWH</i>	30	14	14	43	3.07
<i>Quonnie</i>	16	8	10	2	0.20
<i>Ninigret Conservation Area</i>	18	9	11	3	0.27
<i>NNWR and Arnolda</i>	2	1	2	0	0.00
<i>Block Island</i>	1	0	0	0	0.00
<i>Third Beach</i>	4	2	2	0	0.00
<i>Sachuest NWR</i>	4	2	2	1	0.50
<i>Charlestown</i>	0	0	1	2	2.00
<b>Total</b>	<b>111</b>	<b>50</b>	<b>58</b>	<b>63</b>	<b>1.09</b>

## **LAW ENFORCEMENT ISSUES**

This year a 4-wheeler was caught driving in front of nesting areas at Quonnie. Federal, state, and local law enforcement officials responded to the situation. This incident occurred days before the first chicks hatched at Quonnie. No plovers were documented injured from the harassment.

## **MEDIA**

There were a few articles in south county paper this summer. One article in the Charlestown press on the boy scouts that helped rope East Matunuck and one article in the Westerly Sun in regards to endangered species day. Both articles were very positive and supportive.

## **GIS**

Nesting locations were recorded and over the winter will be put into a database in arcmap9. Previous nesting locations will be organized into a new database in the updated software. There are still locations from early nesting years that need to be found and added to the database. In the future we plan to start mapping least tern nesting sites as well.

## **ACKNOWLEDGEMENTS**

Funding for this program comes from a cooperative agreement with the state of Rhode Island Department of Environmental Management. This state wildlife grant is an agreement to fund the restoration project for 2006, 2007, and 2008. This grant is made possible through match provided by landowners and volunteers.

Landowners provided approximately \$70,000 of in kind match and volunteers contributed approximately \$30,000 of in-kind match towards the state wildlife grant. Volunteers walked beaches to look for plover nesting activity, constructed symbolic fencing, helped put up exclosures, monitored nests and chicks, and interfaced with the public throughout the season.

The biotech position on Block Island was cooperatively supported by the US Coast Guard, the Town of New Shoreham, The Nature Conservancy, the Friends of the NWR of RI, and the USFWS. Without the combined efforts and contributions of many, this project would not be possible.

## **APPENDIX 1:**

### **NESTING IN DETAIL: August 12<sup>th</sup> 2006**

#### **Block Island**

##### *Summary*

- No plovers seen recently

#### **Charlestown Beach**

##### *Summary*

- One pair nesting with 2 chicks fledged

#### **East Beach in Watch Hill (Maschaug)**

##### *Summary*

- 14 pairs, 43 chicks fledged

### *Nesting Details*

- One pair with a 4-egg nest at 45.5 possible adult mortality, eggs abandoned May 11<sup>th</sup> renest at 45 with 3 chicks fledged
- One pair at 19.5 4-egg nest overwashed May 15<sup>th</sup>, continued to inc 1 egg abandoned egg May 22<sup>nd</sup> renested at 20.75 with 4 chicks fledged
- *One pair at 51.9 eggs predated May 8<sup>th</sup> renested at 51 with 4-eggs nest overwashed renested at 52.5 with 3-egg nest abandoned June 25<sup>th</sup> renested at 52.25 with 2 eggs predated June 30<sup>th</sup> laid 3<sup>rd</sup> egg at 51 egg predated July 3<sup>rd</sup>*
- One pair at 41 with 2 chicks fledged
- One pair at 39.9 nest overwashed May 15<sup>th</sup> renested at 39.5 with 4 chicks fledged
- One pair at 56.5 4-egg nest abandoned May 22<sup>nd</sup> renested at 57.75 with 4 chicks fledged
- One pair at 28.5 2-eggs overwashed May 15<sup>th</sup> renested at 32.5 nest abandoned June 2<sup>nd</sup> renested at 31 with 4 chicks fledged
- One pair at 18 4-egg nest 1 egg started to hatch but none of them hatched chicks nest abandoned, renested at 18 with 3 chicks fledged
- One pair at 24.05 with 3 chicks fledged
- One pair at the Dunnies 3 chicks fledged
- One pair at 48.5 4 chicks fledged
- One pair at 29.75 4 chicks fledged
- One pair at 60.75 3 chicks fledged
- One pair at 62.5 with 2 chicks fledged

### **East Matunuck**

#### *Summary*

- *One pair with a nest started to hatch but no chicks came out and nest was abandoned*

### **Green Hill**

#### *Summary*

- No birds seen setting up territories

### **Napatree**

#### *Summary*

- *One pair on the back o/w with 3 chicks lost day 1*
- *One pair with a nest at 17.75 nest overwashed June 18<sup>th</sup>, renested at 19.75 nest overwashed June 27<sup>th</sup>*
- *One pair with 1-egg predated at 23 on June 14<sup>th</sup>*

### **Narrow River**

#### *Summary*

- One pair with 4 chicks fledged

### **Narragansett Town Beach**

#### *Summary*

- No adults seen establishing territories

### **Ninigret Conservation Area and National Wildlife Refuge**

#### *Summary*

- 13 pairs, 3 chicks fledged

#### *Nesting Details*

- *One pair with a 4-egg nest at 30.5 overwashed May 29<sup>th</sup> renested 22.75 with 1e predated June 9<sup>th</sup> renested at 25 eggs predated June 25<sup>th</sup>*

- One pair at 41.5 with a 4-egg nest overwashed May 29<sup>th</sup> renested at 43.5 nest predated June 28<sup>th</sup>
- One pair with a 4-egg nest around pvc 1 predated June 2<sup>nd</sup> renested at 2.5 with a 4-egg nest predated June 19<sup>th</sup>
- One pair with a 4-egg nest at 12.5 predated July 6<sup>th</sup>
- One pair with a 3-egg nest at pvc 31 eggs overwashed but still inc, 3 chicks fledged!!
- One pair at 18.5 4-egg nest predated June 25<sup>th</sup>
- One pair with a 4-egg nest at pvc 60 3 chicks lost 4 days old
- One pair with a 3-egg nest at pvc 82 nest overwashed May 29<sup>th</sup> renested at 81.5 with 4 chicks predated 3 days old
- One pair with a 3-egg nest at 63 4 chicks lost day 1
- One pair at 69.25 with chicks lost 3 days old
- One pair at 91.5 with 2 chicks predated 2 days old
- One pair with a nest at the refuge 4 eggs predated June 23<sup>d</sup> renested at 55 with nest overwashed 7/21
- One pair with a nest at Arnolda with 2 chicks predated 2 days old

### **Norman Bird Sanctuary**

#### *Summary*

- No adults seen establishing territories

### **Sachuest Point National Wildlife Refuge**

#### *Summary*

- One pair with 1 chick fledged
- One pair with chicks lost early on

### **Third Beach**

#### *Summary*

- One pair with 4 chicks lost after heavy rains
- One pair with nest flooded

### **Trustom Pond National Wildlife Refuge**

#### *Summary*

- 11 active pairs with nests, 8 chicks fledged

#### *Nesting Details*

- One pair nested at 39.5 nest overwashed May 16<sup>th</sup>, renested at 39.5 on May 23<sup>rd</sup> 2-egg overwashed on May 29<sup>th</sup>, reneest at 43.9 4 chicks fledged
- One pair with a 3-egg nest at pvc 31 eggs predated June 1<sup>st</sup> renested at 30.75 with 2 chicks lost 13 days old
- One pair nested at 36 overwashed May 16<sup>th</sup> renested at 37 on May 23<sup>rd</sup> with 2 eggs, 2 eggs overwashed on May 31<sup>st</sup> but rescraped around eggs 2 eggs overwashed June 16<sup>th</sup>
- One pair nested at 26 overwashed May 16<sup>th</sup> renested at 25.75 on May 23<sup>rd</sup> 4-egg nest abandoned June 14<sup>th</sup>
- One pair with 2 eggs at 16.25 overwashed on May 16<sup>th</sup> renested at 17.5 with 2 chicks lost day 5
- One pair at Cards Pond with 1 chick fledged
- One pair with a nest at 9.75 1 chick fledged
- One pair at 21 with 2 chicks lost 8 days old
- One pair with a 3-egg at 48.5 nest abandoned May 29<sup>th</sup> renested at cards pond with 2 chicks fledged
- One pair with a 4-egg nest at 38 1 chick lost 18 days old
- One pair with a 4-egg nest at 23 hatched and chicks loss

## Quonochontaug

### Summary

- 10 pairs, 2 chicks fledged

### Nesting Details

- One pair with a 4-egg nest at pvc 32 nest predated, renest at overwash nest predated June 24<sup>th</sup>
- One pair with a 4-egg nest at pvc 85.5 nest predated May 30<sup>th</sup>, renested at 84.25 nest overwashed July 6<sup>th</sup>
- One pair at pvc 1.75 2 chicks fledged
- One pair with a 4-egg nest at pvc 98 predated June 1<sup>st</sup>, renested at 96 eggs predated June 26<sup>th</sup>
- One pair with a 3-egg nest at 16 overwashed May 15<sup>th</sup>, renested on May 23<sup>rd</sup> at 14.5 1 chick lost 8 days old
- One pair with a 4-egg nest at pvc 81 predated May 30<sup>th</sup>, renested at 80, tide overwashed July 1<sup>st</sup>, 1-egg was incubated past hatch date and overwashed 7/16
- One pair with a 4-egg nest at pvc 89 predated June 11<sup>th</sup>
- One pair with a 4-egg nest at pvc 93.5 3 chicks lost at 16 days old
- One pair with a 4-egg nest before the pvc's between the 1<sup>st</sup> and 2<sup>nd</sup> path to the beach, predated May 30<sup>th</sup>, renested at 78 nest predated June 11<sup>th</sup>
- One pair with a 4-egg nest at 0.5 nest predated May 30<sup>th</sup>

## APPENDIX 2: Least Terns 2006

Table 7: Least tern nesting productivity for 2006.

<i>Beach</i>	<i>Census A</i>	<i>Date</i>
<i>Napatree</i>	0	14-Jun
<i>EBWH</i>	107	14-Jun
<i>Ninigret CA&amp;WR</i>	12	14-Jun
<i>Trustom Pond</i>	19	13-Jun
<i>Narrow River</i>	14	13-Jun
<i>East Matunuck</i>	0	13-Jun
<i>Quonnie</i>	9	13-Jun
<b>Total nesting pairs</b>	<b>161</b>	

<i>Beach</i>	<i>Census B</i>	<i>Date</i>
<i>Napatree</i>	0	
<i>EBWH</i>	28	12-Jul
<i>Ninigret CA&amp;WR</i>	2	5-Jul
<i>Trustom Pond</i>	22	8-Jul
<i>Narrow River</i>	34	11-Jul
<i>East Matunuck</i>	0	
<i>Quonnie</i>	23	12-Jul
<b>Total nesting pairs</b>	<b>109</b>	

<i>Beach</i>	<i>Chicks</i>
<i>Napatree</i>	0
<i>EBWH</i>	10
<i>Ninigret CA&amp;WR</i>	0
<i>Trustom Pond</i>	0
<i>Narrow River</i>	24
<i>East Matunuck</i>	0
<i>Quonnie</i>	12
<b>Total</b>	<b>46</b>

**Total Productivity** 0.29

There were a total of 161 nesting pairs of least terns on beaches monitored by the US Fish and Wildlife Service in Rhode Island this year (see Table 7). This number is an increase from 135 pairs last year. A total of 46 chicks were fledged this year for a nesting productivity of 0.29. There was a decrease in the number of nesting terns between the A and B census. This was likely due to a high tide that washed over a majority of the least tern nests on July 1<sup>st</sup>. (This is a similar occurrence to the high tide that overwashed about half of the nests around July 1<sup>st</sup> last year.) Even with this devastation, least terns re-nested and fledged chicks although productivity was a little low this year.

Electric fencing wasn't used at Trustom Pond this year. Pairs of least terns nesting at Trustom Pond this year was lower than usual with 19 pairs nesting in the A census and 22 pairs nesting in the B census. Least terns nested at the Trustom pond and cards pond overwash and also in the 22-26 pvc area on the beach. The majority of least tern nests were overwashed at Trustom pond this year. Perhaps next year placing electric fence and decoys back in the overwash at Trustom would encourage the least terns to nest farther away from the tide line.

Most of the least terns nested at East Beach Watch Hill. One hundred and seven pairs of least terns nested during the A census. Twenty eight pairs nested during the B census, after most nests were overwashed. A total of 10 chicks fledged. While habitat was rather unchanged at Napatree this year no least terns nested there.

Narrow River had 14 pairs nest during the A census and 34 pairs nest during the B census. Narrow River fledged 24 chicks and even though it's one of our smallest least tern sites it had the most nesting pairs during the B census and also had the highest least tern productivity of any site this year.

Ninigret Conservation Area and Quonochontaug overwash habitat increased in some areas at these sites. In particular, overwash areas increased where sand trails were overwashed at the east ends of each site. Twelve pairs of least terns nested during the A census and 2 pairs of least terns nested during the B census at Ninigret. There was no productivity at Ninigret this year. At Quonnie, 9 pairs nested during the A census and 23 pairs nested during the B census with 12 chicks fledged. Least Terns have not nested at Quonnie in past years. This year they nested mostly at the overwash site.



Figure 3: Annual productivity of least terns at all USFWS managed beaches combined from 2004-2006.

