2003 New Jersey Endangered Beach Nesting Bird
(Piping Plover, Least Tern and Black Skimmer)
Site Management Report

Prepared By
C. David Jenkins, Principal Zoologist
Todd Pover, Biological Assistant

New Jersey Department of Environmental Protection
Division of Fish and Wildlife
Endangered and Nongame Species Program
Introduction

This report provides a site-by-site summary of monitoring and management efforts undertaken in New Jersey in 2003 for the protection of piping plovers, least terns and black skimmers at all coastal nesting sites. The report is compiled and edited by the New Jersey Division of Fish and Wildlife (NJDFW) - Endangered and Nongame Species Program. NJDFW is responsible for management at all municipal beaches and state-owned Parks or Natural Areas, as well as one U.S. Coast Guard facility (TRACEN) and one county park (Seven Presidents Oceanfront Park). Information for other nesting sites was provided to NJDFW by the site managers responsible for the management at those sites. This includes the National Park Service, Gateway National Recreation Area for Sandy Hook; the U.S. Fish and Wildlife Service, Forsythe National Wildlife Refuge for Holgate and Little Beach; the U.S. Fish and Wildlife Service, Cape May Wildlife Refuge for U.S. Coast Guard – LSU; and The Nature Conservancy, Delaware Bayshores Office for portions of the Cape May Meadows.

This report is organized on a site-by-site basis, geographically from north to south. Topics addressed for each site include: Monitoring and Patrolling, Fencing/Posting, Predator Exclosures, Predator Control, Beach Management, Coordination/Communication, Beach Nesting Bird Management Plan and Outreach. Where necessary, additional topics are covered under specific headings or Other.

The Management heading discusses current (2003) monitoring and management practices relevant to each management topic, while the Recommendations heading presents a discussion of recommended changes to these policies and practices as suggested by the site manager. A brief summary of nesting results is included under the heading Nesting Results.

A table summarizing the species present, the agency responsible for management and the management techniques used at each site is provided at the beginning of this report. In addition, a map showing the location of 2003 nesting sites is also provided.

Additional copies of this report, as well as other reports and information regarding endangered beach nesting birds in New Jersey are available online at www.njfishandwildlife.com or by request at:

New Jersey Division of Fish and Wildlife
Endangered and Nongame Species Program
2201 Route 631
Woodbine, NJ  08087
# Glossary of Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>ATV</td>
<td>All-Terrain Vehicle</td>
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<tr>
<td>BNB</td>
<td>Beach Nesting Bird(s)</td>
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<td>BP</td>
<td>Beach Patrol (Lifeguards)</td>
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<td>CCRP</td>
<td>Coastal Conservation Research Program</td>
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<tr>
<td>CDF</td>
<td>Contained Disposal Facility</td>
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<td>ENSP</td>
<td>Endangered and Nongame Species Program</td>
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<td>LSU</td>
<td>Loran Support Unit</td>
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<td>MBCC</td>
<td>Monmouth Beach Cultural Center</td>
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<td>MU</td>
<td>Monmouth University</td>
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<tr>
<td>NA</td>
<td>Natural Area (State of New Jersey designation)</td>
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<td>NGTC</td>
<td>National Guard Training Center</td>
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<td>NJDEP</td>
<td>New Jersey Department of Environmental Protection</td>
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<td>NJDFW</td>
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<td>NJDPF</td>
<td>New Jersey Division of Parks and Forestry</td>
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<td>NJFO</td>
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<td>NJONLM</td>
<td>New Jersey Office of Natural Lands Management</td>
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<td>NPS</td>
<td>National Park Service</td>
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<td>NRA</td>
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<td>NWR</td>
<td>National Wildlife Refuge</td>
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<td>ORV</td>
<td>Off-Road Vehicle</td>
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<td>PD</td>
<td>Police Department</td>
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<td>PWD</td>
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<td>SCA</td>
<td>Student Conservation Association</td>
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<td>TNC</td>
<td>The Nature Conservancy</td>
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<tr>
<td>TRACEN</td>
<td>Training Center (United States Coast Guard)</td>
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<td>USACE</td>
<td>United States Army Corps of Engineers</td>
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<td>USFWS</td>
<td>United States Fish and Wildlife Service</td>
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<td>WCC</td>
<td>Wildlife Conservation Corp. (NJDFW volunteer)</td>
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### Summary of beach nesting bird site management in New Jersey: 2003.

<table>
<thead>
<tr>
<th>Site</th>
<th>Species Present</th>
<th>Pre Fence</th>
<th>Post Fence</th>
<th>String &amp; Post Fence</th>
<th>Partial Snow Fence</th>
<th>Wire Fence</th>
<th>Weekend Patrol</th>
<th>Full-time Patrol</th>
<th>Predator Exclosure</th>
<th>Notes</th>
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<td>PP, LT</td>
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*Species Key: PP = Piping Plover, LT = Least Tern, BS = Black Skimmer

*Notes

1. Intertidal zone closed to public access during period of chick rearing.
2. Site co-managed with Monmouth County Park System.
3. Protected nesting area “created” by placement of chain link fence on beach for construction project.
4. Portion of site “permanently” fenced with snow fence and wire fence by NJ Division of Parks and Forestry.
5. Beach closed to public during nesting season.
6. Beach only accessible by boat; closed to public year-round.
7. Beach closed to ORV traffic during period of chick rearing; northern portion also closed during egg laying/incubation period.
8. Beach closed to public and base personnel; co-managed with US Coast Guard personnel.
9. Site co-managed with The Nature Conservancy.

Sites in **bold italics** managed by agencies other than New Jersey Division of Fish and Wildlife – Endangered and Nongame Species Program. National Park Service manages Sandy Hook, USFWS Edwin B. Forsythe NWR manages Holgate and Little Beach, USFWS Cape May NWR manages Coast Guard – LSU, and The Nature Conservancy manages Cape May Meadows – TNC.

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9. Site co-managed with The Nature Conservancy.
New Jersey Beach Nesting Bird Sites: 2003

- Sandy Hook NRA
  - Coast Guard
  - North Beach
  - North Gunnison
  - South Gunnison
  - Critical Zone
  - Hidden Beach
  - Fee Beach
  - South Fee
- Sea Bright North
- Monmouth Beach North
- Monmouth Beach South
- Seven Presidents Park
- Long Branch
- Belmar - Shark River Inlet
- Sea Girt - Wreck Pond
- Sea Girt - NGTC
- Island Beach State Park - Dike
- Barnegat Light
- Forsythe NWR - Holgate
- Forsythe NWR - Little Beach
- North Brigantine Natural Area
- Ocean City - North
- Ocean City - Center
- Corson's Inlet State Park
- Strathmere Natural Area
- Strathmere Bay Island
- Strathmere - Upper Twp.
- Townsend's Inlet
- Avalon - Dunes
- Stone Harbor Point
- North Wildwood - Hereford Inlet
- Cape May Meadows
- Cape May City
- Coast Guard - LSU
- Coast Guard - TRACEN
Sandy Hook – Coast Guard
BNB Site Manager: NPS – Gateway NRA, Sandy Hook Unit
Summary provided by: Jeanne McArthur-Heuser, Park Ranger, NPS

Management

Monitoring and patrolling: The site was monitored 7 days a week by NPS staff, SCA staff and volunteers.

Fencing/Posting: NPS staff prefenced using string-and-post symbolic fence. Signs were placed every 50’. Snow fence was placed on the south end to divert visitors to the waters’ edge. The intertidal zone was not closed because it was not NPS property. However, the intermittent pond behind the dunes helped offset the need for the chicks to forage at the intertidal zone.

Predator exclosures: Predator exclosures were used on each nest. Exclosures were used in this area because gulls were the top predator. There was an incident where humans lifted an exclosure and the eggs were discovered missing. This nest had both fox tracks and human tracks inside so it was unclear which was responsible. It is possible that humans lifted the exclosure making it easy for the fox to prey on the eggs. Exclosures that were not depredated by fox were fortified with wire hardware cloth covered with sand. After making the exclosures fox proof, there were still problems with abandonment.

Predator control: None undertaken.

Beach management: NPS does not mechanically rake this beach. There is an annual beach clean up sponsored by the New Jersey Clean Shores Program from mid March-April 7. There was heavy use of the intertidal zone by fisherman in front of nesting area. There was also heavy use of 4x4 vehicles by USCG to patrol the shoreline with the Navy for ships coming in and out of port.

Coordination/Communication: Updates were given weekly to supervisor to keep him informed of current status of plover activity. He was forwarded that information as necessary to interested parties.

Beach nesting bird management plan: Gateway NRA Sandy Hook Unit has a shorebird management program documented and on file (Environmental Assessment Management Plan for the Threatened Piping Plover, June 1992).

Outreach: Beach nesting brochures were placed at the visitor center and ranger station for beach goers. Junior ranger programs were conducted weekly at North Beach to educate children about endangered species that breed on Sandy Hook.

Nesting Results

Eight (8) pairs of piping plovers nested at this site, resulting in 10 nesting attempts. A total of 40 eggs were laid, 19 eggs hatched and 13 chicks fledged.

A least tern colony (95 maximum adults) was present at the site, although only a small number of nests (12) were observed. Productivity was low (< 0.5 fledges per pair).
**Recommendations**

**Monitoring and patrolling:** Increase staffing levels to monitor area on weekends to insure compliance.

**Fencing/Posting:** Keep “No Pets on Beach” signs up year-round to educate the public that there are no dogs between March 15-Labor Day. Put cattle fence up between multi-use path and shorebird nesting area.

**Predator exclosures:** Monitor predators closely and consider using predator exclosures on all nests with at least 2 eggs. If smart predators key in on exclosures, discontinue their use.

**Predator control:** Have law enforcement (NPS) issue more violations for pets off their leashes.

**Beach management:** Reduce use of vehicles by NPS law enforcement after nests hatch. Place dumpsters in parking lots away from the beach from May-August at areas B, C, D, G, and North Beach. Excessive trash is being left behind by visitors and is attracting predators like fox, gulls, and crows because the park has an ineffective carry-in carry-out policy.

**Coordination/Communication:** Increase number of radios for staff to communicate with dispatch when violations occur.

**Beach nesting bird management plan:** Update management plan.

**Outreach:** No change.

**Other:** Continue SCA partnership. Increase staff by 1 more full-time employee and 2 more SCA’s for a total of 2 full-time employees, 2 seasonals, and 4 SCA’s. This will allow for 1 staff member at each nesting site.

**Sandy Hook – North Beach**

**BNB Site Manager:** NPS – Gateway NRA, Sandy Hook Unit

**Summary provided by:** Jeanne McArthur-Heuser, Park Ranger, NPS

**Management**

**Monitoring and patrolling:** The site was monitored 7 days a week by NPS staff, SCA staff and volunteers.

**Fencing/posting:** NPS staff prefenced using string-and-post symbolic fence. Signs were placed every 50’. White PVC pipe was used to close the intertidal zone with signs in the shape of a stop sign stating: “Area Closed. No One Beyond This Point. No walking, swimming, fishing, kite flying, vehicles or dogs allowed”.

**Predator exclosures:** Predator exclosures were used on each nest until fox predation became a problem. The exclosures were then fortified with wire hardware cloth covered with sand. After limited success, use of exclosures was discontinued at this site.

**Predator control:** None undertaken.
**Beach management:** NPS mechanically rakes the south end of this beach. There is an annual beach clean up sponsored by the New Jersey Shores Program from mid March-April 7.

**Coordination/Communication:** Updates were given weekly to supervisor to keep him informed of current status of plover activity. He forwarded that information as necessary to interested parties.

**Beach nesting bird management plan:** Gateway NRA Sandy Hook Unit does have a shorebird management program documented and on file (Environmental Assessment Management Plan for the Threatened Piping Plover, June 1992).

**Outreach:** BNB brochures were placed at the visitor center and ranger station for beach goers. Junior ranger programs were conducted weekly at North Beach to educate children about endangered species that breed on Sandy Hook. Once chicks hatched and the intertidal zone was closed, staff was stationed at the intertidal zone to educate visitors about Sandy Hook’s endangered species.

**Nesting Results**
Nine (9) pairs of piping plovers nested at this site, resulting in 18 nesting attempts. A total of 63 eggs were laid, 17 eggs hatched and 11 chicks fledged.

A least tern colony (74 maximum adults) was present at the site, although only 2 nests were observed. No chicks fledged. The colony failure was due to fox predation and flooding.

**Recommendations**

**Monitoring and patrolling:** Continue to monitor bayside beaches where adults often feed. Increase staffing levels to guard intertidal zone area on weekends to insure compliance.

**Fencing/Posting:** Keep “No Pets on Beach” signs up year-round to educate the public that there are no dogs between March 15-Labor Day.

**Predator exclosures:** Monitor predators closely and consider using predator exclosures on all nests with at least 2 eggs. If smart predators key in on exclosures, discontinue their use.

**Predator control:** Have law enforcement issue more violations for pets off their leashes.

**Beach management:** Reduce vehicle use by law enforcement after nests hatch. Place dumpsters in parking lots away from the beach from May-Aug. at areas B, C, D, G, and North Beach. Excessive trash is being left behind by visitors and is attracting predators like fox, gulls, and crows because the park has an ineffective carry-in carry-out policy.

**Coordination/Communication:** Increase number of radios for staff to communicate with dispatch when violations occur.

**Beach nesting bird management plan:** Update management plan.

**Outreach:** No change
**Other**: Continue SCA partnership. Increase staff by 1 more full-time employee and 2 more SCA’s for a total of 2 full-time employees, 2 seasonal, and 4 SCA’s. This will allow for 1 staff member at each nesting site.

### Sandy Hook – North Gunnison

**BNB Site Manager**: NPS – Gateway NRA, Sandy Hook Unit  
**Summary provided by**: Jeanne McArthur-Heuser, Park Ranger, NPS

#### Management

**Monitoring and patrolling**: The site was monitored 7 days a week by NPS staff, SCA staff and volunteers.

**Fencing/Posting**: NPS staff prefenced using string-and-post symbolic fence. Signs were placed every 50’. Snow fence was used along the west, north and south sides. White PVC pipe was used to close the intertidal zone with signs in the shape of a stop sign stating: “Area Closed. No One Beyond This Point. No walking, swimming, fishing, kite flying, vehicles or dogs allowed”. The intertidal zone was hard to close at north end of this area when the park was not open. Hundreds of people would try to walk on the beach to get to the “clothing optional” beach at South Gunnison from the northern parking area – additional signs were posted informing visitor to walk down the roadway to get to this beach.

**Predator exclosures**: Predator exclosures were used on each nest until fox predation became a problem. Exclosures were then fortified with wire hardware cloth covered with sand. After limited success the use of exclosures was discontinued at this site.

**Predator control**: None undertaken.

**Beach management**: NPS mechanically rakes next to this beach on the north and south sides. There is an annual beach clean up sponsored by the New Jersey Clean Shores Program from mid March-April 7.

**Coordination/Communication**: Updates were given weekly to supervisor to keep him informed of current status of plover activity. He forwarded that information as necessary to interested parties.

**Beach nesting bird management plan**: Gateway NRA Sandy Hook Unit has a shorebird management program documented and on file (Environmental Assessment Management Plan for the Threatened Piping Plover, June 1992).

**Outreach**: BNB brochures were placed at the visitor center and ranger station for beach goers. Junior ranger programs were conducted weekly at North Beach to educate children about endangered species that breed on Sandy Hook. Once chicks hatched and the intertidal zone was closed, staff was stationed at the intertidal zone to educate visitors about Sandy Hook’s endangered species.
Nesting Results

Five (5) pairs of piping plovers nested at this site, resulting in 11 nesting attempts. A total of 34 eggs were laid, 8 eggs hatched and no chicks fledged.

A least tern colony (53 maximum adults) was present at the site, although only 1 nest was ever observed. No chicks fledged from this site. The colony failure was due to fox predation.

Recommendations

Monitoring and patrolling: Continue to monitor bayside beaches where adults often feed. Increase staffing levels to guard intertidal zone area on weekends to ensure compliance.

Fencing/Posting: Keep “No Pets on Beach” signs up year-round to educate the public that there are no dogs between March 15-Labor Day.

Predator exclosures: Monitor predators closely and consider using exclosures on all nests with at least 2 eggs. If smart predators key in on exclosures, discontinue their use.

Predator control: Have law enforcement issue more violations for pets off their leashes and for littering.

Beach management: Reduce vehicle use by law enforcement after nests hatch. Place dumpsters in parking lots away from the beach from May-August at areas B, C, D, G, and North Beach. Excessive trash is being left behind by visitors and is attracting predators like fox, gulls, and crows because the park has an ineffective carry-in carry-out policy.

Coordination/Communication: Increase number of radios for staff to communicate to dispatch when violations occur.

Beach nesting bird management plan: Update management plan.

Outreach: No change.

Other: Continue SCA partnership. Increase staff by 1 more full-time employee and 2 more SCA’s for a total of 2 full-time employees, 2 seasonal, and 4 SCA’s. This will allow for 1 staff member at each nesting site. This site may even need 2 staff members to ensure compliance.

Sandy Hook – South Gunnison

BNB Site Manager: NPS – Gateway NRA, Sandy Hook Unit

Summary provided by: Jeanne McArthur-Heuser, Park Ranger, NPS

Management

Monitoring and patrolling: The site was monitored 3 days a week by NPS staff, SCA staff and volunteers. The site was difficult to patrol because thousands of nude sunbathers blocked our path. Some staff did not feel comfortable working at this site.
**Fencing/Posting:** NPS staff prefenced the site using string-and-post symbolic fence. Signs were placed every 50’. Snow fence was used along the west, north and south sides. White PVC pipe was used to stop people from sunbathing in front of nesting area. The intertidal zone was never closed because no nests hatched. This nesting area experienced significant erosion. We had to move the signs back 3 times to protect them from being swept away.

**Predator exclosures:** None used.

**Predator control:** None undertaken.

**Beach management:** NPS mechanically rakes the area immediately adjacent to this beach. There is an annual beach clean up sponsored by the New Jersey Clean Shores Program from mid March-April 7.

**Coordination/Communication:** Updates were given weekly to supervisor to keep him informed of current status of plover activity. He forwarded that information as necessary to interested parties.

**Beach nesting bird management plan:** Gateway NRA Sandy Hook Unit has a shorebird management program documented and on file (Environmental Assessment Management Plan for the Threatened Piping Plover, June 1992).

**Outreach:** BNB brochures were placed at the visitor center and ranger station for beach goers. Junior ranger programs were conducted weekly at North Beach to educate the children about Sandy Hook’s endangered species.

**Nesting Results**

One (1) pair of piping plovers attempted to nest here and was present throughout the entire season. However, no eggs were ever found. NPS staff strongly believes fox preyed on the plover eggs before a nest could be located.

One (1) adult least tern observed at this site but it never nested.

**Recommendations**

**Monitoring and patrolling:** No change.

**Fencing/Posting:** Keep “No Pets on Beach” signs up year-round to educate the public that there are no dogs between March15-Labor Day.

**Predator exclosures:** Monitor predators closely and consider using exclosures on all nests with at least 2 eggs. If smart predators key in on exclosures, discontinue their use.

**Predator control:** Have law enforcement issue more violations for pets off their leashes and for littering.

**Beach management:** Reduce vehicle use by law enforcement after nests hatch. Place dumpsters in parking lots away from the beach from May-August at areas B, C, D, G, and North Beach. Excessive trash is being left behind by visitors and is attracting predators like fox, gulls, and crows because the park has an ineffective carry-in carry-out policy.

**Coordination/Communication:** Increase the number of radios for staff to communicate with dispatch when violations occur.
Beach nesting bird management plan: Update management plan.

Outreach: No change.

Other: Continue SCA partnership. Increase staff by 1 more full-time employee and 2 more SCA’s for a total of 2 full-time employees, 2 seasonal, and 4 SCA’s. This will allow for 1 staff member at each nesting site.

Sandy Hook – Critical Zone
BNB Site Manager: NPS – Gateway NRA, Sandy Hook Unit
Summary provided by: Jeanne McArthur-Heuser, Park Ranger, NPS

Management

Monitoring and patrolling: The site was monitored 7 days a week by NPS staff, SCA staff and volunteers.

Fencing/Posting: NPS staff prefenced using string-and-post symbolic fence. Signs were placed every 50’. White PVC pipe was used to close the intertidal zone with signs in the shape of a stop sign stating: “Area Closed”. No One Beyond This Point. No walking, swimming, fishing, kite flying, vehicles or dogs allowed”. This was the hardest intertidal site to close because there was a lifeguarded beach on the north and south side.

Predator exclosures: Predator exclosures were used on each nest until fox predation became a problem. Electric fence was tried on 1 nest but the adults abandoned. One exclosure was placed deep into the sand but it was also abandoned. Eventually the use of exclosures was discontinued in this area.

Predator control: None undertaken.

Beach management: NPS mechanically rakes the area immediately adjacent to this beach on the north and south side. There is an annual beach clean up sponsored by the New Jersey Clean Shores Program from mid March-April 7.

Coordination/Communication: Updates were given weekly to supervisor to keep him informed of current status of plover activity. He forwarded that information as necessary to interested parties.

Beach nesting bird management plan: Gateway NRA Sandy Hook Unit has a shorebird management program documented and on file (Environmental Assessment Management Plan for the Threatened Piping Plover, June 1992).

Outreach: BNB brochures were placed at the visitor center and ranger station for beach goers. Junior ranger programs were conducted weekly at North Beach to educate children about endangered species that breed on Sandy Hook. Once chicks hatch and the intertidal zone was closed, staff was stationed at both ends of the nesting area by the intertidal zone to educate visitors about Sandy Hook’s endangered species.
**Nesting Results**

Four (4) pairs of piping plovers nested at this site, resulting in 4 nesting attempts. A total of 14 eggs were laid, 3 eggs hatched and 2 chicks fledged.

A least tern colony (75 maximum adults) was present at the site. Although 40 nests were observed, only 2 chicks fledged. Productivity was low (<0.5 fledges per pair) due to fox predation.

**Recommendations**

**Monitoring and patrolling:** Continue to monitor bayside beaches where adults often feed. Increase staffing levels to guard intertidal zone area on weekends to insure compliance.

**Fencing/Posting:** Keep “No Pets on Beach” signs up year-round to educate the public that there are no dogs between March 15-Labor Day. Put cattle fence up between multi-use path and shorebird nesting area.

**Predator exclosures:** Monitor predators closely and consider using exclosures on all nests with at least 2 eggs. If smart predators key in on exclosures, discontinue their use.

**Predator control:** Have law enforcement issue more violations for pets off their leashes and for littering.

**Beach management:** Reduce vehicle use by law enforcement after nests hatch. Place dumpsters in parking lots away from the beach from May-August at areas B, C, D, G, and North Beach. Excessive trash is being left behind by visitors and is attracting predators like fox, gulls, and crows because the park has an ineffective carry-in carry-out policy.

**Coordination/Communication:** Increase number of radios for staff to communicate with dispatch when violations occur.

**Beach nesting bird management plan:** Update management plan.

**Outreach:** No change.

**Other:** Continue SCA partnership. Increase staff by 1 more full-time employee and 2 more SCA’s for a total of 2 full-time employees, 2 seasonal, and 4 SCA’s. This will allow for 1 staff member can be at each nesting site. May also consider having two people at this site to allow for more enforcement.

**Sandy Hook – Hidden Beach**

**BNB Site Manager:** NPS – Gateway NRA, Sandy Hook Unit  
**Summary provided by:** Jeanne McArthur-Heuser, Park Ranger, NPS

**Management**

**Monitoring and patrolling:** The site was monitored 7 days a week by NPS staff and SCA staff and volunteers. Eight (8) violation notices were issued for walking through the nesting area. Park visitors climbed over snow fence and under symbolic string line to take a short cut to the beach. On one day, 35 people were observed inside the nesting area at one time. Law enforcement was unable to respond since they were overwhelmed on this
very busy day with DWI’s and assaults in progress. In addition, the jail cells were all occupied.

**Fencing/Posting:** NPS staff prefenced using string-and-post symbolic fence. Signs were placed every 50’. Snow fence was used along the western side to prevent visitors from walking from the parking lots over the seawall to the beach. Snow fence was used to make corridors to direct visitors to the beach. White PVC pipe was used to close the intertidal zone with signs in the shape of a stop sign stating: “Area Closed. No One Beyond This Point. No walking, swimming, fishing, kite flying, vehicles or dogs allowed”.

**Predator exclosures:** Predator exclosures were used on each nest until fox predation became a problem. Exclosures were then fortified with wire hardware cloth covered with sand. After limited success the use of exclosures was discontinued at this site.

**Predator control:** None undertaken.

**Beach management:** NPS mechanically rakes the area immediately adjacent to this beach. There is an annual beach clean up sponsored by the New Jersey Clean Shores Program from mid March-April 7.

**Coordination/Communication:** Updates were given weekly to supervisor to keep him informed of current status of plover activity. He forwarded that information as necessary to interested parties.

**Beach nesting bird management plan:** Gateway NRA Sandy Hook Unit has a shorebird management program documented and on file (Environmental Assessment Management Plan for the Threatened Piping Plover, June 1992).

**Outreach:** BNB brochures were placed at the visitor center and ranger station to beachgoers. Junior ranger programs were conducted weekly at North Beach to educate children about endangered species that breed on Sandy Hook. Once chicks hatched and the intertidal zone was closed, staff was stationed at the intertidal zone to educate visitors about Sandy Hook’s endangered species.

**Nesting Results**

Four (4) pairs of piping plovers nested at this site, resulting in 7 nesting attempts. A total of 26 eggs were laid, 7 eggs hatched and 3 chicks fledged.

A least tern colony (71 maximum adults) was present at the site although only a small number of nests (17) were observed. No young fledged from this site. The colony failure was due to fox predation.

**Recommendations**

**Monitoring and patrolling:** Continue to monitor bayside beaches where adults often feed. Increase staffing levels to guard intertidal zone area on weekends to insure compliance.

**Fencing/Posting:** Keep “No Pets on Beach” signs up year-round to educate the public that there are no dogs between March15-Labor Day. Put cattle fence up between multi-use path and shorebird nesting area.
**Predator exclosures:** Monitor predators closely and consider using exclosures on all nests with at least 2 eggs. If smart predators key in on exclosures, discontinue their use.

**Predator control:** Have law enforcement issue more violations for pets off their leashes and for littering.

**Beach management:** Reduce vehicle use by law enforcement after nests hatch. Place dumpsters in parking lots away from the beach from May-August at areas B, C, D, G, and North Beach. Excessive trash is being left behind by visitors and is attracting predators like fox, gulls, and crows because the park has an ineffective carry-in carry-out policy.

**Coordination/Communication:** Increase number of radios for staff to communicate with dispatch when violations occur.

**Beach nesting bird management plan:** Update management plan.

**Outreach:** No change.

**Other:** Continue SCA partnership. Increase staff by 1 more full-time employee and 2 more SCA’s for a total of 2 full-time employees, 2 seasonal, and 4 SCA’s. This will allow for 1 staff member at each nesting site.

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**Sandy Hook – Fee Beach**

**BNB Site Manager:** NPS – Gateway NRA, Sandy Hook Unit  
**Summary provided by:** Jeanne McArthur-Heuser, Park Ranger, NPS

**Management**

**Monitoring and patrolling:** The site was monitored 7 days a week by NPS staff, SCA staff and volunteers. Two visitors were issued violation notices for being in closed area.

**Fencing/Posting:** NPS staff prefenced with string-and-post symbolic fence. Signs were placed every 50’. Snow fence was used along the west side to prevent visitors from walking from the parking lots over the seawall to the beach. Snow fence was also used to make corridors to divert the visitors to the beach. White PVC pipe was used to close the intertidal zone with signs in the shape of a stop sign stating: “Area Closed. No One Beyond This Point. No walking, swimming, fishing, kite flying, vehicles or dogs allowed.”

**Predator exclosures:** Predator exclosures were used on each nest until fox predation became a problem. Exclosures were then fortified with wire hardware cloth covered with sand. After limited success the use of exclosures was discontinued at this site.

**Predator control:** Hav-a-heart traps were set at 2 exclosures that were depredated. They were baited for one week until renesting took place. No fox were captured.

**Beach management:** NPS mechanically rakes immediately next to this beach in the morning. It is not a lifeguarded beach, but is raked due to large amounts of trash left behind by visitors. Some visitors have started to bury their trash and predators are keying in on the scent and are drawn to the beach. There is an annual beach clean up sponsored by the New Jersey Clean Shores Program from mid March-April 7.
**Coordination/Communication:** Updates were given weekly to supervisor to keep him informed of current status of plover activity. He forwarded that information as necessary to interested parties.

**Beach nesting bird management plan:** Gateway NRA Sandy Hook Unit has a shorebird management program documented and on file (Environmental Assessment Management Plan for the Threatened Piping Plover, June 1992).

**Outreach:** BNB brochures were placed at the visitor center and ranger station for beach goers. Junior ranger programs were conducted weekly at North Beach to educate children about endangered species that breed on Sandy Hook. Once chicks hatched and the intertidal zone was closed, staff was stationed at the intertidal zone to educate visitors about Sandy Hook’s endangered species.

**Nesting Results**

Six (6) pairs of piping plovers nested at this site, resulting in 12 nesting attempts. A total of 45 eggs were laid, 7 eggs hatched and 5 chicks fledged.

A least tern colony (110 maximum adults) was present at the site although only a small number of nests (14) were observed. Productivity was low (< 0.5 fledges per pair) due to fox predation.

**Recommendations**

**Monitoring and patrolling:** Continue to monitor bayside beaches where adults often feed. Increase staffing levels to guard intertidal zone area on weekends to insure compliance.

**Fencing/Posting:** Keep “No Pets On Beach” signs up year-round to educate the public that there are no dogs between March15-Labor Day. Put cattle fence up between multi-use path and shorebird nesting area.

**Predator exclosures:** Monitor predators closely and consider using exclosures on all nests with at least 2 eggs. If smart predators key in on exclosures, discontinue their use. Trap feral cats and remove smart predators (i.e. red fox).

**Predator control:** Have law enforcement issue more violations for pets off their leashes and for littering.

**Beach management:** Place dumpsters in parking lots away from the beach from May-August at areas B, C, D, G, and North Beach. Excessive trash is being left behind by visitors and is attracting predators like fox, gulls, and crows because the park has an ineffective carry-in carry-out policy. Eliminate raking on this beach since it increases the chances of chicks being run over and reduces the wrack line they depend on for foraging.

**Coordination/Communication:** Increase the number of radios for staff to communicate with dispatch when violations occur.

**Beach nesting bird management plan:** Update management plan.

**Outreach:** No change.
**Other**: Continue SCA partnership. Increase staff by one more full-time employee and 2 more SCA’s for a total of 2 full-time employees, 2 seasonal, and 4 SCA’s. This will allow for 1 staff member at each nesting site.

**Sandy Hook – South Fee Beach**

BNB Site Manager: NPS – Gateway NRA, Sandy Hook Unit  
Summary provided by: Jeanne McArthur-Heuser, Park Ranger, NPS

**Management**

**Monitoring and patrolling**: The site was monitored 7 days a week by NPS staff, SCA staff and volunteers.

**Fencing/Posting**: This new nesting area was fenced and posted after plovers were discovered exhibiting courtship behavior. NPS staff used string-and-post symbolic fence to protect the nesting area. Signs were placed every 50’. Snow fence was used along the west side to prevent visitors from walking from the parking lots over the seawall to the beach. White PVC pipe was used to close the intertidal zone with signs in the shape of a stop sign stating: “Area Closed. No One Beyond This Point. No walking, swimming, fishing, kite flying, vehicles or dogs allowed”.

**Predator exclosures**: None used due to fox predation and abandonment of exclosed nests at other nearby nesting sites.

**Predator control**: None undertaken.

**Beach management**: NPS does not mechanically rake this beach. There is an annual beach clean up sponsored by the New Jersey Clean Shores Program from mid March-April 7. Sea Bright PD was observed driving in front of the nesting area on an ATV (even with intertidal zone being closed).

**Coordination/Communication**: Updates were given weekly to supervisor to keep him informed of current status of plover activity. He forwarded that information as necessary to interested parties.

**Beach nesting bird management plan**: Gateway NRS Sandy Hook Unit has a shorebird management program documented and on file (Environmental Assessment Management Plan for the Threatened Piping Plover, June 1992).

**Outreach**: BNB brochures were placed at the visitor center and ranger station for beach goers. Junior ranger programs were conducted weekly at North Beach to educate the children about endangered species that breed on Sandy Hook.

**Nesting Results**

One (1) pair of piping plovers nested at this new site, resulting in 1 nesting attempt. A total of 4 eggs were laid, 4 eggs hatched and 2 chicks fledged.

A least tern colony (9 maximum adults) was present at this site. Productivity was low (<0.5 fledges per pair) due to fox predation.
**Recommendations**

**Monitoring and patrolling:** Continue to monitor bayside beaches where adults often feed. Increase staffing levels to guard intertidal zone area on weekends to ensure compliance.

**Fencing/Posting:** Keep “No Pets on Beach” signs up year-round to educate the public that there are no dogs between March 15-Labor Day. Put cattle fence up between multi-use path and shorebird nesting area. Consider prefencing this site now that nesting has occurred.

**Predator exclosures:** Monitor predators closely and consider using exclosures on all nests with at least 2 eggs. If smart predators key in on exclosures, discontinue their use.

**Predator control:** Have law enforcement issue more violations for pets off leashes. Encourage visitors to walk pets on bayside beaches. Trap feral cats and remove smart predators (i.e. red fox).

**Beach management:** Reduce law enforcement vehicle use after nests hatch.

**Coordination/Communication:** Park staff needs more radios to communicate with dispatch when violations occur.

**Beach nesting bird management plan:** Update management plan. Since this is a new site, include it as a designated nesting area.

**Outreach:** No change.

**Other:** Continue SCA partnership. Increase staff by 1 more full-time employee and 2 more SCA’s for a total of 2 full-time employees, 2 seasonal, and 4 SCA’s. This will allow for 1 staff member at each nesting site.

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**Sea Bright North**

**BNB Site Manager:** NJDFW-ENSP

**Summary provided by:** NJDFW-ENSP

**Management**

**Monitoring and patrolling:** The site was monitored 7 days a week, including patrolling on both weekend days, by ENSP staff and/or MU interns. ENSP staff patrolled the site during the July 4th fireworks.

**Fencing/Posting:** ENSP staff and MU interns prefenced (April 12) an area in front of the Grand Pointe Townhouses using string-and-post symbolic fence. Additional nests were protected with string-and-post symbolic fence as they were found. “Area Closed” signs were posted on every third post. After piping plover nests hatched, feeding corridors were created by posting signs (“Nest Hatched”, “5 MPH”) from the upper beach down to the intertidal zone in areas where chicks were feeding/resting.

**Predator exclosures:** Although predation (particularly avian) continues to be a major concern at this site, predator exclosures could not/were not used on all nests this year (only on 4 of 10 nests). In 3 cases, the nests were destroyed just after being discovered or just prior to when they were going to be exclosed. In 2 other cases, the nests only went to
2 eggs and were not exclosed due to concern that they might be abandoned. One (1) nest was not exclosed because it was located in a large least tern colony, which ENSP believed provided sufficient protection for the plover nest.

**Predator control:** None undertaken.

**Municipal beach management:** The Borough typically does not mechanically rake their beach north of the Ship Ahoy Club (where all nesting has historically taken place). However, at one point during the season the Borough began raking, which, at ENSP’s request, was immediately discontinued. The Borough also began erecting snow fence at several locations on the beach during the nesting season. ENSP requested that the Borough suspend this effort during the nesting season and consult ENSP regarding the long-term impacts of any additional dune fence at the site. An annual beach clean-up, where large debris and litter is removed using heavy equipment and a prisoner work force, was conducted in mid-May through the New Jersey Clean Shores program. ENSP staff briefed clean-up supervisors and monitored all work.

**Coordination/Communication:** Weekly updates were faxed to the municipality to keep them informed of the current status of nesting activity and ENSP management recommendations. Direct contact with the borough was initiated on an as needed basis, primarily through the Municipal Clerk and the Public Works Director.

**Beach nesting bird management plan:** No formal written plan.

**Outreach:** An interpretive sign was placed at the beach access in front of the Grand Pointe Townhouses. ENSP staff and MU interns provided informal on-site outreach, including the distribution of BNB brochures to interested (and concerned) beachgoers.

**Other:** Extensive vehicle travel on the beach by the Sea Bright PD (using all-terrain vehicles) continues to pose a threat to unfledged birds and nests, especially since the exact location of chicks/nests continues to be unpredictable at this site.

**Nesting Results**

Seven (7) pairs of piping plovers nested at this site, resulting in 10 nesting attempts. Four (4) nests hatched. Of the 6 failed nests, 3 were abandoned and 3 were destroyed (likely due to avian predation). A total of 13 chicks hatched, of which 3 fledged.

A least tern colony (104 maximum adults) was present at the site. Productivity for the colony was low (<0.5 fledges per pair). The exact cause of the poor productivity could not be determined although predation of some type was suspected.

**Recommendations**

**Monitoring and patrolling:** Continue intense early-season surveying for the entire site, including the area closest to Sandy Hook since nesting took place just within the Sandy Hook boundary this year and evidence of nesting activity was observed on the northernmost portion of the Borough beach earlier in the season.

**Fencing/Posting:** Continue to prefence an area in front of the Grand Pointe Townhouses, which was done for the first time this year. “No Dog” signs should be posted at all beach accesses, as there are many dog walkers.
**Predator exclosures:** Because crows, cats, and possibly foxes (moving down from Sandy Hook) were a concern this year, predators should be monitored closely. Exclosures should be used in most cases, although consideration should be given to the fact that some “smart” foxes can cause nest destruction and abandonment despite the use of exclosures (which was the case at Sandy Hook this year).

**Predator control:** Work with the Borough to better enforce their existing domestic animal ordinances. Trash and recycling cans located on the beach attract crows, gulls, and other scavengers, which pose a threat to nearby nests. Because trash cans are already located behind the seawall at many beach accesses, they could be removed from the beach entirely (or at least placed well away from nesting areas).

**Municipal beach management:** All dune fence projects should be completed before the start of the nesting season (April 1). In addition, the Borough should consult ENSP prior to undertaking dune management projects (north of the Ship Ahoy Club) to ensure that they are conducted in a manner compatible with nesting birds. The annual Clean Shores Program beach clean-up should be scheduled before the start of the nesting season (April 1) in order to minimize disturbance of the birds. If this is not feasible, activities should continue to be monitored and supervised by ENSP for the duration of the clean-up.

**Coordination/Communication:** Work to improve communication with the Borough, especially in regards to any municipal projects being planned for the beach and beach management policies in general that could adversely affect nesting birds and their habitat. A meeting between ENSP, USFWS, USACE and all appropriate Borough staff (PWD, PD, administrative staff, Borough Council, etc.) would be beneficial towards achieving this aim.

**Beach nesting bird management plan:** Work with the Borough and appropriate agencies (USFWS, USACE) to initiate the development of a written BNB management plan. As the importance of this nesting site continues to grow, this is considered a high priority.

**Outreach:** No basic change, although additional outreach opportunities should be sought within the community.

**Other:** Although the Sea Bright PD has been responsive about lowering the speed of their ATV’s near nesting areas, the number of vehicle trips (patrols) is still extremely high (more than any other municipal law enforcement observed in the state). Seek assistance from USFWS in resolving continued problems with this issue.

**Monmouth Beach North**

BNB Site Manager: NJDFW-ENSP
Summary provided by: NJDFW-ENSP

**Management**

**Monitoring and patrolling:** The site was monitored 7 days a week, including patrolling on both weekend days, by ENSP staff and/or MU interns. A MU intern and volunteers patrolled the site during local July 4th fireworks displays.
**Fencing/Posting:** ENSP staff, MU interns and MU volunteers prefenced (April 12) two large areas directly north and south of the MBCC using string-and-post symbolic fence. A second strand of polypropylene rope was used as part of the fence in order to provide additional protection. The fence was expanded significantly at both the southern and northern ends of the prefenced areas (including into the Borough of Sea Bright) because of the large least tern colony that was present at the site. “Area Closed” signs were posted on every third post. A “No Dog” sign was placed at the main public access in front of the MBCC. After piping plover nests hatched, feeding corridors were created by posting signs (“Nest Hatched”, “5 MPH”) from the upper beach down to the intertidal zone in areas where chicks were feeding/resting.

**Predator exclosures:** Due to avian predation and harassment in recent years, exclosures were considered for all nests and actually used on 2 of 3 nests. One (1) nest was not exclosed because the nest was destroyed just before an exclosure was scheduled to be erected.

**Predator control:** None undertaken.

**Municipal beach management:** This site is not mechanically raked. An annual beach clean-up, where large debris and litter is removed with heavy equipment and a prisoner work force, was conducted in mid-May through the New Jersey Clean Shores Program. ENSP staff briefed clean-up supervisors and monitored all work.

**Coordination/Communication:** This site falls within two municipalities: Monmouth Beach and Sea Bright. Weekly updates were faxed to both municipalities to keep them informed of the current status of nesting activity and ENSP management recommendations. No direct contact was necessary with either Borough this year for this site, although it is usually done through the Municipal Clerk in Sea Bright and the Mayor in Monmouth Beach.

**Beach nesting bird management plan:** No formal written plan.

**Outreach:** An interpretive sign was placed at the beach access in front of the MBCC. In addition, an interpretive sign is permanently placed at the entrance to the MBCC building in the main parking lot for this beach. ENSP staff and MU interns provided informal on-site outreach, including the distribution of BNB brochures to interested beachgoers.

**Nesting Results**

Two (2) pairs of piping plovers nested at this site, resulting in 3 nesting attempts. Two (2) of the nests hatched. One (1) nest was destroyed, likely due to an avian predator. A total of 7 chicks hatched, of which 5 fledged.

A least tern colony (281 maximum adults) was present at the site. Productivity for the colony was low (<0.5 fledges per pair). The exact cause of the poor productivity could not be determined although predation of some type was suspected.
Recommendations

Monitoring and patrolling: No change.

Fencing/Posting: Continue to prefence the areas directly north and south of the MBCC since they harbor the majority of nesting activity. However, because the most recent phase of an USACE beach renourishment improved habitat for the entire site, evaluate (in March) if other areas also need to be prefenced.

Predator exclosures: With the continued presence of crows, exclosures should continue to be considered for all piping plover nests.

Predator control: Closer monitoring of predator activity is necessary since least tern productivity was extremely poor this year and the exact cause could not be determined.

Municipal beach management: The annual Clean Shores Program beach clean-up should be scheduled before the nesting season begins (April 1) in order to minimize disturbance to the birds. If this is not feasible, activities should continue to be closely monitored and supervised by ENSP for the duration of the clean-up.

Coordination/Communication: Work with Monmouth Beach to control the ad hoc construction and placement of volleyball courts on the beach by the public.

Beach nesting bird management plan: Work with both Boroughs and appropriate agencies (USFWS, USACE) to initiate the process of developing a written BNB management plan.

Outreach: No basic change, although additional outreach opportunities should be sought within the community. This includes reestablishing contact with MBCC to conduct a BNB presentation for the public.

Other: The proliferation of private beach accesses over the seawall is a concern (especially in those years when a large least tern colony is present) because they fragment nesting habitat and increase human activity close to the birds. It is unclear what the most effective means to deal with this issue is in the short term, although a long-term solution would be to address it in a BNB management plan. Investigate the permitting process and legal issues concerning private beach accesses at this site.

Monmouth Beach South

BNB Site Manager: NJDFW-ENSP
Summary provided by: NJDFW-ENSP

Management

Monitoring and patrolling: This site was monitored 5 days a week by ENSP staff and/or MU interns. This included limited weekend patrolling once a brood of piping plover chicks from Seven Presidents Oceanfront Park moved to this site.

Fencing/Posting: ENSP staff, MU interns and MU volunteers prefenced (April 12) two small areas just south of the Borough pool/beach using string-and-post symbolic fence. A second strand of polypropylene rope was used as part of the fence in order to provide additional protection. “Area Closed” signs were posted every other post. After a brood of
piping plover chicks moved to the site, a feeding corridor was created by posting signs ("Nest Hatched", "5 MPH") from the upper beach down to the intertidal zone in areas where chicks were feeding/resting.

**Predator exclosures:** No piping plover nests were found at this site, so exclosures were not necessary.

**Predator control:** None undertaken.

**Municipal beach management:** The Borough does not mechanically rake the beach at this site. An annual beach clean-up, where large debris and litter is removed with heavy equipment and a prisoner work force, was conducted in mid-May through the New Jersey Clean Shores Program. ENSP staff briefed clean-up supervisors and monitored all work.

**Coordination/Communication:** Weekly updates were faxed to the municipality to keep them informed of the current status of nesting activity and ENSP management recommendations. No direct contact with the Borough was needed this year for this site, although it is usually done through the Mayor.

**Beach nesting bird management plan:** No formal written plan.

**Outreach:** An interpretive sign was placed at the northern end of the fenced areas, closest to the Borough pool/beach. ENSP staff and MU interns provided informal on-site outreach, including the distribution of BNB brochures to interested beachgoers.

**Nesting Results**

One (1) brood of piping plover chicks, which hatched from Seven Presidents Oceanfront Park, moved to this site several days after hatching. The brood consisted of 4 chicks, 2 of which fledged. A single plover was observed conducting nesting activity (nest scraping) at this site for several weeks early in the season.

**Recommendations**

**Monitoring and patrolling:** No change.

**Fencing/Posting:** Although no nests were found this year, consider prefencing the site if suitable habitat still exists. Nesting is possible in the future and any piping plover chicks that hatch from Seven Presidents Oceanfront Park might move to this site again since human activity at the Park is extremely heavy.

**Predator exclosures:** Consider predator exclosures for any piping plover nests because predator activity is still high at this site.

**Predator control:** Work with the municipality to better enforce the existing local dog ordinance. Monitor cat activity (feral and domestic).

**Municipal beach management:** The annual Clean Shores Program beach clean-up should be scheduled before the nesting season begins (April 1) in order to minimize disturbance of the birds. If this is not feasible, activities should be closely monitored and supervised by ENSP for the duration of the clean-up.

**Coordination/Communication:** No change.
Beach nesting bird management plan: Work with the Borough and appropriate agencies (USFWS, USACE) to initiate the process of developing a written BNB management plan.

Outreach: No basic change, although additional outreach opportunities should be sought within the community. This includes reestablishing contact with MBCC to present a BNB slide show to the public.

Seven Presidents Oceanfront Park
BNB Site Manager: NJDFW-ENSP and Monmouth County Park System
Summary provided by: NJDFW-ENSP

Management

Monitoring and patrolling: The site was monitored 5-7 days a week, including limited weekend patrolling, by both ENSP staff and/or MU interns. Park staff provided additional patrolling on a daily basis. The site was monitored by ENSP staff before and after the July 4th fireworks display.

Fencing/Posting: The Park has created several protected “natural areas” on the beach with the use of snow fence. Once actual nesting activity was discovered by ENSP in 2 of these areas, Park staff placed additional rope-and-post symbolic fence around the nesting sites at the south end of the park (for least terns) and near Avenel Blvd. (for piping plovers). A combination of “Area Closed” signs provided by ENSP and other signs created by the Park were placed on every post. After the piping plover nest hatched, a feeding corridor was created by posting signs (“Nest Hatched”) from the upper beach down to the intertidal zone in areas where chicks were feeding/resting (in front of the fenced area at Avenel Blvd.).

Predator exclosures: A predator exclosure was used on the single piping plover nest. Park staff assisted with placement of the exclosure.

Predator control: None undertaken.

Park beach management: The Park extensively rakes their beach except for the areas they have designated (and fenced) as natural areas. In addition, the ongoing servicing of trashcans, the existence of several lifeguard stands and the intense public usage of the Park in general results in heavy human disturbance to nesting birds.

Coordination/Communication: Weekly updates were faxed to the Park to keep them informed of the current status of nesting activity and ENSP management recommendations. In addition, several on-site meetings were held with Park staff once nesting activity was discovered and at various stages during nesting. These face-to-face meetings were largely due to the fact that this was the first year that piping plover nesting occurred within the Park. ENSP staff also conducted a BNB slide show to educate Park staff and train them so they could serve as qualified piping plover chick monitors (as was outlined in the management plan).
Beach nesting bird management plan: A limited plan was developed by ENSP and agreed upon by Park administration once piping plover nesting was confirmed within the park this year. The plan’s primary purpose was to address the effects of motor vehicle use (including beach raking) on nesting piping plovers and to ensure that the Park was in compliance with USFWS recommendations for the management of recreational activities in piping plover breeding habitat. Within this context, the plan addressed monitoring frequency, fencing needs, vehicle buffers and the division of management responsibilities. The Park fully cooperated with all aspects of the plan, although piping plover brood monitoring by the Park staff was not implemented because chicks moved outside of the park almost immediately after hatching.

Outreach: An interpretive sign (provided by ENSP) was erected by the Park staff at the southern end of the park overlooking the least tern nesting area. Otherwise, ENSP’s public outreach at the site was limited to speaking with beachgoers on an informal basis.

Nesting Results
One (1) pair of piping plovers nested at the site, resulting in 1 nesting attempt. The nest successfully hatched 4 chicks, of which 2 fledged. The brood of chicks (and adults) moved to an adjacent site (Monmouth Beach South) several days after hatching and remained at that site until fledging.

A least tern colony (86 maximum adults) was present at the site. Productivity for the colony was low (<0.5 fledges per pair).

Recommendations
Monitoring and patrolling: Because this is a new nesting site for piping plovers with no established nesting pattern and public usage is heavy at the Park, ENSP should begin regular monitoring in early April so that nesting activity is discovered as soon as possible.

Fencing/Posting: Fence should be placed as soon as focused nesting activity (not just a nest) is detected by ENSP.

Predator exclosures: Consider using exclosures on all piping plover nests as there were continual sighting of crows and gulls near nesting areas at the Park.

Predator control: No change.

Park beach management: Should follow BNB management plan that was developed this year.

Coordination/Communication: Continue close communication with Park staff, including weekly faxing of updates. Frequency of on-site meeting should decrease in the future now that most major management issues have been addressed and a BNB plan is in place. However, annual “training” of Park staff as piping plover brood monitors should be offered by ENSP. Training should be conducted as early as practical so that the Park staff can independently monitor the chicks (as outlined in the management plan).

Beach Nesting Bird Management Plan: Continue to implement the already agreed upon management plan.

Outreach: Offer to conduct a BNB slide show at the Park for the general public.
Long Branch
BNB Site Manager: NJDFW-ENSP
Summary provided by: NJDFW-ENSP

Management

Monitoring and patrolling: The site was monitored 5 days a week, including limited patrolling on both weekend days, by ENSP staff and/or MU interns. ENSP staff patrolled the site during the July 4th fireworks display, as well as a smaller fireworks display in June.

Fencing/Posting: Nesting occurred in a large one-block area of the beach (between Melrose and Laird Avenues) that had been fenced off with 10-foot high chain link fence in order to keep the public away from a large construction site located just west of the boardwalk. A portion of the fence (oceanfront side) was knocked down by storm tides and could not be repaired because of its proximity to nesting activity. ENSP staff erected string-and-post symbolic fence in its place. Area Closed” signs were posted on both ends of the existing construction fence and on all the symbolic fence posts. After the piping plover nest hatched, a feeding corridor was created by posting signs (“Nest Hatched”, “5 MPH”) from the upper beach down to the intertidal zone in areas where chicks were feeding/nesting.

Predator exclosures: A predator exclosure was used on the single piping plover nest. ENSP determined this was necessary because crows were observed in the area and nearby sites have a history of avian predation problems.

Predator control: None undertaken.

Municipal beach management: The area where nesting took place would have normally been mechanically raked by the City, however, due to the placement of the construction fence it was not raked. ENSP requested that the area directly in front of the fence also not be raked. The City closed a vehicle access located immediately south of the construction fence. The City’s BP and PWD frequently drove in front of the nesting area, although ENSP requested that vehicle use be limited to emergency and “essential” uses.

Fireworks: An extensive July 4th fireworks display is usually launched in close vicinity to the area where nesting took place. In addition, several smaller fireworks displays are typically held throughout the season by the Ocean Place Hotel (located on the block directly north of the nesting area). ENSP and USFWS-NJFO worked with City officials to move the launch site about ¼ mile north of the actual nesting site, as well as coordinate crowd control and monitoring associated with viewing of the fireworks.

Coordination/Communication: Weekly updates were faxed to the City to keep them informed of the current status of nesting activity and ENSP management recommendations. Because this was the first time that nesting occurred in the City and its proximity to a large scale redevelopment project meant it potentially impacted the construction schedule, several on-site meetings were held with City officials. In addition, several on-site meeting were held between ENSP, USFWS-NJFO and the City to address issues related to fireworks. Personal communications with City officials also occurred via telephone and e-mail throughout the season.
Beach nesting bird management plan: No formal written plan.

Outreach: ENSP staff and MU interns provided informal on-site outreach, including the distribution of BNB brochures on-site to interested beachgoers.

Nest Results

One (1) pair of piping plovers nested at the site, resulting in 1 nesting attempt. Four (4) chicks hatched from the nest, of which 1 fledged. An additional male piping plover was present at the site for much of the season.

A least tern colony (128 maximum adults) was present at the site. Productivity for the colony was low (<0.5 fledges per pair).

Recommendations

Monitoring and patrolling: The construction fence that created the undisturbed nesting area will likely not be present next year as this portion of the beach is slated for development. Therefore, the exact location where nesting took place this year has little long-term nesting potential. Nonetheless, all nearby viable habitat should be surveyed in early April for evidence of nesting activity.

Fencing/Posting: String-and-post symbolic fence should be erected by ENSP as soon as focused nesting activity is detected (rather than waiting for a nest to be located). Consideration should be given to developing Spanish language signs for this site (and others in the region).

Predator exclosures: No change.

Predator control: No change.

Municipal beach management: If piping plover nesting occurs again in the City, stronger restrictions should be placed on vehicle traffic that is allowed to pass in front of/near the nesting area. A 5 MPH speed limit should be more strictly enforced near the nesting area. Beach raking should be limited in the areas where nesting occurs - similar to the arrangement between the City and ENSP this year.

Fireworks: If nesting occurs again in the vicinity of the fireworks launching or viewing areas, ENSP and USFWS should continue working closely with the City to determine appropriate areas for these activities. Responsibilities and techniques for crowd control during the fireworks need to be more explicit.

Coordination/Communication: In addition to continuing to provide weekly faxed updates to the City during the nesting season, ENSP should meet in-person with the City’s PWD, BP and any other appropriate municipal workers early in the season to educate them of the possible threats their activities pose to nesting birds. Although ENSP and the City worked closely and cooperatively with regards to the fireworks, better coordination is needed with City workers who are setting up for the fireworks or conducting crowd control during the fireworks.

Beach nesting bird management plan: USFWS-NJFO met with City officials this year to discuss a BNB (and sea beach amaranth) management plan, which the City is in the process of drafting.
Outreach: If nesting occurs in the future, an interpretive sign should be placed near the nesting area.

**Belmar - Shark River Inlet**

**BNB Site Manager:** NJDFW-ENSP  
**Summary provided by:** NJDFW-ENSP

**Management**

**Monitoring and patrolling:** The site was monitored at least 3 days a week by ENSP staff and/or MU interns.

**Fencing/Posting:** ENSP staff prefenced (April 12) the site using string-and-post symbolic fence. A second strand of polypropylene rope was used as part of the fence in order to provide additional protection. “Area Closed” signs were posted on every other pole.

**Predator exclosures:** No piping plovers nested at the site, so exclosures were not necessary.

**Predator control:** None undertaken.

**Municipal beach management:** Municipal workers used the vehicle access which runs directly behind (and next to) the fenced nesting area on a semi-regular basis. This included bringing a beach rake on the beach at this location even though the immediate area from the fishing pier to the jetty was not raked (at ENSP and USFWS request). A row of trashcans that were placed just inside of the jetty required ongoing servicing with the use of a vehicle.

**Coordination/Communication:** ENSP and USFWS-NJFO met with a Borough PWD employee prior to the season to discuss management issues at the site. No other regular communication took place.

**Beach nesting bird management plan:** No formal written plan.

**Outreach:** None undertaken.

**Nest Results**

A least tern colony (48 maximum adults) was present at the site early in the season but was abandoned before any nests hatched. The cause of failure was likely related to avian predation. Nesting habitat was only considered marginally suitable for least terns since dense vegetation (primarily seaside goldenrod) encroached on what was already a small nesting area.

**Recommendations**

**Monitoring and patrolling:** No change.

**Fencing and posting:** If habitat remains marginal (which is likely barring any intervention) fence should be erected once nesting activity is observed rather than prior to the season.

**Predator exclosures:** No change
**Predator control:** Avian predators, which are difficult to control when dealing with least terns, are considered the primary threat at the site. Local residents have indicated that mammalian predators may also be present at the site. Monitor predator levels in the area to determine if any control measures would be beneficial.

**Municipal beach management:** Minimize municipal vehicle use near the nesting area in order to lessen disturbance factors. Since other vehicle accesses exist just a few blocks south of the nesting area, encourage the Borough to use those areas during the nesting season, except in the case of an emergency. Approach the Borough about whether garbage cans (which are primarily for fisherman using the jetty) would be just as effective at the beach entrance/exit (just off the beach), so that vehicles would not have to be driven in this area to service them.

**Coordination/Communication:** If nesting occurs, reestablish more regular communication with the borough, including weekly faxed updates.

**Beach nesting bird management plan:** No change.

**Outreach:** Include BNB information on a kiosk being planned for near the site.

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**Sea Girt-Wreck Pond**

**BNB Site Manager:** NJDFW-ENSP  
**Summary provided by:** NJDFW-ENSP

**Management**

**Monitoring and patrolling:** The site was monitored at least 5 days a week, including limited patrolling on both weekend days, by ENSP staff and/or MU interns.

**Fencing/Posting:** ENSP staff prefenced (April 12) the site using string-and-post symbolic fence. As least tern nests were found outside the original perimeter, the fence was expanded several times. “Area Closed” signs were posted on every third post. After the piping plover nest hatched, a feeding corridor was created by posting signs (“Nest Hatched”, “5 MPH”) from the upper beach down to the intertidal zone in areas where chicks were feeding/resting.

**Predator exclosures:** A predator exclosure was used on 1 of the 2 piping plover nests at the site. The first nest was destroyed before becoming a full clutch and therefore was not exclosed.

**Predator control:** None undertaken.

**Municipal beach management:** The nesting area falls within two municipalities: Spring Lake and Sea Girt. Both Boroughs regularly mechanically rake their beaches, but at ENSP request, they did not rake in the vicinity of the nesting area. Sea Girt was asked to avoid raking beyond their northernmost lifeguard stand and Spring Lake was asked to avoid raking beyond the southern end of the boardwalk. Also at ENSP request, Sea Girt was asked to use the Terrace Street vehicle access (which runs directly behind and next to the nesting area) for emergency purposes only. Spring Lake was asked to limit use of a vehicle access at the southern end of the boardwalk as much as possible and, if use was necessary, vehicles were to turn immediately north away from the nesting area. Both
municipalities generally complied with ENSP requests, although unnecessary vehicle use and occasional lapses in following the beach raking protocol occurred.

**Coordination/Communication:** Weekly updates were faxed to both Boroughs to keep them informed of the current status of nesting activity and ENSP management recommendations. In several instances, ENSP had to contact both Boroughs (via fax or telephone contact) to reinforce beach raking restrictions that were not being followed. Since this was the first time that piping plovers nested at this site, USFWS guidelines for the management of recreational activities in piping plover breeding areas was mailed to both boroughs by ENSP as soon as nesting at the site was confirmed.

**Beach nesting bird management plan:** No formal written plan.

**Outreach:** ENSP staff and MU interns provided informal on-site outreach, including the distribution of BNB brochures to interested beachgoers.

**Nesting Results**

One (1) pair of piping plovers nested at this site, resulting in 2 nesting attempts. The first nest was destroyed by an undetermined predator. The second nest (which was exclosed) hatched 2 chicks, of which 1 fledged.

A least tern colony (191 maximum adults) was present at the site. Productivity for the colony was low (<0.5 fledges per pair). The exact cause of the poor productivity was not determined although predation of some type was suspected. Human disturbance was also high in this area.

**Recommendations**

**Monitoring and patrolling:** Surveying should begin in early April since plovers have now nested at this site. More attention should be paid to the entire stretch of Sea Girt’s beach since suitable habitat exists and another nesting site is located at the southern end of the Borough.

**Fencing/Posting:** Prefencing should be conducted no later than mid-April now that plovers have nested at this site. Fence should be expanded on the Spring Lake side to provide a bigger nesting area and disturbance buffer. Try to enlist volunteer help for the fencing from the Wreck Pond Watershed Association.

**Predator exclosures:** Exclosures should be considered on all piping plover nest attempts because of predation on the initial plover nest (and on some tern nests).

**Predator control:** No change.

**Municipal beach management:** Municipal vehicle use of the Terrace Street access should be limited to emergency usage during the nesting season, especially since another vehicle access exists about one block south (near the lighthouse). Discuss with the Borough (Sea Girt) the feasibility of rerouting pedestrians that use the Terrace Street access away from the nesting area. Increase compliance with raking recommendations with both Boroughs since raking occasionally occurred too close to the nesting site.

**Coordination/Communication:** No basic change, although an in-person meeting with both Boroughs (including PWD, BP and any other appropriate municipal workers) to review how their activities can impact nesting would be beneficial.
Beach nesting bird management plan: A written BNB plan should be considered for both Boroughs.

Outreach: An interpretive sign should be placed at the site. Work with the Wreck Pond Watershed Association to develop other outreach opportunities.

Other: A long-term goal at this site should be the creation of access to the pond outflow directly behind the nesting site so that piping plover chicks have an alternative feeding site other than the oceanfront.

Sea Girt - National Guard Training Center
BNB Site Manager: NJDFW-ENSP
Summary provided by: NJDFW-ENSP

Management

Monitoring and patrolling: The site was monitored at least 3 days a week during the early nesting season by ENSP staff and/or MU interns. After determining that the least tern colony had abandoned the site and no piping plover nesting activity was likely, monitoring was reduced to about once a week.

Fencing/Posting: ENSP staff prefenced (April 12) the northern half of the beach using string-and-post symbolic fence. “Area Closed” signs were posted on every third post.

Predator exclosures: No piping plovers nested at this site so exclosures were not necessary.

Predator control: None undertaken.

Beach management: As agreed upon by NGTC and ENSP, the northern portion of the beach (where nesting has taken place in the past) was not mechanically raked. The southern half of the beach is raked and used as a recreational beach. NGTC contracts beach raking and lifeguard services for the recreational portion of the beach from the Borough of Sea Girt. BP drives in front of the nesting area (primarily on quads) to reach the recreational beach.

Coordination/Communication: Updates were faxed every other week to the NGTC, the New Jersey Department of Military and Veteran Affairs - Office of Environmental Compliance (which acts as a liaison) and the Borough of Sea Girt to keep them informed of the current status of nesting activity and ENSP management recommendations.

Beach nesting bird management plan: No formal written plan, however, NGTC is developing an Integrated Natural Resources Management Plan that will have a BNB component.

Outreach: An interpretive sign (provided to NGTC by ENSP) is permanently placed near the main access leading to the recreation beach.
Nesting Results

No piping plovers nested at the site this season, although a single male was observed “scraping nests” early in the season.

A least tern colony (26 maximum adults) was present at the site. However, only a small number of nests (4) were found and the colony abandoned early in the season. The exact cause of abandonment could not be determined, although the presence of foxes, dogs and human trespassers within the fenced nesting area continues to be a problem at the site.

Recommendations

Monitoring and patrolling: Surveying should continue to be initiated early in the season (April) for the possibility of piping plover nesting.

Fencing/Posting: No basic change. However, “No Dog” signs should be posted at either end of the NCTC beach as they have a no dog policy, but dog walkers are frequently observed at the site.

Predator exclosure: If piping plovers attempt to nest at this site again, exclosures should be considered for all nest attempts because predator activity remains high.

Predator control: Because of the continued poor success of the tern colonies (likely due to predation), ENSP staff should attempt to clearly identify predator species. Work with the NGTC to assess the feasibility of managing foxes (and other predator species) at the site. Work with the NGTC to develop a strategies (e.g. more signage, outreach, etc.) to increase public compliance with the no dog policy.

Beach management: No change.

Coordination/Communication: No change.

Beach nesting bird management plan: Work with NGTC to develop the BNB portion of their Integrated Natural Resources Management Plan. Since the plan is not expected to be completed until September 2004, interim measures, consistent with current beach management practices, should be undertaken during the 2004 nesting season.

Outreach: No basic change, although the frequency of ENSP monitoring could be increased as a means to educate the general public and dog-walkers at this site about the potential negative impacts of their activities on nesting birds.

Island Beach State Park – Dike

BNB Site Manager: NJDFW-ENSP

Summary provided by: NJDFW-ENSP

Management

Monitoring and patrolling: ENSP staff monitored the site twice weekly, including limited patrolling on 1 weekend day. ENSP staff also surveyed the oceanfront portion of the Park for nesting activity several times from April-June.
**Fencing/Posting:** The upper portion of the dike is permanently fenced with a combination of snow fence and wire pasture fence. However, the piping plover nests and black skimmer colony were located on the northern down slope of the dike in an area that was not prefenced. ENSP fenced those areas with string-and-post symbolic fence as nests were found “Area Closed” signs were posted on every third post.

**Predator exclosures:** Predator exclosures were used on 2 piping plover nests.

**Predator control:** None undertaken.

**Beach management:** No active management (e.g. beach raking, placement/servicing of trashcans, etc.) is conducted by NJDPF at this site. No public vehicle usage is permitted on this portion of the beach.

**Coordination/Communication:** Updates were faxed to NJDPF every other week to keep the Park informed of the current status of nesting activity and ENSP management recommendations.

**Beach nesting bird management plan:** No formal written plan.

**Outreach:** An interpretive sign, developed and placed by NJDPF, is permanently placed at the eastern end of the site.

**Nesting results**
Two (2) pairs of piping plovers nested at the site, resulting in two 2 nesting attempts. The outcome of one nest could not be determined since 2 of the 3 eggs in the nest disappeared close to the hatch date but no chicks were ever seen. The other nest hatched 4 chicks, of which 1 fledged. An additional unpaired adult (male) was present at the site for most of the nesting season.

A least tern colony (17 maximum adults) was present on the upper portion of the dike. Productivity for the least terns was moderate (≥0.5 to <1.0 fledges per pair).

A black skimmer colony (83 maximum adults, but only 7 active nests) was present on the north side of the dike close to where the plovers nested. The black skimmers failed to hatch any young. Avian predation was the suspected cause of failure.

**Recommendations**

**Monitoring and patrolling:** Increase monitoring frequency, especially early in the season.

**Fencing/Posting:** NJDPF should assist ENSP in the fencing of nesting areas that are not already fenced. There are not enough “Area Closed” signs on the upper portion of the dike that is permanently fenced. ENSP will provide NJDPF with more signs so they can adequately post the area. The signs should be removed at the end of the nesting season since they fade quickly when left out year-round. Kayakers (both independently-operated and as part of park-sponsored trips) often land near the plover nesting/foraging area on the north side of the dike. Signs should be developed and placed by NJDPF on the north side of the dike to let kayakers know that they are entering a nesting/foraging area and that human activity should be limited in this area.
**Predator exclosures:** Since this site has predator problems (most notably gulls from a nearby nesting colony), use of exclosures should be considered in all cases. The fox population, which has historically been high in the Park, appears to have dropped significantly. If the fox population rebounds, consider use of electric fence in conjunction with predator exclosures.

**Predator control:** Dogs should be prohibited from the dike area during the nesting season (April 1–September 15). Signs should be placed by NJDPF at several access points, including where boats land to, to indicate this.

**Beach management:** No basic change. However, if NJDPF plans to erect any additional fence in the dike area, they should consult with ENSP to ensure that it is placed in a manner that is compatible with nesting birds and the maintenance of habitat.

**Coordination/Communication:** No change.

**Beach nesting bird management plan:** Encourage NJDPF to formally designate this site as a protected bird nesting area and work with them to develop a BNB management plan for this area.

**Outreach:** Encourage NJDPF to post BNB information at their Interpretive Centers and other appropriate locations within the Park. (ENSP will provide brochures.) In addition, BNB information could be incorporated into park-sponsored programs.

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**Barnegat Light**

**BNB Site Manager:** NJDFW-ENSP

**Summary provided by:** NJDFW-ENSP

**Management**

**Monitoring and patrolling:** ENSP staff monitored the site at least 3 times a week, including limited patrolling on 1 weekend day.

**Fencing/Posting:** ENSP staff and WCC volunteers prefenced (April 5) a large area adjacent to the Barnegat Inlet with string-and-post symbolic fence. A second strand of polypropylene rope was used as part of the fence in order to provide additional protection. An area between 13th and 14th Street was also prefenced with a combination of string-and-post symbolic fence and wire pasture fence. An area between 15th and 17th Street was fenced with string-and-post symbolic fence once breeding activity was observed. “Area Closed” signs were posted on every third post. After piping plover nests hatched, signs (“Chicks Hatched”, “5 MPH”) were posted to indicate areas where chicks were feeding.

**Predator exclosures:** Predator exclosure were used on 2 of 3 nesting attempts.

**Predator control:** None undertaken.

**Municipal beach management:** The Borough does not mechanically rake any portion of their beach. Although the Borough limits vehicle use near the nesting area at the jetty, other areas of the beach (south of 9th Street) receive heavy vehicle use, primarily from PWD and BP.
Coordination/Communication: Weekly updates were faxed to the Borough to keep them informed of the current status of nesting activity and ENSP management recommendations.

Beach nesting bird management plan: No formal written plan.

Outreach: An interpretive sign was placed at the northwest corner of the fenced area along the jetty. ENSP staff provided informal on-site outreach, including the distribution of BNB brochures to interested beachgoers.

Nesting results
Three (3) pairs of piping plovers nested at the site, resulting in 3 nesting attempts. Two (2) of the 3 nests hatched. One (1) nest was lost to undetermined causes. A total of 6 chicks hatched, of which 4 fledged. An additional unpaired adult was present between 13th and 16th Street for most of the nesting season.

A least tern colony (6 maximum adults) was present in the area between 15th and 17th Streets. Productivity was low (<0.5 fledges per pair). Predator (crows, gulls and foxes) and human activity was high in this area.

Recommendations

Monitoring and patrolling: No change.

Fencing/Posting: String-and-post symbolic fence (with two strands of string/rope) should still suffice for prefencing in the area near the jetty. ENSP staff should also continue to prefence an area between 13th and 16th Streets (assuming sufficient habitat remains). Other areas should be fenced as nests are discovered because nesting patterns are not well established and/or habitat is changeable in these areas.

Predator exclosures: As this site has a history of predator problems (both avian and mammalian), use of exclosures should be considered in most cases.

Predator control: No change.

Municipal beach management: Heavy municipal vehicle usage in the area between 12th and 18th Streets, where nesting has occurred the last several years, continues to be a problem. Although prefencing in this area has created protected habitat where plovers and terns can set up territories, unfledged chicks are still at high risk. In general, vehicle usage should be limited as much as possible in areas where nesting occurs. Encourage PWD and BP to drive on and off the beach at 22nd and 30th Streets as much as possible, especially when heading to southern portions of the beach (instead of driving back and forth on the beach to get on and off at 9th Street). The pattern of servicing trash/recycling cans continues to be a problem in the area between 12th and 18th Streets. PWD drives along the base on the dunes (sometimes in the dunes) to pick up cans, which places unprotected nests and/or unfledged chicks at risk. Work with the PWD to develop a way to service the area in a manner that is less harmful to nesting birds.

Coordination/Communication: ENSP should hold a meeting with the Borough to educate PWD, BP and Long Beach Township PD about the negative impacts of vehicle use on nesting birds and seek changes in vehicle use patterns by these departments.
Beach nesting bird management plan: Work with the Borough to initiate the process of developing a BNB management plan.

Outreach: No change.

Other: As habitat suitability for nesting birds continues to degrade along the inlet, ENSP should explore long-term options to improve the nesting habitat in this area.

Holgate
BNB Site Manager: USFWS – Forsythe NWR
Summary provided by: Vinny Turner, Wildlife Biologist, USFWS – Forsythe NWR

Management

Monitoring and patrolling: A refuge biologist and summer interns monitored the site 3-4 times a week. Refuge law enforcement officers patrolled the site, on a regular basis on weekends and semi-regularly on weekdays. At other times, law enforcement officers were posted at the Refuge’s northern boundary.

Fencing/Posting: The northern boundary of Holgate is posted with signs indicating that no public access is permitted during the nesting season. The south tip and cove areas are also posted for boaters and personal watercraft operators. No fence is used.

Predator exclosures: A total of 8 predator exclosures were used at the site. Only one nest was abandoned. There were no problems with the exclosures: an occasional gull would walk around exclosures, but no mammalian disturbance.

Predator control: Conducted by U.S. Department of Agriculture – Animal and Plant Health Inspection Service. A fox, opossum, and 2 raccoons were taken from the site, and 2 fox dens were destroyed.

Beach management: None. The site is a federally designated Wilderness Area.

Coordination/Communication: The Refuge oversees all plover activities at the site so no outside coordination is necessary.

Beach nesting bird management plan: The USFWS’s Piping Plover (Atlantic Coast Population) Recovery Plan is used for this purpose.

Outreach: Information and updates of plover activities are provided to the public through Refuge volunteers directly at Holgate. Plover updates are also posted on the Refuge website.

Nesting Results

Thirteen (13) pairs of piping plovers nested at the site, resulting in 13 known nesting attempts. Ten (10) of the 13 nests hatched. Of the 3 failed nests, 1 was lost to a mammalian predator, 1 to flooding and 1 to abandonment. A total of 28 chicks hatched, of which 17 fledged.

A least tern colony (60 maximum adults) was present at this site. The colony completely failed, likely due to flooding.
A black skimmer colony (425 maximum adults) was present at the site. Productivity was moderate (>0.5 to <1.0 fledges per pair).

**Recommendations**

**Monitoring and patrolling:** No change.

**Fencing/Posting:** No change.

**Predator exclosures:** No change

**Predator control:** No change

**Beach management:** Many historic plover areas at Holgate have been taken over by vegetation. Improve habitat by thinning out native vegetation to allow more suitable nesting/feeding areas.

**Coordination/Communication:** No change.

**Beach nesting bird management plan:** No change.

**Outreach:** No change.

**Little Beach**

**BNB Site Manager:** USFWS – Edwin B. Forsythe NWR

**Summary provided by:** Vinny Turner, Wildlife Biologist, USFWS – Forsythe NWR

**Management**

**Monitoring and patrolling:** A refuge biologist and summer interns monitored the site 3 times a week (weather and tidal conditions permitting since the site is only accessible by boat).

**Fencing/Posting:** Large (4’ x 8’) “Area Closed” signs are posted at several highly visible locations around the perimeter of the island. No public access is allowed anytime during the year.

**Predator exclosures:** None used. It is too physically demanding to carry exclosures by hand a mile (or longer) to nests. There are no other (closer) access points to safely bring them to Little Beach.

**Predator control:** A trapper was contracted to remove predatory mammals from Little Beach using a snare. Four to six foxes were captured and dispatched.

**Beach management:** None. The site is a totally undeveloped barrier island with limited access and is a federally designated Wilderness Area.

**Coordination/Communication:** The Refuge oversees all plover activities at the site so no outside coordination is necessary.

**Beach nesting bird management plan:** The USFWS’s Piping Plover (Atlantic Coast Population) Recovery Plan is used for this purpose.

**Outreach:** On-site outreach is not conducted at Little Beach since it is closed to the public. Nesting information and updates are posted on the Refuge website.
**Nesting Results**

Nineteen (19) pairs of piping plovers nested at the site, resulting in 22 known nesting attempts. Twelve (12) of the 19 nests hatched. Of the 7 failed nests, 4 were lost to mammalian predators, 2 to flooding and 1 was destroyed by undetermined causes. Three (3) nesting attempts had unknown outcomes. A total of 28 chicks hatched, of which 17 fledged.

**Recommendations**

**Monitoring and patrolling:** No change.

**Fencing/Posting:** No change.

**Predator exclosures:** No change.

**Predator control:** No change.

**Beach management:** No change.

**Coordination/Communication:** No change.

**Beach nesting bird management plan:** No change.

**Outreach:** No change.

**North Brigantine Natural Area**

**BNB Site Manager:** NJDFW-ENSP

**Summary provided by:** NJDFW-ENSP

**Management**

**Monitoring and patrolling:** ENSP staff monitored the site 3-5 times weekly, including patrolling on at least 1 weekend day. The City of Brigantine PD patrolled the area up to the vehicle barrier several times a day.

**Fencing/Posting:** A combination of prefencing and fence erected once nesting activity or nests were found was employed at this site. String-and-post symbolic fence is left up year round in front of the main overwash and around the dune/overwash area at the northern tip. ENSP repaired this fencing and replaced signs in early April. At ENSP’s request, the City (PWD) prefenced an area in front of the “shipwreck” with string-and-post symbolic fence during the first week of April. ENSP had to expand this area considerably as nesting activity occurred outside the original fenced area. ENSP fenced the wide beach area directly north of the “vehicle cut” with string-and-post symbolic fence once significant nesting activity was observed. ENSP fenced 2 small areas south of the main overwash with string-and-post symbolic fence after nests were discovered. “Area Closed” signs were generally placed on every third post in most areas, but on every other post in front of the main overwash. The City placed “No Dog” signs at the vehicle barrier. Other signage was placed in conjunction with the vehicle barrier and is described in that section below.
**Vehicle barrier:** The vehicle barrier serves two purposes: 1) to protect unfenced nests and nesting areas from vehicle traffic 2) to protect unfledged chicks from vehicle traffic. ENSP requested that the City either preference nearly the entire northern portion of the NA or put up a vehicle barrier just south of the “vehicle cut” by early April. The City chose to put up the barrier, which was put in place by the City’s PWD on April 9. This was the second year in a row that the barrier was placed at this location in early April. The barrier consisted of cedar posts connected by rope running from the dune line down to the high tide line. ENSP added additional metal posts and rope to extend the barrier further into the surf zone in an effort to further prevent trucks from driving around the barrier at low tide. A large “Plover Nesting Area – No Vehicles Beyond This Point” sign (provided to the City by NJDPF) was posted close to the barrier. The barrier was scheduled to be relocated to its “traditional” location about 50 yards south of the main overwash once the first nest(s) hatched in the main overwash (which typically occurs around May 15). However, due to delays in nesting and flooding of numerous nests, the barrier was not relocated this year until considerably later (June 29). In addition, because 2 nests were found well south (~ 1 mile) of the main overwash, ENSP determined that the vehicle barrier needed to be relocated to the NA/City boundary. About a month later (July 25), after the chicks from the two southerly nests moved to the main overwash, the vehicle barrier was relocated close to its “traditional” location just south on the main overwash. The barrier was entirely removed from the NA on August 12 after ENSP determined the last chicks had fledged from the site. Brigantine PWD was responsible for the original installment, all relocations and final removal of the barrier. ENSP determined specific locations and timing for the barrier placement and removal.

**Predator exclosures:** Predator exclosures were used to protect 8 of the 23 nests. They were strongly considered for all nesting attempts because of the ongoing threat of fox, and possibly raccoon, predation. Electric fencing was used in conjunction with all exclosures to further deter fox. Anti-perching devices were added to the electric fence chargers to prevent avian predators from perching on them. Of the 15 nests that were not exclosed, 10 were destroyed before they went to a full clutch. (ENSP does not typically exclose nests until they reach a full clutch). Of the 5 other nests that were not exclosed; 2 were destroyed just after reaching full clutch but before ENSP could exclose them and 3 were located in extremely flood prone areas where ENSP decided to wait to see if these nests would survive upcoming high tides (which they did not).

**Predator control:** None undertaken, however, some fox trapping is typically conducted by public during regulated trapping season.

**Beach management:** This site is a state owned NA, therefore, no active management (i.e. beach raking) occurs on this beach.

**Fishing tournaments:** A fishing tournament was scheduled by the City for June 28, including on portions of the NA that were not closed to vehicle traffic. However, the vehicle barrier was scheduled to be relocated to the southern border of the NA (closing the entire NA to vehicles) the day before the tournament. ENSP and NJDPF were not aware of the tournament beforehand and agreed (on a one-time only basis) to delay moving the barrier until the day after the tournament. The tournament was closely monitored by ENSP staff and Brigantine BP.
Coordination/Communication: Weekly updates were faxed to the City of Brigantine, NJDPF and NJONLM to keep them informed of the current status of nesting activity and ENSP management recommendations. ENSP met on-site with Brigantine PWD on several occasions to outline fencing needs and the location of the vehicle barrier. ENSP also met on-site with NJDPF (new Superintendent) and the NJONLM to review current and long-term management practices, as well as issues related to signage and vehicle barrier location.

Beach nesting bird management plan: No formal written plan exists, although a licensing agreement between NJDEP and the City of Brigantine (valid through October 2007) outlines management responsibilities that the City is required to perform at the NA in exchange for being able to issue ORV permits for the site.

Outreach: Extensive informal on-site outreach with interested (and concerned) beachgoers and ORV users was conducted by ENSP staff.

Other: In an attempt to increase piping plover nest hatch success at the site, ENSP “raised” two late-season nests that it believed would not survive normal high tides without intervention. In brief, eggs were carefully removed from the nest and then a tapered mound of sand (3’ in diameter and 6” high in the center) was created by depositing several buckets of sand over the old nest. A nest depression (with a shell lining) was then recreated and the eggs placed back in the new nest. The procedure took 2 staff members less than 10 minutes to complete. In both cases, the incubating adult immediately returned to the nest and a successful nest exchange was also eventually observed. Over time, several heavy rainstorms flattened out both nest mounds so ENSP “raised” the nests again using the same procedure. Unfortunately, both nests were eventually lost due to full moon tidal flooding. It should be noted that this procedure was only done with nests already protected with a predator exclosure, because disturbance of the nest site/substrate as a result of the procedure may have made the nest more vulnerable to predators.

Nesting results
Seventeen (17) pairs of piping plovers nested at the site, resulting in 23 known nesting attempts. Eleven (11) of the nest attempts were in the main overwash, 3 in the overwash/dune area at the north tip, 3 close to the “shipwreck”, 2 on the wide outer beach just north of the “vehicle cut”, 2 on the outer beach at the northernmost tip and 2 south of the main overwash (including 1 at the NA/City boundary line). Only 4 of the 23 nests hatched. A total of 15 chicks hatched, of which 6 fledged. Of the 19 nests that failed, 10 were flooded, 5 were lost to undetermined causes (likely either flooding or a predator), 2 were destroyed by a mammalian predator, 1 was destroyed by an avian predator and 1 was abandoned (as a result of ongoing flooding). This was the first year that birds nested south of the main overwash, which was probably the result of deteriorating habitat conditions in the main overwash. The main overwash has progressively been filling in with vegetation and the remaining open areas are low-lying and extremely flood prone. In addition, predators, especially fox, continue to be a problem at the entire site, but especially in the main overwash. Of the 11 nesting attempts in the main overwash, none hatched. While the main overwash was not a productive nesting area, it did continue to
provide alternate feeding habitat for adults and chicks. Both broods of chicks from nests south of the main overwash moved into the overwash to forage.

**Recommendations**

**Monitoring and patrolling:** As suitable nesting habitat in the main overwash continues to decline, all other areas should be surveyed more intensively, including the entire stretch of beach south of the main overwash. Several of this year’s nests occurred in what would normally be considered “sub-optimal” nesting habitat, making assessment of nesting areas more difficult.

**Fencing:** In the past, the main overwash was the primary nesting area at the site. Nesting in this area is set back from the oceanfront portion of the beach where most of the vehicle usage and human activity occurs. As nesting activity continues to spread out across the oceanfront beach, both north and south of the main overwash, this has necessitated fencing more areas. Prefencing of nesting areas continues to be an effective management tool at this site as it provides the means to separate vehicle and foot traffic from areas of nesting activity and therefore prevents accidental crushing of eggs by vehicles and walkers. Prefencing also limits disturbance to birds setting up nesting territories and establishing nests. In 2003, ENSP requested that the City prefence an area of suitable nesting habitat close to the shipwreck, which was south of (and therefore not protected) by the original location of the vehicle barrier. Ultimately, as nesting activity expanded in that area, ENSP had to extend the fence erected by the City. Furthermore, even with the vehicle barrier in place at the “vehicle cut” in early April, large areas of the beach north of barrier still needed to be fenced (by ENSP) in order to protect nests from foot traffic.

**In the future, as required by the licensing agreement, the City should be responsible for fencing all viable nesting habitat at the NA prior to the start of the nesting season (April 1).** ENSP will determine what constitutes viable habitat in early March (although the City should be prepared to fence nearly the entire sand beach portion of the NA). As per the licensing agreement, the City is responsible for purchasing all fencing materials. (NJDFW will provide nesting signage). A map will be generated by ENSP showing (in general terms) the areas that need to be fenced. ENSP will also meet on-site with the City’s PWD in early March to review exactly where fencing needs to be placed. Prefencing of all nesting habitat will allow the City to leave all of the oceanfront (intertidal) portion of the NA open to ORV usage as long as possible (until nests begin to hatch – around May 15). Failure to erect fence prior to the nesting season would result in ENSP recommending that most (possibly all) of the NA be closed to ORV traffic as of April 1. All fencing should be removed from the NA by the City at the end of the nesting season. Encourage the City to seek volunteer assistance for fencing projects from local users groups, such as beach buggy or fishing organizations if they do not have the resources to complete the task themselves. ENSP and NJDPF could assist the City in this regard by arranging a meeting between all interested parties.

**Signage:** Work with NJDPF to develop appropriate signage for the NA. Placement of an “Entering State Natural Area” sign at the southern boundary of the NA and a list of regulations would clarify for the public exactly where the NA begins and the different regulations that exist from the City owned portion of the beach. The NA has become a frequent dog walking area and dogs pose a serious risk to nesting birds (at all stages of nesting). In the past, “No Dog” signs have been posted by ENSP and the City in
conjunction with the vehicle barrier (at changeable locations). NJDPF should post a large “No Dog” sign at the NA boundary indicating that dogs (leashed and unleashed) are prohibited from April 1-September 15. In addition, the City should post metal “No Dog” signs (that have been used with the vehicle barrier in the past) at the intertidal zone of the NA boundary since most dog walkers access the site along the waterline. NJDPF will provide small metal “Natural Area” signs to the City to post in conjunction with the “No Dog” signs. ENSP staff observed people walking over the dunes in an attempt to get to and from the new observation platform constructed by the City just west of the dunes near the southern end of the NA. The City should post signage and/or create a fenced path directing people to and from the viewing platform in a focused way that does not risk disturbance to nesting birds. “Keep off the Dunes” signs may also be useful in this regard.

**Vehicle barrier:** This year the vehicle barrier was erected just south of the “vehicle cut” in early April. In the absence of fence to protect the large area of suitable habitat at the northern end of the NA, use of the vehicle barrier to keep this area free of ORV’s early in the season provided an undisturbed beach for birds to set up nesting territories and establish nests. **If the City agrees to erect fence to protect all suitable nesting habitat at the NA by April 1 (as recommended by ENSP), the vehicle barrier can be eliminated until later in the season when the first nests hatch (usually about May 15).** Once the first piping plover nest(s) hatches the barrier should be placed far enough south to protect the brood(s) of chicks. The exact location will depend on how far south nesting activity extends and hatch dates of other nests at the site. **If the City chooses not to preference all suitable habitat, ENSP will recommend placement of the vehicle barrier at the southern boundary of the NA as of April 1. This is not the State’s preferred alternative since it effectively closes the NA to all vehicular traffic for the entire nesting season.** Regardless of when or where the barrier is located, the City should extend the barrier further towards into the surf zone to prevent vehicles from driving past it at low tide. The City has been reluctant to do this because posts can be knocked down or washed away during high tides, but ENSP placed metal T-post into the surf this year with good success. As long as poles/posts are deeply pounded into the sand, only occasional maintenance of the poles should be necessary (except in the case of strong storms and/or extremely high tides).

**Predator exclosures:** ENSP should continue to use predator exclosures and electric fence on all piping plover nests, except in some cases such as with nests in extremely flood-prone areas. Although there was only one nest abandoned this year (and that was likely due to flooding), use of both predator exclosures and electric fence should be closely monitored, as abandonment has been a problem in past years. Anti-perching devices, which were used on electric chargers for the first time this year, proved successful and should continue to be used. A large number of nests were destroyed this year before they reached a full-clutch and before ENSP exclosed them. Many of these nests were lost to flooding, however, some nests either were or were likely lost due to predators. If predator levels remain high and/or nests continue to be lost to predators, ENSP should consider exclosing nests earlier in the egg laying stage.
**Predator control:** Fox were observed on numerous occasions and regular observations of fox (and raccoon) tracks were made throughout the nesting areas. ENSP should use night-vision binoculars and video equipment (which was tested this year) to study the abundance and effects of predators. If deemed necessary, predator removal should be considered or trapping encouraged during the regular winter trapping season.

**Beach management:** No active beach management, including the placement of any snow fence for dune protection, should be permitted within the NA.

**Fishing tournaments:** The southern portion of the NA has been open to ORV use in past years, and therefore the City saw no harm in scheduling a fishing tournament this year on June 28 (that would include that part of the NA). **In general, no fishing tournament or other planned activity should be scheduled by the City on the NA from May 15 – August 31 (when unfledged piping plover chicks are likely to be present).** The City should notify NJDPF (through Bass River State Forest) and NJDFW (through ENSP) when any fishing tournaments or other planned activities are scheduled to take place at the NA.

**Coordination/Communication:** No basic change, except as otherwise noted in other specific sections of **Recommendations.**

**Beach nesting bird management plan:** No change.

**Outreach:** A brochure that the City hands out with ORV permits is confusing and insufficient in regards to birds nesting at the NA. ENSP and NJDPF should work with the City to revise the brochure or produce an insert that directly addresses nesting birds and important restrictions that apply at the NA. The information should clearly and prominently explain that most of the northern end is a state-owned NA, why the NA is closed on a seasonal basis and approximately when the closure will be in effect. Dog restrictions should also be addressed in the brochure, but a separate handout for the general public should be considered if new signage proposed for next year does not effectively control dog walkers.

**Law enforcement:** Under the terms of the agreement between NJDEP and the City of Brigantine, the City PD is permitted to fully enforce existing restrictions at the NA, including the issuing of tickets for violations. Work with the City to clarify this responsibility and, if necessary, arrange a meeting between the City and NJDPF to discuss this issue.

**Other:** Although the “raising” of flood prone nests ultimately was not successful this year (because full-moon tides eventually flooded the nests), the method itself proved to be an easy and quick procedure that involved little observed risk. In some very limited cases (i.e. exclosed nest that have an extremely low probability of surviving normal high tide cycle), this procedure could be considered for use in the future.
Ocean City – North
BNB Site Manager: NJDFW-ENSP
Summary provided by: NJDFW-ENSP

Management

Monitoring and patrolling: ENSP staff and CCRP student researchers monitored the site 7 days a week, including patrolling on both weekend days.

Fencing/Posting: ENSP staff fenced nests with string-and-post symbolic fence as they were discovered. “Area Closed” signs were posted on every third post. After piping plover nests hatched, “Nest Hatched” signs were posted near the nest/feeding areas to alert beachgoers of the presence of chicks. “No Dog” signs were posted at several beach accesses.

Predator exclosures: No predator exclosures were used at this site.

Predator control: The Ocean City Animal Control Officer patrolled the site several times a week during the nesting season to prevent problems with dog walkers. Tickets were issued to repeat offenders.

Municipal beach management: The City did not mechanically rake the beach north of the terminal groin. Municipal vehicle use was limited to emergency use only in the area north of the terminal groin for the entire nesting season.

Coordination/Communication: Weekly updates were faxed to the City to keep them informed of the current status of nesting activity and ENSP management recommendations. In addition, communication between ENSP and the City’s PWD was ongoing throughout the season. A mid-season meeting was held with the PWD to discuss both immediate and long-term management concerns with regards to nesting birds on the City’s beaches. The meeting primarily focused on management issues in the middle of the city, but vehicle use at the northern site was also discussed.

Beach nesting bird management plan: A draft plan exists and has been used as a working plan between the City and ENSP for the last five years. The city has begun reviewing the plan with the aim of creating an updated version for approval.

Outreach: ENSP staff provided informal outreach, including the distribution of BNB brochures on-site with interested (and concerned) beachgoers.

Other: The habitat at the north end of the city was severely reduced this year due to erosion. As a result there was significantly less nesting at the site this year.

Nesting results

Two (2) pairs of piping plovers nested at this site, resulting in 3 nesting attempts. One (1) nest hatched. Of the 2 failed nests, 1 was lost due to flooding and 1 was abandoned. The abandoned nest was likely the result of the death of one of the adult plovers associated with the nest (bird recovered near nest). The state pathologist could not determine the cause of death of the adult plover. A total of 4 chicks hatched, of which 2 fledged.
A least tern colony (12 maximum adults) was present at the site. The colony completely failed due to persistent flooding, predation and human disturbance. All of the terns abandoned the site by mid-June.

**Recommendations**

**Monitoring and patrolling:** A beach renourishment project is scheduled to begin at the north end during the Fall of 2003 and will likely restore some nesting habitat to the area, especially the area south of the terminal groin. No nesting occurred south of the groin last year (the beach was severely eroded), but it has in the past so monitoring of this area should be reestablished next year starting in early April.

**Fencing/Posting:** Prefencing was not done at the site this year (for the first time in several years) because the beach was so badly eroded and little viable habitat remained. A habitat assessment should be conducted early in the 2004 season (March) to determine if the beach renourishment project (and associated sand drift) restores enough habitat to warrant any prefencing. “No Dog” signs that have been posted by ENSP at access paths have been ineffective since individuals continually rip them down. Work with the City to develop and post more permanent (metal) “No Dog” signs in prominent locations.

**Predator exclosures:** Consider use of predator exclosures at the site, as an adult piping plover was found dead this year and a history of predation problems (cats and fox) have plagued the site.

**Predator control:** Monitor predator problems more closely to determine if additional control measures and/or outreach (for cats) are necessary. Continue to encourage the City to enforce their dog ordinance at this site.

**Municipal beach management:** No change.

**Coordination/Communication:** No change.

**Beach nesting bird management plan:** ENSP and the City should update the Ocean City Beach Nesting Bird Draft Management Plan/Agreement with the goal of having it formally adopted by the City and approved by NJDEP and USFWS.

**Outreach:** Interpretive signs were not used at the site this year because of ongoing flooding (and fear that signs might be washed away). Depending on the habitat conditions, ENSP should resume placing a sign on the beach. Supply the Ocean City Animal Control Officer with BNB brochures and literature about why dogs and nesting birds “don’t mix” for distribution during his enforcement efforts.

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**Ocean City – Center**

**BNB Site Manager:** NJDFW-ENSP

**Summary provided by:** NJDFW-ENSP

**Management**

**Monitoring and patrolling:** ENSP staff and CCRP student researchers monitored the site 7 days a week, including patrolling on both weekend days. ENSP staff and NJDFW Conservation Officers (4) patrolled the nesting area during the July 4th fireworks display.
**Fencing/Posting:** ENSP staff protected nests as they were found using string-and-post symbolic fence that supplemented existing snow fence. A second strand of polypropylene rope was used as part of the fence along all access paths in order to provide additional protection. “Detour” signs were also placed near several access paths to guide beachgoers away from nesting areas. “Area Closed” signs were posted on every third post. After piping plover nests hatched, feeding corridors were created by posting signs (“Nest Hatched”, “No Ball Playing, Kite Flying, etc.”, “5 MPH”,) from the upper beach down to the intertidal zone in areas where chicks were feeding/resting.

**Predator exclosures:** No predator exclosures were used at this site.

**Predator control:** None undertaken, although an active fox den was located near 21st Street. The City did not have the expertise for fox removal and ENSP was reluctant to remove the fox because of their location on a heavily used beach. The den appeared to be “abandoned” sometime during the middle of the nesting season and piping plover nest hatch success was ultimately high at the site (although nests closest to the den were predated). By late summer/early fall, fox had returned to the den.

**Municipal beach management:** Management restrictions are addressed in detail in a “draft” version of a BNB management plan. The City does not typically rake the area between 18th and 30th Streets during the nesting season. Raking is phased-in later in the season as plovers leave the site. On several occasions this year raking occurred within the nesting zone while nesting was still ongoing. ENSP also observed an increase in municipal management activity and vehicle use within the nesting zone in the early part of 2003, primarily by the PWD. As a result, ENSP met with the PWD to review existing restrictions outlined in the management plan and discuss other ways to minimize vehicle use. One of the primary issues addressed was the frequent use of the 23rd Street vehicle access, which is in the middle of the nesting zone. It was agreed that the PWD would limit use of this access, and use 29th Street or the accesses north of 18th Street during the nesting season except in emergencies and when no other reasonable route was available. Other issues addressed were reducing the number of trash/recycling cans within the nesting zone, notifying ENSP if major dune work was going to be undertaken in the nesting zone (at any time of the year) and working with ENSP so that any dune work was compatible with nesting birds. ENSP also agreed to be more timely in its response to PWD requests or inquires about management (e.g. emergency cleaning of outfall pipes).

**Coordination/Communication:** Weekly updates were faxed to the municipality to keep them informed of the current status of nesting activity and ENSP management recommendations. Additional communication between ENSP and City (PWD and BP) was ongoing throughout the season as needed. As already discussed, a mid-season meeting was held with the PWD to discuss both immediate and long-term management concerns with regards to nesting birds on the City’s beaches. ENSP staff presented a BNB orientation to BP in mid-June. At the request of the BP, a smaller and more informal format was used this year. Lifeguards that were assigned to stands within or close to the nesting areas were addressed in two small groups (rather than the entire lifeguard staff in a large formal setting).
Beach nesting bird management plan: A draft plan exists and has been used as a working plan between the City and ENSP for the last five years. The city has begun reviewing the plan with the aim of creating an updated version for approval.

Outreach: An interpretive sign was placed near the 23rd Street beach access. ENSP staff provided informal on-site outreach, including the distribution of BNB brochures to interested (and concerned) beachgoers.

Nesting results
Eight (8) pairs of piping plovers nested between 18th and 32nd Streets, resulting in 13 nesting attempts. Seven (7) nests hatched. Of the nests that failed, 3 were lost due to predation, 2 to flooding and 1 to abandonment. Predation by foxes from a den in the nesting area is suspected to be the cause of several of the nest failures. A total of 22 chicks hatched, of which 8 fledged.

A scattered least tern colony (19 maximum adults) was present in the area between 18th and 30th Streets. The colony completely failed, probably due to fox predation/harassment and possibly human disturbance.

Recommendations

Monitoring and patrolling: No change.

Fencing/Posting: No change.

Predator exclosures: If fox continue to be a problem, consider the use of predator exclosures to protect nests nearest to the den (but only those nests that are well hidden from public view).

Predator control: Survey the beach in the winter to determine the updated status of fox den(s) before birds arrive. Work with the City and NJDFW Wildlife Control to assess options in managing the fox population, including trapping and removal.

Municipal beach management: Vehicle use by the City (primarily PWD and BP) in the nesting zone should continue to be limited to valid essential and emergency purposes during the nesting season. In particular, vehicle use of the 23rd Street vehicle access should continue to be curtailed, as was initiated in 2003. ENSP should continue to work with PWD and BP (as well as any other appropriate City departments) to educate them about how their activities can have a harmful effect on nesting birds. City cooperation in this regard has improved, however, compared to many other sites (municipalities) the volume of vehicle use is still very high. Public ORV usage is allowed in the early part of the season via the 23rd Street access. Strong consideration should be given to redirecting public vehicles outside the nesting area starting April 1 by only allowing public vehicle access from the 29th Street access to points south. This would be consistent with ENSP requests regarding vehicle usage by City workers. Young chicks were once again observed this season foraging at outfall pipes, therefore, cleaning of outfall pipes in nesting areas should continue to be curtailed during the nesting season, except in the event of an emergency. Catamaran owners were more cooperative this year and their activities did not appear to be significantly affecting nesting birds, even though their designated usage area at 23rd Street is in the middle of the nesting zone. Continue to monitor this carefully.
**Coordination/Communication:** No basic change. Direct communication between ENSP and the PWD increased after a mid-season meeting and should continue in the future.

**Beach nesting bird management plan:** ENSP and the City should update the Ocean City Beach Nesting Bird Draft Management Plan/Agreement with the goal of having it formally adopted by the City and approved by NJDEP and USFWS.

**Outreach:** No basic change, although ENSP should seek additional outreach opportunities within the City.

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**Corson’s Inlet State Park**

**BNB Site Manager:** NJDFW-ENSP

**Summary provided by:** NJDFW-ENSP

**Management**

**Monitoring and patrolling:** ENSP staff and CCRP student researchers monitored the site 3-5 times a week, including limited patrolling on at least 1 weekend day. NJDPF staff patrolled the Park daily.

**Fencing/Posting:** ENSP staff, WCC volunteers and Ocean City High School students prefenced (April 7) a large area at the southern end of the Park with string-and-post symbolic fence. A second strand of polypropylene rope was used as part of the fencing in order to provide additional protection. “Area Closed” signs were posted on every third post. A nest at the northern end of the Park was fenced by ENSP with string-and-post symbolic fence upon discovery. After the piping plover nest hatched, signs (“Nest Hatched”, “5 MPH”) were posted to alert beachgoers and Park staff of the presence of chicks. A defined feeding corridor could not be (effectively) established because the chicks moved around the site considerably.

**Predator exclosures:** A predator exclosure, supplemented with electric fence, was used on one nesting attempt. Exclosures were proposed for all nesting attempts, but other nests were destroyed almost as soon as they were found (prior to a full clutch).

**Predator control:** None undertaken.

**Beach management:** No active management of the beach is undertaken by NJDPF at this site. A boat and personal watercraft landing area, which is situated at the southern tip of the Park, results in disturbance to critical bird foraging area.

**Coordination/Communication:** Weekly updates were faxed to NJDPF to keep them informed of the current status of nesting activity and ENSP management recommendations. An on-site meeting was held between ENSP and NJDPF (including the new Superintendent) at the beginning of the nesting season to review BNB management at the Park.

**Beach nesting bird management plan:** No formal written plan.

**Outreach:** ENSP staff installed an interpretive sign at the northernmost end of the prefenced area (where a walking trail came out on the beach). ENSP staff provided informal on-site outreach, including distribution of BNB brochures to interested beachgoers.
**Nesting results**
Two (2) pairs of plovers nested at the site, resulting in 3 known nesting attempts. Two (2) nests were destroyed due to predation (likely fox). The remaining nest hatched 4 chicks, of which 1 fledged.

**Recommendations**

**Monitoring and patrolling:** No change.

**Fencing/Posting:** No change. Continue to fence the southern portion of the Park prior to the nesting season and other nests as they are discovered.

**Predator exclosures:** If nothing is done to address the fox problems, it may be advisable to place exclosures on nests with fewer than 4 eggs, as nests were destroyed quickly at this site (before exclosures could be erected).

**Predator control:** Breeding habitat continues to be excellent at the Park, however, ENSP believes the fox population and associated predation pressure continue to suppress both the number of plovers attempting to nest at the site and the reproductive success of those that do nest. The fact that plovers shifted nesting to the northern end of the Park (after failing at the southern end) was likely the result of fox harassment. Furthermore, it is possible that black skimmers and least terns would nest at the Park if predatory threats were reduced. NJDPF and NJDFW should jointly develop a predator removal program that could include live trapping or temporary opening of the Park to licensed trappers during the regular trapping season.

**Beach management:** Vehicle use by NJDPF staff in the vicinity of foraging chicks should be limited to emergency and essential purposes only. Consideration should be given to relocating the boat/personal watercraft landing away from prime foraging habitat and possibly eliminating it from the Park entirely.

**Coordination/Communication:** No change.

**Beach nesting bird management plan:** No change.

**Outreach:** No change.

**Strathmere Natural Area**

**BNB Site Manager:** NJDFW-ENSP  
**Summary provided by:** NJDFW-ENSP

**Management**

**Monitoring and patrolling:** ENSP staff monitored the site 3 times per week, including limited patrolling on both weekend days. NJDPF staff also patrolled the site, although not on a regular basis.

**Fencing/Posting:** ENSP staff fenced a black skimmer colony with post-and-string symbolic fence once nesting activity was observed. “Nesting Bird” signs were posted on every other post.

**Predator exclosures:** No piping plovers nested at this site so exclosures were not necessary.
**Predator control:** None undertaken.

**Beach management:** This site is a state NA and, therefore, the beach is not actively managed. Vehicle usage was limited to occasional emergency usage. Boats and personal watercraft are permitted to land at the site. Local citizens placed “unauthorized” snow fence on the NA, including well out on the beach directly next to the nesting colony. ENSP staff removed the fence.

**Coordination/Communication:** Updates were faxed to NJDPF and NJONLM about once every two weeks to keep them informed of the current status of nesting activity and ENSP management recommendations. An on-site meeting was held between ENSP, NJDPF (including the new Superintendent) and NJONLM to review management of the site for nesting birds.

**Beach nesting bird management plan:** No formal written plan.

**Outreach:** A BNB brochure is permanently posted on the information kiosk located at the street entrance to the NA. ENSP staff conducted a limited amount of informal on-site outreach to interested beachgoers.

**Nesting Results**

No piping plovers nested at this site, although an unpaired male plover moved between this site and one directly south throughout the season.

A black skimmer colony (344 maximum adults) was present at the site. Among those birds that were observed nesting (only ~75 pairs) productivity was moderate (>0.5 to <1.0 fledges per pair). However, many birds were never observed nesting (no nests found), likely due to constant flooding and human disturbance.

**Recommendations**

**Monitoring and patrolling:** Increase the intensity of monitoring and initiate it in early April as the nesting habitat continues to improve and a piping plover was present at the site for much of this season. The success of the black skimmer colony was negatively impacted by human disturbances and ongoing vandalism to fencing, including from nighttime parties on the beach. With NJDPF assistance, find means to monitor and patrol these types of disturbances more effectively, including support from NJDFW Conservation Officers.

**Fencing/Posting:** A more protective type of fence (wire pasture fence) may be necessary if high levels of human disturbance and vandalism of sting-and-post symbolic fence continues. NJDPF should consider placing a sign(s) delineating the border between the NA and the Upper Township portion of the beach so that the public realizes they are entering a state owned NA (and that different regulations are in effect). “No Dog” signs at the border would also be beneficial since many people access the site from this direction.

**Predator exclosures:** Consider use of exclosures if plovers nest at this site, since avian (and likely mammalian) predators are frequently present.
**Predator control:** No basic change. However, dogs continue to be a problem (including from boats landing at the site). NJDPF more strictly enforced the dog regulations this year – these efforts should be continued.

**Beach management:** Human disturbance associated with the boat landing has been an ongoing problem for nesting birds using this site, especially in years when suitable nesting habitat is limited due to erosion. Elimination of the boat/personal watercraft landing area should be strongly considered since this is a state NA that should be managed primarily for nature, and secondarily for compatible human use. Furthermore, motorized boat usage is specifically not permitted under Natural Area System Rules and Statutes.

**Coordination/Communication:** No change.

**Beach nesting bird management plan:** No change.

**Outreach:** Placement of an interpretive sign on the beach would be beneficial if nesting occurs next year. Increase informal outreach with beachgoers through more intensive patrolling at the site, especially on weekends.

**Strathmere Bay Island**

**BNB Site Manager:** NJDFW-ENSP

**Summary provided by:** NJDFW-ENSP

**Management**

**Monitoring and patrolling:** ENSP monitored the site (via kayak) once every other week and occasionally more frequently from a nearby bridge.

**Fencing/Posting:** “Nesting Birds” signs were placed on posts around the perimeter of the northern end of the island. No string or rope was used.

**Predator exclosures:** No piping plovers nested at the site so exclosures were not necessary.

**Predator control:** None undertaken

**Beach management:** None – this is an undeveloped backbay marsh island.

**Coordination/Communication:** None.

**Beach nesting bird management plan:** No formal written plan.

**Outreach:** None

**Nesting Results**

No piping plovers nested at this site.

A black skimmer colony (62 maximum adults) was present at the site. The colony completely failed primarily due to several flooding events. Gulls (and possibly black-crowned night herons) nesting at the same site harassed the skimmers and may have directly predated eggs. Skimmers from the nearby colony at Strathmere NA were frequently observed loafing on this island, making it difficult to discern at which site the skimmers were actually nesting.
**Recommendations**

**Monitoring and patrolling:** No change

**Fencing/Posting:** No change.

**Predator exclosures:** Not necessary since this is not a piping plover nesting site.

**Predator control:** Although gulls (and possibly night herons) nesting at the site pose a predatory threat to nesting skimmers (eggs and chicks), predator control is not warranted because the nesting habitat is only marginally suitable and the site is always at a high risk of being flooded.

**Beach management:** No change

**Coordination/Communication:** No change.

**Beach nesting bird management plan:** No change.

**Outreach:** No change.

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**Strathmere (Upper Township)**

BNB Site Manager: NJDFW-ENSP

Summary provided by: NJDFW-ENSP

**Management**

**Monitoring and patrolling:** ENSP staff monitored the site 3-5 times per week, including limited patrolling on both weekend days.

**Fencing/Posting:** ENSP staff fenced two beach blocks with string-and-post symbolic fence as soon as focused piping plover nesting activity was observed. Once a nest was actually discovered within one of the fenced blocks, fence was removed from the other block. “Area Closed” signs were posted on every other post. After the piping plover nest hatched, a feeding corridor was created by posting signs (“Nest Hatched”, “5 MPH”) from the upper beach down to the intertidal zone in the area where chicks were feeding/resting.

**Predator exclosures:** A predator exclosure was used on the single piping plover nest at this site.

**Predator control:** None undertaken.

**Municipal beach management:** Upper Township does not mechanically rake any portion of their beach. Vehicle traffic was infrequent on the portion of the beach where nesting took place. Local residents (not the Township) erected dune fencing well out on the beach in several locations, including close to the nesting area.

**Coordination/Communication:** Weekly updates were faxed to the Township to keep them informed of the current status of nesting activity and ENSP management recommendations. Additional telephone communication between ENSP and the Township Engineer was necessary on several occasions to review management issues, primarily because this was the first time in several years that plovers nested in this area and the first year since a BNB management plan was developed.
Beach nesting bird management plan: A plan was prepared by Upper Township, but is still under review by NJDFW and USFWS-NJFO. In the interim, the plan is being used as the working agreement between ENSP and the Township.

Outreach: ENSP staff provided informal on-site outreach, including the distribution of BNB brochures to interested beachgoers.

Nesting Results
One (1) pair of piping plovers nested on the block between Whittier and Willard Streets, resulting in 1 nesting attempt. Three (3) chicks hatched from the nest, of which 1 fledged.

Recommendations
Monitoring and patrolling: Habitat is highly changeable at this site and no long-term nesting pattern has been established. As a result, careful and frequent monitoring of the entire stretch of beach is necessary.

Fencing/Posting: Prefencing is not recommended, however, fence should be erected by ENSP as soon as nesting activity is observed and territories seem well established (rather than waiting for actual nests to be found).

Predator exclosures: No change.

Predator control: Despite a local dog ordinance and the presence of “No Dog” signs at every beach access, dogs were frequently seen on the beach during the nesting season. On several occasions dogs were observed within the fenced nesting area and/or chasing plovers. Encourage the Township to better enforce their existing dog ordinance.

Municipal beach management: ENSP and the Township should work together to prevent local residents from erecting snow fence on the beach on an ad hoc basis. Such unauthorized dune fencing diminishes suitability of nesting habitat and when erected during the nesting season can cause disturbance to nesting birds.

Coordination/Communication: No change.

Beach nesting bird management plan: ENSP, USFW-NJFO and the Township should work to finalize and adopt the BNB management plan submitted by the Township last year.

Outreach: Consider the placement of an interpretive sign near the nesting area.

Townsend’s Inlet (Sea Isle City)
BNB Site Manager: NJDFW-ENSP
Summary provided by: NJDFW-ENSP

Management
Monitoring and patrolling: ENSP staff monitored the site at 3-5 times per week, including limited patrolling on both weekend days.
Fencing/Posting: ENSP staff prefenced (April 4) the area between 93rd Street and the Townsend’s Inlet Bridge with string-and-post symbolic fence. A second strand of polypropylene rope was used as part of the fence in order to provide additional protection. “Area Closed” signs were posted on every third post. Feeding corridors were not necessary this year since the fenced nesting area extended nearly out to the intertidal zone. However, “Nest Hatched” and “5 MPH” signs were posted once piping plover nests hatched. The City posted large metal signs at either end of the fenced area outlining restrictions put in place as result of a City ordinance designating the area as a BNB area.

Predator exclosures: Two (2) piping plover nests were protected with a predator exclosure.

Predator control: None undertaken. However, ENSP asked the City to trap cats after several cats (and numerous tracks) were observed in the nesting area. The City’s Animal Control Officer (via contract vendor) indicated that he could not trap because there was no shelter space available. The City was unwilling to pursue other animal control services to address the situation.

Municipal beach management: The City did not mechanically rake the area between 93rd Street and the Townsend’s Inlet Bridge during the nesting season. Vehicle use was limited to essential and emergency uses only.

Coordination/Communication: Weekly updates were faxed to the City to keep them informed of the current status of nesting activity and ENSP management recommendations. Additional telephone communication was necessary with regards to cat problems.

Beach nesting bird management plan: No formal written plan exists, however the City has adopted an ordinance which designates the area between 94th Street and the Townsend’s Inlet Bridge as a BNB area and outlines various public and municipal restrictions in the area.

Outreach: An interpretive sign was placed near the 94th Street beach access. ENSP staff provided informal on-site outreach, including the distribution of BNB brochures to interested beachgoers.

Nesting results
One (1) pair of piping plovers nested at the site, resulting in 2 nesting attempts. One (1) nest failed due to flooding. The other nest hatched 3 chicks, 2 of which fledged.

A small least tern colony (36 maximum adults) was present at the site. The colony abandoned the site in mid-June likely due to predation and harassment by cats. Portions of the colony were also flooded.

Recommendations
Monitoring and patrolling: Monitor areas just north of 94th Street on a more regular basis if suitable habitat remains.
Fencing/Posting: Encourage the City to construct larger “No Dogs” signs and/or place current “No Dogs” signs in more prominent locations since dogs are frequently seen on the beach. Some of the dog walkers access the beach from the Townsend’s Inlet Park so signage at this location is necessary.

Predator exclosures: No change.

Predator control: Cats continue to be a severe problem although it is still not clear whether they are feral cats or pets let outside by nearby residents (or a combination of both). Several homeowners have indicated that a feral cat colony is being maintained by local residents at 86th Street (close enough to the nesting area to present a threat). All options need to be explored to lessen the threat of cats at the site, including the removal of cats/cat colonies. Work with the City to control the cat problem prior to and during the nesting season.

Municipal beach management: No change.

Coordination/Communication: No change.

Beach nesting bird management plan: No change.

Outreach: Consider distribution of “Cats Indoors” brochures to homeowners in the vicinity of the nesting area.

Avalon North
BNB Site Manager: NJDFW-ENSP
Summary provided by: NJDFW-ENSP

Management

Monitoring and patrolling: ENSP staff surveyed the site 3 times a week in the beginning of the season (April-May). A pair of plovers was observed in courtship and making nest scrapes just south of the jetty, however, no nesting occurred and eventually the pair left the site. After their departure, surveys were reduced to once a week until July when they were discontinued.

Fencing/Posting: No fence was erected at this site.

Predator exclosures: No piping plover nests were located so no exclosures were necessary.

Predator control: None undertaken.

Municipal beach management: As prescribed in detail in the BNB management plan, although no special consideration was necessary this year because nesting activity only lasted for several weeks early in the season. Some beach raking and non-essential vehicle use occurred at the site early in the season. ENSP requested that these activities be temporarily curtailed, which for the most part, they were.

Coordination/Communication: Weekly updates were faxed to the Borough to keep them informed of the current status of nesting activity and ENSP management recommendations. Direct contact with the Borough was initiated through the Public Works Director on an as-needed basis.
**Beach nesting bird management plan:** A plan signed by ENSP and the Borough has been in place since 2000.

**Outreach:** None undertaken.

**Nesting results**

No nesting occurred at the site.

**Recommendations**

**Monitoring and patrolling:** Continue to survey the site extensively in the early part of the season, even though no nesting occurred this year.

**Fencing/Posting:** Contact Avalon PWD to fence the area between 8th and 9th Streets (or other areas in the vicinity) as soon as focused nesting activity is observed (rather than waiting for a nest to be found).

**Predator exclosures:** Since predators have been a problem at this site, continue to use exclosures on all piping plover nests.

**Predator control:** If nesting birds return next year, contact the Borough immediately to remove cats.

**Municipal beach management:** Harassment due to vehicle use and/or beach raking may have been a factor in plovers leaving the site this year before nesting occurred. Continue to work with the Borough to limit vehicle access and use near 9th Street (or other nearby areas where nesting activity is detected).

**Coordination/Communication:** No change.

**Beach nesting bird management plan:** No change.

**Outreach:** Continue to work with the Avalon Environmental Commission to develop new outreach opportunities within the community.

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**Avalon Dunes**

**BNB Site Manager:** NJDFW-ENSP

**Summary provided by:** NJDFW-ENSP

**Management**

**Monitoring and patrolling:** ENSP staff and CCRP student researchers monitored the site 3-5 times per week, including patrolling on both weekend days. CCRP students patrolled the area during the July 4th fireworks display.

**Fencing/Posting:** Avalon PWD prefenced 3 areas (40th - 44th Streets, 44th - 48th Streets and 48th – 50th Streets) in early April with sting-and-post symbolic fence. “Area Closed” signs were posted on every second post. The prefenced areas proved to be insufficient as piping plovers (and least terns) began nesting outside the fenced area, so the fence was expanded by ENSP staff as needed. ENSP staff also fenced 3 additional areas between 50th and 57th Streets with string-and-post symbolic fence as nests were discovered.

Feeding corridors were not necessary this year since the fenced nesting area extended...
nearly out to the intertidal zone. However, “Nest Has Hatched”, “Piping Plover Crossing” and “5 MPH” signs were posted once piping plover nests hatched.

**Predator exclosures:** Five (5) nests were protected with predator exclosures. Exclosures were used on nests close to the dunes or not otherwise protected by a least tern colony. CCRP student researchers assisted with the placement of exclosures.

**Predator control:** ENSP staff noted a high density of cat tracks in the nesting area, particularly between 40th and 48th Streets. After 3 nests were abandoned in that area, including 2 exclosed nests that had cat tracks encircling them, ENSP contacted the Borough to address the situation. The Borough contracted Tri-County Animal Control to trap cats in the dune area directly behind the nesting area. After 3 days of trapping, a total of 10 cats were removed and transported to animal shelters. ENSP believes the short period of trapping only had a limited effect, as tracks continued to be seen in the nesting area after the trapping.

**Municipal beach management:** The Borough closely followed all management guidelines prescribed in the BNB management plan, including limits on beach raking and vehicle use in the nesting area. In addition, the permanent relocation of the catamarans parking area between 44th – 48th Streets (to the south end of Stone Harbor) decreased the amount of human disturbance in the area.

**Coordination/Communication:** Weekly updates were faxed to the Borough to keep them informed of the current status of nesting activity and ENSP management recommendations. Direct contact with the Borough was initiated through the Public Works Director on an as-needed basis, including an early season meeting to review where PWD should place fencing. ENSP staff briefed Avalon BP in June (once all their seasonal staff was in place) regarding BNB issues.

**Beach nesting bird management plan:** A plan signed by ENSP and the Borough of Avalon has been in place since 2000.

**Outreach:** ENSP placed an interpretive sign on the beach at 40th Street. The Borough also placed interpretive signs at several beach accesses in or near the nesting zone. ENSP staff provided informal on-site outreach, including the distribution of BNB brochures to interested beachgoers.

**Nesting results**

Eight (8) pairs of piping plovers nested at this site, resulting in 12 nesting attempts. Four (4) nests hatched. Of the 7 nests that failed, 3 were lost to abandonment, 2 to predation and 2 to flooding. One (1) nest had an unknown outcome. A total of 12 chicks hatched, of which 6 fledged.

A least tern colony (213 maximum adults) was present early in the season between 40th and 48th Streets. After extensive failure due to flooding and predation (most likely by cats), a much smaller number of terns renested between 48th and 55th Streets. Productivity was low (<0.5 fledges per pair).
**Recommendations**

**Monitoring and patrolling:** More intensive monitoring of the area directly north and south of the “designated” nesting zone is needed as nesting activity continues to expand and habitat conditions are changing in this area.

**Fencing/Posting:** Extend the area that Avalon PWD prefers from 40th - 50th Streets to 40th – 57th Streets, since plovers have nested in this southern area the past two seasons. ENSP should meet on-site with PWD early in the season to review the area to be fenced. To help make the extra fencing as cost efficient and time saving as possible, the Borough could decrease the current pole density to make the same amount of poles go further. The Borough should replace the current type of string used with a more heavy-duty nylon coated style. This would allow the string to last longer and reduce the maintenance and re-stringing performed by ENSP staff throughout the season.

**Predator exclosures:** No change.

**Predator control:** Predators continue to be a concern, although the exact species causing problems have been difficult to determine. The 2003 season seemed to be plagued by cat problems. Implement nighttime monitoring at the site with night vision equipment so that predator species and patterns can be detected. Consider a trapping regime for cats earlier in the season and for a longer period of time.

**Municipal beach management:** Continue to work with the Borough to reduce beach raking near the nesting area. Nesting activity was observed between 35th and 38th Streets early in the season. Beach raking in this area may have altered nest site selection, so request that the Borough temporarily suspend raking if nesting activity is detected outside the “designated” areas.

**Coordination/Communication:** No change.

**Beach nesting bird management plan:** No change.

**Outreach:** Continue to work with the Avalon Environmental Commission to develop new outreach opportunities within the community. Explore the feasibility of ENSP participation in weekly beach walks conducted in Avalon by The Wetlands Institute.

**Stone Harbor Point**

**BNB Site Manager:** NJDFW-ENSP

**Summary provided by:** NJDFW-ENSP

**Management**

**Monitoring and patrolling:** ENSP staff monitored the site 3-5 times per week, including patrolling on both weekend days. ENSP staff and volunteers patrolled the site during the July 4th fireworks display. Oceanfront portions of Stone Harbor’s beach were surveyed on a regular basis early in the season by a monitor hired by USACE (and briefly trained by ENSP) to detect the presence of piping plovers in areas of ongoing beachfill-related construction.
**Fencing/Posting:** ENSP staff prefenced (April 15) all portions of the Point that were not prone to normal tidal flooding using string-and-post symbolic fence. The southwest corner of the CDF berm was also prefenced at the same time because piping plover nesting activity was detected in this area. “Area Closed” signs were posted on every third post. After piping plover nests hatched, “Nest Hatched” and “No Vehicle” signs were posted. “No Dog” signs were placed at the vehicle entrance in the parking lot, at the footpath entrance off of 3rd Avenue and next to the interpretive sign on the beach.

**Predator exclosures:** A predator exclosure was used on 1 nest after it lost an egg to an undetermined predator. Ultimately several other nests also experienced partial clutch reductions, but those nests were located within a dense colony of terns and skimmers making erection of exclosures unfeasible.

**Predator control:** None undertaken.

**Municipal beach management:** The Borough does not mechanically rake the beach at the Point. Stone Harbor BP was observed driving along the oceanfront portion of the Point on a regular basis, but the beach had become so wide that it was not close enough to any nesting to be considered a threat.

**Coordination/Communication:** Weekly updates were faxed to the Borough to keep them informed of the current status of nesting activity and ENSP management recommendations. An independent monitor that was required due to ongoing removal of materials from the CDF during the nesting season, also received the faxed updates. Additional on-site (and telephone) communication between ENSP and the independent monitor was ongoing throughout the season.

**Beach nesting bird management plan:** The Borough has completed a plan, which is still being reviewed by NJDFW and USFWS-NJFO. In the interim, the plan is being used as the working agreement between ENSP and the Borough.

**Outreach:** An interpretive sign was placed by ENSP at the end of the vehicle access path to the Point. ENSP staff provided informal on-site outreach, including the distribution of BNB brochures to interested beachgoers. ENSP presented a BNB program at the Wetlands Institute that was followed by a bird walk at the Point (in July). ENSP sent updates to New Jersey Audubon Society’s Cape May Bird Observatory, who posted the information onto their Natural History Hotline. ENSP staffed an information booth (with a BNB component) at the Wings and Water Festival.

**Other:** As part of a legal settlement with the federal government, the Borough placed approximately 4.4 acres of sand at the Point to restore nesting habitat that was eliminated as a result of the continued presence of the CDF at the site. ENSP worked with USFWS, USACE and the Borough to determine the best location/design for the restored nesting habitat. Ultimately, a large area about 150 years south of the CDF and a smaller area immediately west of the CDF were created just prior to the nesting season. The large area was utilized by 5 piping plovers and nearly all the nesting terns and skimmers. The small area hosted one piping plover nest. Overall, the new nesting areas attracted notably higher numbers of black skimmers and terns than in previous years. Although reproductive success was ultimately low for all species nesting at the Point and flooding was still one of the main causes, it is unlikely that any nests would have hatched at the
site this year if the new sand had not been placed there. NJDFW continued to work with all parties/agencies throughout the season to develop a restoration plan for the site once the CDF is finally removed.

**Nesting results**

Six (6) pairs of piping plovers nested at the site, resulting in 9 nesting attempts. Three (3) of the nests hatched. Five (5) nests were destroyed, including 3 to flooding and 2 to predation. The fate of 1 nest was undetermined since it disappeared close to the hatch date, but no chicks were ever seen. A total of 6 chicks hatched, of which 3 fledged. Notably, 5 of the 9 plover nests suffered clutch reductions (of up to 3 eggs) before they hatched or were totally destroyed. Gull predation is the suspected cause of the clutch reduction as they were observed carrying away tern eggs and chicks.

Both a least tern colony (257 maximum adults) and black skimmer colony (1337 maximum adults) were present at the site. The black skimmer colony was the largest in the state. Productivity for both least terns and black skimmers was low (<0.5 fledges per pair). Both species suffered nest and chick losses due to flooding and predation (by gulls). Least terns suffered the greatest losses, with nearly all the nests being destroyed before hatching.

**Recommendations**

**Monitoring and patrolling:** Survey the oceanfront portions of Stone Harbor’s beach as a beach replenishment project completed last year has created potential nesting habitat.

**Fencing/Posting:** Continue to prefence any viable habitat at the Point in early April. The exact area to be fenced may depend on the status of the CDF, ecological restoration and ongoing natural changes to habitat at the Point. Fencing was completed by ENSP this year. ENSP should continue to take the lead role for now, but Borough involvement should also be encouraged since responsibility for prefencing will eventually be turned over to them under the conditions of the BNB management plan. Recruit volunteer assistance especially among the conservation groups (The Wetlands Institute and New Jersey Audubon Society) that frequently use this site for educational programs.

**Predator exclosures:** Continue to use on an as-needed basis, although more extensive use may be warranted because many piping plover nests suffered clutch reductions this year.

**Predator control:** Monitor the feral cat population at the Point to assess if removal (by the Borough) is necessary. The area is also likely populated by red fox, so populations and use of the beach habitat by fox should also be monitored. Gulls were observed removing common tern eggs and dead skimmer chicks from the site. They are likely responsible for some of the low productive success of all bird species nesting at the Point. Investigate the options available to deter gulls from the nesting area.

**Municipal beach management:** No change, unless nesting activity occurs on the oceanfront portion of the beach.

**Coordination/Communication:** No change.
Beach nesting bird management plan: Continue to work with the USFWS-NJFO and the Borough to finalize and formally adopt the BNB management plan submitted by the Borough.

Outreach: Continue to expand outreach efforts in the community, especially through continued partnership with The Wetland Institute. Stone Harbor Point hosts one of the most spectacular concentrations of beach nesting birds in the state, and as such would make an ideal location for ENSP seasonal monitors to offer guided “nature tours”.

North Wildwood (Hereford Inlet)

BNB Site Manager: NJDFW-ENSP
Summary provided by: NJDFW-ENSP

Management

Monitoring and patrolling: ENSP staff monitored the site 3-5 times per week, including patrolling on both weekend days. ENSP staff and volunteers patrolled the site during the July 4th fireworks display.

Fencing/Posting: ENSP staff prefenced (April 23) two areas along the inlet between Surf Road and Central Avenue with string-and-post symbolic fence. A second strand of polypropylene rope was used on the back side of the fence to provide additional protection. “Area Closed” signs were placed on every second pole. A semi-permanent tidal pond that exists at the back of the beach served as the primary foraging area for the chicks (and adults). Municipal vehicle access to this area was entirely restricted by posting “No Vehicle” signs at the back of either end of the nesting area. After piping plover nests hatched, signs (“Nest Hatched”) were also posted to alert beachgoers walking through this foraging area. In addition, “5 MPH” and “Nest Hatched” signs were posted along the inlet side of the nesting area.

Predator exclosures: No predator exclosures were used at this site.

Predator control: None undertaken.

Municipal beach management: At ENSP’s request, the City did not mechanically rake the area along the inlet between Surf Road and Central Avenue during the nesting season. ENSP requested that municipal vehicle use in this area be limited to essential and emergency uses only.

Coordination/Communication: Weekly updates were faxed to the City to keep them informed of the current status of nesting activity and ENSP management recommendations.

Beach nesting bird management plan: No formal written plan.

Outreach: An interpretive sign was placed at the eastern end of the fencing (where the most public usage was anticipated). ENSP staff provided informal on-site outreach, including the distribution of BNB brochures to interested beachgoers.
**Nesting Results**

Three (3) pairs of piping plovers nested at this site, resulting in 5 nesting attempts. Two (2) nests were destroyed due to flooding and 1 nest was destroyed by an avian predator. Two (2) nests hatched a total of 5 chicks, of which 4 fledged.

A least tern colony (490 xaximum adults) was present at the site. It was the largest least tern colony in the state. Productivity was moderate (> 0.5 to >1.0 fledges per pair), despite problems with flooding and avian predation (peregrine falcon).

**Recommendations**

**Monitoring and patrolling:** No change.

**Fencing/Posting:** The beach receives heavy public use and human encroachment within the fenced nesting area continues to be a problem. String-and-post symbolic fence may still be sufficient but pole density should be increased and a second strand of string/rope should be used around the entire perimeter of the nesting area.

**Predator exclosures:** No change.

**Predator control:** Encourage the City to better enforce their existing dog ordinance since dogs (both leashed and unleashed) continue to be a problem at this site.

**Municipal beach management:** Continue to closely monitor beach raking directly east of the fenced nesting area. If chicks utilize this area, raking should be curtailed or a larger (fenced) buffer established. The amount of municipal vehicle use in front of the nesting area (on inlet side) was excessive, especially considering that there appears to be limited need for travel in this area. Work with the City to reduce their vehicle use to valid essential and emergency usage only.

**Coordination/Communication:** No basic change. However, education of municipal staff (including PWD, BP and PD) regarding potential negative impacts of their activities on nesting birds needs to be initiated.

**Beach nesting bird management plan:** A management plan will be necessary as a permit condition of any upcoming USACE beachfill or bulkhead projects. Work with the City to initiate development of a BNB management plan that encompasses this site, as well as oceanfront portions of the beach.

**Outreach:** Consider placement of an interpretive sign at both ends of the nesting area as public access is heavy from both directions.

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**US Coast Guard - Loran Support Unit (LSU)**

**BNB Site Manager:** USFWS - Cape May NWR  
**Summary provided by:** USFWS – Cape May NWR

**Management**

**Monitoring and patrolling:** NWR staff monitored the site 2-3 times per week.

**Fencing/Posting:** NWR officials closed the adjacent refuge beach to all activities during the entire nesting season and limited use of their trail system leading to the USCG-LSU.
beach to people engaged in wildlife related activities such as fishing and wildlife observation. The USCG-LSU beach was open to all base personnel and security staff. USCG-LSU staff prefenced the area directly next to Cold Spring Jetty. NWR staff used string-and-post symbolic fence along with “Beach Nesting Bird” signs on other areas of the beach once nests were observed. Fencing extended almost to the high tide mark, but left enough room for security vehicles to pass by during high tide.

**Predator exclosures:** No predator exclosures were used at the site.

**Predator control:** None undertaken.

**Beach management:** Beach management activity throughout the nesting season consisted of routine daily patrols by USCG-LSU security vehicles and establishment of two parallel snow fence units placed perpendicular to the existing dunes in order to accommodate ingress and egress to the beach by USCG-LSU security vehicles and staff. Some sand movement by wheeled tractors was conducted to bolster the snow fence and for sign maintenance.

**Coordination/Communication:** Communication was maintained between ENSP and NWR staff and between NWR staff and USCG-LSU throughout the nesting season via telephone, email and personal on-site conversations.

**Beach nesting bird management plan:** No formal written plan.

**Outreach:** None undertaken.

**Nesting Results**

Two (2) pairs of plovers nested at the site, resulting in 4 nesting attempts. Two (2) nests hatched and 2 were destroyed due to flooding. A total of 7 chicks hatched, of which 1 fledged.

A small least tern colony (41 maximum adults) was present at the site, primarily at the southern end of the beach near the inlet jetty. Productivity was low (<0.5 fledges per pair). Aside from some flooding, the exact causes of this low productivity were unknown. However, the following could have been contributing factors: predation after eggs were hatched and beach management activities (i.e. vehicle use).

**Recommendations**

**Monitoring and patrolling:** No change.

**Fencing/Posting:** Prefence appropriate habitat in early April before nesting occurs.

**Predator exclosures:** Predator exclosures should only be used after a predator problem is observed.

**Predator control:** Continue to survey the area for predators as well as the ghost crab population, as specific predator species have been difficult to determine. Consider nighttime and/or video monitoring of the site.
Beach management: USCG-LSU staff and contractors should closely follow guidelines outlined in the USFWS’s Piping Plover Recovery Plan. Vehicle use should be limited to emergencies and valid essential use. A yearly information session is recommended for USCG-LSU staff and security personnel regarding potential negative impacts of their activities on beach nesting birds. The snow fence placed for ingress and egress to accommodate USCG-LSU security and staff should be removed as it is degrading habitat in an area that has historically and recently supported nesting piping plovers (and least terns).

Coordination/Communication: Coordination between USCG-LSU, USFWS-Cape May NWR, USFWS-NJFO and NJDFW-ENSP should increase regarding beach management activities at the site.

Beach nesting bird management plan: USCG-LSU should develop a written management plan consistent with the USFWS “Guidelines for Managing Recreational Activities in Piping Plover Breeding Habitat on the U.S. Atlantic Coast to Avoid Take Under Section 9 of the Endangered Species Act” document.

Outreach: USCG-LSU staff and seasonal employees should receive annual BNB orientation.

Other: Create a written agreement between USCG-LSU and USFWS-Cape May NWR regarding responsibilities for management, monitoring and protection activities.

US Coast Guard Training Center (TRACEN)
BNB Site Manager: NJDFW-ENSP and USCG
Summary provided by: NJDFW-ENSP

Management

Monitoring and patrolling: The site was monitored the 3-5 times per week, including limited weekend patrolling, through a combination of ENSP staff and the USCG (Environmental Officer and his assistant). USCG also patrolled the site for security purposes.

Fencing/Posting: As has been the case in recent years, USCG closed the beach to all base personnel (except security staff) during the entire nesting season, and to reinforce the closure USCG staff prefenced the back portion of the beach with string-and-post symbolic fence. The beach is also closed to the public and to prevent any public trespassers from wandering into the nesting area, USCG staff prefenced most of the shoreline just above the intertidal zone with string-and-post symbolic fence. “Area Closed” signs were placed on every second post. USCG staff also installed a large “Beach Closed” sign at the base’s southern border in an attempt to further reduce unauthorized public access.

Predator exclosures: USCG and ENSP staffs jointly erected 2 predator exclosures at the site. Exclosures were considered for the 2 other nests found at the site, but the nests were destroyed just before exclosures were scheduled to be erected.
**Predator control:** Because mammalian predators (fox, cats and raccoons) are believed to be partially responsible for nest failures and chick loss at the site in recent years, USCG continued its predator removal program. Removal was conducted for about a two month period in the spring by the U.S. Department of Agriculture – Animal and Plant Health Inspection Service.

**Beach management:** No active beach management, including beach raking, is conducted by USCG at the site.

**Coordination/Communication:** Regular communication was maintained between ENSP and USCG via telephone, e-mail and on-site visits with the base’s Environmental Officer.

**Beach nesting bird management plan:** USCG has developed a BNB management plan as part of their Integrated Natural Resources Management Plan and Environmental Assessment.

**Outreach:** None undertaken.

**Nesting Results**

Four (4) pairs of piping plovers nested at the site, resulting in 4 nesting attempts. Two (2) nests hatched. Two (2) nests were destroyed by predators (1 avian and 1 undetermined species). A total of 4 chicks hatched, of which 3 fledged.

**Recommendations**

**Monitoring and patrolling:** No change.

**Fencing/Posting:** No change.

**Predator exclosures:** No change – exclosures should continue to be considered for all piping plover nests.

**Predator control:** USCG should continue the predator removal program that has been in place for the last 3 years. Better assessment of the impact of avian predators on nesting success is needed.

**Beach management:** No change.

**Coordination/Communication:** No change.

**Beach nesting bird management plan:** No change.

**Outreach:** No change.

**Other:** Continue to encourage the USCG to take the lead role in management and monitoring of the site, although ENSP and USCG should continue to share management responsibilities.
Cape May City
BNB Site Manager: NJDFW-ENSP
Summary provided by: NJDFW-ENSP

Management

Monitoring and patrolling: ENSP staff monitored the site 2-3 times per week, including limited patrolling on 1 weekend day.

Fencing/Posting: ENSP staff protected a least tern colony with string-and-post symbolic fence once nesting activity was observed. “Area Closed” signs were placed on every third post.

Predator exclosures: No piping plovers nested at this site so exclosures were not necessary.

Predator control: None undertaken.

Municipal beach management: At ENSP’s request, municipal vehicle use on the Poverty Beach section (Wilmington Avenue to USCG base) was limited to emergency and essential uses only for the entire nesting season. Beach raking was suspended from Baltimore Avenue to the USCG base in the early part of the season, but these restrictions were lifted (except for the Poverty Beach section) at the end of June once no nesting activity was observed in this area.

Coordination/Communication: Updates were faxed to the City about every other week to keep them informed of the current status of nesting activity and ENSP management recommendations. At the City’s request, an on-site meeting was held late in the season to discuss nesting status and management issues (particularly beach raking restrictions).

Beach nesting bird management plan: A plan was submitted by the City, but is still under review by NJDFW and USFWS-NJFO. In the interim, the plan is being used as the working agreement between ENSP and the City.

Outreach: None.

Nesting results

No piping plovers nested at the site.

A least tern colony (66 maximum adults) was present on the Poverty Beach section of the City’s beach. Productivity was moderate (≥0.5 to >1.0 fledges per pair).

Recommendations

Monitoring and patrolling: Although no piping plovers nested at the site this year, continue to closely monitor the entire northern portion of the city’s beach (Baltimore Avenue to the USCG base) for the presence of nesting activity early in the season.

Fencing/Posting: No change. Continue to fence areas only after nesting activity is discovered.

Predator exclosures: Since predator activity is very high at this site, consider use of predator exclosures if plovers nest in the future.
**Predator control:** The City has instituted a trap, neuter and release (TNR) program to deal with its feral cat problem. Work with the City to make sure none of the colonies are located near known nesting areas and that this program is consistent with BNB goals and endangered species regulations. Encourage the City to enforce their existing dog ordinance as dogs continue to be a problem at this site in the early morning and evening hours.

**Municipal beach management:** The Poverty Beach section of the City should be designated as a “no-rake” zone year-round (except for some occasional maintenance “cleaning” of the beach prior to or after the nesting season).

**Coordination/Communication:** All appropriate City officials (other than just those in PWD) should receive regular faxed updates.

**Beach nesting bird management plan:** Work with the USFWS-NJFO and the City to finalize and formally adopt the BNB management plan submitted by the City. The plan needs to be updated to address the City’s implementation of a local TNR program to deal with feral cats.

**Outreach:** More outreach should be undertaken in the City in general, but in particular focusing on residents that live near the nesting area at Poverty Beach.

**Other:** The Poverty Beach Club, a private club located on the northernmost 100 yards of the “City’s” beach, independently manages “their” beach. Management of the beach, which includes frequent beach raking, is not conducive to nesting birds. Because the beach receives regular renourishment as part of a federal (USACE) project and is directly between two areas that have supported nesting birds in recent years, management of this beach needs to be addressed either in the City’s BNB management plan or in some other manner that will be acceptable to ENSP and the appropriate federal agencies (USFWS, USACE).

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**Cape May Meadows – TNC**

**BNB Site Manager:** TNC – Delaware Bayshores Office

**Summary provided by:** Les Frie, Stewardship Coordinator, TNC

**Management**

**Monitoring and patrolling:** The Cape May Meadows were monitored and patrolled daily by TNC Staff and a seasonal intern.

**Fencing/Posting:** The nesting area from Mt. Vernon Avenue to the Cape May Point State Park boundary line was prefenced with “T” posts and two strands of nylon rope (one high and one low). A sign was placed on every fifth post. The signs used were the state-issued “Area Closed - Endangered Birds Nesting” and TNC’s “Bird Nesting Area - Please Do Not Enter”. At every entrance to the preserve there were also signs posted. A large sign with preserve rules was posted on the beach facing Mt. Vernon Avenue.

**Predator exclosures:** Exclosures were used on every nest, due to the high predation rate from crows in previous years.

**Predator control:** None.
Beach management: None.

Coordination/Communication: TNC and the Park were in communication throughout the season regarding the location of plover chicks. This was, in part, due to the use of ORV’s by the Park.

Beach nesting bird management plan: No formal written plan.

Outreach: Monitors (paid staff and/or volunteers) were present on-site on a daily basis to educate the public. An information kiosk is located in the TNC parking lot and a BNB interpretive sign is located at the main beach access path.

Nesting Results
Two (2) piping plover pairs produced four fledglings on the TNC portion of Cape May Meadows. This was the most productive year in the last 6 years, possibly due to inclement weather in the first two months of the season that reduced human activities.

A least tern colony (34 maximum adults) was present at the site. Production was low (<0.5 fledges per pair) due to undetermined reasons.

Recommendations
Monitoring and patrolling: No change
Fencing/Posting: No change
Predator exclosures: No change
Predator control: No change
Beach management: No change
Coordination/Communication: No change.
Beach nesting bird management plan: No change.
Outreach: No change.

Cape May Point State Park
BNB Site Manager: NJDFW-ENSP and TNC
Summary provided by: NJDFW-ENSP

Management
Monitoring and patrolling: The site was monitored at least 3 times a week, including limited patrolling on weekends, through the combined efforts of ENSP and TNC (as part of their regular monitoring of the adjacent TNC-owned beach).

Fencing/Posting: The portion of the Park beach directly adjacent to TNC was prefenced (May 1) with string-and-post symbolic fence as soon as focused piping plover nesting activity was observed. Fencing was completed as a cooperative effort between ENSP, TNC and Park staff. “Area Closed” signs were placed on every third post. After the piping plover nest hatched, a feeding corridor was created by posting signs (“Nest Hatched”, “5 MPH”) from the upper beach down to the intertidal zone in the area where chicks were feeding/resting.
**Predator exclosures:** The single piping plover nest at this site was protected with a predator exclosure, jointly erected by ENSP and TNC.

**Predator control:** None undertaken.

**Beach management:** At ENSP’s request, Park staff discontinued all but emergency and essential vehicle use on the portion of the Park beach closest to the TNC property when unfledged piping plover chicks were present (including broods originating from either the TNC or Park portions of the beach).

**Coordination/Communication:** Updates were faxed to the Park and TNC about every other week to keep them informed of the current status of nesting activity and ENSP management recommendations.

**Beach nesting bird management plan:** No formal written plan.

**Outreach:** None.

**Nesting Results**

One (1) pair of piping plovers nested at the site, resulting in 1 nesting attempt. The nest hatched a total of 3 chicks, of which 1 fledged. The Park was also used as a foraging and resting area by a brood of chicks (and associated adults) that hatched from the TNC portion of the beach.

A least tern colony (10 maximum adults) was present at the site. The colony completely failed due to undetermined reasons.

**Recommendations**

**Monitoring and patrolling:** ENSP and TNC have shared monitoring of the site in recent years, although specific responsibilities for each party have not been formalized. Work with TNC to advance the partnership. Also see Coordination/Communication below.

**Fencing/Posting:** Fencing of the section of Park beach closest to the TNC property should be completed prior to the nesting season (~ April 1) rather than waiting until nesting activity is detected, as piping plovers and/or least terns have now used the same portion of the beach for the last several years. Consider erecting fence the same day as TNC schedules fencing on their beach. Elicit assistance from Park staff for fencing project.

**Predator exclosures:** No change.

**Predator control:** A predator control program should be implemented.

**Beach management:** Vehicle use by Park staff should be limited to essential vehicles only and to the area near the intertidal zone starting April 1. Once chicks are present on the beach, vehicle use should be further restricted to only valid emergency situations.

**Coordination/Communication:** A meeting with all appropriate staff from ENSP, TNC, and the Park should be held prior to the season to discuss the long-term management of the site, including who should be responsible for the various aspects of management. In addition, ENSP should meet annually with the Park staff, including seasonal employees, for an orientation on nesting birds. The main focus of this meeting would be how Park
staff activities potentially have detrimental effects on nesting birds, but it could also be used to help the Park develop and implement BNB outreach.

**Beach nesting bird management plan:** No change.

**Outreach:** ENSP should provide the Park with BNB brochures to distribute at the Visitor’s Center. Encourage the Park to develop outreach programs that have a BNB component. An interpretive sign should be placed at the site during the nesting season.