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**SECTION 18 – SANDY BEACH HABITATS**

(adapted from Brauning 2005)

Along the shore of Lake Erie, particularly in Presque Isle State Park and associated areas, one of the rarest habitat types of Pennsylvania is found -- sandy beach. Presque Isle is a seven-mile spit of land with unique natural communities (Table 18.1) and a unique assemblage of species. The sandy beaches are particularly important for migrating birds for resting and feeding and the inlets created by the spit provide cover for wintering waterfowl. Several rare invertebrates also are associated with sandy beach habitats in Pennsylvania (WAP Appendix 5).

**18.1 Location and Condition of Sandy Beach Habitat**

Presque Isle is a compound recurved sand spit unique to Pennsylvania. It undergoes natural changes that may affect beach-nesting birds, including natural migration of sand to the north-northeast at an indefinite rate. As a very important tourism destination, its stability and long-term sustainability is of great importance to many Pennsylvania businesses and residents.

**Table 18.1:** Natural community types associated with sandy beach habitat in the Lower Great Lakes physiographic region.

<b>PA Natural Community Types</b>	<b>Appendix 4, pages:</b>
Great Lakes Region dry sand plain	51
Great Lakes Region sparsely vegetated beach	52

**18.2 Threats to Sandy Beach Habitat**

Disturbance has reduced the habitat quality of sandy beaches in Pennsylvania, almost to the point of non-recovery. Historically, species such as piping plover and common tern nested on the sandy areas (Brauning *et al.* 1994). With repeat disturbance of their limited habitat, the piping plover and common tern were extirpated from Pennsylvania. Conservation of undisturbed beach habitat could benefit these beach nesters as well as other WAP-priority shorebirds, small mammals and invertebrates using the region.

The remaining critical beach location at Presque Isle (Gull Point), has grown considerably over the past 50 years because of a major sand supplementation program carried out by the U.S. Army Corp of Engineers. This beach supplementation program expanded the extent of Gull Point, but also introduced foreign material that responds differently to vegetation than native sand. Changing lake water levels and increased predators, as well as large human visitation all impact the potential for piping plover nesting.

**18.3 Beach-Associated Wildlife**

Historically, species such as piping plover and common tern nested on sandy beaches in the Commonwealth. Plovers were first documented in 1900 and last reported in the late 1950s. As many as 15 pairs once used this rare habitat type within the state (Brauning *et al.* 1994). Regionally, the Great Lakes population of piping plovers has been drastically reduced, with human disturbance their main threat. The piping plover was extirpated from Pennsylvania, and the Great Lakes population is currently listed as federally endangered. Common terns are considered endangered within the state.

Solitary sandpipers rely on wetland habitats such as marshes, lakes and coastal communities for breeding sites. Migratory concentrations are found wherever water collects including parking lots, lawns, and ditches as well as grassy and muddy shorelines of marshes, for stopover sites. These areas are generally fairly shallow.

**Table 18.2: WAP-Priority species associated with beaches in Pennsylvania.**

SPECIES	SPECIFIC HABITAT ASSOCIATION
<b>IMMEDIATE CONCERN</b>	
<b>Piping Plover</b> <i>Charadrius melodus</i>	Freshwater/saltwater beaches; close to the water’s edge - Presque Isle
<b>PENNSYLVANIA VULNERABLE</b>	
<b>Common Tern</b> <i>Sterna hirundo</i>	Sandy beaches (Presque Isle State Park is only historic nesting location) and rocky maritime sites
<b>MAINTENANCE CONCERN</b>	
<b>Solitary Sandpiper</b> <i>Tringa solitarius</i>	Relies on wetland habitats such as marshes, lakes and coastal communities for breeding sites; migratory flocks gather wherever water collects throughout much of the state.

**18.4 Beach-Associated Wildlife Trends**

Common terns nested on Presque Isle beaches up to 1966 (Brauning *et al.* 1994). Disturbance during summer months has eliminated this species as successful nesting species, although common terns have attempted to nest on several occasions in recent years. Common terns still stop on Presque Isle each spring, but heavy use by people seems to deter possible nesting (Brauning *et al.* 1994). Artificial nest sites are employed when natural sites are not available, such as dredge spoil islands, breakwaters, abandoned piers, bridge abutments, floating navigational platforms, and even gravel root-tops near water (Nisbet 2002). This is occurring frequently around the Great Lakes and may be a

restoration/expansion opportunity for this species. Common Terns are common in the Gull Point area each year and the potential exists for renewed nesting activity.

Piping plovers were first confirmed nesting in Pennsylvania at the east end of Presque Isle, now known as Gull Point, in 1911 following the collection of a female containing a developing egg in 1900 (Todd 1940). About 15 nesting pairs were believed to occur along the Presque Isle beaches. Natural changes in configuration of Presque Isle, including severing of the peninsula from the mainland in the 1800s and constantly moving sands have altered the potential for the site to sustain nesting birds. Increasing human activity in the then-newly created state park (1929; DCNR 1992) resulted in destruction of most of the nesting colony by swimmers in 1931. Stull *et al.* (1985) reports annual nesting activity through the mid-1950s, when numbers began to decline. No subsequent nesting attempts have been observed. After a long absence, piping plovers were observed during the breeding season (April-May 2005) on Presque Isle in the sandy areas adjacent to vegetation.

The habitat issues for nesting plovers are diverse, but at a coarse scale can be summarized as direct loss of habitat caused by various factors and direct disturbance of nesting colonies by human activity. Additionally, indirect anthropogenic effects play a significant role in plover colonies, including issues such as: vegetation as a result of non-indigenous sand brought in for recreational beach nourishment; lake water level and natural replenishment of sand; increased populations of predators (fox, raccoons, dogs and cats), and; high populations of avian predators. Predation and disturbance issues are common to many beach-nesting birds, although the beach replenishment program brings distinctive challenges to Presque Isle.

Although the solitary sandpiper is only a migrant in Pennsylvania, there is growing evidence that the condition of migratory birds arriving on the breeding grounds corresponds to reproductive success (Smith, 2005 personal communication). Threats to this species include riparian corridor degradation, wetland loss and habitat fragmentation.

### **18.5 Conservation and Management Needs of Sandy Beaches**

Sandy beach habitat in Pennsylvania is highly degraded. Piping plover populations could be restored only when considerable intervention is initiated to address the threats outlined.

The piping plover has been a highly managed species in the Great Lakes region, as well as along the Atlantic Coast. Considerable experience has been developed on conservation measures and many techniques have been employed to protect and restore nesting colonies. Options have been developed for site-based challenges such as vegetation control, predator management, and site protection. These efforts have had success in many areas in attracting terns and improving nesting success (USFWS 2003). Few of these efforts have been employed at Presque Isle to date.

The conservation challenges facing the piping plover as a nesting species in Pennsylvania are probably better defined and understood than are the issues for most species of concern.

These challenges are formidable, but restoration of this species has a reasonable chance for success if a systematic plan was undertaken to address known threats. In light of recent breeding-season sightings of piping plovers, a coordinated recovery/habitat restoration initiative is likely the greatest conservation need at this time.

The critical habitat resource for beach-nesting birds is the tip of Presque Isle known as "Gull Point." The designation of Gull Point as a Natural Area Management Unit within the state park system (DCNR 1992), with highly restricted access from land and boat, provides a high degree of protection from human disturbance. Erosion and revegetation, however, continue to affect the potential of this area to support WAP-priority species.

Gull Point represents the best hope for nesting piping plovers and common terns within Pennsylvania and should be the focus for habitat conservation and restoration action. Multi-species management activities should be beneficial on priority sites: potential nesting habitat for common terns also is designated as critical habitat for the federally endangered piping plover.

Priority actions for solitary sandpipers should focus in Pennsylvania on identifying concentrated migratory stopover sites and pathways. Historical records, data from Migratory Bird Day observations and Christmas count data would be useful sources. Additional reporting through efforts such as the International Migratory Bird Day database, and other bird observations also would be beneficial to these efforts. This effort would help identify a migratory corridor for protection. Management strategies should be developed to address the needs of wetland, and riparian corridor conservation. Once a historical review of the migratory corridor is complete, research into the environmental quality of these critical corridors and stopover sites could begin. Quality assessments made on individual wetland systems and watersheds could help to identify management needs for these habitats.

Also long-term monitoring of solitary sandpipers through comprehensive programs such as Christmas counts and Migratory Bird Day is needed.

## **18.6 STATEWIDE PRIORITY CONSERVATION ACTIONS - BEACHES**

### **Level 1 – highest priority in the next 1-5 years**

- **Identification and Protection of High-Priority Sites**

Target: To minimize loss and degradation of unique/isolated habitat types such as sandy beaches and to improve habitat quality through habitat restoration where possible.

Measure: Site protection efforts initiated

Issue: Sandy beaches represent unique, but extremely degraded, habitats in Pennsylvania. Recovery of beach-associated species will require coordinated and targeted intervention by conservation partners.

Prioritized Implementation Actions:

- Identify and map predicted habitat sites based on established models.

- Evaluate habitat condition for nesting plovers at predicted areas of occurrence
- Identify potential zones for habitat restoration
- Work cooperatively with conservation partners and local officials to acquire, restore, manage and/or protect priority sites.
- Implement protection initiatives for nesting plovers to re-establish nesting pairs on Presque Isle
- Develop monitoring protocols for priority habitats

Coordination:

Pennsylvania Game Commission

Pennsylvania Department of Conservation and Natural Resources-Bureau of State Parks,  
Presque Isle State Park

U.S. Fish and Wildlife Service

Presque Isle Audubon

Conservation partners

- **Targeted Management of High-Priority Sites (Gull Point, Presque Isle)**

Target: Appropriate management for highest-priority sites and species (piping plover, common tern)

Measure: Site management/restoration activities initiated

Issue: Piping plovers and common tern have been observed during the breeding season and targeted site management and restoration efforts may encourage breeding activity.

Prioritized Implementation Actions:

- Conduct/review research into species-habitat associations in order to identify appropriate management measures
- Habitat suitability should be assessed to determine if vegetation management should be implemented.
- Develop best management practices/multi-species management guidance for high-priority sites and associated species.
- Implement restoration initiatives

Coordination:

Pennsylvania Game Commission

Pennsylvania Department of Conservation and Natural Resources-Bureau of State Parks,  
Presque Isle State Park

U.S. Fish and Wildlife Service

Presque Isle Audubon

Conservation partners

Related Plans:

DCNR, 1992. Presque Isle State Park Resource Management Plan, DCNR, Harrisburg, PA .

U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Great Lakes Piping Plover (*Charadrius melodus*). Ft. Snelling, Minnesota. Viii + 141 pp.

## 18.7 STATEWIDE PRIORITY CONSERVATION ACTIONS – BEACH-ASSOCIATED SPECIES

### Level 1– highest priority over the next 1-5 years

- **Coordinated Population Monitoring and Recovery Efforts for Gull Point, Presque Isle**

Target: To coordinate population monitoring, site recovery and management efforts for priority species (piping plover, common tern)

Measure: Meeting dates and participation; coordination efforts initiated; recovery efforts initiated

Issue: Piping plover has been a highly managed species in the Great Lakes region, as well as along the Atlantic Coast. Considerable experience has been developed on conservation measures and many techniques have been employed to protect and restore nesting colonies. Options have been developed for site-based challenges such as vegetation control, predator management, and site protection. These efforts have had success in many areas in attracting terns and improving nesting success (USFWS 2003). Few of these efforts have been employed at Presque Isle to date.

Prioritized Implementation Actions:

#### Level 1

- Conduct scoping session on recovery potential that includes presentation(s) by plover management experts from neighboring states
- Establish Recovery Task Force
- Draft Recovery Task Plan and develop brief conservation strategy document
- Evaluate policies and opportunities regarding conservation options within State Park Natural Area.
- Develop standardized monitoring protocols to identify occurrences of piping plovers in suitable nesting habitat on Presque Isle
- Conduct appropriate monitoring efforts annually, beginning with 2006
- Assess habitat suitability to identify potential zones for habitat restoration and to determine if vegetation management should be implemented on priority sites
- Develop a coordinated action plan to respond to piping plovers/ common terns making nesting attempts (such action would be focused on limiting mortality/disturbance factors at occupied sites)

#### Level 2

- Formalize and implement Recovery Plan to respond to incidents of piping plovers making nesting attempts. This plan should address monitoring needs to evaluate the nature of predation threats (e.g., avian vs. mammalian), human disturbance factors, and habitat suitability.
- Develop a public education and outreach program that informs the public of needs of beach-nesting species to address public concerns over beach closures (Michigan on-line document can be used as model)

Coordination:

Pennsylvania Game Commission  
 Pennsylvania Department of Conservation and Natural Resources-Bureau of State Parks,  
 Presque Isle State Park  
 U.S. Fish and Wildlife Service  
 Presque Isle Audubon  
 Conservation partners

Related Plans:

DCNR, 1992. Presque Isle State Park Resource Management Plan, DCNR, Harrisburg, PA .

U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Great Lakes Piping Plover (*Charadrius melodus*). Ft. Snelling, Minnesota. Viii + 141 pp.

**Level 2 – priority over the next 5-10 years**

• **Identify Concentrated Migratory Corridors and Stopover Sites**

**Target:** To identify concentrated migratory corridors and stopover sites to target for protection and management

**Measure:** Stopover sites identified

**Issues:** Although the beach-associated birds are considered migrants in Pennsylvania , there is evidence that the condition of migratory stopover sites has an effect on the condition of these birds upon reaching their breeding grounds. This, in turn, could have an effect upon their reproductive success. Species targets should include the solitary sandpiper.

**Prioritized Implementation actions:**

Level 1

- Identifying important migratory pathways and their environmental quality are key to the protection of this species in Pennsylvania.
- Initiative site protection/management efforts
- Conduct long-term monitoring through comprehensive programs such as Christmas counts and Migratory Bird Day is a good tool for monitoring current trends of this species.

Coordination:

Local birding communities and clubs  
 Regional Audubon societies  
 Pennsylvania Game Commission  
 Pennsylvania Department of Conservation and Natural Resources- Bureau of Forestry  
 Watershed organizations  
 Local conservation districts

## 18.8 SPECIES OF GREATEST CONSERVATION NEED – BEACH HABITATS

There are no species of greatest conservation need associated with sandy beaches in Pennsylvania. Though there are several Immediate Concern species included in the WAP-Priority list, Pennsylvania does not have regional or global responsibility for any of them. However, the piping plover is currently listed as federally endangered in the Great Lakes region and along the Atlantic Coast (USFWS 2003), which means every state has a responsibility to attempt to recover the species. The common tern is considered a Pennsylvania Endangered and a Northeast Region Priority species.

### 18.9 Sources

Brauning, D.W. 2005a. WAP Species Assessment – Piping Plover, *Charadrius melodus*. 8pp. See Appendix 3 for full species account.

Brauning, D.W. 2005b. WAP Species Assessment – Common Tern, *Sterna hirundo*. 8pp. See Appendix 3 for full species account.

Brauning, D.W., M.C. Brittingham, D.A. Gross, R.C. Leberman, T.L. Master, and R.S. Mulvihill. 1994. Pennsylvania breeding birds of special concern: a listing rationale and status update. *J. Pa. Acad. Sci.* 68:3-28.

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Nisbet, I.C.T. 2002. Common Tern (*Sterna hirundo*), *In* The Birds of North America, No. 618 (A.Poole and F.Gill, eds). The Birds of North America, Inc, Philadelphia, PA.

Stull, J., J.A. Stull, and G.M. McWilliams. 1985. Birds of Erie County Pennsylvania, including Presque Isle. Allegheny Press, Eglin, Pennsylvania.

Todd, W.E.C. 1940. Birds of Western Pennsylvania. U. Pittsburgh Press, Pittsburgh PA.

U.S. Fish and Wildlife Service. 2003. Recovery Plan for the Great Lakes Piping Plover (*Charadrius melodus*). Ft. Snelling, Minnesota. Viii + 141 pp.

**Appendix 18.1 – Species/Habitat Associations for Beach Habitats**

Clearly defining species-habitat associations is somewhat complicated. For each wildlife species, the particular habitat it uses is complex and is often comprised of several parts of a landscape and several land cover types or communities. Additionally, many species change their habitat use during various seasons and life stages. This also complicates the conservation of species and key habitats. Further complicating the effort of associating species with key habitats is that fact that a habitat’s quality and/or function may rely upon unknown and/or off-site mechanisms. In order for a species to be adequately conserved, all aspects of its key habitat(s) must be available in a quantity and quality sufficient for its survival.

Though complicated and fraught with incompleteness, it is nevertheless worthwhile to try to associate species with their key habitats in order to begin formulating conservation goals and objectives.

The following table contains summary information describing specific species/habitat associations relative to the habitat type covered in this section. This information is in DRAFT form and is in need of further refinement and additional input from technical experts to ensure its accuracy. Currently, Pennsylvania lacks a meaningful way to classify communities relative to terrestrial vertebrates. This is recognized as an ongoing priority by Pennsylvania’s natural resource agencies.

Species-specific information detailing specific habitat requirements, the location and relative condition of key habitats, threats and factors affecting habitat quality and population trends of target species can be found in Appendix 3: WAP-Priority Species Assessments.

**Table 18.3. Specific species/habitat associations for beach-associated, WAP-Priority species in Pennsylvania.**

Category	Dominant Vegetation	Quality	Specific types	Micro-quality	WAP-Priority Species	Physiographic Area *
Beach		undisturbed			Piping Plover	LGL
					Common Tern	LGL
					Solitary Sandpiper	

\* Species largely or entirely restricted to a specific physiographic area (LGL – Lower Great Lakes, OH – Ohio Hills, NP – Northern Plateau, RV – Ridge and Valley, P – Piedmont, CP – Atlantic Coastal Plain)