

**Beach/ Dune  
Mid-Atlantic Coastal Plain**

Upper beach vegetation includes sea rocket, Dixie sandmat, seaside sandmat, Russian thistle, and seabeach amaranth. Dune vegetation is characterized by sea oats grass and American beach grass. These habitats are also well imitated by dredged material islands within our sounds that are often devoid of the predators that have invaded the barrier beaches. Overwash, salt spray, and erosion contributes to ever-changing beach/dune dynamics. The beach/dune habitat is particularly important to sea turtles, beach nesting birds and shorebirds. Many of the bird species rely on the dynamic nature of the beach, and need storms to recreate wide beaches with bare sand and shell overwash areas. The swash zone (the area between high and low tide) is particularly important to beach invertebrates which are used as a food source by fish and waterbirds.

*A focused discussion of coastal and estuarine habitats as they relate to pelagic and marine species can be found in the Wildlife Action Plan, Chapter 5C (Marine Systems).*

**Table 1. Priority species associated with beach and dune habitats.**

<b>Group</b>	<b>Scientific name</b>	<b>Common name</b>	<b>State status* (Federal status)</b>
Birds	<i>Calidris alba</i>	Sanderling	
	<i>Calidris canutus</i>	Red Knot	
	<i>Charadrius melodus</i>	Piping Plover	T (T)
	<i>Charadrius wilsonia</i>	Wilson's Plover	SR
	<i>Chordeiles minor</i>	Common Nighthawk	
	<i>Falco peregrinus</i>	Peregrine Falcon	E
	<i>Haematopus palliatus</i>	American Oystercatcher	SR
	<i>Pelecanus occidentalis</i>	Brown Pelican	SR
	<i>Rynchops niger</i>	Black Skimmer	SC
	<i>Sterna antillarum</i>	Least Tern	SC
	<i>Sterna caspia</i>	Caspian Tern	SR
	<i>Sterna hirundo</i>	Common Tern	SC
	<i>Sterna nilotica</i>	Gull-billed Tern	T
Mammals	<i>Peromyscus leucopus easti</i>	White-footed Mouse	SC
Reptiles	<i>Caretta caretta</i>	Loggerhead Sea Turtle	T (T)
	<i>Chelonia mydas</i>	Green Sea Turtle	T (T)
	<i>Dermochelys coriacea</i>	Leatherback Sea Turtle	E (E)
	<i>Lepidochelys kempii</i>	Kemp's Ridley Sea Turtle	E (E)
	<i>Malaclemys terrapin</i>	Diamond-backed Terrapin	SC
	<i>Masticophis flagellum</i>	Eastern Coachwhip	SR

\*Abbreviations

- E Endangered
- T Threatened
- SC Special Concern
- SR Significantly Rare

## **Location And Condition Of Habitat**

These habitats occur all along coastal North Carolina, but are restricted to the immediate coastline. The condition of these habitats is probably among the worst of all habitats within the state. Development has exploded on the coast. Beach houses, motels, and other structures, and the infrastructure to support them, have caused a significant stabilization effect on the beaches that will be very difficult to reverse. A map of this habitat is not provided due to scale issues.

## **Problems Affecting Species And Habitats**

Development of our beaches is the primary cause for the depletion in the beach/dune habitat. Several of the bird species we are most concerned about require early successional habitat for nesting and these habitats have been destroyed or severely altered. Predators (native and non-native) have increased many-fold. Many of these species (cats, herring and great black-backed gulls, raccoons, foxes) were not present before the beach became populated with people and their associated trash. These predators have caused significant problems for beach-nesting birds and sea turtles. Vehicle use has also created disturbance issues as well as direct impacts to nesting turtles and birds. Chronic human disturbance is becoming a problem at many sites. People are now able to access even the most remote beaches via shallow draft boats and personal watercrafts. Direct and indirect disturbance, not only by humans but also by their pets, causes problems for nesting and non-nesting birds.

Artificial dune stabilization, associated with the protection of homes and infrastructure (roads, powerlines, waterlines), prevents the natural re-creation of wide beaches and overwash areas. Beach renourishment and beach bulldozing can cover or destroy macro-invertebrates in the swash zone and on the beach that foraging shorebirds and surf fishes depend upon. These activities can also destroy sea turtle nests when conducted between May and November. Even under the best survey conditions, all sea turtle nests can not be found and marked or relocated to prevent take from these activities. Beach renourishment can also lead to more development and possibly decrease washover and increase vegetation, thus decreasing the amount of suitable nesting habitat for beach nesting birds. Landscaping choices (e.g., introduced species such as *Vitex*) can also strongly affect the dune system.

## **Species And Habitat Conservation Actions and Priorities For Implementation**

Building setback distances need to be reevaluated and lengthened. This should prevent much of the need for beach renourishment and stabilization projects. Although coastal development can not be fully controlled, there are a few areas of great importance that can still be purchased fee title or as an easement (South Topsail near New Topsail Inlet, North Topsail near New River Inlet, Lee and Hutaff islands, parts of Masonboro Island, north end of Carolina Beach). These purchases should remain at the top of the list of priorities.

Coordination needs to continue to influence where dredged material is placed to be most beneficial/least detrimental to beach nesting birds, foraging shorebirds, and sea turtles. Reducing disturbance from off road vehicles, people and their pets on coastal beach and dune systems is needed. Continued support for and enhanced coordination among coastal

management agencies regarding existing restrictions and programs aimed at regulating beach activities is also critical.

Continued coordination is needed with waterbird working groups such as the North Carolina Waterbird Committee, the Piping Plover Recovery Team, The American Oystercatcher Working Group and the Royal Tern Working Group. Future recommendations from the North American Waterbird Conservation Plan should be implemented (Kushlan *et al.* 2002).

Predators (not limited to exotic species) must be controlled through education efforts, trapping or other means to increase sea turtle and beach nesting bird reproductive success.

To better manage sea turtle populations, mortality factors must be reduced. In addition, continued efforts need to address beach lighting, sand fencing, sand pushing and beach stabilization issues, so that sea turtles have a better chance for nesting success. Another educational need includes increasing public awareness of potential impacts of tourists and visitors on beach/dune associated species. Recently, there have been severe public conflicts regarding keeping beach access areas open despite conservation agencies recommendations for closure to protect beach-nesting birds and turtles (e.g., Fort Fisher, 2004).

*See the Coastal Habitat Protection Plan (Street et al. 2004) for an in-depth discussion of issues pertaining to coastal fisheries habitat protection. Also see the Wildlife Action Plan, Chapter 5C (Marine Systems).*

### **Priority Research, Survey, And Monitoring**

Surveys are needed to document the distribution, relative abundance and status of many wildlife species associated with these beach/dune habitats. Priorities for conducting surveys need to focus on species believed to be declining, at risk, or mainly dependent on these communities. Secondary priority for surveys should be for species for which current distribution information is already available or for species that are considered common.

- **Surveys**

- Conduct shorebird surveys throughout the year to better understand population fluctuations for breeding, wintering and migratory birds (especially piping plover, American oystercatcher, Wilson's plover).
- Determine distribution and status of wintering shorebirds (Sprandel *et al.* 2000).

- **Monitoring**

- Monitor status and reproductive success of gull-billed tern, common tern, least tern, black skimmer, piping plover, and Caspian tern.
- Continue support for regular colonial waterbird surveys (currently conducted coast wide roughly every three years).
- Determine seasonal numbers and distribution of shorebirds (Dinsmore *et al.* 1998).
- Continue sea turtle nest and stranding monitoring.
- Monitor introduced non-native species effects (especially plants and invertebrates) on native coastal wildlife, including sea turtles.

- **Research**

*Predator impacts*

- Identify causal factors responsible for low beach nesting bird reproductive success; initiate predator impact studies (e.g., ghost crabs, fire ants, gulls, foxes, raccoons, feral cats) (Wolcott and Wolcott 1999).

*Life history/ demography*

- Conduct American oystercatcher and Wilson's plover reproductive success research (more important for Wilson's plover reproductive success since studies are already underway looking at oystercatcher success).
- Conduct foraging strategies and energy budget allocations of migrating shorebirds (Davis and Smith 2001).
- Conduct life history studies of colonial waterbirds (Wambach and Emslie 2003).
- Study the demographics, population dynamics, and the specific habitat requirements of the white-footed mouse subspecies (listing is almost certain for the subspecies).

*Management practices*

- Evaluate impacts of beach renourishment on sea turtle reproduction.
- Examine causal factors in sea turtle strandings to identify ways to reduce strandings.
- Examine the effectiveness of vegetation control for beach nesting birds that require early successional habitat.
- Examine the effectiveness of trapping or other predator control measures (potentially for native and non-native species alike).
- Work with owners and managers of buildings containing nesting least terns to increase reproductive success while allowing owners/managers to maintain good public relations.

*Telemetry*

- Conduct habitat use and time allotment studies on sea turtles.

## **Supporting References**

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