



## 3.15 PROTECTED SPECIES

### 3.15.1 What are protected species?

Protected species are plants and animals whose protection is mandated by specific acts of the United States Congress, and managed and enforced by various federal agencies. Four federal acts are important in conservation of plant and animal species, including the *Endangered Species Act of 1973* (ESA), the *Bald and Golden Eagle Protection Act of 1940* (as amended), the *Migratory Bird Treaty Act of 1918*, and the *Magnuson-Stevens Fishery Conservation and Management Act of 1976* (as amended). These acts and the species protected under them are described in more detail in the following sections.

In addition, the State of South Carolina, under the authority of the SCDNR, has identified species worthy of conservation due to their rarity or decline within state borders. These species of concern are described in more detail in Section 3.15.7 (refer to page 3-204).

#### Threatened and Endangered Species

**Threatened Species** are animal or plant species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

**Endangered Species** are those plant and animal species that are in danger of extinction throughout all or a significant portion of its range.

### 3.15.2 What is the *Endangered Species Act*, and how would species protected under this Act be impacted by the Preferred Alternative?

The *Endangered Species Act of 1973*, (ESA) as amended, requires federal agencies to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species. Furthermore, the ESA requires that actions are not likely to result in the destruction or adverse modification of critical habitat of such species. The USFWS or NOAA Fisheries determines which species should be listed, and once listed, the species is protected under the ESA until its population has recovered to the point that it can be taken off the list, or de-listed. If a federally protected species is present in a Preferred Alternative study corridor, the federal agency responsible for the project must consult with the USFWS or NOAA Fisheries. These agencies determine whether the proposed actions are likely to adversely impact the species or its habitat, which may lead to further decline or extinction.

#### 3.15.2.1 What federally threatened or endangered species may occur within the Preferred Alternative study corridor?

USFWS maintains a list of federally threatened and endangered species for each state. Those species known to occur or possibly occur in Dillon, Horry, and Marion Counties are shown in Table 3.51 (refer to page 3-190). The list was last updated by USFWS in August of 2007.

Of the 15 species listed, seven require marine or estuarine aquatic or beachfront dune habitat. These species are not further discussed in this section because there is no marine or estuarine aquatic or beachfront dune habitat within the Preferred Alternative study corridor.



**Table 3.51  
Threatened and Endangered Species Known to Occur or Possibly Occur in  
Dillon, Horry, and Marion Counties, South Carolina  
Interstate 73 FEIS: I-95 to the Myrtle Beach Region**

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	COUNTY
<b>Plants</b>			
<i>Amaranthus pumilus</i>	Sea-beach amaranth <sup>†</sup>	Threatened	Horry
<i>Lindera melissifolia</i>	Pondberry	Endangered	Horry (possible)
<i>Oxypolis canbyi</i>	Canby's dropwort	Endangered	Horry (possible), Marion
<i>Schwalbea americana</i>	American chaffseed	Endangered	Horry (possible)
<b>Animals</b>			
<i>Trichechus manatus</i>	West Indian manatee*	Endangered	Horry
<i>Picoides borealis</i>	Red-cockaded woodpecker	Endangered	Dillon, Horry, Marion
<i>Mycteria americana</i>	Wood stork	Endangered	Horry, Marion (possible)
<i>Dendroica kirtlandii</i>	Kirtland's warbler	Endangered	Horry (possible)
<i>Charadrius melodus</i>	Piping plover <sup>†</sup>	Threatened	Horry
<i>Lepidochelys kempii</i>	Kemp's ridley sea turtle*	Endangered	Horry
<i>Dermochelys coriacea</i>	Leatherback sea turtle*	Endangered	Horry
<i>Caretta caretta</i>	Loggerhead sea turtle*	Threatened	Horry
<i>Chelonia mydas</i>	Green sea turtle*	Threatened	Horry
<i>Acipenser brevirostrum</i>	Shortnose sturgeon	Endangered	Dillon (possible), Horry, Marion

Source: South Carolina Distribution Records of Endangered, Threatened, Candidate, and Species of Concern, August 2007.  
<sup>†</sup> requires beachfront dune habitat  
\*requires marine or estuarine aquatic habitat

**3.15.2.2 What has been done to avoid impacts to federally threatened or endangered species for this project?**

The SCDNR Heritage Trust Program maintains a database of known locations of the federally protected species, as well as those state-listed species considered rare, within South Carolina. This database was added to a GIS data layer during the development of the Preferred Alternative. Buffers of varying widths, dependent on the species habitat requirements, were established around each of the known locations of federally protected species:

- red-cockaded woodpecker sites were buffered 0.5 mile;
- wood stork sites were buffered 2,500 feet; and,
- federally protected plant sites were buffered 100 feet.



The point locations of these species and state-listed rare species were designated as constraints during alternative development, and were avoided (refer to Chapter 2, page 2-1). Preliminary field surveys were conducted between August 2005 and July 2006 within 2,500-foot-wide corridors along the Reasonable Build Alternatives to evaluate whether potential habitat for federally protected species existed along the alignments. During these surveys, aerial photographs were reviewed to identify potentially suitable habitat within the corridor and preliminary field surveys were made at the appropriate time of year to identify species. Habitats observed varied from potentially suitable to unsuitable, depending on the species. All the Reasonable Build Alternatives, including the Preferred Alternative, were designed to avoid all known locations of federally protected species.

### Habitat Determinations for Species

**Suitable habitat** for a particular species means that special conditions that it requires to survive are present such as: the proper soil type; open or forested areas; the presence or the absence of water; nesting structures; and food sources.

**Marginally suitable habitat** is an area that has been altered from its natural condition in some way and the alteration has affected the special conditions that certain species of plants and/or animals need to survive. Often times protected species can survive in these altered areas.

**Unsuitable habitat** means that the special conditions required by species to survive are either not present or have been altered such that protected species can no longer live there.

#### *3.15.2.3 How could federally threatened or endangered species be affected by the proposed project?*

Typically, federally protected species require specific conditions, or habitats, to sustain them. A literature search was performed to determine the habitat requirements and descriptions of federally protected species, which would aid in identification during field surveys. Important sources of reference information included natural resource agency data and published reports, various botanical and faunal literature, and available USFWS Recovery Plans.

Intensive field surveys were conducted within the 600-foot wide Preferred Alternative study corridor between July 2006 and May 2007, concurrent with the wetland delineation. No federally protected species were found within or adjacent to the Preferred Alternative study corridor during the field surveys.

The following are descriptions of the federally protected species known to occur or possibly occur within Dillon, Horry, and Marion Counties, their habitat requirements, and the potential direct impacts to each from the proposed project.

#### Pondberry

Pondberry (*Lindera melissifolia* syn. *L. melissaefolium*) is a deciduous shrub with an alternate drooping leaf arrangement that reaches up to six feet in height. The leaves and other parts are aromatic, having a fragrance very similar to sassafras when crushed. In March, before the leaves come out,



**Pondberry**  
Charleston County, S.C.  
Photo by Gordon Murphy

small yellow flowers appear in clusters along the branches, while in late summer to early fall, bright red fruits mature on the plant. Pondberry grows along the edges of sandy lime sinks, ponds, swamp forests, open bogs, and in wet depressions in pine flatwoods. While it prefers shaded areas, pondberry is sometimes found in areas of full sun.

Marginally suitable habitat for pondberry is present within the Preferred Alternative study corridor. Examples of this habitat were found adjacent to the inundated forested wetlands such as along the Little Pee Dee River and Lake Swamp. However, these areas were investigated and no pondberry plants were found. According to the SCDNR database, this species has not been documented to occur within Dillon, Horry, or Marion Counties. Based on these findings, it is anticipated that the project will have no effect on pondberry.

#### Canby's dropwort



**Canby's dropwort**  
Marion County, S.C.  
Photo by Gordon Murphy

Canby's dropwort (*Oxypolis canbyi*) is a perennial herbaceous plant that grows to approximately four feet tall. It has a slender stem that is purplish at the base and green above, which may branch above the middle, and the leaves are long, slender and quill-like. Flowers of Canby's dropwort are tiny (~0.1 inch across), with white petals and are arranged in compound umbels.<sup>102</sup> Canby's dropwort favors the high water table, open canopy, and medium- to highly-organic soils found in cypress-pine ponds, sloughs, drainage ditches, wet meadows, and wet pine savannahs.

Marginally suitable habitat for Canby's dropwort is present within the Preferred Alternative study corridor. However, fire has been suppressed from the majority of the Preferred Alternative study corridor, which has allowed herbaceous and shrubby vegetation to become thick in areas that may otherwise be suitable for this species. The majority of these potentially suitable areas also have closed canopies that would shade out this species. One area that would potentially provide suitable habitat, a cypress pond in The Gulley near Zion in Marion County, was investigated and none of the plants were found. There are no documented occurrences of the plant in the vicinity of the Preferred Alternative study corridor, according to the SCDNR database. Based on these findings, it is anticipated that the project will have no effect on Canby's dropwort.

<sup>102</sup> Murdock, Nora, and Douglas Rayner, *Recovery Plan for Canby's Dropwort* (Asheville Field Office, USFWS, 1990).



### American chaffseed

American chaffseed (*Schwalbea americana*) is an upright, perennial herb with a stem that is unbranched or only has branches at the base of the plant. It grows to a height of one to two feet, and has lance-shaped to elliptic alternate leaves that connect directly to the stem at the base. Upper leaves are reduced to small bracts, and the purplish yellow flowers of the plant arise from the area where the upper surface of these bracts meets the stem of the plant. The flowers, which are borne on small stalks, are tubular in shape and range from 1.2 to 1.4 inches in length. The inflorescence exhibited by the plant, with many stalked flowers concentrated on the upper portion of an unbranched stem, is referred to as a raceme. Flowering occurs from April to June and fruits, which consist of a narrow capsule about a half-inch long, begin to mature shortly afterward in early summer.



**American chaffseed**  
**Williamsburg County, S.C.**  
**Photo by Gordon Murphy**

American chaffseed is restricted to longleaf pine flatwoods and savannahs, ecotonal areas between peaty wetlands and xeric sandy soils (in the uphill portions), mesic loamy-soil slopes or swales in longleaf pine sandhill woodlands, and other open, grass-sedge systems. It typically requires areas of habitat that are subject to frequent disturbance due to burning or occasional mowing and/or areas with a fluctuating water table. These conditions can impede the growth of some herbaceous species and thereby make the conditions more favorable for chaffseed to grow and compete due to its ability to better tolerate these conditions. This species prefers areas with an open or partially open overstory. Fire has been excluded from the majority of the corridor, so that areas that may otherwise be suitable for this species are overgrown with herbaceous and shrubby vegetation. In addition, the majority of the wet flatwood areas have closed canopies and dense understories that shade out this species.

Marginally suitable habitat for American chaffseed is present within the corridor, but most areas have thick herbaceous and shrubby undergrowth or closed canopies. Due to this, these areas are no longer open enough to support this species. In addition, no open savannah habitat was encountered. According to the SCDNR database, the closest known occurrence is more than 1.5 miles east of the Preferred Alternative study corridor in Horry County. Based on these findings, it is anticipated that the project will have no effect on American chaffseed.

### Red-cockaded woodpecker

The red-cockaded woodpecker (*Picoides borealis*) is a small woodpecker with a wingspan up to 15 inches. The bird has black and white horizontal stripes on its back, white cheeks and breast, black-streaked flanks, and a black cap and throat. Males have small red spots or “cockades” on each side



**Red-cockaded woodpecker**  
**Sumter County, S.C.**  
**Photo by Gordon Murphy**

of the cap just behind the eye, which is very difficult to see in the field.<sup>103</sup> The red-cockaded woodpecker prefers old-growth pine forests (trees at least 60 years old) that are relatively free of hardwood undergrowth for nesting habitat. Suitable foraging habitat includes pine and pine hardwood stands with pine trees at least 30 years of age. Primary literature concerning the red-cockaded woodpecker states that colonies typically require areas of at least 100 acres of suitable habitat. The range of the red-cockaded woodpecker mirrors that of the southern pine forests it inhabits. Historically, the species was found from eastern Texas to Florida and north to New Jersey.

Potentially suitable habitat for red-cockaded woodpecker is present within the Preferred Alternative study corridor. Three stands of loblolly pines greater than 60 years of age were located within the Preferred Alternative study corridor. Two stands were located at private residences north of Zion in Marion County, while the third was a pine plantation located between Hannah Bay and Wolf Pit Bay in Horry County. All were surveyed for evidence of

cavities; however, no evidence of cavities was observed at either location. In addition, the surrounding stands within one-half mile of these stands were evaluated for suitability as foraging or nesting habitat. No stands within the one-half mile buffer were greater than 30 years of age, were of sufficient acreage (100 acres or greater), or were the open type of habitat preferred by the red-cockaded woodpecker. The majority of the pine stands within the remainder of the Preferred Alternative study corridor have dense undergrowth present due to fire suppression. The Preferred Alternative study corridor also lacks large, undisturbed tracts of mature pines that the bird requires. According to the SCDNR database, there are no known occurrences of the red-cockaded woodpecker within the Preferred Alternative study corridor, with the closest documented occurrence located in Horry County, more than 1.3 miles away from the Preferred Alternative study corridor. Based on these findings, it is anticipated that the project will have no effect on the red-cockaded woodpecker.

#### Wood stork

The wood stork (*Mycteria americana*) is a large wading bird that reaches four feet in height and has a wingspan of up to five feet. The bird's plumage is white except for the black feathers on its tail, primary feathers, and the trailing edge of its wings. Its head and neck are featherless and its long bill is black in color.<sup>104</sup> Wood storks typically nest in the upper branches of black gum (*Nyssa biflora*) or cypress (*Taxodium distichum*) trees that are in standing water of swamps along rivers and streams or adjacent to shallow lakes. Standing water is an essential element of colony sites that helps deter

<sup>103</sup> USFWS, *The Red Book*. 1993.

<sup>104</sup> USFWS, *The Red Book*. 1996.



mammalian predators. Since storks require open access to nest trees, they are frequently found in trees adjacent to open water areas. They frequently feed in large groups in open wetlands where prey species are available and water depths are less than 20 inches. Forested riverine floodplain habitats are frequently used, but a variety of ponds, ditches and diked marsh impoundments are important habitats. Receding water, especially in areas that flood in the spring and begin to dry up in the summer, enhances feeding by concentrating fish for the catch. Storks also forage around low tide along many coastal tidal creeks. In South Carolina, colony sites are surrounded by extensive wetlands, in particular palustrine forested wetlands.



**Wood stork**  
**Calhoun County, S.C.**  
**Photo by Gordon Murphy**

Potentially suitable habitat for the wood stork is present within the Preferred Alternative study corridor. The Little Pee Dee River and Lake Swamp have floodplains with associated cypress-tupelo swamp that the bird prefers, although the area has not been previously documented as a wood stork nest site. No wood storks or their rookeries were observed within or adjacent to the Preferred Alternative study corridor. According to the SCDNR database, the closest documented occurrence is in the Waccamaw River, more than 16 miles southeast from the Preferred Alternative study corridor. Based on these findings, it is anticipated that the project will have no effect on the wood stork.

Kirtland’s warbler

Kirtland’s warbler (*Dendroica kirtlandii*) is a small (approximately six inches in length) wood warbler with a finely pointed bill. The plumage is bluish-gray with black streaks on the back, while the underparts are yellow with distinct dark streaks on the sides of the breast. The male of the species can be distinguished by its black mask. Another identifying characteristic is that it constantly bobs its tail up and down. Kirtland’s warbler is a very rare transient in South Carolina, breeding in only a few protected stands of jack pines in Michigan, and over-wintering in the Bahamas. Its migration takes it across South Carolina in late April to early May, and



**Kirtland’s warbler**  
**Photo by Cory Glidersleeve**



early September to October. The bird frequents thickets and woodland edges on high ground just beyond the wet margins of lakes and swamps, often in association with flocks of other songbirds.

Suitable habitat for Kirtland's warbler is present within the Preferred Alternative study corridor. However, although habitat that the bird temporarily uses during its migration could be impacted, nesting and over-wintering habitat would not be lost as a result of the proposed project. Also, suitable temporary habitat is common in South Carolina for transient migrants of this species and is therefore not a limiting factor. Kirtland's warbler has not been documented to occur in Dillon, Horry, or Marion Counties, based on information from the SCDNR database. Therefore, it is anticipated that the project may affect, but is not likely to adversely affect, Kirtland's warbler.

### Shortnose sturgeon

The shortnose sturgeon (*Acipenser brevirostrum*) is a fish that reaches a maximum length of approximately four feet and weighs as much as 14 pounds, and it has a life-span of 60 years or more. The forked tail of the fish is larger on the upper lobe than the lower lobe. It has five rows of bony plates called scutes that run the length of its body, one row is located on each side and along its back, and two rows of scutes are located along its belly. The shortnose sturgeon varies in color from olive gray to



**Shortnose sturgeon**  
**Image: Duane Raver**

yellowish brown on its sides, with darker coloration found along the midline of its dorsum and the top of the head, and its underside being typically pale in color. The shortnose sturgeon possesses a short, blunt snout, and its mouth protrudes from the underside of the snout enabling it to forage along the substrate for prey items such as mussels and crustaceans.

The shortnose sturgeon is found in riverine, estuarine, and occasionally near-shore marine environments of eastern North America and the Atlantic Ocean. Spawning and larval stages of the life cycle typically occur in freshwater channels of large, unobstructed river basins from as far inland as the fall line to the zone of tidal influence in estuarine or brackish channels. Foraging occurs near the freshwater/saltwater interface in riverine and estuarine environments, such as sounds and bays of river basin deltas. In South Carolina, the drainage basins utilized for spawning and foraging are the Pee Dee/Waccamaw, Santee, Cooper, ACE Basin (Ashepoo, Combahee and Edisto rivers), and Savannah.<sup>105</sup> Threats to the shortnose sturgeon include pollution, incidental take by commercial fisheries, impingement at hydroelectric and nuclear power intakes, poaching, and alteration of habitat due to damming of rivers.

<sup>105</sup> SCDNR Comprehensive Wildlife Conservation Strategy Program Website, <http://www.dnr.sc.gov/cwcs/> (September 11, 2007).





NOAA Fisheries has identified the mainstem portions of the Little Pee Dee River within the corridor as adult sturgeon spawning habitat. Suitable habitat for shortnose sturgeon is present within the Preferred Alternative study corridor. The Little Pee Dee River does represent a suitable spawning migration corridor for the species. Based on studies performed in other river basins, it is believed that shortnose remain near the freshwater/saltwater interface for much of the year, and, between January to March, migrate upstream to spawn for a period of about three weeks. These spawning migrations have not been thoroughly studied in the Pee Dee River basin, but it is possible that spawning sturgeons migrate through or utilize portions of the Little Pee Dee River during their spawning migrations.

According to the *Recovery Plan for the Shortnose Sturgeon*, any blasting that may occur in association with construction or demolition of bridges could potentially impact the shortnose sturgeon due to shock wave damage to the air bladder of the fish.<sup>106</sup> It is unlikely that there would be blasting associated with the construction of new bridges along I-73. Furthermore, the SCDOT in cooperation with NOAA Fisheries has agreed to implement certain conditions on construction and demolition activities that could potentially disturb migrating shortnose sturgeon in the vicinity of the project. SCDOT has agreed to implement a seasonal moratorium for all in-water work between February 1 and April 30, and work would not impede more than 50 percent of the channel during the months of January through April. No special measures would be employed outside of this moratorium, except for normal BMPs related to construction. Based on these findings, it is anticipated that the project may affect, but is not likely to adversely affect, the shortnose sturgeon.

### 3.15.3 What is the *Bald and Golden Eagle Protection Act*, and how would species protected under this Act be impacted by the Preferred Alternative?

The *Bald and Golden Eagle Protection Act* (BGEPA) prohibits any form of taking of both bald and golden eagles except as provided by permit. The act makes it illegal to possess or sell an eagle or any part of an eagle (i.e., feathers, talons, eggs, or nests), and any “taking” of an eagle which includes killing, harassing, disturbing, or poisoning. Congress enacted the BGEPA in 1940, in response to the declining numbers of bald eagles (*Haliaeetus leucocephalus*) due to hunting and habitat encroachment. Faced with the prospect of the extinction of the national symbol, U.S. Congress specifically sought to protect this national treasure<sup>107</sup> as well as the golden eagle (*Aquila chrysaetos*), the other eagle species native to the United States. Bald and golden eagles are also protected under the *Migratory Bird Treaty Act* (MBTA) which is discussed in Section 3.15.4 (refer to page 3-198).

The bald eagle is a large bird of prey with a dark brown body and conspicuous white coloration on the head, neck, and tail. Its wingspan may reach up to seven feet, and it can weigh as much as seven pounds as an adult. The bald eagle is typically associated with coasts, rivers, and lakes, and requires large trees with

<sup>106</sup> NOAA-National Marine Fisheries Service, 1998, *Recovery Plan for the Shortnose Sturgeon (Acipenser brevirostrum)*, (Silver Spring, MD: Shortnose Sturgeon Recovery Team for the National Marine Fisheries Service, 104 pp., 1990).

<sup>107</sup> Michigan State University College of Law, Animal Legal & Historical Center Website, <http://www.animallaw.info/articles/ovusbgepa.htm>. (September 24, 2007).



an open limb structure for nesting, usually in a forest/marsh ecotone within one kilometer (0.62 mile) of open water. Large trees allow bald eagles to build large nests that can support nesting for many years without falling. The open limb structure provides easy access and a clear view of foraging habitat. Nesting habitats initially selected by eagles usually have limited disturbance. Trees suitable for perching and future nesting sites are also important components of stable nesting territories. Fresh, brackish, and marine habitats provide suitable foraging sites and these habitats can include open water, marsh, and riverine types. Prime habitats are characterized by having shallow, slow moving water with abundant fish and bird prey. Preferred sites have suitable perch and roost sites with minimal disturbance. Large man-made reservoirs in South Carolina have provided many acres of new inland eagle foraging habitat. Concentrations of eagles may be found below hydroelectric dams where they forage on injured fish, and impounded marsh managed for waterfowl is also preferred foraging and nesting habitat.



**Bald eagle**  
**Photo by USFWS/Mike Lockart**

According to the SCDNR database, there are no documented bald eagle nest sites within the Preferred Alternative study corridor or in the immediate vicinity of the corridor. Potentially suitable habitat for the bald eagle was identified during the field surveys within the corridor. It is possible that bald eagles occasionally utilize the portion of the Little Pee Dee River as foraging habitat. However, the Little Pee Dee River crossing would only impact a narrow corridor adjacent to the existing S.C. Route 917 crossing and would result in a minimal reduction in available foraging habitat for this species. No nests were observed within the Preferred Alternative study corridor during the field surveys. Therefore, it is anticipated that the proposed project would not affect the bald eagle.

A biological assessment detailing the results of the intensive field surveys for federally listed threatened and endangered species as well as bald eagles was prepared and submitted to the USFWS for its review. Concurrence with the findings in the biological assessment was provided on October 16, 2007 (refer to Appendix A).

### **3.15.4 What is the *Migratory Bird Treaty Act*?**

*The Migratory Bird Treaty Act of 1918* (MBTA) prohibits a person to “pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention . . . for the protection of migratory birds . . . or any part, nest, or egg of any such bird.” unless allowed by regulation. The MBTA includes a list of the species of birds protected by the Act that can be found in 50 C.F.R §10.13. The USFWS interpretation of migratory bird protection under the MBTA extends to structures and trees that



are being actively used by migratory birds for nesting. It would therefore be illegal to destroy bird nests (including trees with nests) that contain eggs or young or to cause an adult to abandon its nest due to disturbances from any sort of construction. However, it is not illegal to remove nests that do not contain eggs or young, nor is it illegal to prevent birds from nesting during or prior to the construction period.

Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, requires federal agencies to take actions to implement the MBTA. Primarily these actions are to evaluate agency actions on migratory birds and to identify impacts with a measurable negative effect on migratory bird populations. If such impacts are identified, then the federal agency must mitigate the effects and consult with the USFWS prior to initiating the action.

**3.15.4.1 What are migratory birds, and which ones may potentially occur within the Preferred Alternative study corridor?**

Migratory birds are those that migrate, or fly long distances, from their winter habitat to summer nesting grounds and back annually, generally during the spring and fall. The project study area is located within the Atlantic Flyway, which is the migration route along the eastern seaboard of the United States used by waterfowl and other birds. Therefore, numerous migratory birds can be found within the project study area. Some migratory birds temporarily use habitats within the project study area as roosting and foraging habitat while on their way to more northerly nesting or southerly wintering grounds. Referred to as transients, they use these areas to “stop over” during their migration. Fall transients include merlins (a falcon) and least sandpipers in marshes, and sharp-shinned hawks in forested areas. Least sandpipers also stop over in spring. For the majority of migrants, however, various habitats within the project study area are a destination, arriving to stay for the winter (overwinter) or to breed and nest in summer. Examples of some of the more common migratory bird species and when they are present are shown in Table 3.52 (refer to page 3-200).



**Eastern Phoebe**  
Photo by Gordon Murphy



**Dark-eyed junco**  
Photo by Gordon Murphy



**Yellow-breasted chat**  
Photo by Gordon Murphy



**Table 3.52**  
**Migratory Bird Species Potentially Occurring Within the Project Study Corridor**  
**Interstate 73 FEIS: I-95 to the Myrtle Beach Region**

HABITAT	WINTER RESIDENTS	SUMMER RESIDENTS
<b>WATER RELATED</b> (Marshes, Lakes, Rivers, Swamps, Bottomland Hardwoods, etc.)	American bittern Sora Common snipe Canada goose Mallard Gadwall Ring-necked duck Lesser scaup Green-winged teal Hooded merganser Northern harrier	Least bittern Black crowned night heron Purple gallinule American anhinga Mississippi kite Acadian flycatcher Northern parula warbler Prothonotary warbler Swainson's warbler Kentucky warbler Hooded warbler
<b>FORESTED</b> (Mixed Woodlands, Pine Woodlands, etc.)	Yellow-bellied sapsucker Blue-headed vireo Brown creeper Red-breasted nuthatch House wren Winter wren Golden-crowned kinglet Ruby-crowned kinglet Hermit thrush Yellow-rumped warbler Fox sparrow White-throated sparrow Dark-eyed junco Purple finch	Broad-winged hawk Chuck-will's-widow Ruby-throated hummingbird Yellow-billed cuckoo Eastern wood pewee Great crested flycatcher Yellow-throated vireo Red-eyed vireo Blue-gray gnatcatcher Wood thrush Summer tanager Yellow-throated warbler Hooded warbler Kentucky warbler
<b>OPEN</b> (Roadsides, Hedgerows, Farmlands, Fallow Fields, etc.)	Cedar waxwing Grasshopper sparrow Song sparrow Swamp sparrow Savannah sparrow Baltimore oriole American goldfinch Evening grosbeak	Cattle egret Eastern kingbird Rough-winged swallow Blue grosbeak Indigo bunting Orchard oriole Prairie warbler Yellow-breasted chat

Source: Potter, E.F., J.F. Parnell, and R.P. Teulings. 1980. *Birds of the Carolinas*. The University of North Carolina Press, Chapel Hill, NC. Peterson, R.T. 1980. *A Field Guide to the Birds of Eastern and Central North America*. Houghton Mifflin Company, Boston, MA.

#### 3.15.4.2 What are the potential impacts of roadways to migratory birds?

General threats to migratory bird species include habitat loss, habitat degradation, and to a lesser extent, habitat fragmentation. The construction of new roadways or the widening of existing ones can contribute directly or indirectly to these. Clearing forests for the construction of a new roadway results in a direct loss of habitat utilized by forest birds. However, brushy habitat created along the edges of



right-of-ways generates nesting and foraging areas for forest birds as well as other species. Other direct impacts that could potentially occur to wildlife and birds are discussed in greater detail in Section 3.14, page 3-172.

### 3.15.5 What is the *Magnuson-Stevens Fishery Conservation and Management Act*?

The *Magnuson-Stevens Fishery Conservation and Management Act of 1976*, as amended, gives the NOAA Fisheries the authority to regulate fisheries for long-term sustainable use of United States marine resources. Specifically, the *Magnuson-Stevens Act* provides for the establishment of regional fishery management councils to work with NOAA Fisheries to describe and identify Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC).<sup>108</sup>

#### 3.15.5.1 What are EFH and HAPC?

EFH consists of the water column and the underlying bottom surface of a body of water that is necessary for the long-term survival and health of our nation's fisheries. Certain properties of the water column such as temperature, nutrients, or salinity are essential to various species. EFH includes those habitats that support the different life stages of each managed species. A single species may use many different habitats throughout its life to support breeding, spawning, nursery, feeding, and protection functions. Some species may require certain bottom types such as sandy or rocky bottoms, vegetation such as sea grasses or kelp, or structurally complex coral or oyster reefs. It includes those habitats that support different life stages of managed species.<sup>109</sup>

HAPC are areas within EFH that provide extremely important ecological functions or are especially vulnerable to loss and/or degradation. The designation of HAPC does not provide additional protection but is useful to allow agencies to prioritize conservation efforts.

Each regional fishery management council describes and identifies the EFH for their region. Approved Council EFH descriptions and identifications are available on each regional council's web page. Federal agencies may use this information to determine if EFH will be impacted by an action, thereby requiring consultation with NOAA Fisheries. EFH generally includes deep ocean waters, near-shore waters, and those inland waters used by marine and diadromous (living at least a portion of their lives in both fresh and salt water) species of fish.

#### 3.15.5.2 What impacts could occur to EFH from the Preferred Alternative?

NOAA Fisheries has identified EFH within the project study area south of Conway along the Waccamaw River and a portion of Kingston Lake, east of Conway, but there are no designated areas of EFH within the Preferred Alternative study corridor.

<sup>108</sup> NOAA Fisheries Service, Office of Habitat Conservation's Habitat Protection Division Website, [http://www.nmfs.noaa.gov/habitat/habitatprotection/efh/index\\_a.htm](http://www.nmfs.noaa.gov/habitat/habitatprotection/efh/index_a.htm). (September 24, 2007).

<sup>109</sup> *Ibid.*



NOAA Fisheries has identified every perennial stream within the Preferred Alternative study corridor as potential habitat for juvenile and adult fish maturation or nursery habitat for diadromous fish species. This includes species such as shortnose sturgeon, Atlantic sturgeon, American shad, blueback herring, hickory shad, American eel, and striped bass. In addition, NOAA Fisheries indicated that adult sturgeons are likely to be confined to the mainstem portions of the Waccamaw River, Lumber River, and Little Pee Dee River within the project study area. Only the Little Pee Dee River occurs within the Preferred Alternative study corridor. As discussed in Section 3.15.2.3 (refer to page 3-191), SCDOT and NOAA Fisheries have entered into an MOA with respect to road construction that would minimize potential impacts to sturgeons in the Little Pee Dee River.

Most of the streams identified within the Preferred Alternative study corridor during the wetland delineation have been channelized to the point that they no longer have contact with their adjacent wetlands. These wetlands are no longer usable as fish nursery habitat. Two examples of this are Maidendown Swamp and Mose Swamp. A few streams that were indicated as potential nursery and maturation habitat do not exist and were not found during the delineation. Streams that fall into this category include Watery Bay, Horse Creek, and Cross Branch. Several streams and potential nursery habitat would be bridged which would avoid and/or minimize impacts. This would occur at the crossings of Little Reedy Creek, The Gulley, Maidendown Swamp, Back Swamp, Little Pee Dee Swamp, Little Pee Dee River, Black Creek, Lake Swamp, Joiner Swamp, and Loosing Swamp. However, filling wetlands associated with these systems would result in a loss of potentially suitable nursery habitat.

As discussed in the wetland and stream mitigation section of this document, hydrologic studies would be performed to determine where the use of pipes or box culverts would be appropriate in streams. Pipe or culvert bottoms would be recessed below the bottom of the perennial stream channels to help maintain movement of aquatic species through the structure. Crossings would be evaluated to determine where stream channels could be relocated outside of the fill limits of the roadway rather than piped. The relocation of the stream channels would allow cross pipes and culverts to be placed perpendicular to the roadway and reduce the length of stream that would be impacted.

### **3.15.6 What indirect and cumulative impacts may occur to federally protected species?**

A GIS analysis was performed to determine if impacts to known occurrences of federally protected species within the project study area would occur as the result of induced development associated with the Preferred Alternative. The analysis indicated that development, as predicted by land use modeling, would encroach into a red-cockaded woodpecker 0.5-mile buffer zone. No other federally protected species are anticipated to be indirectly impacted by the project.

Cumulative impacts could occur to the shortnose sturgeon, bald eagle, Kirtland's warbler, and woodstork. Shortnose sturgeon threats include pollution, incidental take by commercial fisheries, impingement at hydroelectric and nuclear power intakes, poaching, and alteration of habitat due to damming of rivers.<sup>110</sup>

<sup>110</sup> NOAA-National Marine Fisheries Service, 1998, *Recovery Plan for the Shortnose Sturgeon (Acipenser brevirostrum)*, (Silver Spring, MD: Shortnose Sturgeon Recovery Team for the National Marine Fisheries Service, 104 pp., 1990).



The bald eagle originally declined primarily due to low reproductive success caused by man's use of the pesticide DDT. Today the biggest threats are habitat disturbance by humans, illegal shooting, electrocution, and impact injuries. Since the 1930's, the decline in the population of wood storks in the United States has been attributed in large part to alteration of foraging and nesting habitat, particularly in historic rookery areas in south Florida.<sup>111</sup> As development begins to encroach on the riparian wetland and upland habitat along the Little Pee Dee River and the Great Pee Dee River, habitat for the eagle and wood stork could be lost, and water quality degradation could impact the shortnose sturgeon. As discussed in the Section 3.12.11 (refer to page 3-159), cumulative impacts to these linear systems are anticipated to occur along the edges. Currently there are approximately 10,136 acres of riparian habitat protected along the Little Pee Dee River within the Little Pee Dee River Heritage Preserve, Little Pee Dee State Park, and the Little Pee Dee State Park Heritage Bay Preserve. Additionally, the riparian wetlands associated with these rivers are protected by the Section 404 permit process.

Cumulative impacts to migratory birds may result from the construction of cell towers along new roadways such as SELL, and I-73 North and South. Studies indicate that migratory birds frequently collide with lighted cell towers taller than 200 feet and their guy wires, especially when visibility is hindered flying at night or during inclement weather. It is generally accepted that the birds are attracted to the warning lights on the towers during periods of low visibility.<sup>112</sup>

A review of the Federal Aviation Administration GIS data layer for potential aircraft obstructions and the Federal Communication Commission cell tower data layer indicates that there are 23 cell towers, 17 of which are greater than 200 feet in height. The average height of cell towers in the I-73 South project study area is 279 feet. There are five cell towers located within the I-73 North project study area, four of which are greater than 200 feet tall. The average cell tower height in the I-73 North project study area is 285 feet. Currently there are 143 other structures such as television and radio towers that are 200 feet or greater in height within the I-73 North and South project study areas that could affect migratory birds.

Measures recommended by the USFWS to minimize impacts to migratory birds due to cell towers include the following:

- Using existing structures instead of constructing new cell towers, and designing new towers to accommodate multiple future antennas;
- Constructing towers less than 200 feet when possible, and designing new towers so that guy wires are not required;
- Clustering towers in areas outside migratory bird flight paths or in areas where fog and/or low cloud ceilings are common;

<sup>111</sup> Johnson, Terry W., et. al. *Protected Animals of Georgia*. (Georgia Department of Natural Resources, Wildlife Resources Division, Nongame Wildlife-Natural Heritage Section, (1999).

<sup>112</sup> S.A. Gauthreaux and C.G. Belser, "The behavioral responses of migrating birds to different lighting systems on tall towers." *Remarks at 1<sup>st</sup> Conference of Avian Mortality at Communication Towers*, (Ithaca, NY: Cornell University, (August 1999).



- Using the minimum number of lights as allowed by the FAA, and using white strobe lights when possible, and,
- Removing towers that are no longer needed.

Construction of cell towers along the Preferred Alternative is expected, especially in the more rural areas. However, the number and height of these new towers is not easy to predict. Although cumulative impacts to migratory birds may occur as the result of the construction of I-73, the FHWA is not required to mitigate for these impacts.

### **3.15.7 What are State Species of Concern, and which ones may occur within the project study area?**

SCDNR maintains a list of plants and animals it considers rare, threatened, and endangered in South Carolina, listed as “Species of Concern”. The list comprises species, beyond those federally protected, thought to have populations that are rare, declining, or of unknown status. According to SCDNR 2005 Comprehensive Wildlife Conservation Strategy, the Species of Concern list does not carry the weight of law and is used only as a conservation tool to assist in protection planning and to direct research and survey efforts.

Table 3.53 (refer to pages 3-205 to 3-206) lists species that SCDNR has designated that are of concern known to occur or possibly occur in Dillon, Horry, and Marion Counties. Suitable habitat may be present in the Preferred Alternative study corridor for any of these species.





<b>Table 3.53</b> <b>State Listed Rare, Threatened, and Endangered Species (Species of Concern)</b> <b>Known to Occur or Possibly Occur in Dillon, Horry, and Marion Counties, S.C.</b> <b>Interstate 73 FEIS: I-95 to the Myrtle Beach Region</b>					
Scientific Name	Common Name	Status	Habitat	Suitable Habitat Present?	Counties
<b>Plants</b>					
<i>Asclepias pedicellata</i>	Savannah milkweed	S1	Dry or seasonally wet pine savannas and flatwoods.	Yes	Horry
<i>Coreopsis rosea</i>	Rose coreopsis	S2	Drawdown zones of black water rivers (the Waccamaw in Horry County).	Yes	Horry
<i>Dionaea muscipula</i>	Venus' fly-trap	S1	Wet, sandy ditches, open longleaf pine savannas, pocosin ecotones and sphagnum openings in pocosins, especially those with frequent burns and no competing understory growth.	No	Horry
<i>Echinodorus parvulus</i>	Dwarf burhead	S2	Drawdown zones of Coastal Plain ponds, pineland ponds, and blackwater riverbanks.	Yes	Horry
<i>Fimbristylis perpusilla</i>	Harper's fimbristylis	S2	On muddy bottoms and silty margins of drying pine barren ponds and Coastal Plain blackwater rivers; seasonally exposed mudflats along pond margins, river shores, and in the center of seasonal ponds; silty sandbars in rivers.	Yes	Horry
<i>Helenium brevifolium</i>	Shortleaf sneezeweed	S1	Bogs, springhead seepage forests, boggy stream banks, boggy clearings, and other saturated soils.	Yes	Horry
<i>Isoetes riparia</i>	River bank quillwort	S1	Wet soil along muddy or sandy shores (including tidal shores and estuaries) of rivers, streams, and in swamps.	Yes	Dillon, Marion
<i>Liliaeopsis carolinensis</i>	Carolina liliaeopsis	S1	Open mud flats of pond shores, swamps, freshwater marshes, interdune ponds, ditches, and shores of brackish to freshwater estuarine sounds and rivers, often immersed in the water.	Yes	Horry
<i>Lipocarpa micrantha</i>	Half-chaff sedge	S2	Moist to wet sandy soils, commonly on alluvial sands, of riverbank draw-down zones, pond margins, streams, and ditches.	Yes	Horry
<i>Lygodium palmatum</i>	American climbing fern	S1S2	Moist, sandy, intensely acid soil of sandstone outcrops, montane bogs, moist forests, or roadsides adjacent to above.	Yes	Horry
<i>Parnassia caroliniana</i>	Carolina grass-of-Parnassus	S1S2	In wet longleaf pine, pond pine, or pond cypress savannas, often over calcareous substrates, where fire is a factor.	No	Horry
<i>Pteroglossaspis ecristata</i>	Crestless plume orchid	S2	Scrub oak lands, pine-palmetto flatwoods, acid seepage slopes, dry-mesic pine savannas and roadsides, especially those with frequent burns.	No	Horry



<i>Sabatia kennedyana</i>	Plymouth gentian	S1	In sandy and peaty margins of streams and ponds, and savannas. Also, in seasonally exposed drawdown banks of the Waccamaw River, adjacent ditches, and disturbed flats.	No	Horry
<i>Scleria baldwinii</i>	Baldwin nutrush	S1/S2	In wet, peaty or sandy soils in pinelands, and borders of ponds, drainage ditches, and borrow-pits, often in shallow water. In our area, it favors wet savannas, under <i>Pinus serotina</i> , <i>P. palustris</i> , and/or <i>Taxodium ascendens</i> .	Yes	Horry
<i>Sporobolus teretifolius</i>	Wire-leaved dropseed	S1	Permanently moist to wet savannas on essentially flat terrain underlain by a clay layer. The open canopy is composed of pond and/or longleaf pine with sparse to locally dense shrub patches. Also found in ecotones between pine/oak/wiregrass uplands and red maple-sweet gum-swamp tupelo drainages.	Yes	Horry
<i>Stylisma pickeringii</i> var. <i>pickeringii</i>	Pickering's morning-glory	S1	Coarse, white sands in open sandhills or in other dry, barren, sandy woods with sparse ground cover, scant litter accumulation, and little canopy cover.	Yes	Horry
<b>Animals</b>					
<i>Corynorhinus rafinesquii</i>	Rafinesque's big-eared bat	S2?	Dilapidated buildings, under bridges, and in large cavity trees near permanent water.	Yes	Dillon, Horry, Marion
<i>Corynorhinus townsendii</i>	Townsend's big-eared bat	S1	Limestone caves in the mountains reaching 1,500 feet or more in elevation.	No	Horry
<i>Fundulus diaphanus</i>	Banded killifish	S1	Blackwater systems, including some with a tidal influence. However, they rarely venture into brackish water. It prefers calm, slow, clear or brown-stained waters of creeks, rivers, lakes, and ponds with a sand and gravel bottom near scattered submerged and emergent vegetation. It congregates in large schools.	Yes	Horry
S1 = Critically imperiled statewide because of extreme rarity or because of some factor(s) making it especially vulnerable to extirpation.					
S2 = Imperiled statewide because of rarity or factor(s) making it vulnerable.					