

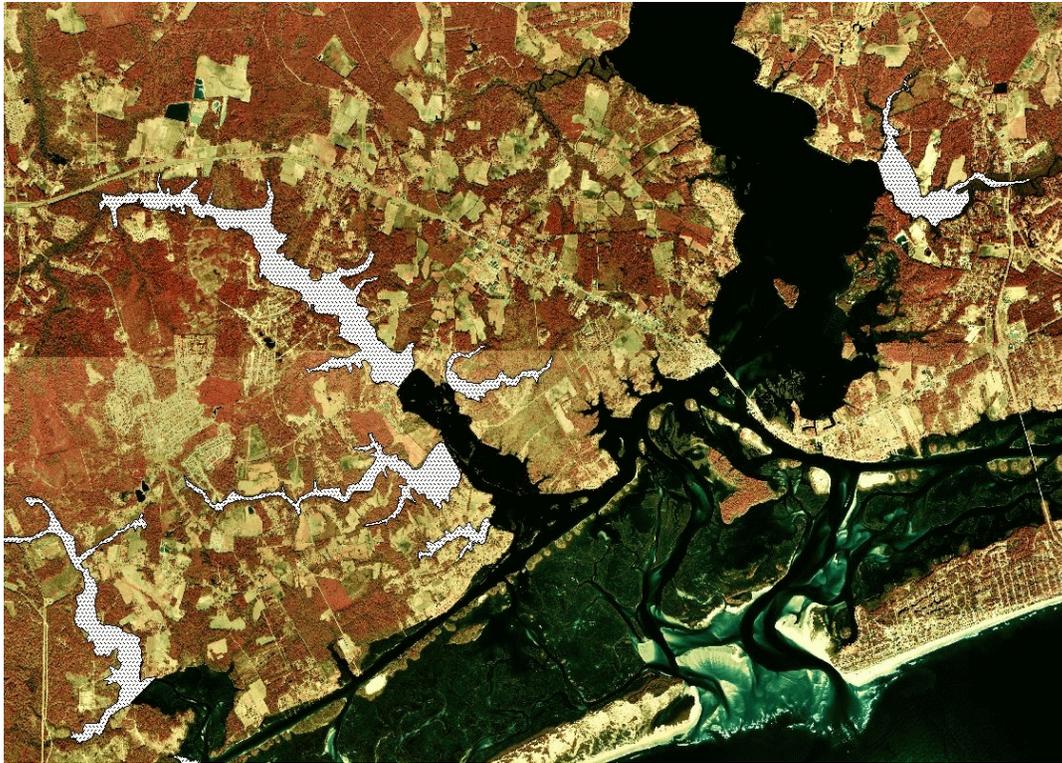
## **Bogue Inlet**

The fish and wildlife resources in and around Bogue Inlet are abundant and diverse. Sandy, tidal inlets in North Carolina provide valuable habitat to migratory shorebirds, colonial waterbirds, marine mammals and reptiles, anadromous fish, and estuarine and marine fisheries. The inlets also serve as a hydrologic pathway connecting marine and estuarine resources including wetlands, saltwater marsh, submerged aquatic vegetation (SAV), fish nursery areas, and both freshwater and marine fishery spawning areas. Many fishery resources have pelagic early life stages that rely upon tidal currents at inlets to passively transport larvae from spawning to juvenile development areas.

Several federally-protected species are present in the Bogue Inlet area depending on the season. Federally-threatened and endangered sea turtles use the inlet as a pathway to estuarine foraging areas and nest on project area beaches. The West Indian manatee (*Trichechus manatus*), a federally-endangered species, may be present in or around the project area from June to October, foraging in estuarine areas. Manatees have been sighted in July 2000 in the Atlantic Intracoastal Waterway north of State Highway 101, August 1999 near Calico Creek, August 1999 along the Beaufort waterfront, June 1998 near Hammocks Beach State Park, August 1994 near Sportsman Pier in Atlantic Beach, August 1994 near the U.S. Coast Guard Station at Fort Macon, November 1992 in Barden Inlet, October 1990 in Peltier Creek, and August 1983 in the nearshore off the western end of Shackleford Banks.

The federally-threatened piping plover (*Charadrius melodus*) may be present in the proposed project area year-round for nesting, migration or overwintering. The Service has designated Bogue Inlet, as well as Shackleford Banks and the Rachel Carson National Estuarine Research Reserve, as critical habitat for overwintering piping plovers. Service personnel identified 11 piping plovers, including one believed to be from the Great Plains population of Saskatchewan and another from Prince Edward Island, Canada, using the inlet as a migratory stopover site on October 13, 2002, illustrating the inlet's comparably high use by piping plovers in North Carolina.

The project area has been designated with numerous management characterizations reflecting its high resource value. The waters to the east and west of the navigational channel have been designated as Outstanding Resource Waters (ORW) by the North Carolina Division of Water Quality (NC DWQ). The Natural Heritage Program has delineated several Significant Natural Heritage Areas within the project area, including Huggins and Dudley Islands, West End Beach on Emerald Isle, Hammocks Beach State Park to the west of the inlet, extensive areas within Bogue Inlet and Bogue Sound as bird islands, Hawkins Island to the northwest, and Jones Island and Cedar Point Marshes in the White Oak River to the north of the inlet (Figure 17). Tidal inlets have also been designated as Habitat Areas of Particular Concern (HAPC) for red drum (*Sciaenops ocellatus*), penaeid shrimp and the snapper-grouper complex by the South Atlantic Fishery Management Council (SAFMC). The Service has designated critical habitat for overwintering piping plovers at Bogue Inlet. The United States Congress has designated most of Bogue Inlet as Otherwise Protected Area (OPA) NC-06P under the Coastal Barrier Resources Act, coincident with the boundaries of Hammocks Beach State Park.



**Figure 17. Fishery nursery areas in and around the White Oak River (upper right) and Bogue Inlet (lower right) are highlighted in white and black. Data from NC Division of Marine Fisheries.**



**Figure 18. Anadromous fish spawning and rearing areas of the White Oak River are highlighted in white outline. Bogue Inlet is at the lower left of the photograph. Data from NC Division of Marine Fisheries.**

The White Oak River that drains into Bogue Inlet contains anadromous fish spawning areas from north of the North Carolina Route 24 bridge to Maysville (Figure 18). Anadromous and catadromous fish that use these areas include alewife (*Alosa pseudoharengus*), striped bass (*Morone saxatilis*), blueback herring (*Alosa aestivalis*), American shad, hickory shad (*Alosa mediocris*), Atlantic sturgeon (*Acipenser oxyrinchus*) and American eel (Dr. J. Hightower, North Carolina State University; C. Waters, NC WRC; and W. Laney, USFWS, personal comm.). Designated fishery nursery areas within the tidal influence of Bogue Inlet include Queens Creek, Parrots Swamp, and Dicks Creek to the northwest and Pettiford Creek to the northeast.

Commercial fishery landings from the White Oak River/Bogue Inlet area average 241,971 lbs harvested and for an annual value of \$ 390,900. Up to 39 fishery species have been commercially taken each year from this system. Blue crab, shrimp, hard clams, spot, mullet (*Mugilidae* sp.), and southern flounder are the largest annual catches by weight from the White Oak River and Bogue Inlet (NC DMF, unpublished data).

The tidal shoal system within Bogue Inlet provides spawning habitat for blue crab and red drum. The sheltering effect of the shoals often creates SAV habitat on the lee side of the shoals, but to date no inventories of SAV have been performed in Bogue Inlet. Extensive SAV beds are present in adjacent Bogue Sound, however, indicating the likelihood of the Bogue Inlet complex to contain additional SAV beds. Dudley Island is an example of how the flood tidal shoal system can generate abundant marsh areas in addition to SAV. This marsh complex has been designated a Significant Natural Heritage Area due to its high resource value. Adjacent Huggins Island is now managed by Hammocks Beach State Park and contains high archaeological value as an historic military defense site in coastal North Carolina.

Tidal shoals that are subaerial during low tides are valuable foraging and roosting habitat for migratory shorebirds and colonial waterbirds. Some of these shoals are supratidal even at high tide and provide additional habitat to avian species such as brown pelican (*Pelecanus occidentalis*), cormorants (*Phalacrocorax* sp.), egrets, plovers, black skimmer, American oystercatcher, and numerous gull and tern species. The North Carolina Wildlife Resources Commission (NC WRC) manages several of these supratidal shoals for their avifaunal use, most of which are owned by the state.

In 1998, the Bogue Inlet shoal system encompassed approximately 250 acres (Figure 15). This was the fourth largest intertidal shoal system in the state south of Cape Lookout. Overall, Bogue Inlet provided the eighth largest inlet complex in terms of habitat available to avifauna in 1998 (Appendix D).

The inlet shorelines on both Bogue Banks and Hammocks Beach State Park have consistently supported bird nesting habitat. Black skimmers, least terns, and Wilson's plovers are nesting on bare sandy flats adjacent to the inlet on both shoulders in 2002 (D. Allen, pers. comm.). Piping plovers, common terns, willet and American oystercatcher also have nested in these areas. During migratory periods, piping plover, Wilson's plover, semipalmated plover (*Charadrius semipalmatus*), red knot, sandwich tern (*Sterna sandvicensis*), Forster's tern (*Sterna forsteri*), Royal tern (*Sterna maxima*), least tern, gull-billed tern, common tern, black tern (*Chlidonias*

*niger*), Caspian tern (*Sterna caspia*), herons, egrets, marbled godwit (*Limosa fedoa*), laughing gull (*Larus atricilla*), and cormorant are commonly found in and around the inlet. Overwintering bird species include piping plover, brown pelican, cormorants, Forster's tern, Royal tern, dunlin (*Calidris alpina*), and various gull species (Fussell 1985). The Bogue Inlet area also provides overwintering habitat for seabirds and diving ducks, including common loons, red-throated loons (*Gavia stellata*), northern gannets and red-breasted mergansers. Faunal use of the inlet shoreline at The Pointe in Emerald Isle is currently restricted by the presence of several sandbag revetments protecting structures from inlet currents (Figure 19), but the extensive sand spit and marsh areas to the north of The Pointe remain undeveloped and unstabilized.

Bogue Inlet is minimally disturbed by anthropogenic activities. The sandbag revetments at The Pointe have limited migratory bird habitat, but this area of disturbance is spatially limited to less than 1/8 of a mile of shoreline. The western inlet shoreline and the bulk of its interior islets are in conservation status, offsetting the artificial stabilization on the eastern shoreline. The Corps maintains a navigational channel through the inlet, but the channel follows the natural thalweg, or deepwater channel, through the inlet. The Town of Emerald Isle is currently evaluating the feasibility of dredging a new, larger channel to the west of the current thalweg in an effort to realign ebb tidal flows away from development at The Pointe. Material removed from the proposed channel would be used as beach fill along the oceanfront beaches of Emerald Isle under an existing Corps Regulatory permit. Any material leftover from the beach fill will be used to constrict the existing ebb tidal channel along the eastern shoulder of the inlet. If the project receives the approval of the town and regulatory agencies, dredging is proposed for the winter of 2003-04.



**Figure 19. Sandbag revetments along the Bogue Inlet shoreline at The Pointe have eliminated natural sandy inlet shoulder habitat for migratory birds. Photo taken May 30, 2002, by USFWS.**