

# History of Cooperative Management of North Carolina's Colony-nesting Waterbirds

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*Abstract:* North Carolina's colony-nesting waterbirds probably existed for thousands of years along nearly 500 km of coastal estuaries and barrier islands. Suffering from the effects of over-harvest by plume hunters and extensive loss of habitat due to coastal development, these birds began to receive notice during the 1970s. Studies of coastal community succession began in 1970 and quickly determined that dredged material islands provide essential habitat for colony-nesting waterbirds. In 1976, coastwide censuses were initiated to survey the 20-22 species suspected to nest in the state. Surveys in 1976, 1977, and 1983 brought to light a need for cooperative management for these species. In 1988, a Cooperative Agreement to conserve these species and their habitats was adopted by 11 state, federal, and private agencies. For the past 4 years, the cooperating agencies have successfully continued this coastwide conservation effort.

Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies 47:328-332

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North Carolina's coastal estuaries and barrier islands extend approximately 500 km from Virginia to South Carolina. Northern barrier islands up to 40 km from the mainland are characterized by shallow open sounds and salt marsh fringes along western shores of the islands. Southern barrier islands are generally less than 2 km from the mainland (Parnell and Soots 1979).

Small natural islands varying from a few square meters to several hectares in size dot the estuaries. Most are low in elevation and subject to erosion and frequent flooding. Bare substrates or early successional communities are common but protected sites may develop shrub thickets or forests.

Colony-nesting waterbirds have probably been located along the North Carolina coast for thousands of years. Pearson et al. (1919) reported that from 1882 to 1903 plume hunters harvested thousands of herons, egrets, and terns for their feath-

ers which were used in hats. As a result, by 1900 most species of herons and egrets had become rare in North Carolina. The first Audubon warden in North Carolina was appointed in 1903 to work in Pamlico Sound. Plume hunting began to decline and by 1919, populations of many species had begun to recover due to the work of the National Audubon Society (Pearson et al. 1919).

During the 1920s and 1930s, the construction of the Atlantic Intracoastal Waterway and the subsequent dredging of channels, inlets, and rivers in North Carolina resulted in the formation of over 400 dredged-material islands (Soots and Parnell 1975). Concurrent coastal development and utilization stimulated by the construction of several bridges spanning inlets and the construction of coastal highways had likely begun to negatively impact wading bird nesting activities. Construction of the dredged-material islands provided much-needed nesting habitat at a time when habitat loss began to increase at rapid rates.

Early efforts at management of colony-nesting waterbirds were aimed at passage of protective laws. Habitat manipulation in North Carolina at the time was usually the unplanned by-product of coastal dredging activities (Soots and Parnell 1975, Parnell and Soots 1975). Habitat and population management efforts by the National Audubon Society, the U.S. Fish and Wildlife Service, state agencies and individuals usually involved only single sites.

The North Carolina Wildlife Resource Commission was the state agency responsible for management of colonial waterbirds, but budget limitations prevented active incorporation of this responsibility. In the early 1980s, National Audubon established a cooperative research and management project with the state of North Carolina for Battery and Striking islands. National Audubon leased the two islands from the State of North Carolina to provide for a stewardship warden as well as to provide for research into the biology and ecology of the wading bird colonies using the islands. It was hoped that the project would serve as a guidepost for future inter-agency cooperation (D. A. McCrimmon, pers. commun.). No effort was formulated to manage coastal waterbirds on a statewide basis, however, until the 1970s.

In 1970, Dr. James Parnell of the University of North Carolina at Wilmington began his efforts to study community succession on dredged material islands in North Carolina. By 1974, these man-made islands were known as exceptionally valuable bird nesting habitats but coastal development was occurring or was planned which would impact the birds. The effects of these man-made changes could not be adequately assessed without accurate estimates of bird usage of the islands (Parnell and Soots 1979).

Dr. Parnell began to develop census techniques in 1975 for the 20 to 22 species suspected to nest in the state. Formalizing the techniques to be used, Dr. Parnell began coastwide surveys in 1976. These surveys were repeated in 1977 and 1983 for all species nesting along the coast. Subsequent survey efforts in 1984, 1985, and 1986 failed to produce comparable estimates for all species throughout the coast due to the inability to synchronize the surveys with the peak of nesting. A 1988 survey produced better results (J. F. Parnell, pers. commun.). Results of the 1975 through 1977 censuses were published in an atlas by Parnell and Soots

(1979). This atlas was designed for use by agencies working in the estuaries to provide information on the presence and nesting requirements of the waterbirds.

Building upon the data collected for publication of the Atlas and on subsequent surveys, Parnell and Shields (1990) developed a management plan to guide efforts to protect these species and to manage their habitats. Under the coordination of the Division of Wildlife Management's Nongame and Endangered Wildlife Section of the North Carolina Wildlife Resources Commission and involving state, federal, and private agencies, the management plan provided a unique approach for a coastwide effort. The cooperative spirit among North Carolina's conservation and management agencies, the background data on the resource, and the development of this management plan provide the basis for successful protection and enhancement of coastal waterbird populations.

The management plan (Parnell and Shields 1990) outlined 5 goals for the program:

1. To maintain reproductive populations of most species at or near current levels. Data collected from 1977 (Parnell and Soots 1979) and 1983 (Parnell and McCrimmon 1984) provided information necessary for evaluating population trends.
2. To encourage reproduction among native species that are presently at low numbers or are currently declining. Censuses indicated declines in glossy ibis (*Plegadis falcinellus*), common terns (*Sterna hirundo*), gull-billed terns (*S. nilotica*), least terns (*S. antillarum*), Forster's terns (*S. forsteri*), and black skimmers (*Rhynchops niger*).
3. To discourage a problem species when it is having a strong negative effect on another species.
4. To encourage a dispersed nesting population over portions of the coastal zone traditionally occupied by a species. This is important to help prevent catastrophic events or disease at a single site from destroying a large portion of the population of a given species (Buckley and Buckley 1976).
5. To provide special attention for species listed as endangered, threatened, or species of special concern. Of the 25 colony-nesting species found in North Carolina, the black skimmer, brown pelican (*Pelecanus occidentalis*), glossy ibis, gull-billed tern, little blue heron (*Egretta caerulea*), snowy egret (*E. thula*), tricolor heron (*E. tricolor*), and roseate tern (*Sterna dougalli*) are protected under federal and/or state endangered species statutes.

In 1985, using a draft of the management plan, the Wildlife Resources Commission opened negotiations with various state, federal, and private agencies to develop a cooperative agreement for the implementation of the Management Plan. A coastwide effort of this nature required participation by all land-holding agencies, as well as those agencies involved with issuance and review of various types of permits. Land-holding agencies included the North Carolina Wildlife Resources Commission, National Park Service, National Audubon Society, North Carolina Division of Coastal Management, North Carolina Division of Parks and Recreation, North Carolina Nature Conservancy, and the U.S. Fish and Wildlife Service. While most of these agencies are also involved in either permit review or permit issuance, other agencies specifically involved with permit issuance or review include the National Marine Fisheries Service, North Carolina Division of Marine Fisheries, and the U.S. Army Corps of Engineers.

Negotiations were completed on the Colonial Waterbird Cooperative Agreement and all agencies listed above signed the agreement in late 1988. The Agreement requires cooperating agencies to participate in annual committee meetings and, given the extent of limitations on their jurisdiction, manpower, budget, and policies and directives, to implement management activities identified annually in the committee meetings. Management activities include but are not limited to conducting annual surveys, posting colony sites, enforcing regulations, and managing nesting habitat. Permit issuing and reviewing agencies agree to lend expertise and technical guidance on management activities that might require permits.

Since the adoption of the Cooperative Agreement in 1988, the Wildlife Resources Commission annually conducted or contracted for aerial surveys to determine colony locations and has made this information available to all parties of the Agreement. Additionally, the Commission adopted a set of state regulations providing for the protection of colony sites and provided enforcement of these regulations for landholding agencies that lack enforcement authority. The Commission provided training for coastal enforcement officers in the identification of colony-nesting waterbirds and annually provides them with data on the location of colonies for enforcement purposes. The Commission requested and received management authority allocation for 21 state-owned islands and accepted the management responsibilities associated with this allocation. Furthermore, the Commission provided signs for identifying and posting colony sites for all participating land-holding agencies.

The Corps of Engineers provided its expertise to assist with the placement of dredged material on islands requiring additional material. During 1991, South Pelican Island and Ferry Slip Island, both in the lower Cape Fear River, were determined to need re-nourishment due to erosion from winds and tides. These islands were barely above mean high tide and were frequently overwashed during storm events. Through the cooperative efforts of the agencies involved, appropriate permits were obtained and the Corps was able to coordinate channel dredging activities with dredged-material deposition on these islands. The project was completed during 1992 and both islands were utilized by nesting birds during that year. A similar project was coordinated in the Oregon Inlet region and birds utilized the site during the dredged-material deposition. That project is scheduled for completion during May 1993. Corps personnel provided much input into the planning of management operations and permit requirements. Their support is critical to a program of this nature.

Other parties to the agreement have enthusiastically accepted their responsibilities to participate on the committee and to affirm their commitment to the conservation of this resource. All agencies have taken an active role in the management proposals and have lent their expertise when required.

Although still in its infancy, North Carolina's Cooperative Colonial Waterbird Management Program has shown very good results in its first four years. Many years will pass before we fully realize our goals for conservation of these species. North Carolina has, however, shown that cooperation among its conservation com-

munity can rise to the challenge. The single most important factor of our success is the close cooperation that exists between state, federal, and private agencies.

The North Carolina Wildlife Resources Commission wishes to acknowledge the contributions of all parties to the Cooperative Agreement and for their commitment to this resource. Special consideration is due to Dr. James F. Parnell, University of North Carolina, Wilmington, North Carolina, for more than 20 years of effort to bring a closer appreciation of the value of our colony-nesting waterbirds.

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