

UNITED STATES FISH AND WILDLIFE SERVICE

ENVIRONMENTAL ACTION STATEMENT

Within the spirit and intent of the Council on Environmental Quality's regulations for implementing the National Environmental Policy Act (NEPA), and other statutes, orders, and policies that protect fish and wildlife resources, I have established the following administrative record and determined that the proposed Hunting Plan for Currituck National Wildlife Refuge in Currituck County, North Carolina:

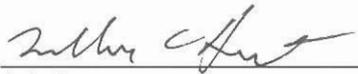
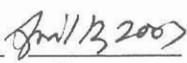
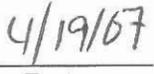
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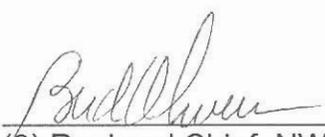
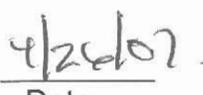
- is a categorical exclusion as provided by 516 DM 2, Appendix 1 and 516 DM 6, Appendix 1, Section 1.4 A (4). No further NEPA documentation will therefore be made.
- is found not to have significant environmental effects as determined by the attached Environmental Assessment and Finding of No Significant Impact.
- is found to have significant effects and, therefore, further consideration of this action will require a notice of intent to be published in the Federal Register announcing the decision to prepare an EIS.
- is not approved because of unacceptable environmental damage, or violation of Fish and Wildlife Service mandates, policy, regulations, or procedures.
- is an emergency action within the context of 40 CFR 1 506.1 1. Only those actions necessary to control the immediate impacts of the emergency will be taken. Other related actions remain subject to NEPA review.

Other Supporting Documents:

Endangered Species Act, Section 7 Consultation, 2007
Compatibility Determination, 2007

Signature Approval:

			
(1) Originator	Date	(2) Regional Environmental Coordinator	Date

			
(3) Regional Chief, NWRS, Southeast Region	Date	(4) Regional Director, Southeast Region	Date

Final Environmental Assessment
2007 Sport Waterfowl Hunt Plan

on

CURRITUCK NATIONAL WILDLIFE REFUGE
Currituck County, North Carolina

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Chapter 1 Purpose and Need for Action

Introduction

In response to a 2003 lawsuit filed by the Fund for Animals, the U.S. Fish and Wildlife Service (Service) will amend or rewrite environmental assessments that describe hunting programs at twenty-three national wildlife refuges located in the Southeast Region. The new environmental assessments will address the cumulative impacts of hunting at all refuges which were named in or otherwise affected by the lawsuit. This document addresses the waterfowl hunting program at Currituck National Wildlife Refuge in North Carolina.

The United States Fish and Wildlife Service (Service) is proposing to open Currituck National Wildlife Refuge (NWR) to waterfowl hunting. The purpose of the hunt is to increase the general public's recreational opportunities on the refuge. Currently, only those with a blind license can hunt waterfowl in Currituck County. The proposed hunt will provide other members of the public an opportunity to participate.

The National Wildlife Refuge System Improvement Act of 1997 (H.R. 1420) signed into law by President Clinton on October 7 of that year, identified hunting as one of six priority public uses of the System. These public uses are to receive priority consideration in the planning and management of refuges and those uses deemed compatible with refuge purposes should be facilitated.

Various members of the public have approached the Service about hunting waterfowl on portions of Currituck NWR. The Currituck County Game Commission and North Carolina Wildlife Resources Commission have expressed support for a well managed waterfowl hunt on the refuge. Thus, the Service is proposing a hunt which is designed to be compatible with refuge purposes and is based on sound wildlife management principles. Hunting is an acceptable and traditional form of wildlife-oriented recreation and can be used as a tool to effectively manage game populations.

Service personnel held several informal meetings with representatives of the Currituck County Game Commission, North Carolina Wildlife Resources Commission and with some members of the public to discuss details of the proposal. Representatives of The Nature Conservancy and the North Carolina Estuarine Reserve Program, which are interested in a similar hunting program on their properties adjacent to Currituck NWR, were present at one meeting. Two public meetings were held (Knotts Island and Currituck, NC) in March 1999.

Chapter 2 Alternatives Including the Proposed Action

This chapter discusses the alternatives considered for hunting on Currituck National Wildlife Refuge. These alternatives are A) no action which would not allow for the opening of a refuge waterfowl hunt B) proposed action which implements a Special

Regulation Waterfowl Hunting Management Plan C) Waterfowl Hunt with general state and county regulations.

A. No Action Alternative: No Waterfowl Hunt

Waterfowl hunting on Currituck NWR will be prohibited under this alternative. A priority public use of the refuge (i.e., hunting), which refuges are encouraged by H.R. 1420 to permit, will not be allowed. Waterfowl hunting in the vicinity of the refuge will continue to be limited to those with a blind license or the ability to pay for a guided hunt. Local businesses which cater to waterfowl hunters will not gain the additional income offered by the other alternatives. Natural and cultural resources would not be affected by this alternative.

B. Proposed Action: Waterfowl Hunt- Special Regulations (Preferred alternative)

The Service proposes to provide a restrictive public waterfowl hunt on Currituck NWR. This hunt would be more restrictive than currently allowed under general regulations published in the 1998-99 North Carolina Inland Fishing, Hunting & Trapping Regulations Digest (Digest)(North Carolina Wildlife Resources Commission 1998). Hunts would be restricted in the following ways:

1. Hunts will be limited to two days a week. The short durations of hunting disturbance will serve to minimize persistent impacts to waterfowl use of the area.
2. Hunting hours will be limited to ½ hour before sunrise to 1:00 p.m. Hunters will have to be off the refuge by 3:00 p.m.
3. Blind sites will be established according to the Currituck County Game Commission Laws (Currituck County Game Commission 1990). Fewer blinds than permitted by this regulation may be established. A lottery will be used to determine who will be assigned to each blind site on hunt days. Blinds not hunted due to no-show hunters may be filled by a standby hunt drawing system run by volunteers.

The existing blinds on the refuge will be the first area open to hunting. This configuration represents a maximum number of blinds to be established in this area. As acquisition of refuge proceeds additional hunting areas may be made available.

4. To the extent possible, blind sites will be located where persons not familiar with the refuge can find them without disrupting other hunters. Use of a guide will be permitted.

Blinds will be placed in such a manner as to provide small rest areas in the interior portion of the units. In addition, disturbance to waterfowl populations will be limited by

short hunting periods (e.g., waterfowl will utilize the areas on non-hunt days and the evenings of hunt days). This will help hold birds in the area. Additional regulations to insure this occurs may be developed in the future as needed.

Current Service policy permits waterfowl hunting on no more than 40% of the refuge (U.S. Fish and Wildlife Service 1982). In addition, blinds cannot be located in various portions of the refuge due to blind site location rules and a waterfowl rest areas (such as Ships Bay) established by the Currituck County Game Commission. These policies and regulations will limit the number of blinds that can be placed on the refuge.

In addition to the proposed refuge blind locations, about 3 float blind sites are possible in creeks flowing between refuge properties. Some or all of the float blind sites will not be available when point blinds are established on the refuge under alternatives B and C.

This alternative will result in a quality recreational experience for members of the public who are waterfowl hunters. It will also provide hunters who do not have a blind license an additional opportunity to hunt on public land. Income for area businesses that cater to waterfowl hunters should increase. Waterfowl will continue to feed and roost in the vicinity of refuge blinds during those times when hunting is not permitted. Relative to the No Action Alternative, waterfowl numbers on the refuge may be reduced during the hunting season due to hunting mortality. This reduction will not be large due to the few number of blinds expected and the special regulations which limit hunting times. From a flyway perspective, the reduction in numbers will be insignificant. Littering, potential for wildfires, and refuge law enforcement activities may slightly increase under this alternative. Finally, a slight increase in disturbance to non-target wildlife is expected.

C. General Regulations Alternative:

Waterfowl hunting would open according to general regulations published in the Digest and the Currituck County Game Commission Laws would apply to the refuge. These would be in addition to current Service regulations (e.g., waterfowl hunting is permitted on no more than 40% of the area of the refuge). Few refuge specific regulations restricting the hunt further would be developed. Basically, alternative C would typically allow the following (Listed in the same order as alternative B above):

1. Hunts will be permitted on all days of the waterfowl season.
2. Hunting hours will be from ½ hour before sunrise to ½ hour past sunset. After November 1, hunting hours will change to ½ hour before sunrise to 4:20 p.m.
3. All blind sites permitted by the Currituck County Game Commission Laws will be allowed. A lottery will be used to determine who will be assigned to each blind site on hunt days. Refill of blind sites would not be allowed (i.e., Blind sites could not be hunted by more than one party a day.).

4. All established blinds could be used on each hunt day.

5. Blinds will be located where Currituck County Game Commission Laws permit them. Use of a guide will be permitted.

Under alternative C, as well as B, current plans are to begin waterfowl hunting on the Currituck Marsh, the northern-most tract of the refuge. Some or all of the float blind sites will not be available when point blinds are established on the refuge under alternative C.

Alternatives B and C would provide hunters who do not have a blind license an additional opportunity to hunt on public land. The quality of the hunting experience will not be as high as alternative B because waterfowl will likely discontinue use of areas around the blinds due to the high level of hunting pressure. Waterfowl numbers on the refuge may be reduced during the hunting season due to hunting mortality. This reduction will be larger than alternative B. However, this reduction will not be significant from a flyway perspective. Littering, potential for wildfires, and refuge law enforcement activities will be highest under alternative C. This alternative will also result in the highest level of disturbance to non-target wildlife. Income for area businesses that cater to waterfowl hunters should be highest under alternative C.

Alternatives are different approaches or combinations of management objectives and strategies designed to achieve the refuge purpose, vision, and the goals identified in the comprehensive conservation plan (CCP); the priorities and goals of the Roanoke - Tar - Neuse - Cape Fear Ecosystem Team; the goals of the national wildlife refuge system; and the mission on the Fish and Wildlife Service. Alternatives are formulated to address the significant issues, concerns, and problems identified by the Service and the public during public scoping.

The three alternatives identified and evaluated represent different approaches to provide permanent protection, restoration and management of the refuge's fish, wildlife, plants, habitats and other resources. A major consideration in the formulation of the alternatives is the ability to obtain sufficient proprietary interest in lands to facilitate a physical and biological connection of dunes, maritime grasslands, maritime shrub lands, and marshes; and to restore the functions and values of wetlands.

The refuge staff assessed the biological conditions and analyzed the external relationships affecting the refuge. This information contributed to the development of goals and objectives and, in turn, helped to formulate the alternatives. As a result, each alternative presents different sets of objectives for reaching refuge goals. The staff evaluated each alternative based on how much progress it would make and how it would address the identified issues related to fish and wildlife populations, habitats, land protection and conservation, education and visitor services, and refuge administration.

The staff designed all of the management alternatives for the area within the current approved acquisition boundary of 18,015 acres. Acquisition of a large area beyond the

existing boundary will require a revision of the Comprehensive Conservation Plan to develop programs that consider the larger area.

Chapter 3 Affected Environments

3.1.1 LOCATION

Currituck National Wildlife Refuge is in Currituck County in the northeastern corner of North Carolina. The Service named the refuge for the county where it is located. The approved acquisition boundary lies entirely in Currituck County, North Carolina. The refuge consists of five main tracts and totals 3,570 acres. The 1,390 acre Currituck Marsh tract and the 247 acre Station Landing Marsh tract are the two most northern parcels. The 1,390 acre Swan Island tract is the next tract to the south. The 388 acre Monkey Island tract, which includes several small islands in Currituck Sound, is located just north of a 50 acre tract owned by The Nature Conservancy. The County Marsh tract, which consists of two parcels totaling 54 acres, is located northwest of the Currituck Beach Lighthouse. The Swan Island and Monkey Island tracts run from the sound to the beach. The other tracts either are located in Currituck Sound or border it.

The Final Environmental Impact Statement developed when the refuge was proposed (U.S. Fish and Wildlife Service 1980) contains an excellent description of environmental features of the area. This document should be consulted if a detailed description of environmental features is needed.

The refuge occurs in Currituck County (population 18,190). The southern end of the city of Virginia Beach, Virginia (population 425,257) lies at the northern end of the refuge; the closest developed area of the city lies 18 miles north of the refuge; the center of the city lies 27 miles north of the refuge. The center of the city of Chesapeake, Virginia (population 199,184) lies 27 miles northwest of the refuge and the center of the city of Norfolk, Virginia (population 234,403) lies 31 miles northwest of the refuge. The refuge covers a total of 4,570 acres in fee title ownership and 3,931 acres in conservation easements. Its western boundary is Currituck Sound, eastern boundary is the Atlantic Ocean, northern boundary is the city of Virginia Beach, and southern boundary is Dare County, North Carolina. This region is part of the physiographic area known as the South Atlantic Coastal Plain and the Fish and Wildlife Service administrative ecosystem known as the Roanoke - Tar- Neuse - Cape Fear Ecosystem.

3.1.2 ESTABLISHMENT

The Migratory Bird Conservation Commission established the Currituck National Wildlife Refuge on August 2, 1983 by the authority of the Migratory Bird Conservation Act of 1929. The Service established the acquisition boundary of 15,880 acres in 1981.

3.1.3 ACQUISITION HISTORY

The Service acquired 1,770 acres in 1985 by fee simple purchase and 166 acres by conservation easement. Between 1985 and 2000, the refuge acquired 2,800 additional acres of fee simple purchase for a total of 4,570 acres. It has added 3,931 acres of conservation easements. The refuge purchased another 284 acres in 2003. Acquisition of additional lands to complete the refuge has been difficult based on increased property values and competition for limited acquisition dollars.

When the Service established the refuge, the function of acquired managed wetlands (moist soil units) and brackish marsh was the protection of additional habitat types for migratory waterfowl. Reevaluation has determined that those habitats are as important for marsh birds and neotropical migratory songbirds (in support of Partners in Flight) as they are for waterfowl habitat. The refuge's current acquisition boundary reflects the importance of protecting and managing the most valuable brackish marsh. Those properties are important links in protecting areas along Currituck Sound. To maintain the potential to protect these lands, the Service must have the ability and authority to manage and protect (through acquisition of fee title interest or conservation easements) the substantial habitat within current acquisition boundary. Acquisition of fee title interest in new lands would provide expanded public use opportunities if they are compatible; acquisition of conservation easements would not.

3.1.4 PURPOSES

The purpose of Currituck National Wildlife Refuge, as reflected in the legislation under which Congress authorized the refuge and the Service has acquired land, is to protect and conserve migratory birds, and other wildlife resources through the protection of wetlands, in accordance with the following laws:

...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds... 16 U.S.C. Sec. 664 (Migratory Bird Conservation Act of 1929);

...for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species... 16 U.S.C. Sec 460k-1 (Refuge Recreation Act of 1962)

The North American Waterfowl Management Plan's Atlantic Coast Joint Venture office, working through a collaborative effort with private, state, and federal agencies, has established certain habitat objectives for the physiographic area.

3.1.5 SPECIAL DESIGNATIONS

The North Carolina Natural Heritage Program has designated most of the refuge, with the exception of the moist soil management area, as a Significant Natural Heritage Area. The Nature Conservancy ranks certain vegetative communities as imperiled or rare.

The North Carolina Division of Water Quality has designated several water bodies in the vicinity of Currituck National Wildlife Refuge as outstanding resource waters or high quality waters.

The North Carolina Division of Marine Fisheries has designated several streams and water bodies within and off the borders of the refuge as anadromous fish spawning habitats.

3.1.6 ECOSYSTEM CONTEXT

Currituck National Wildlife Refuge lies within a physiographic region known as the South Atlantic Coastal Plain. The South Atlantic Coastal Plain was once a 25 million-hectare complex of forested wetlands and uplands, dunes, and marshes that extended from Florida to North Carolina. Historically, the extent and duration of seasonal flooding along the ecosystem's rivers fluctuated annually, recharging the South Atlantic Coastal Plain's aquatic systems and creating a rich diversity of dynamic habitats that supported a vast array of fish and wildlife resources.

3.2 Vegetation

The Currituck National Wildlife Refuge is a typical southeastern United States coastal barrier island system that has formed dunes, brackish marshes and forested swamps in the Coastal Plain region. Seabeach amaranth (*Amaranthus pumilus*) is the only plant species from the Federal Endangered Species List known to occur on the refuge. The National Wetlands Inventory described the refuge as an estuarine emergent herbaceous or palustrine, forested wetland with deciduous or broad-leaved deciduous vegetation and a water regime ranging from temporarily flooded to semi permanently flooded (Cowardin et al. 1979). Schafale and Weakley (1990) identify five natural communities within the refuge boundary they are: dune grass, maritime dry grassland, maritime shrub, brackish marsh, and maritime swamp forest. Other habitats have been altered or created by man. The national wetland inventory map delineates the refuge habitats vegetative communities on coastal barrier islands are spatially distributed in a pattern relative to the location of the ocean and sound.

The large number of plant species listed in Appendix IV is indicative of the diverse habitats on the refuge. Levy (1976) delineated 178 species representing 50 families and 132 genera in his study at Duck, North Carolina. Hosier and Cleary (1979) listed over 200 plant species but felt that intensive study would produce many more species. The vegetation communities present on the Banks include extensive dune systems, maritime grasslands, maritime shrub thickets, maritime forests, and vast brackish marshes.

Dune Grass and Maritime Dry Grassland. Dunes and grasslands occupy 137 acres and tend to occur in the eastern section of the refuge. The dunes immediately west of the beach are dominated by American beachgrass, bitter panicum, saltmeadow cordgrass, and

seaoats. The grasslands west of the dunes are dominated by saltmeadow cordgrass with goldenrod, Indian blanket, and many other forbs in areas eroded by winds.

The floral diversity and distribution on the North Carolina portions of the Currituck Banks is interesting and complex. The barrier beach system is located in a transition zone between northern and southern groups of plant species. The warm Gulf Stream waters turn offshore at Cape Hatteras and the Labrador Current moves southward along the Currituck Banks creating a zone where northern species have their southern limits and southern species have their northern limits. American beachgrass is near its natural southern limit while sea oats is considered to be at the northern limit of its range (Hosier and Cleary, 1979).

Both American beachgrass and seaoats develop extensive horizontal and vertical rhizomes that capture moisture from rainfall. These rhizomes further serve to bind sand and stabilize sand surfaces. Beach grass and sea oats are adapted to tolerate stresses such as salt spray, overwash, sand blast, and drought, all of which are characteristic of the foredune area (Seneca, Woodhouse and Broome, 1977). However, both species are extremely vulnerable to mechanical disturbance of the soils.

As the dunes are stabilized and conditions become more favorable, other species will invade the strand community. Sea rocket, evening primrose, seaside goldenrod, beach pea, sandspurs, daisy fleabane, and spurge are other common dune plants.

The width of the dunes varies along Currituck Banks. In those areas where artificial dunes have been built, the berm crest and back slope often no longer exist, or are severely eroded. Generally, those areas with natural berms are wide, gently sloping and frequently over washed by storm tides.

Maritime Dry Grassland. Two basic types of terrestrial grasslands cover the Currituck National Wildlife Refuge. They are interdunal depressions, and barrier flat grasslands. Interdunal depressions occur where sand is moved from the surface forming a blowout. Mesic conditions, a relatively diverse flora and often standing water, prevail in these areas. Barrier flat grasslands found on the overwash terraces comprise the other terrestrial grassland community.

Interdunal depressions occur between the fore and back dunes along seashore. The depressions are "generally bowl-to-saucer shaped with semi-circular-to-irregular perimeter" (Tyndall, 1977). Aeolian sand transport and oceanic overwash are the generative forces in the formation of these depressions. The depth varies from just below to several feet above the water table. Floral development is in response to the erosion of these depressions to, or below the water table. Some depressions possess standing water for varying amounts of the year.

A high diversity of plant species occurs in these depressions. At False Cape State Park and Back Bay National Wildlife Refuge, both in Virginia, 129 species of plants were surveyed (Tyndall, 1977). Distribution and succession of these species are controlled by

several abiotic and biotic factors including soil moisture, interspecific competition, salt spray, migratory waterfowl activity, and feral hog disturbance (Tyndall, 1977).

Dominant species in these depressions include salt meadow cordgrass, black needlerush, chair-maker's rush, and broom sedge. Other common herbaceous species include *Centella asiatica*, water pennywort, aster, and water purslane.

Species on the perimeter of these depressions include groundsel tree, wax myrtle, bayberry, black cherry, and live oak.

Availability of fresh water, diversity of seed producing and food plants, as well as vegetative cover provide habitat for many species of wildlife. Hosier and Cleary (1979) believe that these depressions act as "reservoirs of genetic systems which, as conditions on the islands change, serve as a source of new species for colonizing the new environments."

The barrier flats begin on the backside of the beach berm and cover the flat overwash terraces. Salt spray and overwash developed and maintains this community. It is common in areas where dunes are low and have not been stabilized. The vegetation of this zone is adapted to withstand frequent storm tide inundation and sand burial. Dominant species consist of grasses, sedges and some forbs. Species diversity on the flats adjacent to the beach berm is low. It is composed of salt meadow cordgrass, seaside goldenrod, and sea rocket. In an area where overwash is less frequent, diversity and cover are greater. In addition to the above-mentioned species are marsh fleabane, sandspurs, seapink, and ladies tresses. Godfrey and Godfrey (1976) described similar terraces on Cape Lookout National Seashore as having greater than 50% cover and a standing crop of up to 1500 grams per square per year.

Dune buildup has occurred in several overwash passes and shrubs have invaded the terrace areas. Sea elder, wax myrtle, groundsel tree are common species.

Shrubs occupy 778 acres and tend to occur in the central part of the refuge between the dunes and the marshes. The maritime shrub occur the length of the refuge on areas that are naturally or artificially protected from oceanic influence. The buffering action provided by the fore and mid dunes is essential for the establishment of this arborescent zone. Where salt spray effects are the greatest, these species form low spreading cover with many areas of maritime grassland in between. Away from the ocean, in shrub-dominated area, the growth pattern is low and dense forming a closed canopy.

This community is dominated by wax myrtle, yaupon holly, American holly, groundsel tree, eastern red cedar, and stunted live oak. The understory of greenbrier, Virginia creeper, grape, poison ivy, and American beautyberry contributes substantially to its habitat value. The shrubs are sculpted by salt spray and susceptible to wild fires that can temporarily return the area to an herbaceous stage of succession.

Cleared edges, roadways, and right-of-way have been invaded by shrub thicket stands. This pattern possesses large areas of "edge space," a habitat that many wildlife species prefer.

Brackish marshes occupy 2,202 acres and tend to occur on the poorly drained peat soils in the western section of the refuge. Tidal flooding is rare and usually less than one foot. Tides are generally wind driven with water levels dependent upon wind velocity and direction. Marsh salinity is a function of the salinity of the overlying water, (which varies between 2% and 20%), the relative frequency and duration of inundation caused by oceanic overwash, periodic wind flooding waters, and the rate of flushing through the Currituck Sound (Odum et al. 1974). These wetlands are classified as slightly to moderately estuarine intertidal areas that irregularly flood and support persistent emergent vegetation (Cowardin et al., 1979).

The Northwest and North Landing Rivers and Back Bay that have high levels of dissolved oxygen, nutrients, and detritus material feed Currituck Sound. Coupled with the suspended materials from periodic oceanic overwash, the marsh substrate provides a nutrient rich area for plants.

These marshes are both physically and biologically important. The marshes of the Sound act as buffer strips, protecting the Outer Banks from erosion by waves on the sound side. Without the marshes the western shore of the Outer Banks would receive the full brunt of the waves. If not protected the slope of the Barrier Island western shore would cause the expenditure of the energy contained in the waves over a smaller area. The higher the energy received in an area, the higher the likelihood of erosion. The nearly flat plains of the marshes allow for large areas of dissipation. Biologically the marshes serve as important nesting and migrating grounds for numerous animal species at all trophic levels. The vegetation allows for good forage and cover.

The marshes are dominated by black needle rush and saltmeadow cordgrass with big cordgrass and seashore saltgrass in substantial quantities. With frequent fires, the black needle rush is suppressed and the other grasses dominate.

The black needlerush occurs just above mean high tide in relatively pure stands. Other species found with the needlerush include big cordgrass. The net primary productivity for needlerush marshes in Dare County averages 478 grams per square meter per year (Stiven and Plotecia, 1976). This amount of dead or decaying marsh vegetation is contributed to the open estuary where it is utilized directly by consumer organisms, including important fish and shellfish. While this figure is less than the productivity of the smooth cordgrass marshes of Dare County, it is still important to the ecosystem.

The northern marshes exhibit a more heterogeneous composite of species including cattails, arrowheads, seashore mallow, smartweeds, Olney three square, salt grass, chair-maker's rush, and black needlerush. No primary productivity data were available for this area; however, based on related studies, productivity is assumed to be greater than the monotypic black needlerush stands.

The forest consists of approximately 637 acres and tends to occur in the central part of the refuge between the dunes and marshes. Bellis and Proffitt (1976) defined the maritime forest community of North Carolina as "all forested areas occurring in relict sand dunes either on the Outer Banks or immediately adjacent to a permanently salty sound." The maritime forest of the refuge is generally located on the back dunes of the barrier beach system in areas not directly influenced by storm-tide flooding and migrating dune systems.

The forest is dominated by swamp black gum, red maple, sweetgum, white ash, loblolly pine, baldcypress, and water oak. It usually has a dense understory of wax myrtle, American hornbeam, swamp red bay, stiff dogwood, and other shrubs. There is usually not a notable herbaceous understory.

Forests that are close to the ocean are low, generally less than 20 feet, and they exhibit dense lateral branching. This lack of apical dominance is caused by wind and salt spray. Dominant species include live oak, red cedar, and laurel oak. Understory shrub species include American holly, black cherry, poison ivy, Virginia creeper, and grape.

Forests that are further away from the ocean are taller (20 to 40 feet) and exhibit a more open canopy that is structurally more diverse. Loblolly pine is a dominant member in this community along with live oak and American holly. Yaupon holly, hudsonia, greenbrier, and grape are common understory species.

Bellis and Proffitt (1976) found that the primary value of the maritime forest is that it helps reduce erosion caused by storm surge and wave action. Other benefits of the forest include: protection of loose sandy soils from wind erosion, accumulation and storage of freshwater, mineral iron filtration, production of soil by trapping blowing sand, deposition of humus, and wildlife habitat.

3.3 Wildlife Resources

Native wildlife which use the area on a year-round or seasonal basis include the following groups; species listed under The Endangered Species Act, migratory birds, resident mammals including game and non-game, shorebirds and waterbirds, reptiles, and amphibians.

Species listed under The Endangered Species Act which may occur or have been documented include; piping plover, seabeach amaranth, loggerhead sea turtle, and the bald eagle. Loggerhead sea turtles have nested on the beach either immediately adjacent to or in the vicinity of both tracts bordering the beach (i.e., Swan Island and Monkey Island). Piping plovers have also nested on the Swan Island tract. In addition, seabeach amaranth has been found on this tract. Bald eagles use the area on occasion and may be seen flying between locations.

Waterfowl use of the refuge is primarily in the emergent marshes of Currituck Sound. The flats, and to a lesser degree the interdunal depressions, provide important resting and feeding areas to waterfowl in the late fall and winter when water is present.

Shrub thickets provide important wintering habitat for songbirds. These thickets also provide important resting and feeding habitat for songbirds during spring and fall migration.

A wide variety of shorebirds use the beach tidal zone for feeding during spring and fall migration periods. These shorebirds also use mudflats on the sound side when tidal conditions permit. Egrets and herons use the beach tidal zone, interdunal depressions, and emergent marsh ponds and creeks for feeding during spring, summer, and fall.

Resident mammals include white-tailed deer, red fox, gray squirrel, cottontail and marsh rabbit, otter, muskrat, and nutria. A wide variety of snakes, turtles, and frogs use the beach dunes, interdunal depressions, shrub thicket, maritime forest, and, emergent marshes.

Birds. The Outer Banks exhibits a great diversity and distribution of birds. This is due to many factors including the location of this area within the Atlantic Flyway and along the Gulf Stream.

Observations of raptors during fall migrations indicate that large numbers follow the Outer Banks, notably accipiters and falcons (Lee and Lee, 1978; Ward, 1979). Many other species such as migrant warblers, shorebirds, gulls, terns, herons, and egrets use the Outer Banks as a migration corridor during spring and fall migrations. Currituck Sound and the barrier beach system are important wintering grounds for 23 species of waterfowl, as well as numerous other avian species. Additionally, offshore winds and hurricanes undoubtedly bring transient species to the barrier beach system.

Located in the transition zone between northern and southern groups, the refuge is the northern distribution limits for many southeastern Coastal Plain species. Additionally, species that are common to the mainland (indigo bunting, bobwhite) as well as those common to the barrier beach system (osprey, barn swallow) are represented on the refuge.

The variety of plant communities found on the refuge also contributes to the diversity and distribution of bird life. As vegetative complexity and mass increase so do available habitats. The forest/shrub thicket communities support the majority of species on Currituck National Wildlife Refuge. This is due in part to the layering effect of understory, woody vine, and shrub and forest vegetation.

The threatened bald eagle has nested on the Currituck National Wildlife Refuge across the Currituck Sound for the past seven years. Several species listed as high priority by the U.S. Fish and Wildlife Service and/or listed by the State as rare and of special concern include the prairie warbler, hooded warbler, black-throated green warbler,

yellow-throated warbler, prothonotary warbler, northern parula, sharp-tailed sparrow, northern bobwhite, king rail, solitary sandpiper, semipalmated sandpiper, black tern, American black duck, American woodcock, short-eared owl, and American kestrel to name a few. The endangered red-cockaded woodpecker has been seen on rare occasion, and the most recent sighting was more than 20 years ago. At least 182 species of birds, including 55 breeding species (16 migratory and 39 resident) utilize the refuge.

Wintering and migrating waterfowl make extensive use of the refuge's wetlands and the water bodies surrounding the refuge. Factors that affect waterfowl distribution and population in Currituck Sound include overall Flyway population, food availability, waterfowl disturbance, and local land use trends (Sincock, et al., 1965). Aquatic plant production affects the persistence of wintering waterfowl in an area. The major change in aquatic plant production in Currituck Sound has been the growth of Eurasian water milfoil. Florshutz (1972) reported the use of milfoil as a food source by twelve species of waterfowl, most notably scaup, gadwall, and widgeon. A comprehensive survey of aquatic vegetation in Currituck Sound is now underway. Growth of submerged vegetation, once felt to be sufficient for waterfowl populations utilizing the Sound (Florshutz, 1979), is now thought to be declining.

Disturbances that affect waterfowl distribution can take many forms including boat activity and hunting. Currituck Sound has 737 licensed waterfowl blinds, the majority being blinds on platforms over the water (Snowden, 1979).

Land use trends in surrounding areas have influenced the use of the Sound by waterfowl. The availability of corn and winter wheat is important to field feeders such as mallard and black duck as well as Canada and snow geese. Sincock forecasted the effects of changes in agricultural practices and conversion of farmland to other uses on waterfowl use on Currituck Sound (Sincock, et. al., 1965). The refuge provides an area managed for moist soil vegetation that provides food and rest areas.

The Fish and Wildlife Service has identified areas that are of importance to wintering waterfowl in general and wintering black ducks in particular. In both the Black Duck Coastal Wintering Habitat Concept Plan and the Wintering Duck Concept Plan, the Service identified Currituck Sound as a habitat warranting preservation for waterfowl (U.S. fish and Wildlife Service 1975 and 1979).

Principle species include the snow goose, tundra swan, mallard, wood duck, American black duck, and American widgeon, blue-winged teal, green-winged teal, ruddy duck, and northern pintail. The marshes surrounding Currituck Sound, Back Bay, and Knotts Island Bay provides habitat for a substantial portion of the duck species in North Carolina.

3.4 Threatened and Endangered Species

Threatened and endangered animals on the refuge include six federally listed species and 63 species recognized by either the State of North Carolina or the State Museum of

Natural History, both of which have published lists. Only the seven on the Federal and State lists have the benefit of legal protection and regulation. The refuge will give state-listed species emphasis in planning and management actions.

After an absence of many years, the threatened bald eagle recently returned to nest on the Currituck National Wildlife Refuge across the sound from the Currituck National Wildlife Refuge. There have been numerous incidental sightings of non-nesting bald eagles in Currituck County.

The Federally listed piping plover occurs in Currituck County. The last documented sighting was in 2001 when a refuge staff member observed a single plover foraging. In 1999, volunteers conducted transects on eight occasions and observed at least one plover foraging each time. They observed as many as 13 plovers foraging on one occasion. Disturbance from unrestricted vehicular traffic on the beach discourages nesting. Plover nesting also suffers from the absence of washover habitat between and in back of the dunes.

There are records of the occurrence of the endangered red-cockaded woodpecker in the county from more than 20 years ago. However there are no records on what are now Currituck NWR lands or within the approved acquisition boundary.

The only Federally listed reptiles listed for Currituck County are the threatened loggerhead sea turtle and endangered leatherback sea turtle. There are records of loggerheads within the past 20 years; there was a stranded leatherback in the county in 1979. The last record of loggerhead nesting was in 1998 when eggs were laid in a nest 3.5 miles south of the North Carolina – Virginia state line. Biologists relocated the nest of 118 eggs from its original location below the high tide elevation to a location above the high tide elevation. Forty-five (38%) eggs hatched.

The turtles, inhabitants of the open ocean, nest just above high water on the open beaches. Mating takes place in the water near nesting beaches. The turtles lay eggs from April to early October though most often through August. Eggs are subject to predation from a variety of creatures including hogs, dogs, crabs, raccoons, and humans. Disturbance from unrestricted vehicular traffic on the beach discourages nesting.

There have been incidental reports of endangered West Indian manatees in the county within the last twenty years. The county is well north of its normal range.

3.5 Other Animal Associations

3.5.1 Unique Animal Associations

Various State agencies and research biologists have identified numerous unique animal associations along the barrier beach system. Following are brief descriptions of these associations that have not been covered in other sections.

Investigators have pinpointed several heron rookeries along the Currituck Sound. These colonies indicate that the area is an important breeding territory for wading birds. The colonies also reflect the health of the estuarine system. Osborne and Custer (1978) found that wading birds and their allies are a terminal link in many aquatic food chains and may be used to reflect changes in the ecosystem. The largest colony in Currituck Sound is located on Monkey Island that is within the study area. Five species, totaling 935 adults are reported nesting on Monkey Island. Great blue herons, great egrets, glossy ibis, tricolored herons, and snowy egrets inhabit the island. Several other heron rookeries have been located in Currituck Sound and Back Bay (Osborne and Custer, 1978).

Several investigators have identified the osprey (*Pandion haliaetus*) as meriting special concern (Cooper et al., 1977). During the 1950's and 1960's the species suffered considerable losses in the North Carolina and Virginia area due to organochlorine pesticide contamination. The residues produced eggs with thin shells that were easily broken during incubation causing severe reproductive losses (Cooper et al., 1977). The population in Currituck Sound and Back Bay has since stabilized and is thought to be increasing. The osprey nest on channel markers, manmade platforms and in trees, and is reasonably tolerant of man.

The peregrine falcon is a species that migrates through the area during the spring and fall of the year. During migration, the peregrine falcon forages along the beaches and newly over washed areas of the Banks. Seegar (1979) considers the uninhabited beachfront and wash flats critical in the migratory habits of the peregrine falcon. Modification of these habitats may have a profound effect on the migratory ecology of the species.

Systematic monitoring along the Currituck Banks reported 138 individual sightings over a 28-day period during the 1979 fall migration (Nichols, 1979).

Thirty-one observations were made along False Cape State Park, Virginia while 107 were made in North Carolina. These falcons continue to migrate south following the Outer Banks migration corridor.

3.5.2 Feral Populations

Currituck National Wildlife Refuge supports a feral hog and feral horse population. No population estimates were available for the hogs. In the past, hogs were released in the area that is now False Cape State Park in the fall for grazing and collected in the spring. Collection of the hogs was incomplete resulting in the present feral population (Tyndall 1977).

Feral horses of uncertain origin inhabit the refuge. Some residents and others believe that these horses have origins that date back to Spanish origins and indicate that these horses may have existed here for over 400 years. Other sources indicate that these horses were brought to the island to avoid mainland taxes and to provide summer grazing. Investigation of the genetics of the horses to determine the origin of the horses has been

inconclusive. Currituck County has passed an ordinance to protect the horses. They have also developed a group that advises the County Commissioners on matters relating to the maintenance of the wild horse herd. The Wild Horse Advisory Board is composed of two citizen representatives and representatives from the Corolla Wild Horse Fund, the U.S. Fish and Wildlife Service, and the National Estuarine Research Reserve. The approved Currituck Banks Wild Horse Management Plan calls for the population of the horses to be maintained of no more than sixty individuals. As funding becomes available, the Service will study the effects of the horses on refuge lands and incorporate recommendations based on the studies into the Currituck Wild Horse Management Plan.

Historically, grazing animals were left to forage wherever food was available; most of these animals fed in the marshes and dunes as the forests were not particularly conducive to grazing. The result of this grazing was the reduction of vegetation, encouraging the formation of sand sheets and sand hills, destabilizing much of Currituck Banks (Hennigar, 1979)

Evidence of grazing exists south of Carova Beach where a large area is devoid of vegetation. The hog population has had a regressive successional effect on vegetation in the interdunal depressions (Tyndall, 1977)

3.6 Cultural Resources

The body of federal historic preservation laws has grown dramatically since the enactment of the Antiquities Act of 1906. Several themes recur in these laws, their promulgating regulations, and more recent Executive Orders. They include: 1) each agency is to systematically inventory the "historic properties" on their holdings and to scientifically assess each property's eligibility for the National Register of Historic Places; 2) federal agencies are to consider the impacts to cultural resources during the agencies' management activities and seek to avoid or mitigate adverse impacts; 3) the protection of cultural resources from looting and vandalism are to be accomplished through a mix of informed management, law enforcement efforts, and public education; and 4) the increasing role of consultation with groups, such as Native American tribes, in addressing how a project or management activity may impact specific archaeological sites and landscapes deemed important to those groups. The U.S. Fish and Wildlife Service, like other federal agencies, are legally mandated to inventory, assess, and protect cultural resources located on those lands that the agency owns, manages, or controls. The Service's cultural resource policy is delineated in 614 FW 1-5 and 126 FW 1-3. In the Service's Southeast Region, the cultural resource review and compliance process is initiated by contacting the Regional Historic Preservation Officer/Regional Archaeologist (RHPO/RA). The RHPO/RA will determine whether the proposed undertaking has the potential to impact cultural resources, identify the "area of potential effect," determine the appropriate level of scientific investigation necessary to ensure legal compliance, and initiates consultation with the pertinent State Historic Preservation Office (SHPO) and federally recognized Tribes.

There are three documented sites on the refuge located on Monkey Island. One site is a hunt club clubhouse that is falling down and is on an eroding island in Currituck Sound. The Fish and Wildlife Service regional cultural resources officer has examined the site and determined that structure cannot be saved. There have been two oyster shell midden sites documented that were dated as being from between 50 and 1600 A.D. Ceramics have also been found on the island. There is also a wide-spread story alluding to a burial site on the island, but the refuge has no specific information to help determine the validity or even the exact location of the site.

3.7 Socio Economic

Currituck County is in the northeastern corner of North Carolina with the Atlantic Ocean to the east, Dare County, North Carolina to the south, Camden County, North Carolina to the west, and the city of Virginia Beach, Virginia to the north. The county is split into east and west segments by the Currituck Sound. The only bridge over the sound is in the southern part of mainland Currituck County that connects to northern Dare County on the Outer Banks, the barrier island next to the ocean. The southern tip of the Currituck National Wildlife Refuge is twenty miles north of that bridge. Knotts Island, where the Currituck National Wildlife Refuge is located, is only accessible from the Currituck National Wildlife Refuge by traveling from mainland Currituck County through the cities of Chesapeake and Virginia Beach, Virginia or by ferry. A ferry connects the town of Currituck, North Carolina, to Knotts Island.

Despite the difficulty of traveling, Currituck County has experienced a great amount of growth in the last thirty years due to its proximity to the city of Virginia Beach and the ocean. Unemployment and poverty rates are much lower than the state average.

Currituck County is still predominantly rural, with the largest town and county seat being Currituck (2000 population: 18,190). Like other rural areas throughout the country, outdoor activities are both popular and necessary. Hunting and recreational fishing are popular pastimes and farming, commercial fishing, and forestry are important elements of the economy.

Chapter 4 Environmental Consequences

This section addresses the anticipated environmental, social, economic, and cultural consequences of the alternatives. The alternatives are not expected to vary widely in their effects on these resources. This is because the number of blinds added to the refuge, and, therefore, the amount of additional hunting in the area, is not expected to be high under any alternative due to Service and County Game Commission mandates. The exact number of blinds the refuge could currently support under these mandates is unknown, but is unlikely to be more than ten. This must be kept in mind when comparing effects among the alternatives.

4.1.1 Alternative A: No Action Alternative

This alternative will not permit hunting, one of the six priority public uses encouraged by HR 1420. Waterfowl hunting in Currituck Sound in Currituck County will continue to be limited to those with a blind license or the ability to pay a guide to hunt due to current requirements of the Currituck County Game Commission Laws. Income for businesses which cater to waterfowl hunters would be lowest of the three alternatives being considered.

Littering, potential for wildfires, trespass problems, and law enforcement efforts are expected to be least of the three alternatives. The abundance and distribution of waterfowl on the refuge will not change due to hunting since hunting is not permitted under this alternative. No wetlands impacts nor disturbance to wildlife will result from implementation of this alternative. No cumulatively significant impacts on the environment will occur.

Currituck NWR lands on Currituck Sound all supported active blind licenses before acquisition. These regulated blind locations have served to preclude additional blind placement in adjacent navigable waters. Under this alternative and current Currituck County Game Commission rules which require all licensed blinds to be hunted, the existing blinds on the refuge would not remain licensed. This would open these areas to private float blinds and bush blinds that can be located within navigable waters. Although this alternative would eliminate a public hunt conducted by the refuge, it is possible that under this alternative more hunting activity and hunting pressure would be placed on interior waterways that are commonly interspersed throughout the lands of Currituck NWR.

4.1.2 Alternative B: Waterfowl Hunt- Special Regulations (Preferred alternative)

This alternative will permit one of the six priority public uses encouraged by HR 1420 (i.e., hunting) to occur on Currituck NWR. Waterfowl hunting would be limited to 40% of the refuge at any given time. In addition, there would be days when no waterfowl hunting would be permitted during the hunting season. Potential for conflicts between user groups will not occur due to the area being closed to other public access during the migratory waterfowl season (October 15 to March 15).

The special regulations required by this alternative will result in a quality recreational experience. Hunters will know in advance which days and blinds they are able to hunt. This will reduce the chance that hunters will approach an occupied blind. Locating the blinds in sites that are relatively easy to find will reduce the likelihood that hunters will get lost and either use the wrong blind or travel past an occupied site while trying to find their blind.

Alternative B will provide hunters who do not currently have a blind license in Currituck County another opportunity to hunt waterfowl. The best chance for these hunters

currently is to pay a guide to hunt because no other public hunting opportunities are available in this part of the sound in North Carolina. The opportunity for these hunters to obtain their own blind licenses is very limited under Currituck County Game Commission Laws. Guides will not be adversely affected by this alternative. Overall, the number of parties requiring guides is likely to increase because more hunters will be attracted to the area. Hunters that traditionally have used guides are unlikely to stop. This is especially true of those from other parts of North Carolina or other states because they are generally unfamiliar with the area. Those few who stopped using guides would be replaced by others requiring guides expertise in locating blinds on the refuge.

This alternative provides greater opportunity for additional income for other area businesses that cater to waterfowl hunters. The additional revenues brought into the County depends on many factors, including for example the total number of blinds eventually added to the refuge, the number of hunters attracted to the County from other areas, and how long they stay.

Those portions of the refuge which will be open to waterfowl hunting under this proposal were historically hunted using general state and county regulations. Whether all of the hunting pressure permitted by these regulations was exerted on a particular tract varied. Based on comments made during scoping meetings, especially for Currituck Marsh, it is likely that this alternative will result in similar or less hunting pressure than in the recent past. Thus, no cumulatively significant impacts on the waterfowl resource will occur. No significant cumulative effects to other resources is expected.

Many factors affect the number of waterfowl that use the refuge during the fall and winter months (e.g., habitat condition on and off the refuge, weather, and breeding success on the nesting grounds). Assuming all other factors are equal, the hunting proposed under alternative B will result in fewer waterfowl on the refuge than the No Action Alternative due to hunting mortality. However, waterfowl mortality will be limited due to the small number of blinds involved and the special regulations that limit the amount of hunting (e.g., the number of days and hours per day the blinds will be hunted is limited). Waterfowl mortality is expected to be similar or less than in the past, since hunting pressure will be similar or less (See above paragraph). Waterfowl populations are managed at the flyway level by the Service and the States. From a flyway perspective, the effect of the proposed hunting on waterfowl populations will be insignificant. The Service will continue to monitor number of waterfowl on the refuge via aerial surveys.

Since many factors affect actual number of birds using the refuge, probably more important is whether waterfowl will continue to use the hunted portion of the refuge. Under this alternative, waterfowl will continue feeding and roosting in the areas of the blinds during those times when hunting will not be permitted (i.e., after hunting hours or between hunt days). In addition, blinds will be situated in a manner that will permit waterfowl to feed and rest between or among blinds during hunting. Having fewer blinds than Alternative C will make this possible.

Refuge law enforcement activities are expected to increase under this alternative. Littering and potential for wildfires may increase due to the increase in people on the refuge. Although not expected initially, since blind sites in the Currituck Marsh are unlikely to be located close to other properties, trespass problems on adjacent lands may increase slightly.

Minimal impacts to wetlands will result from blind construction and increased activity in these areas (e.g., hunters walking in the marsh to retrieve birds). The Army Corps of Engineers does not require a permit for the typical style waterfowl blind that the Service plans to use in the marsh. A slight increase in disturbance to non-target wildlife is expected.

4.1.3 Alternative C: Waterfowl Hunt- General State and County Regulations

Like alternative B, this alternative will also permit one of the six priority public uses encouraged by HR 1420 (i.e., hunting) to occur on Currituck NWR. As with alternative B, waterfowl hunting will be limited to less than 40% of the refuge at any given time. Potential for conflicts between user groups will not occur due to the area being closed to other public access during the migratory waterfowl season (October 15 to March 15).

Alternative C, like alternative B, will provide hunters who do not currently have a blind license in Currituck County another opportunity to hunt waterfowl. Overall, the number of parties requiring guides and the additional revenues for other area businesses that cater to waterfowl hunters are likely to be highest under this alternative because more hunters will be attracted to the area.

No cumulatively significant impacts to the waterfowl population of the Atlantic Flyway are expected as a result of this alternative. It is unclear whether these types of impacts to the local waterfowl population will occur. Those portions of the refuge which will be open to waterfowl hunting under this alternative were historically hunted using general state and county regulations. All blinds on this tract may be hunted if this alternative is initiated. Of the three alternatives, this one has the greatest possibility of reducing waterfowl numbers on the refuge due to the more liberal hunting regulations (i.e., more blinds, hunt days, and hours available for hunting). Hunting mortality will likely be highest and, more important perhaps, waterfowl may stop using the hunted portion of the refuge during much or all of the waterfowl hunting season due to increased hunting pressure. No significant cumulative effects to other resources are expected.

Littering, potential for wildfires, trespass problems on adjacent lands, and refuge law enforcement activities are expected to be greatest under this alternative due to the increase in human activity in the area. Greater disturbance to non-target wildlife is also expected. However, like alternative B, impacts to wetlands will be minimal.

4.1.4 Conclusions

The beneficial and adverse effects of the three alternatives are noted above. No significant effects on the human environment are likely to result from alternatives A and B. Although alternative C will not affect the flyway waterfowl population significantly, it could restrict waterfowl use of the hunted portion of the refuge due to the increased number of blinds and the liberal hunting times.

4.2 Effects Common to all Alternatives

None of the alternatives is expected to have any adverse effects on ecologically critical areas, historic/cultural/archaeological resources, farmlands, floodplains, National Wild and Scenic Rivers, air quality, fisheries resources, public health and safety, and water quality, including drinking water. No land use changes are expected. No hazardous wastes will be generated, transported, treated, stored, or disposed of as a result of the implementation of any of the alternatives. A Section 7 endangered species evaluation resulted in a "not likely to adversely affect" conclusion for the proposed alternative. Waterfowl hunting currently occurs on other National Wildlife Refuges. Thus, the alternatives will not present unknown or unique environmental risks. Any additional hunting on the refuge (e.g., deer hunting) proposed in the future will have to be assessed for its effects on resources. Thus, the alternatives proposing hunting do not establish a precedent for future actions which will have significant effects on resources. None of the alternatives will lead to a violation of federal, state, or local environmental laws. The effects of the alternatives on the quality of the human environment are not likely to be highly controversial.

4.2.1 Public Health and Safety

Each alternative would have similar effects or minimal to negligible effects on human health and safety. Under Alternative A, interior navigable waters would still have boating and other activities that would constitute a similar effect to the other alternatives. There is a potential for impacts to hunters related to activities proposed in Alternatives B and C. There is the potential for boating accidents, hypothermia, and even firearms incidents related to alternatives B and C. However, these potential concerns are no greater than found on hunting activities located off refuge lands. Efforts to insure public safety are taken with specific guidance provided to hunting locations and a required check in process under Alternative B. If refuge blinds were not in place it is likely that the area would have new blinds located in navigable waters and licensed under the authority of the Currituck County Game Commission.

4.2.2 Cultural Resources

There are no known cultural resources that would be impacted by any of the proposed alternatives. The effects of the implementation of any of the proposed alternatives would therefore be similar. However, as part of this decision process the Service has contacted the North Carolina State Historic Preservation officer for a detailed review.

4.2.3 Impacts to Refuge Facilities (roads, trails, parking lots, levees)

The Service defines facilities as: "Real property that serves a particular function(s) such as buildings, roads, utilities, water control structures, raceways, etc." Under the proposed action, no real property exists in the hunt area; therefore, there is no impact to refuge facilities, roads and trails as a result of the proposed action. The hunt area is comprised of only natural marsh. The facilities most utilized by hunters are: roads, parking lots, trails and boat launching ramps that are located on State or private property. Maintenance or improvement of duck hunt blinds will cause minimal short term impacts to localized soils and waters and may cause some wildlife disturbances and damage to vegetation. In addition, the maintenance and improvement of duck hunt blinds are periodically conducted to accommodate daily refuge management operations and general public uses such as wildlife observation and photography. These activities will be conducted at times (seasonal and/or daily) to cause the least amount of disturbance to wildlife. Access these areas will be on foot to minimize soil erosion, and all disturbed sites will be restored to as natural a condition as possible.

Alternative A would require no facilities and therefore would have no effect on refuge facilities at all. Alternatives B and C would also have no effect to facilities. Access to the boat ramp is along maintained public roads. The boat launch is maintained by the North Carolina Resource Commission. Access to the blinds is through public navigable waters. The only structures related to Alternatives B and C are the maintained hunting blinds which do not constitute real property.

4.3 Summary of Effects of the Proposed Action & Cumulative Effects Analysis

This section describes the effects of the implementation of the alternatives. The analysis has attempted to get an understanding of all impacts related to the proposed decision. An effort has been made to assess the cumulative impacts of the proposed action.

4.3.1 Impacts to Habitat

There is a slight difference between the no action alternative and Alternatives B and C. No Action impact to the habitat and either alternative that supports hunting. Under this alternative no blind bushing would be required so the materials such as pine buses and cordgrass would not be needed. This would save about one acre that is impacted by vegetation removal operations. However, the area targeted for materials are usually areas that would be mowed for structural fire protection or boundary eminence so actual loss of vegetation is negligible. Under this alternative there is the potential for reduced submerged aquatic vegetation impacts related to boat traffic. Prop scarring of bottomlands is a factor in reduced aquatic vegetation in some locations. However, the Service does not regulate interior navigable waterways and it would be likely that these areas would be available to private blind licenses and that subsequent impacts would be similar.

The effects to the habitat under Alternatives B and C would be similar. There would be some impacts to vegetation related to camouflaging proposed blinds. There would also be some increased turbidity related to hunters walking to blinds and placing decoys at the

hunt sites. Under Alternative B there would be a reduced impact to habitats associated with reduced hunt periods, namely two days per week versus six days per week under Alternative C. Both alternatives share a potential for impacts to submerged vegetation. However, Alternative B would constitute a reduced potential for these impacts related to the number of hunt days per year.

4.3.2 Impacts to Migratory Species

The U.S. Fish and Wildlife Service, working with partners, annually prescribe frameworks, or outer limits, for dates and times when hunting may occur and the number of birds that may be taken and possessed. These frameworks are necessary to allow State selections of season and limits for recreation and sustenance; aid Federal, State, and tribal governments in the management of migratory game birds; and permit harvests at levels compatible with population status and habitat conditions. Because the Migratory Bird Treaty Act stipulates that all hunting seasons for migratory game birds are closed unless specifically opened by the Secretary of the Interior, the Service annually promulgates regulations (50 CFR Part 20) establishing the frameworks from which States may select season dates, bag limits, shooting hours, and other options for the each migratory bird hunting season. The frameworks are essentially permissive in that hunting of migratory birds would not be permitted without them. Thus, in effect, Federal annual regulations both allow and limit the hunting of migratory birds.

Migratory game birds are those bird species so designated in conventions between the United States and several foreign nations for the protection and management of these birds. Under the Migratory Bird Treaty Act (16 U.S.C. 703-712), the Secretary of the Interior is authorized to determine when "hunting, taking, capture, killing, possession, sale, purchase, shipment, transportation, carriage, or export of any ... bird, or any part, nest, or egg" of migratory game birds can take place, and to adopt regulations for this purpose. These regulations are written after giving due regard to "the zones of temperature and to the distribution, abundance, economic value, breeding habits, and times and lines of migratory flight of such birds, and are updated annually (16 U.S.C. 704(a)). This responsibility has been delegated to the U.S. Fish and Wildlife Service as the lead federal agency for managing and conserving migratory birds in the United States. Acknowledging regional differences in hunting conditions, the Service has administratively divided the nation into four Flyways for the primary purpose of managing migratory game birds. Each Flyway (Atlantic, Mississippi, Central, and Pacific) has a Flyway Council, a formal organization generally composed of one member from each State and Province in that Flyway. Currituck National Wildlife Refuge is located within the Atlantic Flyway.

The process for adopting migratory game bird hunting regulations, located in 50 CFR Part 20, is constrained by three primary factors. Legal and administrative considerations dictate how long the rule making process will last. Most importantly, however, the biological cycle of migratory game birds controls the timing of data-gathering activities and thus the dates on which these results are available for consideration and deliberation. The process of adopting migratory game bird hunting regulations includes two separate regulations-development schedules, based on "early" and "late" hunting season

regulations. Early hunting seasons pertain to all migratory game bird species in Alaska, Hawaii, Puerto Rico, and the Virgin Islands; migratory game birds other than waterfowl (e.g. dove, woodcock, etc.); and special early waterfowl seasons, such as teal or resident Canada geese. Early hunting seasons generally begin prior to October 1. Late hunting seasons generally start on or after October 1 and include most waterfowl season not already established. There are basically no differences in the processes for establishing either early or late hunting seasons. For each cycle, Service biologists and others gather, analyze, and interpret biological survey data and provide this information to all those involved in the process through a series of published status reports and presentations to Flyway Councils and other interested parties (USFWS 2006).

Under the proposed action, Currituck NWR estimates a maximum harvest of 100-300 ducks and 10 tundra swans would be harvested each year. This level of harvest represents 0.001% and 0.004%, respectively of North Carolina's four-year average harvest for these species (USFWS 2005). Expansion of waterfowl hunting on Currituck NWR should not have cumulative impacts on waterfowl populations.

Because the Service is required to take abundance of migratory birds and other factors in to consideration, the Service undertakes a number of surveys throughout the year in conjunction with the Canadian Wildlife Service, State and Provincial wildlife-management agencies, and others. To determine the appropriate frameworks for each species, the Service considers factors such as population size and trend, geographical distribution, annual breeding effort, the condition of breeding and wintering habitat, the number of hunters, and the anticipated harvest. After frameworks are established for season lengths, bag limits, and areas for migratory game bird hunting, migratory game bird management becomes a cooperative effort of State and Federal Governments. After Service establishment of final frameworks for hunting seasons, the States may select season dates, bag limits, and other regulatory options for the hunting seasons. States may always be more conservative in their selections than the Federal frameworks but never more liberal. Season dates and bag limits for National Wildlife Refuges open to hunting are never longer or larger than the State regulations. In fact, based upon the findings of an environmental assessment developed when a National Wildlife Refuge opens a new hunting activity, season dates and bag limits may be more restrictive than the State allows. At Currituck NWR, the number of allowable hunt days is more restrictive for waterfowl than the State allows.

There are cumulative impacts to the waterfowl population that constitute a benefit to waterfowl populations as a whole associated with a hunting program. Hunters are often the first people to notice a disease outbreak that can plague waterfowl populations. Quick response to a disease outbreak is often essential to reducing the potential for a widespread outbreak.

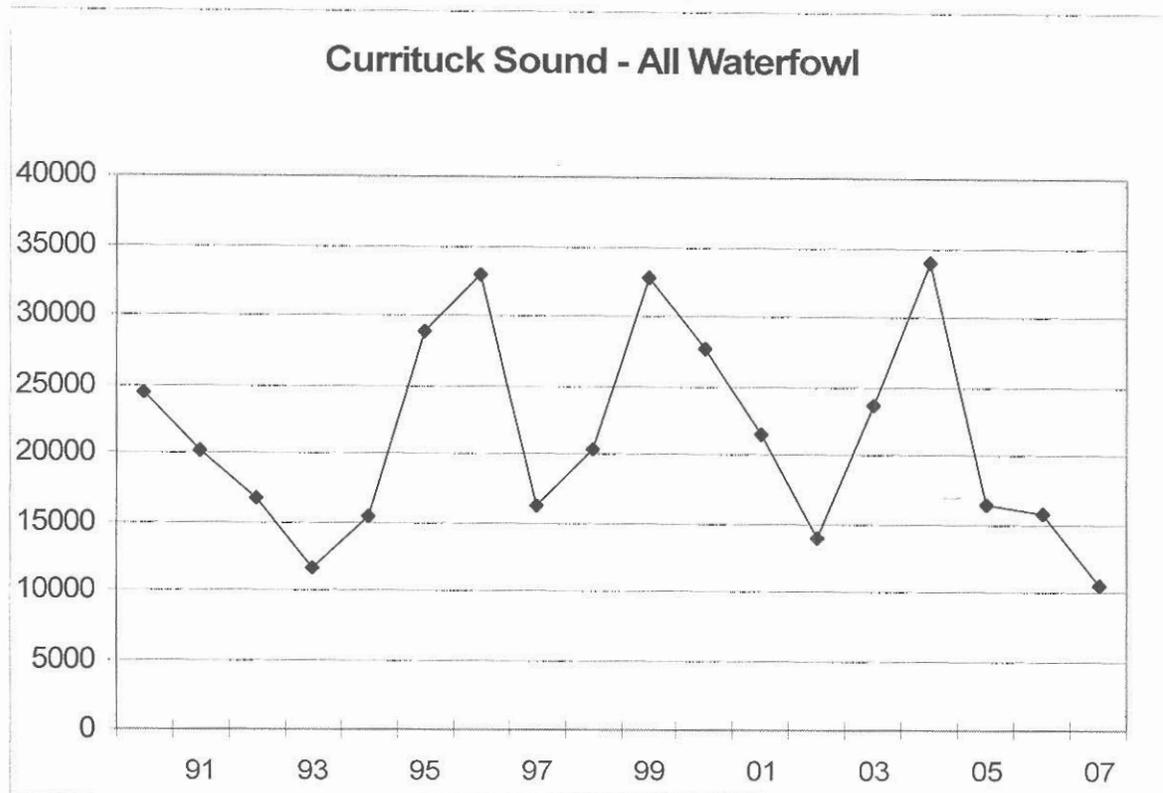
There is also an effect of active participation in recreational program that gets the public actively invested in conservation of resources. The public support of law enforcement is enhanced through dialog. Hunters are often the first people to advise the refuge of suspected poaching and baiting cases. The refuge manager (personal comm.) indicates

that almost all public reports of wildlife harassment reports (planes, boats, night spotlights) have come from hunters over the last three years. The refuge also has a benefit from increased awareness associated with the proposed hunting opportunity.

NEPA considerations by the Service for hunted migratory game bird species are addressed by the programmatic document, "Final Supplemental Environmental Impact Statement: Issuance of Annual Regulations Permitting the Sport Hunting of Migratory Birds (FSES 88- 14)," filed with the Environmental Protection Agency on June 9, 1988. We published Notice of Availability in the Federal Register on June 16, 1988 (53 FR 22582), and our Record of Decision on August 18, 1988 (53 FR 31341). Annual NEPA considerations for waterfowl hunting frameworks are covered under a separate Environmental Assessment, "Duck Hunting Regulations for 2006-07," and an August 24, 2006, Finding of No Significant Impact. Further, in a notice published in the September 8, 2005, Federal Register (70 FR 53376); the Service announced its intent to develop a new Supplemental Environmental Impact Statement for the migratory bird hunting program. Public scoping meetings were held in the spring of 2006, as announced in a March 9, 2006, Federal Register notice (71 FR 12216). More information may be obtained from: Chief, Division of Migratory Bird Management, U.S. Fish and Wildlife Service, Department of the Interior, MS MBSP-4107-ARLSQ, 1849 C Street, NWR, Washington, DC 20240.

In the action area the distribution of migratory waterfowl is often sporadic and very dependant on habitat conditions. Survey work is conducted to establish trend information. The North Carolina Wildlife Resource Commission provided the following counts for the mid-winter Currituck Survey Area (Figure 1). The survey area includes the entire area of Currituck Sound and is not limited to the area just around the refuge.

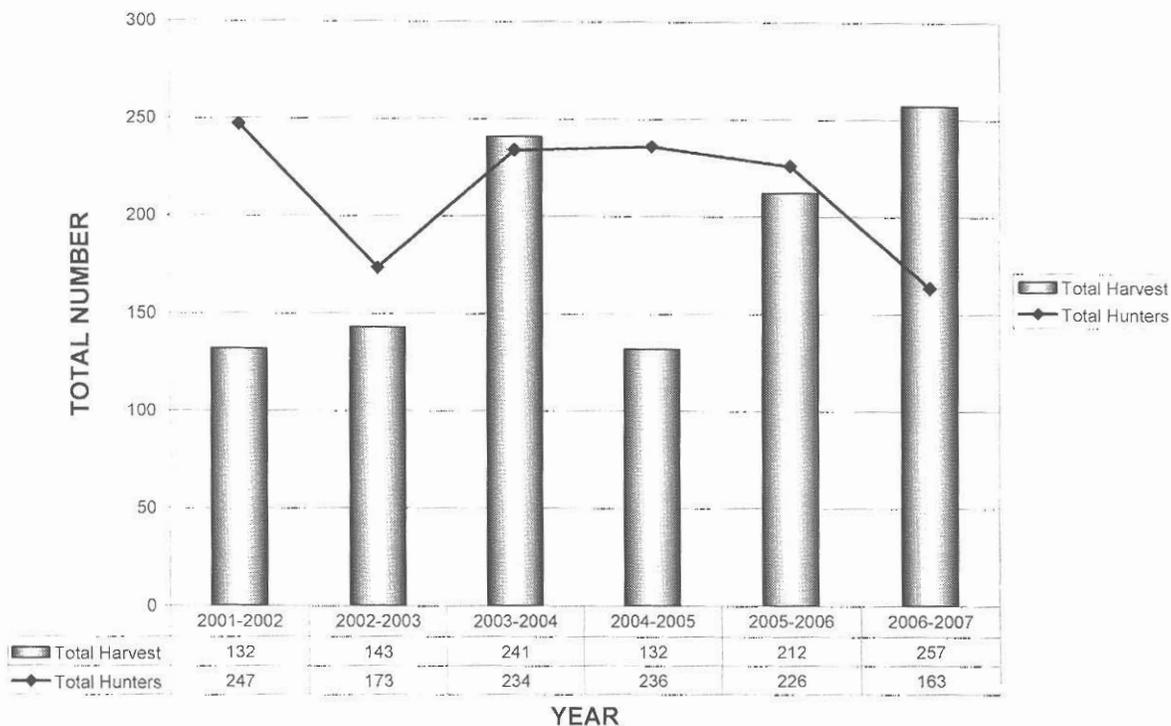
FIGURE 1. NWRC MID-WINTER COUNTS FOR ALL WATERFOWL IN CURRITUCK SURVEY AREA ,



We see definable no trend in impacts to waterfowl numbers related to hunting pressure on the refuge. The use of the refuge by waterfowl is habitat dependent and when conditions are good. The effect of this association can be demonstrated in trends like seen in Figure 2. The seasons of 2003-2005 saw similar hunter numbers but large visitation in harvest numbers. Mid-winter survey data illustrate a marked upward trend. It is difficult to draw conclusion from this information in a system as dynamic as Currituck Sound.

The future impacts of the proposed hunt would be relatively constant. The number of blinds and therefore the number of hunters would be regulated since under the preferred alternative the regulated hunt would authorize only limited areas for hunting. Currituck County Game Commission regulates the distances between licensed blinds. As new lands are acquired there may be an increase in refuge blinds, but in most places current private blinds exist that would be displaced as part of the refuge hunting program. The preferred alternative would allow hunting only two days per week compared to state regulations that allow up to six days per week of hunting on these areas. The Service regulates the seasons for waterfowl hunting to reduce overall pressures when waterfowl numbers are down. The number of approved days within a migratory waterfowl hunting season which are established based on survey data have a direct correlation with the number of hunt days involved with the proposed refuge hunt and further mitigate the future impacts of the proposed action.

Figure 2. Currituck NWR Harvest and Hunter Totals 2001-2007



Woodcock, rails (e.g. sora rail, and king rail) and common snipe are other migratory birds that may occur within the hunt area on rare occasions. These species are not permitted for harvest during the waterfowl hunt.

Some species of bats, butterflies and moths are migratory. Cumulative effects to these species at the “flyway” level should be negligible. These species are in torpor or have completely passed through North Carolina once waterfowl season starts in November and ends in January.

4.3.3 Impacts to Resident Wildlife

Non-hunted, resident wildlife would include non-hunted migratory birds such as songbirds, wading birds, raptors, and woodpeckers; small mammals such as voles, moles, mice, shrews, and bats; reptiles and amphibians such as snakes, skinks, turtles, lizards, salamanders, frogs and toads; and invertebrates such as butterflies, moths, other insects and spiders. Except for migratory birds and some species of migratory bats, butterflies and moths, these species have very limited home ranges and hunting could not result in significant cumulative effects regionally; thus, only local effects will be discussed.

Disturbance to non-hunted migratory birds could have regional, local, and flyway effects. Regional and flyway effects would not be applicable to species that do not migrate such as most woodpeckers, and some songbirds including cardinals, titmice, wrens,

chickadees, etc. The cumulative effects of disturbance to non-hunted migratory birds under the proposed action are expected to be negligible for the following reasons. The waterfowl hunting season would not coincide with the nesting season. Long-term future impacts that could occur if reproduction was reduced by hunting are not relevant for this reason. Disturbance to the daily wintering activities, such as feeding and resting, of birds might occur. In addition, temporary displacement of resident wildlife may occur when hunters are entering and leaving the hunt areas. However, disturbance to birds by hunters would probably be commensurate with that caused by non-consumptive users.

The cumulative effects of disturbance to non-hunted migratory birds under the proposed action are expected to be negligible for the following reasons. Small mammals, including bats, are inactive during winter when hunting season occurs. These species are also nocturnal. Both of these qualities make hunter interactions with small mammals very rare. Hibernation or torpor by cold-blood reptiles and amphibians also limits their activity during the hunting season when temperatures are low. Hunters would rarely encounter reptiles and amphibians during most of the hunting season. Encounters with reptiles and amphibians in the early fall are few and should not have cumulative negative effects on reptile and amphibian populations. Invertebrates are also not active during cold weather and would have few interactions with hunters during the hunting season. Refuge regulations further mitigate possible disturbance by hunters to non-hunted wildlife. Vehicles are restricted to roads and the harassment or taking of any wildlife other than the game species legal for the season is not permitted.

Although ingestion of lead-shot by resident wildlife could be a cumulative impact, it is not relevant to Currituck NWR because the use of lead shot would not be permitted on the refuge for waterfowl hunting.

4.3.4 Impacts to Endangered and Threatened Species

The only endangered or threatened species that utilize the proposed refuge waterfowl hunting area is the bald eagle. Bald eagles currently winter or migrate through areas that are open to waterfowl hunting without significant effects. Actually, in the past few years, the number of bald eagles wintering on the refuge has increased. An active bald eagle nest is located in a “no hunting” area.

Loggerhead Sea Turtles may occur in Currituck Sound. However winter months provide conditions that are less likely to support these animals. Extreme wind tidal fluctuations make the shallow areas of the sound dangerous for turtles that may become exposed or stranded. Additionally, sea turtles have difficulty maintaining adequate temperatures during winter periods in waters that experience quick temperature changes. The proposed hunt was not likely to affect loggerhead turtles since waterfowl hunting is conducted at times when turtles are not in local waters.

Other listed species are known to be in the Currituck County area but were not found in areas where the hunts would be conducted. A Section 7 Evaluation was conducted in February 2007 in association with this assessment for opening waterfowl hunting on Currituck NWR. It was determined that the proposed alternative would not likely

adversely affect this threatened species. Refer to the Section 7 Evaluation for the Waterfowl Hunting on Currituck NWR for more information.

4.3.5 Refuge Physical Environment

Under Alternative A, there would be no change in the refuges physical environment. However, the Service does not regulate interior navigable waterways and it would be likely that these areas would be available to private blind licenses and that subsequent impacts would be similar.

There would be a slight impact to the physical environment related to the placement of fixed blinds under Alternatives B and C. The proposed blinds would be large enough to accommodate a party of three hunters with a dog. This space requirement is less than twenty feet by six feet at each location. Under Alternatives B and C there would be approximately nine blinds placed on refuge lands.

4.3.6 Impacts to Wildlife Dependent Recreation

Under Alternative A there would likely continue to be private hunting impacts throughout navigable waters adjacent to refuge lands. This alternative would eliminate the public hunt and allow private blinds to be located in areas where they currently may not be permitted under Currituck County Game Commission regulations. The public would lose the only recreational waterfowl hunt opportunity in this area. The Service works closely with the North Carolina Wildlife Resource Commission to the degree that the NCWRC cooperates in the proposed hunter lottery, blind maintenance, law enforcement and wildlife surveys as a reflection of the interest in this a part of the larger NCWRC public hunting program. Additionally, this alternative would have minimal impact to other wildlife dependent recreational activities. In winter there are few other wildlife dependent recreational activities that utilize Currituck Sound and associated marshlands. Fishing is very limited and would probably be unaffected by this alternative.

Alternative B and C would provide an opportunity for hunting in the area. These alternatives would constitute the only public hunt for waterfowl in Currituck Sound. There has been substantial support for additional public hunting opportunities at Currituck NWR. These alternatives would have minimal impact to other wildlife dependent recreational activities. In winter there are few other wildlife dependent recreational activities that utilize Currituck Sound and associated marshlands. Fishing is very limited and would probably be unaffected by these alternatives.

Chapter 5 Consultation and Coordination with Others

The Service has presented this document for public comment. Press releases were provided to the Virginian Pilot and the Coastland Times for public notification. Additionally, the refuge posted the press releases in all refuge kiosks and at the refuge office. A copy of the document is available for review at the refuge office and can be accessed from the internet at <http://www.fws.gov/mackayisland/currituck/>. Compatibility determinations were also disseminated at this time. The public was provided with 30 days to comment on the proposed action.

Letters were sent to elected representatives including Senators Burr and Dole and Congressman Walter B. Jones were provided with copies of the draft EA. Additionally, the North Carolina Wildlife Resource Commission and the Currituck County Game Commission were consulted in the preparation of this document and have been invited to review it during the comment period.

Service personnel requested information from several representatives of the Currituck County Game Commission, North Carolina Wildlife Resources Commission regarding the waterfowl hunting program on Currituck NWR and adjacent areas in 2007.

A Section 7 Consultation was submitted to the Ecological Field Office in Raleigh North Carolina and with a request for concurrence that the proposed action would have no adverse affects on Federally listed species in the area. Additionally, the proposed blind locations were submitted the USFWS Region 4 Archeologist for review of any potential archeological impacts associated with the proposed alternative.

From our prior effort in 1999, a public notice of this EA was published in local papers indicating that the public had 30 days to comment. Two public meetings were held in Currituck County on March 17, and 18, 1999. There were 35 people at the meeting in Knotts Island, NC and over 20 at the meeting in Currituck, NC.

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Appendix II Summary of Comments and Responses

We received four comments on our Draft Environmental Assessment titled Sport Waterfowl Hunt Plan on Currituck National Wildlife Refuge, that was available for public comment from March 5 through April 6, 2007. Two of these comments were in support of the Service's preferred Alternative in the draft EA. One comment was in opposition to the preferred Alternative.

We received a letter from the Humane Society of the United States that contained comments related to hunting on the National Wildlife Refuge System as a whole and containing elements related to litigation filed in 2003 by the Fund for Animals against the Service. These comments were not specific to this draft EA and are noted but not responded to here.

We also received verbal comments from the North Carolina Wildlife Resources Commission's David Cobb supporting the proposed alternative allowing waterfowl hunting on Currituck NWR. The comment letter supported the hunt program as proposed and indicated concurrence with Service's position that the proposed alternative would have no significant cumulative impacts associated the proposal on waterfowl populations. The letter also concurred with the Service's position that proposed public hunt opportunity would reduce waterfowl hunting pressure in the area from historic levels. Although no specific response was needed, the Service agrees with the comments made by the NCWRC in the April 5, 2007 letter and no changes to the document were needed.

A comment letter was received from the Safari Club International. The letter has several points. The document should: 1) Increase emphasis on coordination with the state agencies larger hunting program 2) Recognition of the beneficial aspects of hunter involvement in supporting law enforcement and identifying issues of concern. 3) Increase the cumulative impacts assessment to include beneficial analysis of hunting. The EA has been modified to incorporate the recommendations outlined here.

Finally, a phone recommendation was received from Mr. Richard Williams indicating interest in: 1) Consideration of charging for a permit associated with the standby hunts to support a youth hunting program and the hunt program overall. 2) The Service should consider licensing additional point blinds or adding float blinds to the program to control heavy hunting pressure on some interior waters of the refuge not covered in the refuge program. The Service will reserve the potential to add fees or other administrative adjustments as part of potential future modification of the proposed action. The Service recognizes that in cooperation with the Currituck County Game Commission there is some potential to modify the alignment of existing blinds to create a better public hunt opportunity or create better rest area conditions across the refuge. The potential for these types of improvements is not precluded by this plan.

FINDING OF NO SIGNIFICANT IMPACT

2007 Sport Hunting Plan for Currituck National Wildlife Refuge

The U.S. Fish and Wildlife Service (Service) proposes to allow waterfowl on Currituck National Wildlife Refuge (Refuge). Waterfowl hunting will be opened for specifically designated blinds and for a limited number of days, within the framework allowed by the state of North Carolina.

The Service has analyzed the following alternatives contained in the Environmental Assessment (copy attached):

- A. No Action Alternative: No waterfowl hunting would be allowed on Currituck National Wildlife Refuge. The Refuge would not offer a priority public use as defined in the National Wildlife Refuge System Improvement Act of 1997.
- B. Preferred Alternative: Open waterfowl hunting on select days within the framework of days permitted by North Carolina in specially designated blinds as outlined in the annual refuge-specific regulations.
- C. General Regulations Alternative: Waterfowl hunting would open according to general regulations published in the Digest and the Currituck County Game Commission Laws would apply to the refuge. These would be in addition to current Service regulations (e.g., waterfowl hunting is permitted on no more than 40% of the area of the refuge). Few refuge specific regulations restricting the hunt further would be developed

The preferred alternative was selected because:

- A. The preferred alternative is compatible with general Service policy regarding the establishment of hunting on National Wildlife Refuges.
- B. The preferred alternative is compatible with purposes for which Currituck Refuge was established.
- C. The preferred alternative will allow the refuge to open an additional public use that is listed as a priority public use as defined by the National Wildlife Refuge System Improvement Act of 1997.
- D. The preferred alternative would: promote wildlife-orientated recreational opportunities; minimize operational costs; increase awareness of Currituck NWR and the National Wildlife Refuge System; meet public demand; and promote economic interests in the area.

- E. The preferred alternative will allow the refuge to limit hunting pressure in the areas surrounding the refuge. Local laws passed by the Currituck County Wildlife Resource Commission prohibit blind locations from being placed closer than 500 yards from each other. Blinds must be brushed annually, and blind locations must be hunted 3 times per year or the county reserves the right to remove or redistribute blind locations within the navigable waters of the area. Hunting blinds on the refuge will effectively decrease total number of blinds in the navigable waters surrounding the refuge and minimize the total number of days each blind is hunted. Hence, creating benefits that support the mission of the U.S Fish and Wildlife Service and the purpose for which Currituck NWR was established.
- F. There are no conflicts with local, state, regional, or federal plans or policies.

Implementation of the agency's decision would be expected to result in the following environmental, social, and economic interests:

- A. The public would be permitted to harvest a state regulated renewable resource.
- B. Additional segments of the population would be permitted to use the refuge for additional priority public uses defined by the Refuge System Improvement Act of 1977.
- C. Local businesses would benefit from hunters visiting from surrounding counties and states.
- D. The refuge could better manage wildlife populations.
- E. The Service will be perceived as a good steward of the land by continuing traditional land uses of land in North Carolina.

Measures to mitigate and/or minimize adverse effects have been incorporated into the proposal by the following:

- A. Waterfowl hunting will be allowed in specific blind locations of the refuge only.
- B. The total amount of hunting pressure on the refuge and surrounding navigable waterways will be significantly lower than if no refuge hunt program is offered and the Currituck County Wildlife Resource Commission rezones blind locations and offers more hunting days than offered in this plan.
- C. Refuge-specific hunting permits are required for all hunters. These permits and news releases from local media sources and will serve to inform hunters of specific requirements.

- D. The refuge law enforcement program will ensure hunt regulation compliance and will protect refuge resources.

The proposal is not expected to have any significant adverse effects on wetlands and floodplains pursuant to Executive Orders 11990 and 11988 because this area has historically had a high use of recreational hunting with no detrimental long-term effect on wetlands.

The proposal has been thoroughly coordinated with all interested and/or affected parties, including:

- U.S. Fish and Wildlife Service, Ecological Services Office, Raleigh NC
- North Carolina Wildlife Resource Commission
- North Carolina Department of Cultural Resources
- Virginia Department of Game and Inland Fisheries
- Local public and adjacent landowners

Copies of the Environmental Assessment are available from:

Mackay Island National Wildlife Refuge
P.O. Box 39
Knotts Island, NC 27950

Therefore, it is my determination that the proposal does not constitute a major Federal action significantly affecting the quality of human environment in the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969 (as amended). As such an Environmental Impact Statement is not required. This determination is based on the following factors (40 CFR 1508:27):

Both beneficial and adverse effects have been considered and this action will not have a significant effect on the human environment.

The action will not have a significant effect on public health and safety.

The project will not significantly affect any unique characteristics of the geographical area such as proximity to historical or cultural resources or ecologically critical areas.

The effects on the quality of the human environment are not likely to be highly controversial.

The actions do not involve highly uncertain, unique, or unknown environmental risks to the human environment.

The actions will not establish a precedent for future actions with significant effects nor does it represent a decision in principle about a future consideration.

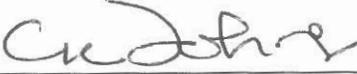
There will significant cumulative impacts on the environment. Cumulative impacts have been analyzed with consideration of other similar activities on adjacent lands, in past action, and in foreseeable future actions.

The actions will not significantly affect any site listed in, or eligible for listing in, the National Register of Historic Places, nor will they cause loss or destruction of significant scientific, cultural, or historic resources.

The actions are not likely to adversely affect endangered or threatened species, or their habitats.

The actions will not lead to a violation of federal, state, or local laws imposed for the protection of the environment.

References: Environmental Assessment of 2007 Sport Hunt Plan for Currituck NWR Hunting Plan, Compatibility Determination, Letters of Concurrence, Refuge-specific Regulations, Intra-Service Section 7 Evaluation.



Regional Director



Date