ENVIRONMENTAL ASSESSMENT

2007 Sport Hunt Plan

for

Mountain Longleaf National Wildlife Refuge

Fort McClellan, Calhoun County, Alabama

For Further Information Contact:
Refuge Manager
U.S. Fish and Wildlife Service
Mountain Longleaf National Wildlife Refuge
P.O Box 5087
Fort McClellan, AL 36205

Prepared by:
U.S. Department Of Interior
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1.0 PURPOSE AND NEED FOR ACTION

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 hunting programs at Mountain Longleaf National Wildlife Refuge in Alabama.

The U.S. Fish and Wildlife Service (Service) proposes to adopt the 2007 Sport Hunting Plan for Mountain Longleaf National Wildlife Refuge (Refuge). Proposed uses within the plan have been determined to be appropriate and compatible with the Refuge System and the purpose for which the refuge was established. The Refuge was created (May 2003) on a portion of Fort McClellan, which had been closed in 1999 under the Base Realignment and Closure Act (Figure 1). The entire refuge was closed to the public between 1999 and 2004. The eastern third of the Refuge (east of Ridge Road) has since been opened to the public (USFWS 2004).

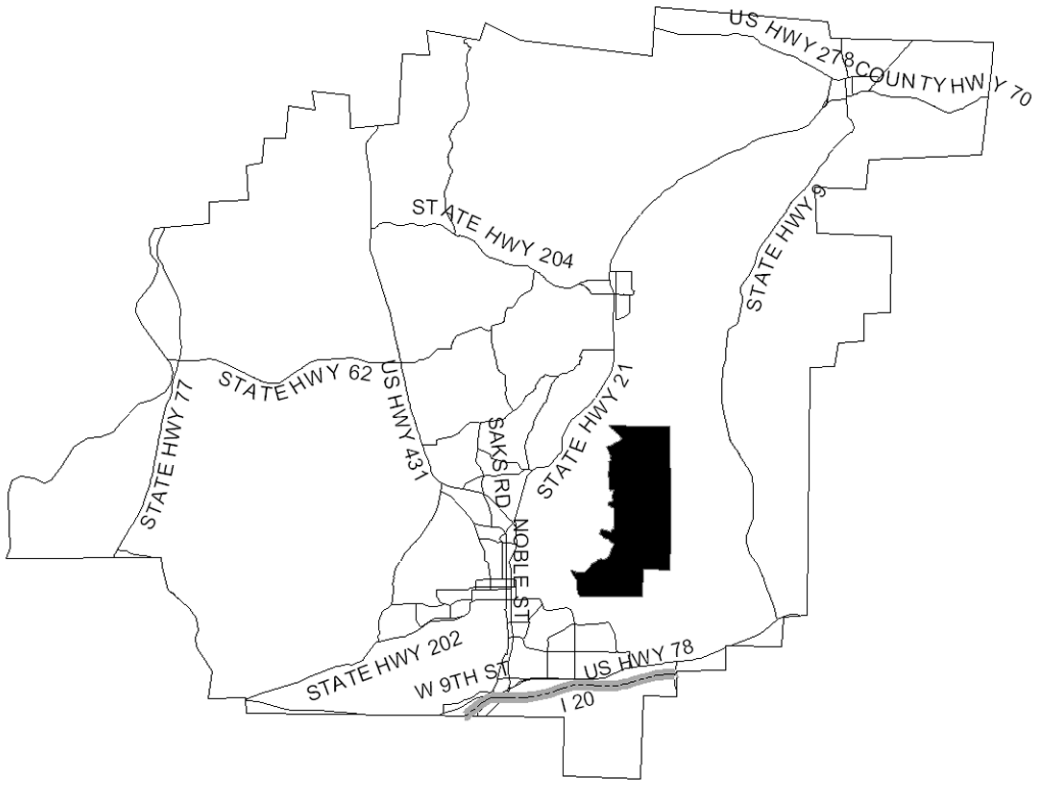
This document considers the proposed Sport Hunt Plan (*Preferred alternative*) along with the *No Action Alternative*, and compares the impacts that each alternative is likely to have on the human environment.

1.1. Background

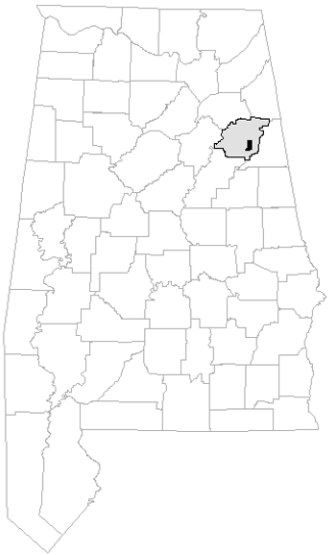
Under previous Army ownership, refuge lands were primarily used for military training and firing ranges. Much of the area that now forms the refuge was within the boundaries of firing range safety fans. These areas were closed to both the public and trainers during the use of firing ranges. With eight small arms ranges firing into the face of Choccolocco Mountain, much of the area remained closed to the public. Hunting was allowed under a controlled and restricted program.

During base closure, the potential hazards of unexploded ordnance (UXO) were identified as a risk to public safety, and the entire area, that eventually became the Refuge, was closed to both public use and hunting in 1999. The Army initiated a program of sampling and studying the distribution and risk level of UXO/environmental contamination. As of February 2007, the Army was able to characterize 3,345 acres of the total 9,016 acre Refuge as safe for public use (Figure 2). The 3,345 acres are considered free of UXO contamination, and are identified by Army and Service as “Public Access” lands that could be opened for public uses “during

Mountain Longleaf National Wildlife Refuge



Alabama Locale



260 130 0 260 520 Miles

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REFUGE LOCATION

- I-20
- ROADS
- REFUGE
- CALHOUN COUNTY

10 5 0 10 20 30 Miles

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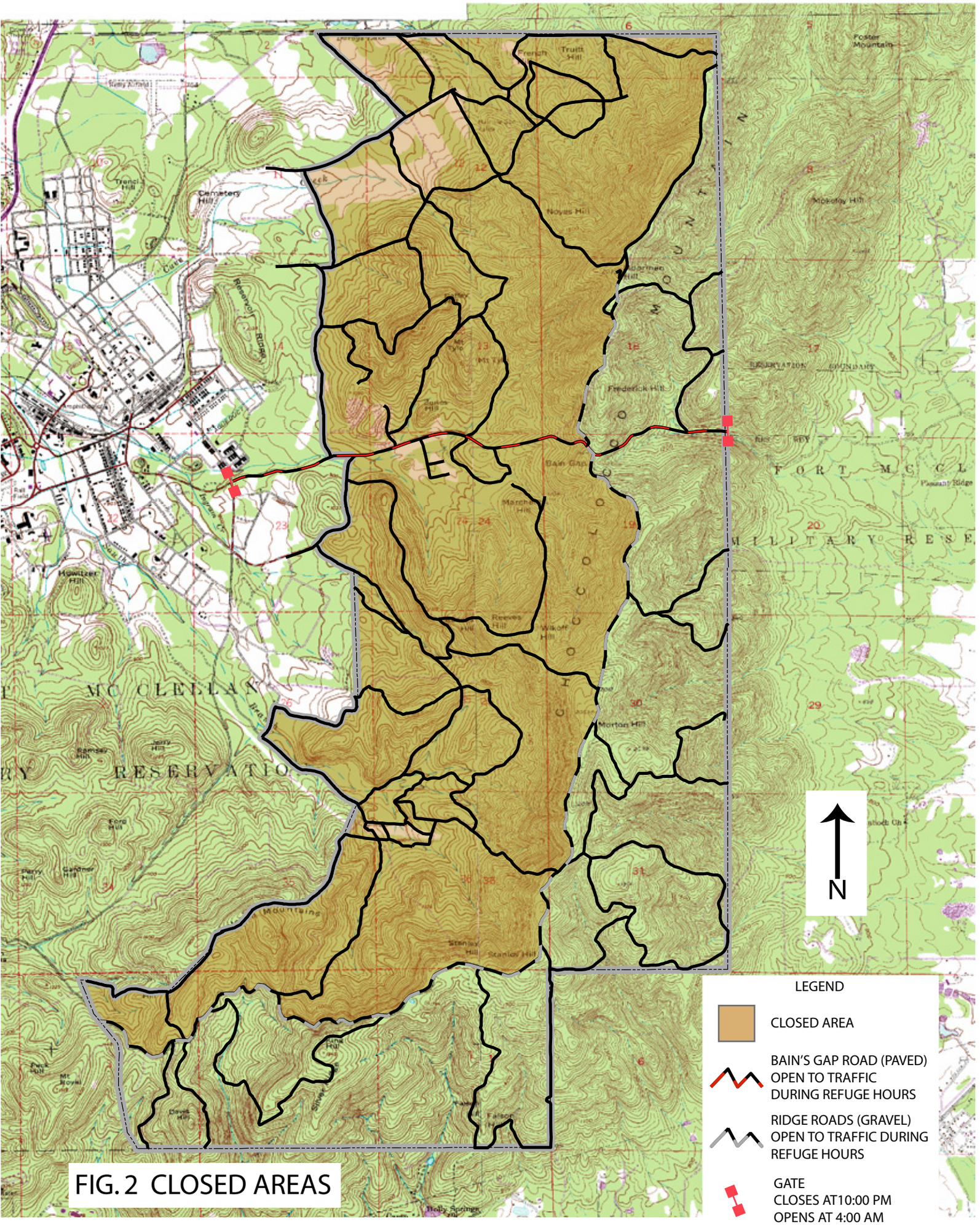

FIG. 2 CLOSED AREAS

daylight hours" (USFWS 2004). The proposed Sport Hunt Plan would guide implementation of hunting within this area.

The proposed Sport Hunt Plan must ensure the public a reasonable degree of protection from the hazards associated with unintentional or illegal access to UXO contaminated study areas. Such areas are designated "No Public Access" or "Potential UXO Areas," but are in close proximity or adjacent to public access areas. The Army is responsible for land use controls that identify areas unsafe for public access. The Army is and will in the future provide safety related pamphlets and brochures for distribution to public users. They have also undertaken a community outreach education program on UXO safety in the local area.

1.2. Refuge Mission

Purposes for which the Refuge was established include (1) preserve and enhance the natural mountain longleaf pine ecosystem in the Fort McClellan Main Post area; (2) help perpetuate the neotropical migratory bird resource; (3) preserve the natural diversity and abundance of flora and fauna, with special emphasis on threatened and endangered species; (4) provide compatible wildlife dependant recreational opportunities such as hunting, fishing, wildlife observation and photography, and environmental education and interpretation; and (5) promote an understanding and appreciation of fish and wildlife ecology. Analysis of alternatives considered the primary purposes of the Refuge along with environmental and social/cultural consequences related to implementing these programs.

Wildlife-dependant recreational uses, including hunting, fishing, wildlife observation, wildlife photography, and environmental education, are identified as priority uses in the National Wildlife Refuge System Improvement Act of 1997. Hunting was reviewed and considered compatible with the mission of the Refuge System and the purpose for establishing Mountain Longleaf National Wildlife Refuge.

The mission of the National Wildlife Refuge System is " to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Improvement Act of 1997). National wildlife refuges provide important habitat for native plants and many species of mammals, birds, fish, insects, amphibians, and reptiles. They also play a vital role in preserving endangered and threatened species. Refuges offer a wide variety of wildlife-dependent recreational opportunities and many have visitor centers, wildlife trails, and environmental education programs. Nationwide, about 30 million visitors annually hunt, fish, observe and photograph wildlife, or participate in educational and interpretive activities on refuges.

The historical background and description of natural and cultural resources on the Refuge can be found the Refuge's Habitat Management Plan (USFWS 2005).

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

The assessment of possible hunting options was evaluated through the following two alternatives.

Alternative 1 (No Action - No Hunting Programs)
Alternative 2 (Preferred Alternative – Implementation of Sport Hunt Plan)

2.1. Alternative 1: No Action – No Hunting

Under this alternative, the Refuge remains closed to hunting and management is limited to the maintenance, management and restoration of the mountain longleaf pine forest communities. This alternative represents existing baseline conditions and the continuation of prohibiting public hunting opportunities on the area. Once UXO/environmental remediation has been completed, public sport hunting, would be reconsidered.

2.2 Alternative 2: Preferred Alternative – Sport Hunt Plan

Under the *Preferred Alternative*, the Service will allow the priority public use of hunting on 3,345 acres of the total 9,016 acre Refuge (Figure 2). The hunting program will be operated in cooperation with the Alabama Division of Wildlife and Freshwater Fisheries. Access will be along existing paved and improved gravel roads. No additional facilities or construction will occur for the public hunting alternative. Visitors will be allowed access along unimproved roads and trails within the 3,345 acre area by foot only. Only Bain's Gap Road and Ridge Roads will be opened to motorized vehicles.

Alternative 2 (Sport Hunt Plan) was selected as the Preferred Alternative. Both legislation and comments solicited for the Refuge Establishment EA (USFWS 2003) supported a public hunting program on the Refuge. As additional acreage is identified by the Army as safe for public use, additional areas may be opened to public hunting in the future.

3.0 AFFECTED ENVIRONMENT

This section describes the environment that will be affected through the two alternatives. A detailed description of the natural, social and cultural environment on the Refuge can be found in the Refuge Habitat Management Plan (USFWS 2005). The following sections provide an overview of resources located on the 3,345 acre area (Figure 2) that will be opened to hunting under the *Preferred Alternative.*

3.1 Introduction

The Refuge is located in Calhoun County in northeastern Alabama. It is contiguous to the City of Anniston, and lies approximately 65 miles east of Birmingham and 90 miles west of Atlanta. The 7,759 acre refuge was legislatively established on May 31, 2003 within the former military training base of Fort McClellan. On October 23, 2003, an additional 1,257 acres were contributed by the Joint Powers Authority (JPA) for a total of 9,016 acres. Fort McClellan was selected for closure by the Base Realignment and Closure Commission of 1995, and was effectively closed on September 30, 1999.

Physiographic classification of refuge lands has long been a source of contention for both physical and biological scientists. While Osborne et al. (1989) consider these lands as a juncture between the Ridge and Valley to the west and the Piedmont to the east, others, such as Harper (1913), consider the area a disjunct southern extension of the Blue Ridge Physiographic Province. In fact, Harper (1928) specifically identifies Choccolocco Mountain as a southern outlier of the Blue Ridge. As a southern extension of the Blue Ridge, the Refuge represents the southern most extension of one of the most biologically important regions in North America, isolated from the main body of that region, and sandwiched between the Ridge and Valley and the Piedmont. Biological communities represent a rich combination of Appalachian species along with species common to more southern provinces.

3.2 Physical Environment

Almost the entire Refuge is within The Weisner Geological Formation. The Weisner Formation occurs to 2,500-foot (750-meter) depths and consists of buff shale, siltstone, sandstone, quartzite, and conglomerate. Outcrops form hills or mountains of great relief. Quartzite and conglomerate are most conspicuous where they form crests or ledges along the southeastern side of Choccolocco Mountain. The mountain runs north to south and contains deposits of limonite, manganese, bauxite, and hematite. Several historic iron ore mining sites are located within the Refuge. The quartzite beds of the Weisner Formation are highly permeable and responsible for the abundance of springs and seepages along Choccolocco Mountain.

The Refuge is located within the north-south extending mountain range referred to as Choccolocco Mountain. Choccolocco Mountain is actually a 24 mile long ridge that extends from the City of Piedmont on the north to the City of Oxford on the south. Elevations on the Refuge range from a low of 880 feet above sea level (ASL) on the northwest corner of the Refuge and along North and South Branches Cane Creek, to 2,063 feet ASL on Morton Mountain. Choccolocco Mountain actually forms the third highest mountain ridge in Alabama, after Cheaha and Dugger Mountains. While Choccolocco Mountain extends north to south through the Refuge, smaller saddle ridges extend west and east off of the mountain. Resulting topography is highly varied with differing aspects and slopes. A review of Refuge topography indicates approximately 75 percent of the refuge contains slopes exceeding 40 percent.

Calhoun County lies within the Coosa River Drainage System. The Coosa River flows in a southwesterly direction and forms the western boundary of the county. Within the Refuge, Choccolocco Mountain forms the major surface water divide. East of this divide, surface water drains into Choccolocco Creek. To the west of the mountain, surface water eventually flows into either Cane or Ohatchee Creeks, before entering the Coosa River. Most surface waters on the mountain's west face originate from headwater streams that eventually form Cane Creek. Some of the larger named streams that flow into Cane Creek include South Branch Cane Creek, North Branch Cane Creek and Cave Creek. A small area on the northern portion of the Refuge forms headwater drains that flow into Little Tallahatchee, than Tallahatchee, and eventually Ohatchee Creek, before entering the Coosa River. Many of the headwater streams on Choccolocco Mountain are ephemeral and are dry, at least during late summer. Others, flow across karsts geology and may exhibit periodic subsurface flow, at least during dryer periods. Cave Creek actually flows through Weaver Cave to the west of the Refuge, returning to the surface about half a mile from the cave's entrance.

Refuge soils reflect the extreme mountainous conditions of Choccolocco Ridge. Almost the entire Refuge was mapped as "Stony Rough Land Underlain by Sandstone". This miscellaneous land type consists of rough mountainous areas with many outcrops of sandstone and quartzite bedrock, loose rock fragments, and scattered patches of sandy soil material. In Calhoun County, it includes all of the higher parts of Choccolocco and Coldwater Mountains where the Weisner formation is common. While county-wide, slopes tend to be greater than 25 percent for this soil type, the majority of slopes on the Refuge exceed 40 percent. Soil material is generally shallow over bedrock. Runoff is high, infiltration is slow, and the capacity for available moisture is low.

3.3 Vegetation

The Refuge was established to protect and manage one of the finest remaining examples of mountain longleaf pine forest. This forest type is most common within restricted areas of the Refuge on the west and south facing slopes of Choccolocco Mountain. The 3,345 acre area proposed for sport hunting under the *Preferred Alternative* is located along the north south ridge of Choccolocco Mountain. While longleaf pine forms isolated stands or a component of forests in this area, most forests of higher elevation ridges and eastern mountain slopes are dominated by Virginia pine and oak/hickory hardwood forests. In general, mountain longleaf pine rarely is a conspicuous component of the forest above an elevation of 1800 feet.

Upland ridges and slopes on the Refuge support a variety of natural community types. The formation of these communities is influenced by a variety of factors that include elevation, slope, aspect and soils. In addition to geographic and physical factors, the introduction of fire has the ability to structurally change the composition of many of these natural communities. The following description characterizes forest types encountered on the Refuge.

3.3.1 Upland Pine Forest Community

Upland pine forest contains longleaf, shortleaf, loblolly and Virginia pines. While small or localize stands may be dominated by any one of these tree species, absence of fire has significantly altered species composition on much of the area. Historic descriptions as well as the presence of longleaf pine as a forest component, suggests that longleaf pine was the dominant cover over most of Choccolocco Mountain. Regionally, Harper (1913) estimated the original pine forest cover in Alabama's Blue Ridge as longleaf pine (20%), shortleaf pine (12%), loblolly pine (6%) and Virginia pine (3%).

Previous studies on Fort McClellan identified 101.5 acres of forest that are considered old-growth forest (Varner et al. 2000). These forest stands represent the only know old-growth longleaf pine outside of the Coastal Plain. Approximately 80 acres of these old-growth forests were included within the boundaries of the Refuge. .

The mountain longleaf pine community on the Refuge exists as a relict of historic forest cover. While fires related to army training have maintained this forest type in some areas, most of the Refuge suffers from fire exclusion and hardwood encroachment. Most existing longleaf pine is located along the western slopes pf Choccolocco Mountain and on lower saddle or lateral ridges. While some of the centrally located stands are well maintained, the overall condition of refuge longleaf pine forests is declining. This decline was documented prior to the closure of Fort McClellan when training related wildfires were ongoing. With closure of the fort and disappearance of wildfires, this decline can only be expected to accelerate without implementation of an active prescribed fire program.

3.3.2 Upland Hardwood Forest Community

This community type includes hardwood forest that occurs in a mesic to xeric environment. These forests can be found along slopes and ridgetops on Choccolocco Mountain. The presence of American chestnut (*Castanea dentate*) sprouts along mid-slopes and hills indicates that chestnut may have historically been a significant component of some forests.

A variety of oaks and hickories make up the overstory of this forest community. Rock chestnut oak (*Quercus montana*) often dominates the overstory in more xeric and/or high elevation locations. More mesic situations contain a variety of overstory trees that include rock chestnut oak, white oak (*Q. alba*), southern red oak (*Q. falcate*), post oak (*Q. stellata*), black oak (*Q. velutina*), pignut hickory (*Carya glabra*), sand hickory (*C. pallida*) and mockernut hickory (*C. tomentosa*).

Most upland forest communities exist elevationally above longleaf pine forests, or within the mosaic of forest communities that cover the mountain slopes. Fire no doubt historically occurred within this community type. In all probability, the upland hardwood community has expanded onto areas historically covered by longleaf pine. Fire exclusion or a less frequent fire regime has favored the expansion of these forests in more recent years. Where a loblolly seed source is available, loblolly pine also becomes a prominent tree of these new upland forests.

Historical evidence indicates that fire has probably been an important factor in these forests, affecting vegetation structure and composition of the lower strata. In the past, fire may have favored oaks and pines over other trees in the canopy (Nature Serve 2004). In most situations, fuel loads remain light within this forest type, and fire burns across the forest floor with a light intensity.

3.3.3 Lowland Hardwood Forest Community

This forest is encountered along streams and around seepage areas, and covers only a minor portion of the Refuge. In more mesophytic situations, this community is co-dominated by oaks, hickories, tulip poplar (*Liriodendron tulipifera*), beech (*Fagus grandifolia*), basswood (*Tilia Americana*), and chalk maple (*Acer leucoderme*). Hardwood-pine terraces are slightly more dry-mesic and include oaks, tulip poplar, hickories (especially *Carya glabra, C. pallida and C. tomentosa*), along with pines, particularly loblolly pine.

These forests exist as a narrow border along larger streams and as upland borders around larger springs and seepages. Longleaf pine is not considered an historic tree of these communities. These forests formed inclusions within the overall longleaf pine forest mosaic, and enhanced biodiversity values on a landscape scale. Because of excessive moisture and low fuel loads, fire seldom enters these communities except during extreme drought.

3.3.4 Virginia Pine Community

The Virginia Pine Community is found along exposed ridges and thin-soiled disturbed sites, primarily along higher elevations on Choccolocco Mountain. Under the most xeric conditions, Virginia pine can exist in pure stands or in association with chestnut oak, blackjack oak (*Quercus marilandica*), sparkleberry, and chokeberry (*Aronia arbutifolia*). Slightly more mesic conditions can also include post oak and southern red oak.

This cover type is often described as including both early successional forest on natural or anthropogenic disturbed sites, and natural forests in edaphically extreme conditions (NatureServe 2002). On the Refuge, the prominence of Virginia pine may be the result of past disturbances along Choccolocco Mountain ridge and/or lack of recent fire along the ridge. Virginia pine communities were probably restricted higher ridges above the longleaf pine forest in historic times. Monoculture stands or isolated trees have invaded lower slopes and disturbed areas at the expense of longleaf pine.

3.3.5 Hardwood Seep Community

Spring seepages are found on mountain slopes and along the base of ridges. These communities are highly variable and range from seasonal spring seeps a few yards in diameter to larger perennial seepages up to ten acres in size. The smaller seeps often exist as a micro-community within another forest type, while the larger seeps have a characteristic wetland shrub and forest

overstory. The four largest seeps are associated with headwater springs of the four major refuge drainages; South Branch Cane Creek, North Branch Cane Creek, Cave Creek and Bain's Gap Creek. A detailed field investigation by Whetstone et al. (1998) identified 24 seeps on the Refuge that met the definition of jurisdictional wetlands as defined in the 1987 Army Corps of Engineers Wetlands Delineation Manual.

Hardwood seeps are considered one of the most significant and sensitive communities on the Refuge. Over half of all rare plant species identified by the Alabama Natural Heritage Program (1994) on former Fort McClellan occurred in or were associated with the seeps. High quality seeps meet the criteria of sphagnum and shrub bogs, which have been defined as "rare community" types within the recently completed multi-agency Southern Appalachian Assessment (SAMAB 1996). The assessment concludes that few existing examples of this community remain, and those that do are in a degraded condition. While seeps on the Refuge are highly variable in size and species composition, typical overstory trees of larger seeps include tulip poplar, black gum, sweet gum (*Liquidambar styraciflua*) and green ash (*Fraxinus pensylvanica*).

3.3.6 Loblolly Pine-Disturbed Community

The Loblolly Pine-Disturbed Community type includes those areas that have been heavily impacted or altered through human activity. Generally, this alteration is far beyond the scope of simple fire exclusion. With fire exclusion, some remnant of the former landscape remains, a seed-bank may still be in place and restoration through fire may be possible. Significant soil disturbances through military or other human activity creates additional restoration issues, many involving the introduction or proliferation of exotic plant species.

Disturbed community types on the Refuge include loblolly pine plantations, reclaimed quarries and former firing ranges and training areas. While loblolly pine is often an invader of roadside areas and fire excluded lands, planted pine plantations on the Refuge are rare.

3.4 Wildlife Resources

The Refuge contains a rich diversity of wildlife species. Lands to be opened for hunting (*Preferred Alternative*) primarily include shallow rocky high elevation soils and steep slopes. Typically these xeric uplands support a lower carrying capacity than lowland habitats. The lack of open water and extensive wetlands on the refuge also limit the number of species that can be expected on the Refuge.

3.4.1 Reptiles and Amphibians

The Refuge is located on upland ridges and slopes along Choccolocco Mountain. The rugged upland topography with few aquatic environments limits breeding sites and habitat required by many reptiles and amphibians.

Inventories were accomplished on former Fort McClellan by the Army (Cline and Adams 1997). Thirty-three reptile and amphibian species were documented on or directly adjacent to the Refuge during this survey. Particularly significant species recorded on or adjacent to the Refuge during the inventory included the southern redback salamander (*Plethodon serratus/websteri*), four-toed salamander (*Hemidactylum scutatum*), northern pine snake (*Pituophis melanoleucus molanoleucus*) and wood frog (*Rana sylvatica*).

3.4.1 Birds

Breeding birds on former Fort McClellan were surveyed between 1994 and 1996 (Soehren 1995; Webb 1996a). Both studies were accomplished in hardwood and mixed pine forest on the southern part of the Refuge. The following birds were commonly recorded during point counts; downy woodpecker, pileated woodpecker, eastern wood-pewee, great crested flycatcher, blue jay, tufted titmouse, red-eyed vireo, black-and-white warbler, worm-eating warbler, ovenbird, summer tanager, and scarlet tanager (Soehren 1995). The worm-eating warbler is included as a "Priority Bird Population" in the forthcoming Southern Piedmont Partners in Flight (PIF) Bird Conservation Plan.

Game birds inhabiting the Refuge, and proposed to be hunted under the *Preferred Alternative*, include eastern wild turkey, northern bobwhite and American woodcock. Refuge hunting is administered by the Alabama Division of Wildlife and Freshwater Fisheries in conjunction with Choccolocco Wildlife Management Area.

Turkey in Alabama have dramatically increased in numbers during recent years. Today, the statewide population is estimated to exceed 450,000 birds. Harvest numbers on the Choccolocco Wildlife Management Area from 1996 to 2006 ranged from 40 to 110 birds annually (McCutcheon 2006).

During the 2005-2006 hunting season, 86 birds were harvested were harvested on the Choccolocco Wildlife Management Area. Approximately 10 of these birds were taken on the Refuge. Harvest numbers for the Choccolocco Wildlife Management Area (86 birds) were well above the Statewide Management Area average of 40 birds/day. The success rate of 6.5 man-days/bird at Choccolocco Wildlife Management Area was far better than the state-wide average of 13.3 man-days/bird, and represented the second best Management Area success rate in the state. State-wide, eight percent of all Management Area turkeys were taken on the Choccolocco Wildlife Management Area. Turkey populations on the Refuge and Choccolocco Wildlife Management Area are currently high and considered to be expanding (Lyles, personal communications).

Northern Bobwhite are relatively rare on the Refuge and primarily occur around abandoned firing ranges and mature longleaf pine stands. Quail populations in the Southeast declined 65.8 percent from 1980 to 1999, while declines in breeding numbers averaged almost 4 percent per year from 1982 to 1999 (Dimmick et al 2003). In Alabama, quail numbers are believed to have declined by as much as 85 percent since 1980 (USDA, Forest Service 2004).

Because suitable quail habitat is absent from the 3,345 acres opened to hunting under the *Preferred Alternative*, there is little probability that hunters will pursue quail on the Refuge. During the previous 2005-2006 season, 120 birds were harvested on the Choccolocco Wildlife Management Area with 250 man-days of effort (McCutcheon 2006). Harvest numbers for the Wildlife Management Area (120 birds) were comparable to the Statewide Management Area average of 117 birds. The success rate of 0.48 birds/day at Choccolocco Wildlife Management Area however was well below the statewide average of 0.82 birds/day. State-wide, slightly more than three percent of all Management Area quail were taken on the Choccolocco Wildlife Management Area

A series of breeding bird point counts within better quality refuge longleaf pine stands (currently not included in the *Preferred Alternative*) was accomplished in 2006. A single bobwhite was recorded during the survey, which indicates quail populations are currently very low throughout the Refuge. Management objectives of restoring longleaf pine forest are expected to improve habitat suitability in the future.

American Woodcock have been experiencing significant population declines over recent decades. Globally, they have experienced an annual decline of 1.6 percent from 1980 to 1999. Breeding Bird Survey data has indicated long-term annual declines of 2.3 percent annually from 1966 to 1999 (NatureServe 2007). The woodcock is designated a species of "High Conservation Concern" (Imperiled Status) in the Alabama's Wildlife Conservation Planning Strategy (ADCNR 2005). Woodcock are also classified "Vulnerable" by NatureServe in Alabama. While not directly recorded on the Refuge, woodcock are considered an uncommon and permanent resident in most of Alabama (Mirarchi et al. 2004) and are a potential refuge inhabitant. Harvest data for the Choccolocco Wildlife Management Area indicates no woodcock were taken during the 2005-2006 hunting season (McCutcheon 2006).

3.4.2 Mammals

Fifty-one mammal species are suspected or known to inhabit the Refuge (USFWS 2005). Twenty-four of these species have been documented on or directly adjacent to the Refuge. Because most of the Refuge contains upland and mountain forests, habitat availability is good for species such as opossum, eastern chipmunk, gray squirrel, coyote, gray fox, raccoon and white-tailed deer. Habitat for species requiring rich woodlands and wetlands is less available, and these species tend to be absent or rare within the Refuge. An exception includes small headwater streams and seepages that provide localized and isolated wetland habitat. Within seeps, species such as beaver and muskrat may be encountered.

Game species included under the *Preferred Alternative* are white-tailed deer, gray squirrel, eastern fox squirrel, eastern cottontail, Appalachian cottontail, bobcat, coyote, gray fox, beaver, raccoon, opossum, woodchuck and feral hog. Refuge hunting is administratively managed by the Alabama Division of Wildlife and Freshwater Fisheries in conjunction with Choccolocco Wildlife Management Area.

White-tailed Deer populations in Alabama reached 1.75 million animals in 2000 (Cook and Gray 2003). In fact, many areas in Alabama are overpopulated with deer and have been for many years. In 2001-2002 hunting season, over 213,000 deer hunters spent over 3,900,000 man-days in pursuit of deer. Those hunters harvested 410,000 deer. During the 2005-2006 hunting season, 299 deer were harvested on the Choccolocco Wildlife Management Area with a man-day success of 6.1 percent (McCutcheon 2006).

The primary issue involving deer on the refuge is related to overpopulation. With the removal of large predators from Alabama (wolves and mountain lions), hunting remains the only viable population control for this large animal. When deer numbers exceed the ability of habitat to provide the forage, low growing plants are depleted, and starvation and disease become the only means of controlling population growth. This can be a long-term issue affecting the entire forest, removing new tree growth before the plants have an opportunity to mature and grow above the browse line. The problem is exacerbated on refuge lands because most of the refuge and all adjoining Joint Powers Authority lands have been off limits to hunting for almost a decade.

Deer are opportunistic browsers, selecting the most palatable species in the forest. As populations increase, pressure is placed on more palatable species first, with less desirable species eventually being chosen as browse availability worsens. The end result is a modification of forest structure with some species disappearing entirely from the landscape. Habitat modifications, such as the elimination of low shrubs and herbaceous plants, can actually eliminate nesting habitat for sensitive neotropical migratory birds that inhabit the forest interior (Cook and Gray 2003). Refuge forests have repeatedly been identified as important habitat for these species (USFWS 2005; Soehren 1995; Webb 1996a; ANHP 1994). Additional refuge impacts attributed to browsing have also been observed within sensitive wetland seepages. White fringeless orchid (Candidate Species) appears selectively chosen with multiple stems browsed during the flowering period. The long-term implications of browsing are unknown, but represent a serious potential concern for rare isolated populations such as this orchid.

Increasing deer populations represent a serious threat to biological integrity on the Refuge. The closure to hunting on refuge UXO restricted lands (5,671 acres), and the probable permanent elimination of hunting on adjacent Joint Powers Authority properties, indicates continuing issues involving deer overpopulation into the future. The dispersal of deer from adjacent non-hunted lands will always provide a new source of animals, even with active hunting on the Refuge. To maintain a healthy population after reducing the herd to carrying capacity, management studies have demonstrated that one-third of the population must be harvested annually (Cook and Gray 2003).

Gray Squirrel is the most common squirrel species in Alabama, and commonly observed throughout the Refuge. Historically, this squirrel was probably less common on the Refuge where open longleaf pine forests once covered mountain slopes. With fire suppression, hardwoods increased on the refuge and the canopy closed, creating habitat preferred by the gray squirrel. The estimated annual harvest on the Choccolocco Wildlife Management Area during 2005-2006 was 100 squirrels with 300 man-days of effort (McCutcheon 2006). The hunter success ratio was well below that occurring on most Wildlife Management Areas in Alabama.

There is no distinction in harvest information between eastern fox and gray squirrels, but the abundance of gray squirrels in the area would indicate this species was most commonly taken.

Eastern Fox Squirrel is a characteristic species of longleaf pine forests in the southeastern United States. They prefer and are adapted to the mature open longleaf pine forests that once covered much of the region. As these forests disappeared, fox squirrel populations also declined in the Southeast. Once the forest canopy closes, gray squirrels usually out-compete and replace fox squirrels. While considered a low conservation concern overall in Alabama (Mirarchi et al. 2004), the squirrel is uncommon and isolated to remnant stands of mature longleaf pine in northeast Alabama. While they have disappeared from most private lands surrounding the Refuge, fox squirrels can still be found in longleaf pine stands on Choccolocco Mountain. Populations, however, are small with no biological information on their viability. Information concerning refuge populations and genetic exchange between isolated population pockets on the refuge is absent. The fox squirrel is also known from the Talladega National Forest where it is also considered uncommon (Gardner, personal communication). Proposed management objectives to restore mature longleaf pine habitat should enhance fox squirrel habitat and increase populations.

The greatest threat to eastern fox squirrels in the Southeast is the loss of mature forest habitat, particularly the open longleaf pine ecosystem. In Alabama, the fox squirrel is considered vulnerable (S3) according to NatureServe (2007). Because of the squirrel's low reproductive rate, hunting of smaller and more disjunct populations has the potential to threaten regional survival of the species. Fox squirrels are protected from hunting mortality on 22 of 36 Wildlife Management Areas in South Carolina, as part of the State's 2005 Comprehensive Wildlife Conservation Strategy (South Carolina Department of Resources 2007).

Eastern Cottontail is common in deciduous forest, forest edges, grasslands, fencerows and urban areas throughout Alabama (Mirarch 2004). Because most of Choccolocco Mountain is covered by continuous forest, habitat for rabbits, at least for the eastern cottontail, is poor and rabbits are rarely observed on the Refuge. During the 2005-2006 hunting season, 120 rabbits were harvested with 340 man-days of effort in the Choccolocco Wildlife Management Area (McCutcheon 2006). With a success rate of 0.35 percent, these results reflect a low hunting success in comparison to the average rate on all State Wildlife Management Areas (1.21 percent).

Appalachian Cottontail is a secretive forest dwelling rabbit that is restricted to the Appalachian Mountains. The rabbit reaches its southern range extension in northeast Alabama. Its preferred habitat, high elevation blueberry and mountain laurel thickets, is available along much of Choccolocco Mountain. It has been documented from the Talladega Mountains east of the Refuge (Hart 2007) and from Choccolocco Mountain (Liles 2007). Refuge observations by the Alabama Heritage Program (1994) and Jacksonville State University (1996) tentatively identified Appalachian Cottontail during biological surveys performed for the Army. A third individual rabbit was collected by Webb (1996b) during these surveys and sent to Josh Larem at the Georgia Museum of Natural History. Although the specimen was a juvenile and difficult to

identify, Dr. Larem felt "confident in giving a preliminary identification as *obscurus*" to the rabbit.

The rabbit's geographical distribution is broken into small isolated populations in the Southern Appalachians, which are particularly vulnerable to extirpation by chance events (NatureServe 2007). In Alabama, the rabbit is considered "Critically Imperiled" (NatureServe 2007) and as "Imperiled" in Alabama's Comprehensive Wildlife Strategy (ADCNR 2005).

Typically, the Appalachian cottontail is restricted to high elevation forests in the Southern Appalachian Mountains. In South Carolina they are found at elevations as low as 900 feet ASL (Bunch et al. 2007). In North Carolina, all rabbits found above 2,500 feet ASL are considered Appalachian Cottontail (Sharpe 1996). In Alabama, the rabbit has been found at elevations as low as 700 feet ASL (Hart 2004). While elevation provides an indication of potential presence, habitat alteration and disturbance can change the landscape and place the rabbit in direct competition with the eastern cottontail. Within disturbed habitats, the eastern cottontail usually out-competes and replaces the Appalachian cottontail.

Refuge elevations range from 880 feet ASL to 2,063 feet ASL on Morton Mountain. The entire refuge is within the elevational requirements for Appalachian cottontail. The presence of numerous heath thickets (e.g. mountain laurel, rhododendron, blueberry) also indicates potential habitat is available to the rabbit on the Refuge. Together with large expanses of undisturbed forest habitat and tentative identifications in the past, there is high probability that Appalachian cottontail inhabits the Refuge.

The Appalachian cottontail is extremely difficult to visually separate from the eastern cottontail. Hunting under the *Preferred Alternative* allows the harvest of all rabbits, which includes Appalachian cottontail. Because all rabbits are uncommon in a mature forest landscape at higher elevation forests, few hunters intentionally hunt rabbits along Choccolocco Mountain.

Bobcats are considered common in Alabama (Mirarchi 29004), but as large predators with extensive home ranges, their populations should be viewed at a broad landscape scale. In Florida, home range size for males averages 4,900 acres and 2,900 acres for females (Mallow 2003). It has been estimated that a viable population needs 200 individuals occupying 159,000 acres of forest land to avoid adverse effects associated with inbreeding. Bobcats can tolerate some habitat disturbance, but usually are absent from areas of intensive farming or dense human populations. A key management approach for maintaining bobcat populations is to maintain large blocks of relatively wild habitat with sufficient corridors to allow individuals to move back and forth among local populations. Coyote predation of bobcat is a threat in many areas of the country. Typically high or expanding coyote populations result in low numbers of bobcat, even in suitable bobcat habitat (NatureServe 2007).

Bobcats are occasionally sited on the Refuge and are known to inhabit Choccolocco Mountain. Choccolocco Mountain however exists as a mountain outlier of the Talladega Mountains, and is almost entirely surrounded by farmland and human development. Only isolated forest corridors currently connect the mountain to the main stem of the Blue Ridge. As a habitat island of 50,000

acres, the mountain may not provide adequate habitat to maintain a viable bobcat population. If bobcats are moving back and forth across the Choccolocco Valley or along the few remaining forested corridors, population viability becomes a lesser issue. Because research on local bobcat populations has not been accomplished, the viability of refuge populations cannot be conclusively answered. The existence of habitat corridors to the adjacent National Forest, however, represents a positive and perhaps critical habitat need for bobcats, as well as, other wide ranging species.

Coyotes are common in all habitats throughout Alabama (Mirarchi 2004). They are commonly observed on the Refuge and have replaced the cougar and wolf as the largest predator in our State. Coyotes, however, expanded their range into our region from the west, and represent highly intelligent and effective predators of many native species that evolved in a landscape without coyotes.

Gray Fox are common in forested areas throughout Alabama (Mirarchi 2004). They are occasionally observed on the refuge with suitable habitat available along all of Choccolocco Mountain.

Beaver are common in open water habitats throughout Alabama (Mirarchi 2004). They are occasionally observed along Refuge streams and spring seepages. They appear to periodically move up streams onto the Refuge, disappear and then reappear a few years later. They represent a serious threat to the sensitive wetland plant community in spring seepages. White fringeless orchid, a Candidate for federal listing, is one of the species found in Refuge seepages. The damming of springs around seepages eliminates wetland habitat for certain plant species, resulting in the disappearance of unique wetland flora and potentially the federally designated white fringeless orchid.

Raccoon are common in all habitats throughout Alabama (Mirarchi 2004). Raccoons or their tracks are commonly observed on the Refuge.

Opossum are common in all habitats throughout Alabama (Mirarchi 2004. Opossums or their tracks are commonly observed on the Refuge.

Woodchuck are found in the northern two-thirds of Alabama along forest edges, open fields and pastures (Mirarchi 2004). They are closely associated with early successional, agricultural and disturbed habitats, which are rare on the Refuge. They have been observed on lands adjacent to the Refuge, and potentially may be found around former army range areas or adjacent to former wildlife foodplots.

Feral Hogs have spread or been released throughout Alabama (Nelson and Causey 2001) and have recently become a serious problem on the adjacent Talladega National Forest (Liles, personal communications). They have been observed just east of the Choccolocco State Forest, and represent a potential threat to the Refuge should they move along the forest corridor onto Choccolocco Mountain.

Hogs have been described as the greatest vertebrate modifier of natural communities in our region (Nelson and Causey 2001). Soil disturbance from rooting hogs in both uplands and wetlands will eliminate long-lived perennials adapted to our natural communities. Tree seedlings, including those of longleaf pine, are highly preferred by rooting hogs, and their loss will eventually modify forest structure. Early successional and exotic plants will subsequently invade native communities, degrading the quality and biological integrity of all refuge natural systems. Hogs are omnivores and opportunistic feeders, and will compete with native wildlife for food. They are serious nest predators, particularly devastating to forest interior ground and shrub nesting birds. They also prey on native mammals, birds, reptiles and amphibians. They carry a wide range of parasites and diseases that can be transmitted to native wildlife.

3.4.3 Endangered Species

Gray Bat. The endangered gray bat is the only federally listed species know to frequent refuge lands. The Army conducted field investigations between 1995 and 1997 to determine the distribution and use of fort lands by gray bats (3D/International 1996a, 1996b, 1997). This effort involved mist netting along fort streams and radiotelemetric investigations to identify foraging use and roosting areas (3D/International 1998).

Mist netting studies documented that gray bats use both Cane and Choccolocco Creeks for foraging. The capture of a reproductive female and three adult males during summer 1996 indicated at least one maternity colony and one bachelor colony were located within 22 miles of Fort McClellan. Mist netting in August 1995 also indicated gray bats foraged during the transient period following maternity season. Subsequent radiotelemetry studies in 1997 revealed two bachelor roosts under Highway 21 bridges at Cave and Cane Creek bordering the fort, and two transitional cave roosts a short distance west of the fort. Foraging on the Main Post portion of Fort McClellan was primarily confined to the golf course and forested areas north and south of Baltzell Gate. A single radiosignal was detected north of the headwaters of South Branch Cane Creek on the Refuge.

The study classified all stream corridors on Fort McClellan according to potential foraging value for gray bats. This classification was based on the physical characteristics of stream corridors and was categorized into high, moderate or low quality habitat. Only low quality habitat was identified as existing on lands that eventually became the Refuge. According to the Biological Assessment (3D/International 1998), a low quality rating indicated suitable flyways were not available and measures were not necessary for protecting gray bats under the Endangered Species Act. The U.S. Fish and Wildlife Service concurred on this approach in a letter to the Army dated February 6, 1997.

Red-cockaded Woodpecker. The endangered red-cockaded woodpecker (RCW) is adapted to mature open longleaf pine forest, and historically inhabited the Refuge and other longleaf pine forests in northeast Alabama. With the disappearance of longleaf pine in the region, the woodpecker also experienced serious population declines. RCWs within the adjacent Talladega National Forest were occasional into the early 1960s, and at least fair populations are suspected to have existed on the Refuge into the 1950s (Summerour 1992). The last active RCW cluster on

Fort McClellan was recorded in the late 1960s or early 1970s. There is no record of activity within this cluster after 1972. Subsequent surveys on Fort McClellan in 1992 (Summerour 1992) and 1998 (Reisz 1998) failed to find any active or recently inactive RCW clusters.

The 1992 survey by Dr. William Summerour was conducted by a respected ornithologist with decades of experience and familiarity with Fort McClellan terrain. While old-growth suitable for cavity excavation was identified, Summerour did not believe adequate foraging habitat and acreage was available to sustain a RCW population. He did recognize the possibility of RCWs pioneering from the adjacent Talladega National Forest.

The 1998 (Reisz 1998) survey also identified conditions responsible for the disappearance of RCWS from the fort. Habitat quality was considered moderate to poor, with the thick midstory primarily responsible for habitat degradation. The study concluded that some good RCW habitat existed on the fort and, with midstory control, habitat quality and availability would increase. As in the previous survey, the possibility of birds pioneering from the National Forest was considered a possibility with habitat improvement programs.

At present, old-growth availability for cavities on the Refuge is probably as good as or better than on most longleaf pine forests in the Southeast. Small acreages of high quality forest however indicate the Refuge is probably not capable of supporting a viable RCW population in and by itself. It may be possible at some future time to establish clusters as part of the adjacent recovery population. The probability of establishing such a population at some future date would be dependant on the continued existence of the connecting forested corridor, the success of longleaf pine restoration on the Refuge and creation of a viable RCW population on the Talladega National Forest. There is a potential over time for Forest Service birds to naturally pioneer onto the Refuge.

White Fringeless Orchid. White-fringeless orchid (*Platanthera integrilabia*), a Candidate for federal listing, has been documented within the Marcheta Mountain Seep and the Cave Creek Seep. Both seeps are located outside proposed hunting described in the *Preferred Alternative*. Within the Marcheta Mountain Seep, 252 flowering individuals were recorded in 1993 (ANHP 1994) and 213 in 1995 (Garland 1996b). Only three individuals were documented in the Cave Creek Seep in 1993, and none were found in 1995. These two populations are included in the Service's "Candidate and Listing Priority Assignment Form" and accompanying Site Conservation Plan (White 1998) that were used for elevating the orchid to Candidate status. The conservation plan estimates the population within Marcheta Mountain Seep as 500-750 individuals, and the Cave Creek Seep as 75 individuals. These increased numbers are based on the premise that only a small fraction of the orchids actually flower each year, and therefore the actual population is much greater than flowering individuals. The Marcheta Mountain population actually represents one of the larger known populations of white-fringeless orchids remaining in the Southeast.

Potential habitat exists for this orchid throughout seepage areas along the base and slopes of Choccolocco Mountain. The Army funded field investigations to locate new seeps along with potential and new white fringeless orchid populations in 1997 (Whetstone et al. 1998). The

study identified 24 seeps on the Refuge that met the criteria of jurisdictional wetlands as defined in the 1987 Army Corps of Engineers Wetland Delineation Manual. Additional field surveys were accomplished in late July to revisit sites that appeared to potentially support white fringeless orchid. While no new populations were identified, seepages identified in the study represent potential habitat for the orchid within the Refuge. Because the orchid flowers infrequently, the identification of new populations may take many years to verify.

3.4.4 Wetlands

Steep mountain ridges and slopes limit the types and extent of wetlands on the Refuge. Springs and associated seepages comprise the only wetland type found on refuge lands. Most, but not all, are located along the base and slopes of Choccolocco Mountain. While some are seasonal, the larger more significant wetlands are perennial and up to seven acres in size. They are located at springs and along streams flowing from upland areas. Studies commissioned by the Army identified 23 areas on the Refuge that meet the jurisdictional definition of wetlands in the 1987 Army Corps Manual.

3.4.5 Aquatic and Fishery Resources

All streams within refuge boundaries are small perennial or ephemeral streams that are unable to support recreational fishing. Studies by the Army characterized water quality and mollusk populations on the former army installation (C2 Environmental Services 1997). Water quality varied along small streams according to proximity to development and training facilities. Low calcium levels and reduced pH were characteristic of upstream and headwater environments on the Refuge. Mollusk densities declined and disappeared moving upstream onto refuge lands. Headwater streams and seepages however were sampled for caddisflies and revealed a large number of rare and endemic species (Harris 1991). Eighteen species of caddisflies considered rare or unique to the Refuge were collected from the headwaters of Bains Gap Creek and South Branch Cane Creek (ANHP 1994).

3.5 Socioeconomic and Land Use Conditions

3.5.1 Socioeconomic

The general socioeconomic conditions of Anniston, Fort McClellan and Calhoun County are described in the Refuge Establishment EA (USFWS 2003).

3.5.2 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 FWS'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.

Hunting, regardless of method or species targeted, is a consumptive activity that does not pose any threat to historic properties on and/or near the Refuge. In fact, hunting meets only one of the two criteria used to identify an "undertaking" that triggers a federal agency's need to comply with Section 106 of the National Historic Preservation Act. These criteria, which are delineated in 36 CFR Part 800, state:

> 1- an undertaking is any project, activity, or program that can alter the character or use of an archaeological or historic site located within the "area of potential effect;" and
> 2- the project, activity, or program must also be either funded, sponsored, performed, licenses, or have received assistance from the agency.

Consultation with the pertinent State Historic Preservation Office and federally recognized Tribes are, therefore, not required.

4.0 ENVIRONMENTAL CONSEQUENCES

This chapter describes the foreseeable environmental consequences of implementing the two Sport Hunting Plan alternatives (*Preferred Alternative* and *No Action Alternative*). When detailed information is available, a scientific and analytic comparison between alternatives and their anticipated consequences is presented, which is described as "impacts" or "effects." When detailed information is not available, those comparisons are based on the professional judgment and experience of refuge staff and Service and State biologists

4.1 Effects Common to all Alternatives

4.1.1 Environmental Justice

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" was signed by President Bill Clinton on February 11, 1994, to focus federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Order directed federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in federal programs substantially affecting human health and the environment, and to provide minority and low-income communities access to public information and participation in matters relating to human health or the environment. This assessment has not identified any adverse or beneficial effects for either alternative unique to minority or low-income populations in the affected area. Neither alternative will disproportionately place any adverse environmental, economic, social, nor health impacts on minority or low-income populations.

4.2 Summary of Effects

4.2.1 Refuge Physical Environment

While the *Preferred Alternative* will increase visitor usage during fall and winter months, only Bain's Gap Road (paved) and Ridge Road (improved gravel) will be opened to hunter's vehicle traffic. Unimproved refuge roads and trails are gated and hunters will access these areas on foot. Sensitive physical features will therefore only be exposed to foot traffic under both alternatives

The refuge expects impacts to air and water quality to be minimal and only due to refuge visitor automobile emissions. The effect of these refuge-related activities on overall air and water quality in the region are anticipated to be relatively negligible.

4.2.2 Cultural Resources

Hunting and visitor access does not pose a threat or potential harm to cultural resource sites on the Refuge under either the *Preferred Alternative* or *No Action Alternative*. Refuge cultural resource sites are unmarked and will not be impacted by foot traffic.

4.2.3 Public Safety

There is an increased risk of inadvertent or illegal entry from public use areas into restricted areas under the *Preferred Alternative*. Refuge lands west of Ridge Road (5,671 acres) are currently closed to the public while the Army is characterizing the possible presence of unexploded ordnance (UXO). This increased risk, however is minimized through the use of law enforcement, signage, brochures and outreach programs currently in place.

4.2.4 Vegetation

Hunting is not anticipated to adversely impact refuge natural communities under the *Preferred* or *No Action Alternatives*. While the number of visitors on the Refuge is expected to increase under the *Preferred Alternative,* the movement and presence of hunters is not considered a significant modifying influence.

Some wildlife species however can alter or modify existing refuge vegetation through foraging or other habitat modifications. Because of overpopulation or site specific activities, these effects can adversely impact specific community types or the refuge landscape in general. In some situations, these impacts have the potential to lower refuge carrying capacity, or in other situations, to totally eliminate sensitive habitat for rare or endangered species. Hunting under the *Preferred Alternative* could reduce or eliminate some of these potential adverse effects. The following species were evaluated in Section 3.0, and identified as possible sources for adversely impacting refuge vegetation and habitats:

- White-tailed Deer – Overpopulation resulting in refuge-wide modification of natural communities, particularly harmful to nesting forest interior birds and rare plants.
- Beaver – Potential threat from damming in spring seepages, and the elimination unique wetland habitat and federally designated plants.
- Feral Hogs – Potential threat from rooting affecting all refuge habitats, including federally designated species, wetlands and longleaf pine communities.

4.2.5 Game Species

Information is lacking on the impact of hunting to refuge and regional game populations. An evaluation of game species included under the *Preferred Alternative* indicates hunting is and will have no significant adverse impact on refuge game populations. Local observations and regional trends however suggest five species included in the *Preferred Alternative* occur on the Refuge at low populations or in isolated population pockets, and should be monitored during future hunting programs. Detailed evaluations on these species are provided in Section 3.0:

- Northern Bobwhite
- American Woodcock
- Eastern Fox Squirrel
- Appalachian Cottontail

- Bobcat

All five species are rarely encountered on the refuge and hunting take would probably be incidental to other hunting efforts. Hunting harvest information is only available for quail and woodcock (McCutcheon 2006). Currently, few people hunt for these species on the Refuge and refuge populations are probably not impacted through hunting. Low bobwhite numbers reflect poor habitat and not hunting pressure. Slightly more than three percent of all Alabama Wildlife Management Area quail were harvested on the Choccolocco Wildlife Management Area (Section 3.4.1). Quail have the ability to rapidly reproduce and are expected to increase in numbers with refuge longleaf pine restoration programs. American woodcock are a permanent and migratory bird that is rare in our area. Regional information indicates hunting is not an issue with woodcock population declines (McAuley et al 2005). The eastern fox squirrel, Appalachian cottontail and bobcat all occur at such low numbers on the Refuge that hunters seldom harvest any of these species. In most situations, this is because of poor or limited habitat for these species on the Refuge.

4.2.6 Non-game Species

Non-game wildlife would benefit from the selective hunting of those species that have potential to alter or modify natural communities (Section 3.0). Refuge-wide, the most significant alteration of habitat is and will occur from deer overpopulation. Feral hogs, should they invade the Refuge, also represent a significant adverse potential impact to non-game wildlife. While deer hunting may provide some relief to overpopulation, large acreages of adjacent non-hunted forest (Refuge Restricted Areas and Joint Powers Authority Property) indicates a serious problem under both the *Preferred* and *No Action Alternatives*.

Hunting of predators was not considered beneficial to non-game wildlife and is, generally, not recognized as an appropriate population management action. Maintaining biological integrity requires that predators are part of the overall refuge natural system. In some situations, predators may actually be providing benefits to ecosystem stability. Should specific predator problems occur on the Refuge, they will be evaluated and specific controls will be considered as management options

Beaver are occasional and intermittent residents on the Refuge. While beaver dams can create a diverse aquatic and wetland community, they are displacing a unique and rare community type (spring seepage) that is critical to refuge biological integrity and enhancing regional biodiversity. Beaver represent a critical threat to native and endemic species that inhabit these seepages.

4.2.7 Endangered Species

Three federally designated species (Gray Bat-Endangered, White-fringeless Orchid-Candidate and Red-cockaded Woodpecker-Endangered) are found or historically inhabited the Refuge (Section III). While the *Preferred Alternative* may increase recreational use on the refuge, none of the three species would be impacted through additional human activities. The red-cockaded wood pecker is not currently found on the refuge. The Gray Bat is in hibernation during hunting season in caves distant to the Refuge. The White-fringeless orchid is dormant during the winter.

4.2.8 Facilities (Roads, Parking Areas and Trails)

The preferred alternative is not anticipated to impact or degrade existing facilities (e.g. parking areas, roads, and trails) on the Refuge. Hunter vehicle traffic will be restricted to existing paved and improved roads used by all refuge visitors. Environmentally sensitive trails and off-road pathways are gated and restricted to foot traffic, which is anticipated to result in no significant environmental impacts refuge-wide.

4.2.9 Wildlife Dependant Recreation

The *No Action Alternative* fails to provide the wildlife dependant recreational opportunity of hunting, which is compatible with the purposes for which the refuge was established and the mission of the National Wildlife Refuge System. Local residents interested in hunting would have to travel to other public lands, possibly further distances from their home residence.

The *Preferred Alternative* of hunting may result in some conflict between consumptive (hunters) and non-consumptive (birdwatchers, hikers, etc) users. Because hunting generally occurs during the winter or colder months, non-consumptive refuge use is less than during other times of the year. The proximity of the Refuge to urban and residential areas however is an enticement to many non-consumptive users, particularly during warmer periods of the winter. Fall colors during November bring large numbers of visitors along Bain's Gap and Ridge Road.

Potential conflicts between hunters and non-consumptive users will be managed by restricting hunting to areas away from roads, and away from established interpretive trials and vistas. These restrictions would be designated on the hunt permit.

4.3 Cumulative Impacts Analysis

4.3.1 Anticipated Direct and Indirect Impacts of Proposed Action on Wildlife Species.

Migratory Game Birds.

The U.S. Fish and Wildlife Service 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.

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 seasons 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).

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.

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.

The only migratory game bird included in the Refuge *Preferred Alternative* is American Woodcock. Although woodcock are showing declines in numbers on their breeding grounds, habitat loss is considered to be the culprit, not hunting. This assertion was tested in a study conducted by the U.S. Geological Patuxent Wildlife Research Center in 2005 (McAuley *et al.* 2005). Results showed no significant differences in woodcock survival between hunted and non-hunted areas. Furthermore, the authors concluded that hunting was not having a considerable impact on woodcock numbers in the Northeast (McAuley *et al.* 2005).

In Alabama, 216 woodcock were harvested on Wildlife Management areas during the 2005-2006 hunting season (McCutcheon 2006). No woodcock were harvested on the Choccolocco Wildlife Management Area during this period. Woodcock is not a highly popular game species in Alabama. The cumulative effects of hunting woodcock on the Refuge however are not considered significant.

Resident Game. With the exception of woodcock, all game species described for the *Preferred Alternative* are resident species with impacts affecting only the local population. The cumulative effect to these species at a broad scale however is generally less significant. Current local and regional trends for these species are provided in Section 3.0. An overview of local or refuge level effects of hunting can be found in Section 4.2.

Fifteen resident game species were evaluated under the *Preferred Alternative*. Species included in the analysis included turkey, northern bobwhite, white-tailed deer, gray squirrel, eastern fox squirrel, eastern cottontail, Appalachian cottontail, bobcat, coyote, gray fox, beaver, raccoon,

opossum, woodchuck, and feral hog. Four of the species (northern bobwhite, eastern fox squirrel, Appalachian cottontail and bobcat) were identified at low population levels or restricted to isolated population pockets on the Refuge.

While refuge environmental conditions are not necessarily comparable to all regions of the Southeast, they do represent an overall trend that is impacting these four species region-wide. This trend is more closely related to regional habitat degradation and alteration than the individual take of species. The regional loss of longleaf pine woodlands and fire suppression are critical elements in the decline of northern bobwhite and eastern fox squirrel populations. Bobcats have large home ranges and require extensive blocks of wildland to sustain genetically viable breeding populations. Choccolocco Mountain, as an isolated mountain outlier surrounded by human development, creates an island of limited habitat for the bobcat. The bobcat is regionally doing very well on larger tracts of wildland around the State. The Appalachian cottontail is extremely rare in Alabama with only five specimens collected in the State since 1912 (Hart 2007). The rabbit is also rare and patchy throughout much of its range to the north. Rarity and lack of habitat result in few hunters targeting and harvesting any of these species on the Refuge. Hunting therefore is not considered a significant impact to any game species listed under the *Preferred Alternative*.

There are no specific cumulative impacts associated with *No Action Alternative*.

Non-Game Wildlife. Possible cumulative effects to refuge non-game wildlife primarily involve neotropical and other migratory birds. These birds migrate through the area, nest or winter in refuge forests. The refuge may provide habitat for a critical nesting, resting or wintering stage in the species life. Some species of bats, butterflies and moths are also migratory. Cumulative effects to these species at the "flyway" level should be negligible.

Disturbance to non-game migratory birds could have regional, local, and flyway effects. The cumulative effects of disturbance to these birds under the *Preferred Alternative* are expected to be negligible. Hunting season would not coincide with the nesting season. Disturbance to the daily wintering activities, such as feeding and resting, of birds might occur, but disturbance by hunters would be commensurate with that caused by non-consumptive users. The *No Action Alternative* would have no adverse or beneficial cumulative effects on non-game wildlife.

Endangered Species. Three federally listed species (gray bat-endangered, white fringeless orchid-candidate and red-cockaded woodpecker-endangered) were or are found on the refuge. The red-cockaded woodpecker disappeared from the Refuge in the 1970s and only marginal foraging habitat exists for the gray bat.

The white fringeless orchid is a Southern Appalachian Species that is designated a candidate for federal listing. Fifty-three populations of white-fringeless orchid have been documented in the Southeast United States (USFWS 2002). Eleven (21 percent) of the sites are on federal lands (2 USFWS and 9 Forest Service) and receive protection under Section 7 of the Endangered Species Act. Refuge orchid populations represent 18 percent of federal land populations and 67 percent of Alabama federal land populations, and therefore represent a significant regional contribution

to the orchid's survival and recovery. While refuge orchid populations are considered of regional importance, the orchid is dormant during hunting season and adverse effects attributable to hunting are not anticipated under either the *Preferred* or *No Action Alternatives*.

4.3.2 Anticipated Direct and Indirect Impacts of Proposed Action on Refuge Programs, Facilities, and Cultural Resources.

Wildlife-Dependant Recreation. As public use levels expand across time, unanticipated conflicts between user groups may occur. The Refuge's visitor use programs would be adjusted as needed to eliminate or minimize each problem and provide quality wildlife-dependent recreational opportunities. Experience has proven that time and space zoning (e.g., establishment of separate use areas, use periods, and restrictions on the number of users) is an effective tool in eliminating conflicts between user groups.

Wildlife-dependant refuge use would be concentrated along roads, interpretive trails and mountain vistas. This, combined with the addition of increased hunting opportunity, could have a negative effect on nesting bird populations. However, because hunting season (except for the limited turkey hunt) is during the winter and not during most birds' nesting period, hunting is not expected to affect nesting birds.

High deer numbers are recognized as a problem altering forest structure, selectively reducing certain plants and reducing reforestation seedling survival. Hunting under the *Preferred Alternative* would be used to keep the deer herd and other resident wildlife in balance with the habitat's carrying capacity, resulting in long-term positive impacts on wildlife habitat. The *No Action* Alternative fails to provide controls for deer overpopulation and the maintenance of forest communities

Refuge Facilities. 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 those facilities most utilized by hunters are: roads, parking lots, and trails. Maintenance or improvement of existing facilities (i.e. parking areas, roads and trails) will cause minimal short term impacts to localized soils and waters and may cause some wildlife disturbances and damage to vegetation. The facility maintenance and improvement activities described 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. Siltation barriers will be used, as needed, to minimize soil erosion, and all disturbed sites will be restored to their natural condition. During times when roads are impassible due to weather events or other natural causes, those roads, parking lots, and trails impacted by the event will be closed to vehicular use.

Cultural Resources. Hunting, regardless of method or species targeted, is a consumptive activity that does not pose a threat to historic properties on and/or near the Refuge. Consultation with the pertinent State Historic Preservation Office and federally recognized Tribes are, therefore, not required.

4.3.3 Anticipated Impacts of Proposed Hunt on Refuge Environment and Community.

The Refuge does not expect adverse impacts from either the *Preferred* or *No Action Alternatives* on the refuge physical environment (e.g. soils, vegetation, air quality, water quality and solitude). Some disturbance to surface soils and vegetation would occur in areas selected for hunting, however, impacts would be minimal. Control of deer numbers through hunting is expected to benefit habitat quality and over all biological integrity on the Refuge. The refuge would also restrict all hunter vehicle access to paved and improved gravel roads to minimize habitat degradation and sedimentation from roadways.

The refuge expects impacts to air and water quality to be minimal and only due to refuge visitors' vehicle emissions. The effect of these refuge-related activities, as well as other management activities, on overall air and water quality in the region are anticipated to be negligible, compared to the contributions of industrial centers, power plants, and non-refuge vehicle traffic. Impacts associated with solitude are expected to be minimal given time and space zone management techniques, such as seasonal access and area closures, used to avoid conflicts among user groups.

The Refuge would work closely with State, Federal, and private partners to minimize impacts to adjacent lands and its associated natural resources; however, no indirect or direct adverse impacts are anticipated under either the *Preferred Alternative* or the *No Action Alternative*. Refuge hunting would result in a net gain of public hunting opportunities positively impacting the general public, nearby residents, and refuge visitors. The refuge expects increased visitation and tourism to bring additional revenues to local communities.

4.3.4 Other Past, Present, Proposed, and Reasonably Foreseeable Hunts and Anticipated Impacts.

Cumulative impacts on the environment result from incremental effects of a proposed action when these are added to other past, present, and reasonably foreseeable future actions. While cumulative effects may result from individual minor actions, they may, viewed as a whole, become substantial over time. The proposed hunt plan has been designed to be sustainable through time under relatively stable conditions. Changes in refuge conditions, such as sizeable increases in refuge acreage or public use, are likely to change the anticipated impacts of the current plan and would trigger a new hunt planning and assessment process.

The implementation of any of the proposed actions described in this assessment includes actions relating to the refuge hunt program (see 2007 Hunting Plan for Mountain Longleaf NWR). These actions would have both direct and indirect effects (e.g., new site inclusion would result in increased public use, thus increasing vehicular traffic, disturbance, etc); however, the cumulative effects of these actions are not expected to be substantial.

The Refuge has been closed to all hunting for nearly a decade. The *Preferred Alternative* represents new public hunting opportunities in the region. This effort is fully compatible with

the purpose for which the refuge was established and the mission of the National Wildlife Refuge System. The refuge does not foresee any changes to the *Preferred Alternative* in the way of increasing the intensity of hunting in the future.

4.3.5 Anticipated Impacts if Individual Hunts are Allowed to Accumulate.

National Wildlife Refuges, including Mountain Longleaf NWR, conduct hunting programs within the framework of State and Federal regulations. Mountain Longleaf NWR is at least as restrictive as the State of Alabama. By maintaining hunting regulations that are as, or more, restrictive than the State, individual refuges ensure that they are maintaining seasons which are supportive of management on a more regional basis. The proposed hunt plan has been reviewed and is supported by the Alabama Division of Wildlife and Freshwater Fisheries (ADWFF). Additionally, refuges coordinate with ADWFF annually to maintain regulations and programs that are consistent with the State management program.

5.0 Consultation and Coordination with Others

The Alabama Division of Wildlife and Freshwater Fisheries (ADWFF) concurs and fully supports the regulated consumptive public use of the natural resources associated with the Mountain Longleaf NWR (Refer to Letters of Concurrence). The Fish and Wildlife Service also provided an in depth review by the Regional Office personnel and staff biologists. Numerous contacts were made throughout the area of the refuge soliciting comments, views, and ideas into the development of the accompanying hunting plan.

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