

Environmental Assessment
2016 Recreational Hunting Plan

For

ATCHAFALAYA
NATIONAL WILDLIFE REFUGE
ST. MARTIN and IBERVILLE PARISHES,
LOUISIANA

For Further Information, Contact:
U. S. Fish and Wildlife Service
Southeast Louisiana Refuges Complex
Bayou Lacombe Centre
61389 Hwy. 434
Lacombe, LA 70445

TABLE OF CONTENTS

| | | |
|------------|--|----|
| Chapter 1 | PURPOSE AND NEED FOR ACTION | 1 |
| Chapter 2 | ALTERNATIVES INCLUDING THE PROPOSED ACTION | 2 |
| Chapter 3 | AFFECTED ENVIRONMENT | 3 |
| Chapter 4 | ENVIRONMENTAL CONSEQUENCES..... | 8 |
| Chapter 5 | CONSULTATION AND COORDINATION WITH OTHERS..... | 18 |
| Appendix A | LITERATURE REFERENCES | 19 |

Chapter 1. Purpose and Need for Action

The National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 668dd et seq.) provides authority for the U.S. Fish and Wildlife Service (Service) to manage national wildlife refuges across the country. The Act established wildlife conservation as the primary mission of the National Wildlife Refuge System (NWRS). In accordance with the Act, national wildlife refuges will be managed to fulfill the mission of the NWRS, fulfill the individual purpose of each refuge, and maintain the biological integrity, diversity, and environmental health of the natural system.

While wildlife is first priority in refuge management, wildlife-dependent recreational uses or other uses may be allowed after they have been determined appropriate and compatible by the Refuge Manager. There are six priority wildlife-dependent public uses identified in the National Wildlife Refuge System Improvement Act: hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation. These uses are dependent upon healthy fish and wildlife populations and are to receive enhanced consideration over other public uses in planning and management.

Atchafalaya National Wildlife Refuge (Refuge) was established on October 26, 1984, in accordance with Public Law-98-548. The current acreage of the Refuge is approximately 15,220 acres. The public use of these lands is managed by the Louisiana Department of Wildlife and Fisheries (LDWF) consistent with specific language in the authorizing legislation under a cooperative agreement. The Refuge is adjacent to the state's Sherburne Wildlife Management Area (WMA) and located about 30 miles west of Baton Rouge, Louisiana and one mile east of Krotz Springs, Louisiana and lies just east of the Atchafalaya River. Refuge purposes include: 1) providing for conservation and management of all fish and wildlife within the Refuge, 2) fulfilling the international treaty obligations of the United States with respect to fish and wildlife, and 3) providing opportunities for scientific research, environmental education, and fish and wildlife oriented recreation, including hunting, fishing, birdwatching, nature photography, and others. Access is provided through bayous and a network of gravel roads and trails through the Refuge.

The Refuge (15,220 acres), LDWF lands (11,780 acres), and U.S. Army Corps of Engineers (COE) lands (17,000 acres) combine to form a 44,000 acre tract within the Basin (Figure 4) known collectively as Sherburne WMA. LDWF manages public use on Sherburne WMA, COE lands, and the Refuge. Development and management have improved access, habitat, wildlife populations, and public use on these lands. All hunting and fishing regulations within the Sherburne WMA are set by LDWF and adopted by the Refuge when applicable. This makes it easier from not only a law enforcement standpoint but also to provide public wildlife related opportunities.

A Recreational Hunting Plan for the Refuge was submitted and approved in 1987 (USFWS 1986). Hunting of migratory game birds, small game and big game has taken place on the Refuge continuously since approval of the 1987 plan. This revised Refuge Hunting Plan is being submitted in order to update the 1987 plan with current compliance documentation to meet legal and policy obligations while expanding hunting opportunities for squirrel and adding incidental

take of feral hogs. The purpose of this Environmental Assessment is to predict the environmental consequences (positive and negative) of the revised hunt plan. Most of the Refuge is currently open to hunting, except for the waterfowl sanctuary, in accordance with LDWF regulations. All current hunting regulations would remain the same as those currently available within the Refuge (see 2016 Refuge Recreational Hunting Plan).

Chapter 2. Alternatives Including the Proposed Action

This chapter discusses the alternatives considered for hunting on the Refuge. The alternatives are 1) no action – continue the current hunt program, and 2) proposed action - implement updates to the existing approved plan as referenced in the 2016 Recreational Hunting Plan for the Refuge.

2.1 Alternative A: No Action - Current Management

Hunting is a popular activity and the Refuge offers hunters the opportunity to hunt small game, big game, and migratory birds. The Refuge offers the public a wide range of hunting opportunities for those using archery, primitive firearms, and modern guns, as well as special opportunities for youth and mobility impaired hunters with access available to most portions of the Refuge. Hunts offered include deer (open season and lottery; archery, muzzleloader, and gun); turkey (open season and lottery); fox and grey squirrel; rabbit; raccoon; waterfowl, snipe, rail, and gallinules; woodcock and mourning dove. Opportunities for handicapped (e.g., wheelchair bound) hunters are available that include marked all-terrain vehicle (ATV/UTV) trails and deer and waterfowl hunting areas that include wheelchair accessible blinds. In addition, youth hunts are offered for deer (lottery), waterfowl (lottery), and squirrel each year (LDWF 2015-16b.).

2.2 Alternative B: Proposed Action - 2016 Refuge Recreational Hunting Plan

The proposed action would update the existing Refuge Hunt Plan (1987) with current compliance documentation to meet legal and policy obligations, add incidental take of hogs, and add a spring squirrel season. A Hunt Plan Package has been prepared which includes:

- 1) 2016 Recreational Hunt Plan
- 2) Appropriate NEPA documentation (EA)
- 3) Appropriate NEPA decision document (FONSI)
- 4) Compatibility Determination
- 5) Other Relevant Compliance (e.g. Environmental Action Statement, Section 7, NHPA Section 106)
- 6) Copies of official letters

Refer to the 2016 Recreational Hunting Plan for specific Refuge regulations.

Chapter 3. Affected Environment

The Refuge is located in the lower Atchafalaya Basin Floodway System in St. Martin and Iberville Parishes, Louisiana. The name originated from its location within the Atchafalaya River Basin. The Refuge is bounded on the north by U.S. Highway 190, on the south by Interstate 10, on the west by the Atchafalaya River, and on the east by the East Atchafalaya Basin Protection Levee (Figure 2). The Refuge is part of the Southeast Louisiana National Wildlife Refuges Complex.

3.1 Physical Environment

The Refuge is encompassed within nearly one-half million acres of hardwood swamps, lakes and bayous known as the Atchafalaya River Basin (Basin). The natural floodplain of the Atchafalaya River flows for 140 miles south from its junction with the Mississippi River to the Gulf of Mexico.

The upper reaches of the Basin offer a great diversity of wildlife habitat that can be broadly classified as mid- to late-successional bottomland hardwood forests, cypress forests mixed with bottomland hardwoods, open water, and agricultural lands (Figure 3). Bottomland hardwoods are forested, alluvial wetlands occupying broad floodplain areas flanking large river systems (Atchafalaya/Mississippi Rivers) and are maintained by a natural hydrologic regime of alternating wet and dry periods that tend to follow seasonal flooding events; and, are the primary habitat of the Refuge.

3.2 Vegetation

The Refuge provides a variety of habitat types including bottomland hardwood forests, cypress swamps, freshwater marsh, moist soil areas, and a greentree reservoir.

The bottomland hardwood forests on the Refuge have four dominant tree species associations: sugarberry—American elm—green ash; sycamore—sweetgum—American elm; black willow; and baldcypress. Hybrid forest types created based on vegetation present and man-made changes in hydrology are baldcypress-green ash and baldcypress-black willow. Tree species within this bottomland hardwood forest vary according to the wetness of the specific site. Common tree species on the higher, well-drained sites include red oak, sugarberry, sweet gum, overcup oak, and elm. The wetter, lower sites contain predominantly cypress, willow, and ash. Other common species found in association within these forest types include red maple, cottonwood, sycamore, honey locust, box elder, and bitter pecan. Approximately 12 percent of the Refuge is inundated open water, with isolated cypress trees and willow stands (USFWS 2006). Except for the lowest swampy areas in the Bayou Des Glaises area, merchantable timber stands exist throughout most of the Refuge, covering approximately 14,455 of the total 15,220 acres.

Midstory species encompass seedlings of dominant species along with boxelder, maple, red mulberry, and rough-leaf dogwood. Ground cover is sparse, in areas, due to shading out and prolonged inundation. In those areas where habitat improvement, through the practice of forest management, has taken place, the ground cover is very dense and provides excellent habitat for

many game and non-game wildlife species. Common groundcover species found include rattan vine, greenbrier, blackberry, trumpet creeper, Virginia creeper, poison ivy, and milkweed. Much of the area supports lush stands of fern (USFWS 2008).

Buttonbush and water-elm are common mid-story species on wet sites, while rough-leaf dogwood is common on drier sites. Common understory plants on wet sites include lizard's tail, smartweed, water hyacinth, frog's bit, American lotus, *Bidens* sp., and cattail. Alligator weed and duckweed are prevalent in some areas.

3.3 Wildlife Resources

The Refuge supports a diversity of wildlife species common to Louisiana. The Basin's dense bottomland hardwoods, cypress-tupelo swamps, overflow lakes, and meandering bayous provide a tremendous diversity of habitat for more than 200 species of resident and migratory birds (and numerous other wildlife), and the area has been recognized as an Internationally Important Bird Area. The Basin's wooded wetlands provide vital nesting habitat for wood ducks, and support the nation's largest wintering concentration of American woodcock. Eagles, ospreys, swallow-tailed kites, and Mississippi kites can occasionally be seen soaring overhead. Wild turkeys, white-tailed deer, gray and fox squirrels, eastern cottontail and swamp rabbit, gray and red fox, coyote, striped skunk, and opossum inhabit the Refuge, as does the Louisiana black bear. Furbearers found in the great swamp are raccoon, mink, bobcat, nutria, muskrat, river otter, and beaver. Within the last few years, feral hog populations have increased dramatically.

3.4 Threatened and Endangered Species

Only two federally listed threatened and endangered species may be presently found on the Refuge: the Louisiana black bear (*Ursus americanus luteolus*) and the pallid sturgeon (*Scaphirhynchus albus*).

The Louisiana black bear is a subspecies of the American black bear, found in Louisiana, south Mississippi, and east Texas. The Sherburne Complex, including the Refuge, has a history of bear use.

In Louisiana, the most frequent occurrence of the pallid sturgeon is in the Mississippi and Atchafalaya Rivers, where the Atchafalaya River diverges from the Mississippi River (USFWS 1993 and 2007). Since the lifecycle of the pallid sturgeon requires migration between large river and small stream habitat, it is unlikely that the Refuge currently provides suitable habitat due to being cut off from the main channel of the Atchafalaya River. If the Sherburne Freshwater Diversion Structure at Big Alabama Bayou (or a similar project within the Basin) was to be constructed, it would likely provide habitat for the pallid sturgeon.

In addition to threatened and endangered species, several species of wildlife are of special concern on the Refuge. The State of Louisiana's Natural Heritage Program identifies several species of wildlife as rare or imperiled, and of special concern in vicinity of the Refuge (LDWF 2014). These include:

Birds

American Swallow-tailed Kite (*Elanoides forficatus*)
Bald Eagle (*Haliaeetus leucocephalus*)
Osprey (*Pandion haliaetus*)
Roseate Spoonbill (*Platalea ajaja*)
Peregrine Falcon (*Falco peregrines tundrius*)
Interior Least Tern (*Sternula antillarum athalassos*)

Fish

Paddlefish (*Polyodon spathula*)
Pallid Sturgeon (*Scaphirhynchus albus*)

Crustaceans

Old Prairie Crawfish (*Fallicambarus macneesei*)

Mammals

Louisiana Black Bear (*Ursus americanus luteolus*)
Eastern Harvest Mouse (*Reithrodontomys humulis*)

Reptiles

Alligator Snapping Turtle (*Macrolemys temminckii*)

3.5 Fishery Resources

The lifeblood of the fishery is the Basin's annual flooding and dewatering cycle. Overflows occur during the winter and spring rains, with many areas gradually becoming dewatered during the summer and fall. Recreational fishing is popular throughout the basin. Largemouth bass, white crappie, black crappie, warmouth, bluegill, redear sunfish, and channel catfish are the primary species sought. More than 85 species of fish occur in the Basin, and their populations frequently exceed 1,000 pounds per acre. Red swamp crawfish and white river crawfish are also important for both a recreational and commercial harvest.

3.6 Cultural Resources

The Refuge is located within the nation's largest swamp being encompassed by nearly one-half million acres of nationally significant expanses of bottomland hardwoods, swamp lands, bayous, and back-water lakes, which provide a tremendous diversity of habitat for more than 200 species of birds, and well as more than 100 species of mammals, reptiles, and fish.

The region was inhabited by mound building societies as early as the 12th century B.C. and later resettled by various Native Americans tribes between 500 and 700 A.D. The remains of these mound constructs and the preserved ceramic artifacts from this time period offer enduring evidence of the sophistication and rich cultural heritage of these prehistoric societies. The Basin's cultural history may go back 2,500 years when Native Americans are believed to have first settled in the area, a time when the Mississippi River flowed down the course of the present-day Bayou Teche. From 1000 – 1700 A.D., Indian villages were located within the wetlands and on grassy prairies along what is generally the current channel of Bayou Teche. Villagers harvested and hunted fish, shellfish,

reptiles, birds, deer, and small mammals that were plentiful in the area. Tribes with a history in the Basin include the Chitimacha, Attakapas, Opelousa, Houma, Choctaw, Coushatta and Alabama, Tunica-Biloxi and Avoyel, and Tensas. Native American association with the “great swamp” is evidenced by many place names in the modern basin, including Atchafalaya (hacha falaia), bayou (bayuk), Catahoula (oka hullo), Chacahoula (chukka hullo), Plaquemine (piakimin), and Whiskey Bay (oski abeha).

In the early 1700s, French settlers and slaves arrived in the Basin to trade with the Native Americans, primarily in the fur trade. In 1755, however, one of the most culturally significant migrations into the Basin occurred when refugees expelled from the Canadian province of Acadia found a home here. These immigrants quickly adapted to their new environment and developed skills that allowed them to survive in the challenging, yet fertile, swamp. As the years went by, they intermarried with other settlers of the area, including Hispanics, Old World and Canadian French, Anglo-Americans, and Native Americans, resulting in a people and culture referred to as “Cajun.” Many residents in the region surrounding the Basin, in fact, can trace their roots back to the Acadians, and the unique Cajun heritage is expressed in the food, music, and traditions of the area. Other ethnic groups who immigrated to the area over the years include Creoles, African-Americans, Colonial Spanish and Islenos, Italians, and Asians, with each contributing their own cultural “seasonings” to the Basin region’s cultural “gumbo.”

In the early years, the one element that seemed to tie all of the basin settlers together was the bountiful resources of the hardwood forests, cypress swamps, bayous, and marshes, and the utilization of these resources for subsistence and commerce. Logging, agriculture and cattle farming were staples of life in the Basin. Based on an 1874 river commerce survey report, “The products of the Atchafalaya country are cotton, sugar, molasses, moss, lumber, staves and shingles.” Today, people from across south Louisiana and beyond continue to rely on these natural resources for their livelihood and for recreation. According to a USDA Census report, the market value of all agricultural products sold in the Basin area total almost \$900 million, about 45 percent of the state’s total. The value of livestock and livestock products sold total about \$168 million, or 28 percent of the Louisiana total.

The 1900s were years of dispute and compromise over conservation issues in the Basin. Flood control, agriculture, energy development, recreation, and other interests in the basin were difficult to reconcile. In 1985, Congress enacted the Multipurpose Plan, which authorized the COE to spend \$250 million to preserve and restore the Basin ecosystem. In 1986, Atchafalaya NWR was established (Public law 98-396), with the purchase of 15,220 acres of land from the Iberville Land Company. In 1998, the Louisiana Department of Natural Resources created the Atchafalaya Basin Program to manage and protect the cultural and natural resources of the basin. A feasibility study developed by the COE for the Basin, calls for specific flood control measures, water flow rates, and the purchase of flowage and conservation easements designed to keep the basin in a natural state, while providing navigation and flood protection for surrounding communities.

3.7 Socio Economic

Hunting and recreational fishing are popular pastimes. Farming, commercial fishing, and forestry are important elements of the area's economy. The Basin's commercial fisheries are extremely valuable (crawfish being an important component), with an estimated average annual commercial harvest of nearly 22 million pounds (USFWS 2006c). Because much of the area is considered wetlands and is subject to periodic inundation by rising waters, limited development has occurred, with farming and recreation as primary purposes for land use. The local area is unique with respect to its geography, transportation systems, and land use. The chemical and agricultural industries help power the economy. The area lies within the Basin and is marked by numerous oil and gas fields. Nearby access to the Mississippi River provides transportation facilities as well as water availability for the numerous industrial and chemical plants located on its banks.

The 15,220-acre Refuge is in Iberville and St. Martin Parishes of Louisiana. The Refuge is about 30 miles west of Baton Rouge, Louisiana, and 1 mile east of Krotz Springs, Louisiana, lying just east of the Atchafalaya River. The Refuge is located roughly between latitudes 30 degrees 24 minutes and 30 degrees 30 minutes north and longitudes 91 degrees 35 minutes and 91 degrees 43 minutes west. The Refuge is bordered on the west by LDWF's property (11,780 acres); on the north by agricultural land; and on the east and south by private holdings in bottomland hardwoods. Substantial private holdings interrupt the continuity of the Refuge. In addition to the adjacent LDWF owned property, the COE owns over 16,000 acres in the vicinity of the Refuge, known as the Bayou Des Ourses Area. The entire three agency complex (referred to as the Sherburne WMA Complex), comprises approximately 44,000 acres and is cooperatively managed by the LDWF.

Iberville and St. Martin Parishes are predominantly rural, with the largest towns being Plaquemine (Iberville Parish); and Breaux Bridge and St. Martinville (St. Martin Parish), both with populations of about 8,000 people. The population of Iberville Parish increased by only 0.2 percent, and the population of St. Martin Parish increased by 7.4 percent from April 2000 to July 2010. Iberville Parish has one of the lower growth rates, while St. Martin Parish has one of the higher growth rates among the 64 parishes in Louisiana. Area per capita incomes in Iberville and St. Martin Parishes were below the state's averages in 2010. Unemployment rates for Iberville Parish were higher while in St. Martin Parish these rates were lower than the state's averages in 2010 (U.S. Census Bureau 2014). St. Martin Parish, home to the world's largest freshwater river basin, the Basin, provides nearly every type of outdoor recreational activity imaginable. St. Martinville, the parish seat, is the third oldest town in Louisiana. The major crops in St. Martin Parish are sugarcane, soybeans and rice. St. Martin Parish includes the municipalities of Arnaudville, Breaux Bridge, Henderson, Parks and St. Martinville.

Agriculture is a well-diversified \$100 million industry vital to economic health of St. Martin Parish. Plant enterprises lead the way, accounting for \$62 million, in part due to a 31,000 -acre, \$40 million sugarcane crop. Nearly 11,000 acres of soybeans, over 3,200 acres of rice, 1,600 acres of grain sorghum and 370 acres of wheat account for the rest of the field crop total. Other major commodities include aquaculture and wildlife valued at \$24 million and animal enterprises including horses and cattle estimated at 13.6 million.

Iberville Parish has six municipalities - Plaquemine, the largest city and capital of the parish, St. Gabriel, White Castle, Rosedale, Grosse Tete and Maringouin. The parish is situated in the industrial corridor, just 15 miles from Baton Rouge. Dow Chemical Company is the largest employer in the parish, providing about 3,000 Dow and contract jobs. Other major employers include Shintech, Georgia Gulf Corp., other chemical industrial plants, and government agencies.

Iberville Parish still has significant agricultural operations, especially in the north Iberville communities of Rosedale, Grosse Tete and Maringouin and in the White Castle area; and the fishing industry plays an important role in the rural areas of Bayou Sorrel and Bayou Pigeon.

Chapter 4 Environmental Consequences

This chapter describes the foreseeable environmental consequences of implementing the two management alternatives in Chapter 2. 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.

4.1.2 Public Health and Safety

Each alternative would have similar minimal to negligible effects on human health and safety.

4.1.3 Refuge Physical Environment

Impacts of each alternative on the Refuge physical environment would have similar minimal to negligible effects. Some disturbance to surface soils, topography, and vegetation would occur in areas selected for hunting; however, effects would be minimal. No additional acreage would be

opened to hunting. The hunting boundary would remain what was opened in the 1987 Hunt Plan.

Impacts to the natural hydrology would have negligible effects. The Refuge expects impacts to air and water quality to be minimal and only due to Refuge visitors' automobile and off-road vehicle emissions and run-off from road and trail sides. The effect of these Refuge-related activities on overall air and water quality in the region are anticipated to be relatively negligible. Existing Louisiana water quality criteria and use classifications are adequate to achieve desired on-Refuge conditions; thus, implementation of the proposed action would not impact adjacent landowners or users beyond the constraints already implemented under existing state standards and laws.

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.

4.1.4. Cultural Resources

Under each alternative, 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.

4.1.5. Facilities

Maintenance or improvement of existing facilities (i.e. parking areas, trails, and boat ramps) will cause minimal short term impacts to localized soils and waters and may cause some wildlife disturbances and damage to vegetation.

4.2 Summary of Effects

4.2.1 Impacts to Habitat

No Action Alternative

Under this alternative the existing hunt plan would remain the same for big game, small game, and migratory bird hunting with no additional impacts to habitat.

Proposed Action Alternative

The biological integrity of the Refuge would continue to be protected under this alternative, and the Refuge purpose of conserving wetlands for wildlife would be maintained. The type of species hunted is the same as the current hunt plan except adding a spring season for squirrels and the take of feral hog as an incidental species to the approved hunts. The new plan also updates the old plan with current compliance documentation to meet legal and policy obligations. The taking of feral hogs as an incidental species would positively affect wildlife habitat by promoting plant health and diversity, reducing competition for resources with other wildlife, reducing hog wallowing, which destroys vegetation and compacts soils, and increasing tree

seedling survival. The opening of a short spring squirrel season in May should have no adverse impacts to the Refuge's habitat.

Impacts to Hunted Wildlife

No Action Alternative

Additional mortality of individual hunted wildlife would not occur under this alternative. Unless feral hogs are taken as incidental species, their populations could increase above the habitat's carrying capacity. Feral hogs can harbor several infectious diseases, some of which can be fatal to wildlife. Additionally, hogs compete directly for food with deer, bears, turkeys, squirrels and many other birds and mammals.

Proposed Action Alternative

Additional mortality of individual hunted wildlife would occur under this alternative with the opening of a spring squirrel season, however, in the absence of major habitat modifications, year to year fluctuations in squirrel populations are due primarily to the prior year's mast crop and flood events. The added mortality of a short spring squirrel season in May should have no adverse impacts to the Refuge's squirrel population. The added mortality by taking of feral hogs as an incidental species during Refuge hunting seasons will have a positive impact on other Refuge wildlife.

4.2.2 Impacts to Non-hunted Wildlife

No Action Alternative

Under this alternative, there would be no change to the current public use or wildlife management programs. Ground- and shrub-nesting birds and turtles are subject to high egg depredation rates if hog populations are not kept in check through harvest. Under this alternative, feral hog populations would remain high. Non-native hogs are predators of small mammals and deer fawns, reptiles and amphibians, as well as ground-nesting birds such as turkeys. There would be no to a minimal (temporary) increased of disturbance to non-hunted wildlife.

Proposed Action Alternative

Feral hog populations would be decreased through hunting. Depredation rates of songbirds, turkeys, turtles and their nests would decrease. Feral hog populations would be reduced thereby decreasing predation of deer fawns, turkeys, and small animals.

The cumulative effects of disturbance to non-hunted wildlife under the preferred action are expected to be negligible. Small mammals, including bats, are rarely encountered during the hunting season. Many of these species are also nocturnal. Hunters occasionally encounter reptiles and amphibians during most of the hunting season and may kill large-bodied snakes such as cottonmouths. Refuge regulations strictly prohibit this and Refuge staff work to educate hunters during contacts with them.

Refuge regulations also 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. Disturbance to the daily wintering activities, such as feeding and resting, of birds might occur, but would be transitory as hunters traverse habitat. Disturbance to birds by hunters would probably be commensurate with that caused by non-consumptive users. Disturbance to important wildlife use areas can be mitigated by closing the areas to all public use.

4.2.3 Impacts to Endangered and Threatened Species

No Action Alternative

Mortality or impacts to threatened and endangered species is not likely occur under this alternative. Disturbance by hunters would be the same as currently experienced in small game, big game, and waterfowl hunting.

Proposed Action Alternative

Two federally listed threatened and endangered species may be presently found on the Refuge: the Louisiana black bear (*Ursus americanus luteolus*) and the pallid sturgeon (*Scaphirhynchus albus*). The proposed action would have no effect on the pallid sturgeon.

The Refuge is within the upper Atchafalaya River Basin which supports one of only three core bear populations in the state and bears have been documented on the Refuge (USFWS 2008). LDWF has conducted hunts on the Sherburne Complex since the Louisiana black bear was federally listed. No impacts to this species have been documented.

Black bears and feral hogs share similar body styles and appearance, so hunters must be especially careful when hog hunting in areas where bears may be found. LDWF has posted signs at state WMAs to warn hunters about the similarities between the two species and also developed other educational and public outreach materials.

The population impacts to other endangered and threatened species are anticipated to be negligible. There is no other critical habitat in the hunting area.

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

No Action Alternative

Costs associated with the current hunting program in the form of boat ramp and trail maintenance, instructional sign needs, and law enforcement would remain unchanged. Ramp maintenance, signage, and law enforcement to enforce Refuge regulations would still occur. No new roads or parking lots are proposed to be constructed or paved.

Proposed Action Alternative

Costs associated with the proposed hunting program in the form of boat ramp and trail maintenance, instructional sign needs, and law enforcement would remain unchanged. Ramp maintenance, signage, and law enforcement to enforce Refuge regulations would still occur. No new roads or parking lots are proposed to be constructed or paved.

4.2.5 Impacts to Wildlife Dependent Recreation

No Action Alternative

Under this alternative the existing hunt plan would remain the same for big game, small game, and migratory bird hunting. Opportunities for the hunting squirrels in the spring would not be available on the Refuge nor would incidental take of feral hogs.

Proposed Action Alternative

Under this alternative the existing hunt plan would remain the same for big game, small game, and migratory bird hunting. In addition, a spring squirrel season would be opened and of incidental take of feral hogs during all Refuge hunts. Public use opportunities would be available with an expanded hunting program.

Should unanticipated conflicts between user groups occur, 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. Conflicts between hunters and non-consumptive users might occur but would be mitigated by time (non-hunting season) and space zoning.

4.3 Cumulative Impacts Analysis

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

4.3.1.1 Migratory Birds

The Service annually prescribes frameworks, or outer limits, for dates and times when migratory bird hunting may occur and the number of birds that may be taken and possessed for each species. 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 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 Refuge is within the extreme southern reaches of the Mississippi 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 2011).

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.

National Environmental Policy Act (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. The Service published Notice of Availability in the Federal Register on June 16, 1988 (53 FR 22582), and the 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.

At the Refuge, the annual harvest of migratory birds by hunters would not result in adverse or cumulative effects since our bag limits would be the same as the state.

4.3.1.2 Big Game

Big game species hunted on the Refuge include white-tailed deer and wild turkey. The deer population in Louisiana is estimated to be about 750,000 to 1million. Herds are monitored to ensure the proper numbers of does are harvested to lower this occurrence. To better manage the deer herd in Louisiana, LDWF has initiated a more liberal harvest of antlerless deer throughout all of the deer hunting season while also lowering the allowable harvest of antlered bucks. The desired results of these management decisions are to bring deer numbers more in line with the carrying capacity of their available habitat and to allow for older bucks to enter the population structure. The deer season in Louisiana extends from early October through most of January, making it a recreational activity that people have ample opportunity to enjoy. About 200,000 Louisiana hunters bag between 130,000 and 150,000 deer each year.

Deer hunts have proven to be not only compatible with Refuge objectives but also beneficial in meeting them. Deer harvest is essential to maintain the herd at or below habitat carrying capacity in the absence of apex predators. When deer are overpopulated, they over-browse their habitat, which can completely change the plant composition of a forest. Overpopulation can also lead to outbreaks of devastating diseases such as Epizootic Hemorrhagic Disease (EHD) and bluetongue. Overpopulation also leads to increased car-deer collisions and poor overall herd health.

Wild turkeys are widely distributed across Louisiana and most suitable habitat is occupied. Turkey hunting is fair to excellent in the bottomland hardwood complex on the Refuge, and

variations in population levels are mainly due to flood events effecting turkey survival and nesting success.

The cumulative effects of any additional disturbance to big game species under the proposed action are expected to be negligible.

4.3.1.3 Feral Hogs

Feral hogs are an extremely invasive, introduced, non-native species. Complete eradication of feral hog is desirable, but currently is not feasible. Feral hogs breed rapidly. It has been shown on the Refuge that populations can be decreased significantly, but eradication has not been feasible due to trapping limitations. Incidental take of feral hogs would provide the Refuge with another management tool for reducing this detrimental species.

4.3.1.4 Small Game

Small game, when listed under the Sherburne WMA regulations, includes both resident game animals and game birds as well as migratory species of birds (woodcock, mourning dove, snipe, rails, gallinules). However, small game hunting on the Refuge is primarily for squirrels, rabbits, and woodcock. Specific population surveys are not conducted for these species; however, LDWF's annual hunter harvest survey provides indices to population trends. In the absence of major habitat modifications, year to year fluctuations in small game populations are due primarily to the prior year's mast crop, flood events, and summer rainfall amounts. The cumulative effects of any additional disturbance to small game species under the proposed action are expected to be negligible.

4.3.1.5 Non-hunted Wildlife

Non-hunted 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 affect their populations regionally; thus, only local effects will be discussed.

Disturbance to non-hunted migratory birds could have regional, local, and flyway effects. The cumulative effects of disturbance to non-hunted migratory birds under the proposed action are expected to be negligible for the following reasons. The 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. Disturbance to birds by hunters would probably be commensurate with that caused by non-consumptive users.

The cumulative effects of disturbance to non-hunted resident wildlife under the proposed action are expected to be negligible and disturbance would be unlikely for the following reasons. Small

mammals are active year round on the Refuge, but activity is limited to foraging and resting behavior. The hunt season does not coincide with the mating season therefore limiting disturbance. Hunters may encounter reptiles and amphibians during the hunting season, but these encounters should not have cumulative negative effects on reptile and amphibian populations. Invertebrates are 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 non-hunted wildlife could be a cumulative impact, it is not relevant to the Refuge because the use of lead shot for waterfowl hunting is not permitted. Invertebrates including moths and butterflies occur year round on the Refuge; however, hunter interaction would be commensurate with that of non-consumptive users.

4.3.1.6 Endangered Species

The proposed action would have no effect on the pallid sturgeon. The Louisiana black bear may frequent the hunting area traveling through or stopping to forage, however, the Refuge has a history of light bear use and hunter interactions with these animals are expected to be minimal. A Section 7 Evaluation was conducted in association with the revision of the Refuge Recreational Hunt Plan. It was determined that the proposed alternative would not likely adversely affect these listed species.

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

4.3.2.1 Wildlife-Dependent Recreation

As public use levels expand across time, unanticipated conflicts between user groups may occur. The Refuge's public 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.

The level of recreational use and ground-based disturbance from visitors would be largely concentrated at trails, parking areas, and boat ramps. This, combined with the addition of increased hunting opportunity, could have a negative effect on nesting bird populations. However, the hunting season is during the late summer through fall and early winter and not during the nesting period of most birds utilizing the Refuge.

The opportunities for hunting may increase, but the current hunt boundary would remain the same. The LDWF would control access under this alternative to minimize wildlife disturbance and habitat degradation, while allowing current and proposed compatible wildlife-dependent recreation.

4.3.2.2 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: parking lots, trails, and boat launching ramps. Maintenance or improvement of existing facilities (i.e. parking areas, trails, and boat ramps) 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. Trails will not be constructed unless appropriate water quality concerns are addressed. These activities will be conducted at times (seasonal and/or daily) to cause the least amount of disturbance to wildlife. During times when roads are impassible due to weather events or other natural causes, those parking lots, trails, and boat ramps impacted by the event will be closed to vehicular use.

4.3.2.3 Cultural Resources

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.

4.3.2.4 Anticipated Impacts of Proposed Hunt on Refuge Environment and Community

The Refuge expects no sizeable adverse impacts of the proposed action on the Refuge environment which consists of 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. The Refuge would also control access to minimize habitat degradation.

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 relatively negligible, compared to the contributions of industrial centers, power plants, and non-Refuge vehicle traffic. Existing state water quality criteria and use classifications are adequate to achieve desired on-Refuge conditions; thus, implementation of the proposed action would not impact adjacent landowners or users beyond the constraints already implemented under existing state standards and laws.

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 impacts are anticipated. The changes to the Hunt Plan 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 to bring additional revenues to local communities, but not a significant increase in overall revenue in any area.

4.3.2.5 Other Past, Present, Proposed, and Reasonably Foreseeable Hunts and Anticipated Impacts

Cumulative effects 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 individually minor actions, they may, viewed as a whole, become substantial over time. The proposed hunt plan has been designed so as to be sustainable through time given relatively stable conditions. Changes in Refuge conditions, such as sizeable increases in Refuge acreage or public use, could change the anticipated impacts of this proposed hunt plan and could 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 2016 Recreational Hunting Plan for the Atchafalaya National Wildlife Refuge). These actions would have both direct and indirect effects, however, the cumulative effects of these actions are not expected to be substantial.

4.3.2.6 Anticipated Impacts if Individual Hunts are Allowed to Accumulate

National wildlife refuges, including Atchafalaya, conduct hunting programs within the framework of state and federal regulations. Public use on the Refuge is managed by the LDWF as part of the Sherburne Complex and hunting seasons are designed to support wildlife management on a statewide and regional basis. Hunting has been allowed on the Refuge for 30 years. If unanticipated conflicts between user groups occur, due to the proposed action, experience has proven that time and space zoning can be an effective tool in eliminating such conflicts. The proposed Refuge Hunt Plan has been reviewed and is supported by the LDWF. In addition, the Service and LDWF coordinate annually to maintain regulations and programs that are consistent with state and federal management programs.

Chapter 5 Consultation and Coordination with Others

The LDWF concur and fully support the regulated consumptive public use of the natural resources associated with the Refuge. The Service also provided an in depth review by the Regional Office (RO) 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.

Appendix A Literature References

- Louisiana Department of Wildlife and Fisheries. Sherburne WMA Coordination Meeting, LDWF Activity Reports 2013-2014. Baton Rouge, LA.
- Louisiana Department of Wildlife and Fisheries. 2005b. Rare Species and Habitats by Parish. www.wlf.louisiana.gov/experience/naturalheritage/rarespeciesandparishhabitats/. Baton Rouge, LA.
- Louisiana Department of Wildlife and Fisheries. 2015-16a. Louisiana Hunting Regulations. Baton Rouge, LA.
- U.S. Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics. Accessed April 14, 2008. <http://www.fedstats.gov/qf/>
- U.S. Fish and Wildlife Service. 1986. Sport Hunting Decision Document Package for Atchafalaya NWR – Hunting Plan, December 1986.
- U.S. Fish and Wildlife Service. 1993. Pallid sturgeon recovery plan. U.S. Fish and Wildlife Service. Bismarck, ND.
- U.S. Fish and Wildlife Service. 2006. Atchafalaya National Wildlife Refuge, 2006 Annual Narrative Report.
- U.S. Fish and Wildlife Service. 2007. Pallid sturgeon (*Scaphirhynchus albus*) 5-year review summary and evaluation. U.S. Fish and Wildlife Service, Pallid Sturgeon Recovery Coordinator. Billings, Montana.
- U.S. Fish and Wildlife Service. 2008. Biological Review Report. Atchafalaya National Wildlife Refuge.
- U.S. Fish and Wildlife Service, Southeast Region, Lafayette Ecological Services Field Office. 2008a. Louisiana Black Bear Critical Habitat Fact Sheet. Lafayette, LA. http://www.fws.gov/Lafayette/pdf/LA_Black_Bear_Critical_Habitat_Fact_Sheet.pdf
- U.S. Fish and Wildlife Service 2011, Atchafalaya National Wildlife Refuge Comprehensive Conservation Plan, U.S. Department of the Interior, Fish and Wildlife Service, Atlanta, GA.
- U.S. Fish and Wildlife Service. 2013. Habitat Management Plan for Atchafalaya National Wildlife Refuge. U.S. Department of the Interior, Fish and Wildlife Service, Atlanta, GA.
- U.S. Fish and Wildlife Service. 2016. Atchafalaya National Wildlife Refuge Recreational Hunting Plan. U.S. Department of the Interior, Fish and Wildlife Service, Atlanta, GA.