

APPENDIX A. GLOSSARY

<i>Adaptive management</i>	A process in which projects are implemented within a framework of scientifically driven experiments to test predictions and assumptions outlined within the comprehensive conservation plan. The analysis of the outcome of project implementation helps managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.
<i>Alternative</i>	Alternatives are different means of accomplishing refuge purposes, goals, and objectives, and contributing to the National Wildlife Refuge System. A reasonable way to fix the identified problem or satisfy the stated need.
<i>Approved Acquisition Boundary</i>	A project boundary which the Director of the Fish and Wildlife Service approves upon completion of a detailed planning and environmental compliance process.
<i>Bayou</i>	A minor river or secondary watercourse, usually sluggish or back flooding water flow.
<i>Biological Diversity</i>	The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur. The National Wildlife Refuge System focus is on indigenous species, biotic communities, and ecological processes.
<i>Canebrake</i>	Cane stand (<i>Arundinaria gigantea</i>) that, under present-day conditions, grows in disturbed areas and frequently persists in small closed-canopy patches at Bayou Cocodrie National Wildlife Refuge. Historically, cane was in large disturbed areas under open canopies. Habitat is unique and valued for the Swainson's warbler.
<i>Canopy</i>	A layer of foliage; generally the upper-most layer, in a forest stand. It can be used to refer to mid- or under-story vegetation in multi-layered stands. Canopy closure is an estimate of the amount of overhead tree cover (also canopy cover).
<i>Categorical Exclusion</i>	A category of actions that do not individually or cumulatively have a significant effect on the human environment and have been found to have no such effect in procedures adopted by a federal agency pursuant to the National Environmental Policy Act.
<i>CFR</i>	Code of Federal Regulations.
<i>Compatible Use</i>	A wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the Refuge Manager, will not materially interfere with, or detract from, the fulfillment of the mission or the purposes of the refuge. A compatibility determination supports the selection of compatible uses and identifies stipulations or limits necessary to ensure compatibility.

<i>Comprehensive Conservation Plan</i>	A document that describes the desired future conditions of the refuge; provides long-range guidance and management direction for the Refuge Manager to accomplish the purposes, goals, and objectives of the refuge; and contributes to the mission of the National Wildlife Refuge System, and to meet relevant mandates.
<i>Conservation Easement</i>	A legal document that provides specific land-use rights to a secondary party. A perpetual conservation easement usually grants conservation and management rights to a party in perpetuity.
<i>Cooperative Agreement</i>	A simple habitat protection action in which no property rights are acquired. An agreement is usually long-term and can be modified by either party. Lands under a cooperative agreement do not necessarily become part of the National Wildlife Refuge System.
<i>Corridor</i>	A route that allows movement of individuals from one region or place to another.
<i>Cover Type</i>	The present vegetation of an area.
<i>Cultural Resources</i>	The remains of sites, structures, or objects used by people of the past.
<i>Cypress and Tupelo Swamp</i>	Found in low-lying areas - swales and open ponds - that hold water several months, if not all of the year. Large hollow trees are used as bear den sites.
<i>Deciduous</i>	Pertaining to perennial plants that are leafless for some time during the year.
<i>Ecological Succession</i>	The orderly progression of an area from one vegetative community to another through time in the absence of disturbance.
<i>Ecosystem</i>	A dynamic and interrelating complex of plant and animal communities and their associated non-living environment.
<i>Ecosystem Management</i>	Management of natural resources using system-wide concepts to ensure that all plants and animals in ecosystems are maintained at viable levels in native habitats and basic ecosystem processes are perpetuated indefinitely.
<i>Even aged Forests</i>	Forests that are composed of trees with a time span of less than 20 years between oldest and youngest individuals.
<i>Emergent Growth/Revegetation</i>	Farmland or logged timber that has been reforested (early succession) or may be naturally revegetated.
<i>Endangered Species</i>	A plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.
<i>Endemic Species</i>	Plants or animals that occur naturally in a certain region and whose distribution is relatively limited to a particular locality.

<i>Environmental Assessment</i>	A concise document prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action, alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or a finding of no significant impact.
<i>Fauna</i>	All the vertebrate or invertebrate animals of an area.
<i>Federal Trust Species</i>	All species where the Federal Government has primary jurisdiction including federally threatened or endangered species, migratory birds, anadromous fish, and certain marine mammals.
<i>Fee Title</i>	The acquisition of most or all of the rights to a tract of land. There is a total transfer of property rights with the formal conveyance of a title. While a fee title acquisition involves most rights to a property, certain rights may be reserved or not purchased, including water rights, mineral rights, or use reservation (the ability to continue using the land for a specified time period, or the remainder of the owner's life).
<i>Finding of No Significant Impact</i>	A document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment that briefly presents why a Federal action will have no significant effect on the human environment and for which an environmental impact statement, therefore, will not be prepared.
<i>Flood Plain Woods/Bottomland Hardwood Forests</i>	Forests consisting of hardwood species adapted to heavy clay soils and frequent/seasonal inundation. Such forests occur naturally in the alluvial flood plains of rivers and streams in the southeastern United States but millions of acres (up to 90%) have been cleared primarily for agriculture in the Mississippi River Alluvial Valley.
<i>Fragmentation</i>	The process of reducing the size and connectivity of habitat patches. The disruption of extensive habitats into isolated and small patches.
<i>Goal</i>	Descriptive, open-ended, and often broad statements of desired future conditions that convey a purpose but do not define measurable units.
<i>Geographic Information System</i>	A computer system capable of storing and manipulating spatial data.
<i>Ground Story (flora)</i>	Vascular plants less than one meter in height, excluding tree seedlings.
<i>Herbaceous Wetland</i>	Annually or seasonally inundated with vegetation consisting primarily of grasses, sedges, rushes, and cattail.
<i>Habitat</i>	The place where an organism lives. The existing environmental conditions required by an organism for survival and reproduction.
<i>Indicator Species</i>	A species of plant or animals that is assumed to be sensitive to habitat changes and represents the needs of a larger group of species.
<i>In holding</i>	Privately owned land inside the boundary of a national wildlife refuge.
<i>Issue</i>	Any unsettled matter that requires a management decision.

<i>Mid-succession Forest</i>	A forest generally characterized by even aged structure resulting from human disturbance such as timber harvest. Mid-successional forests may contain mature trees but as a whole do not exhibit functional or structural characteristics associated with old growth conditions.
<i>Migratory</i>	The seasonal movement from one area to another and back.
<i>Monitoring</i>	The process of collecting information to track changes of selected parameters over time.
<i>National Environmental Policy Act</i>	Requires all agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate this Act with other planning requirements, and prepare appropriate policy documents to facilitate better environmental decision making.
<i>National Wildlife Refuge</i>	A designated area of land, water, or an interest in land or water within the National Wildlife Refuge System.
<i>National Wildlife Refuge System</i>	Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife, including species threatened with extinction, all lands, waters, and interests therein administered by the Secretary as wildlife refuges, wildlife ranges, game ranges, wildlife management areas, or waterfowl production areas.
<i>Native Species</i>	Species that normally live and thrive in a particular ecosystem.
<i>Neotropical Migratory Bird</i>	A bird species that breeds north of the United States/Mexican border and winters primarily south of that border, which includes Mexico, West Indies, Central America and part of South America.
<i>Natural Levee</i>	Natural embankment created by soil deposited as a stream over-tops its banks. Located adjacent to a stream, a natural levee is often the highest ground in a bottomland or swamp type area.
<i>Objective</i>	An objective is a concise quantitative (where possible) target statement of what will be achieved. Objectives are derived from goals and provide the basis for determining management strategies. Objectives should be attainable and time-specific.
<i>Old Growth Forest</i>	Forested areas lacking frequent disturbance to vegetation, usually characterized by dominant species entered into a late successional stage; usually associated with high diversity of species, specialization, and structural complexity.
<i>Planning Area</i>	A planning area may include lands outside existing refuge planning unit boundaries that are being studied for inclusion in the unit and/or partnership planning efforts. It may also include watersheds or ecosystems that affect the planning area.

<i>Planning Team</i>	A planning team prepares the comprehensive conservation plan. Planning teams are interdisciplinary in membership and function. A team generally consists of a planning team leader; refuge manager and staff biologists; staff specialists or other representatives of Service programs, ecosystems or regional offices; and state partnering wildlife agencies as appropriate.
<i>Preferred Alternative</i>	This is the alternative determined by the decision maker to best achieve the refuge purpose, vision, and goals, to contribute to the refuge system mission, address the significant issues, and is consistent with principles of sound fish and wildlife management.
<i>Refuge Boundary</i>	Lands acquired by the Fish and Wildlife Service within the current approved acquisition boundary.
<i>Refuge Operating Needs System</i>	This is a national database that contains the unfunded operational needs of each refuge. Projects included are those required to implement approved plans and meet goals, objectives, and legal mandates.
<i>Refuge Purposes</i>	The purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing or expanding a refuge, refuge unit, or refuge subunit.
<i>Seral Forest</i>	A forest in the mature stage of development, usually dominated by large, old trees.
<i>Sink</i>	A habitat in which local mortality exceeds local reproductive success for a given species.
<i>Sink Population</i>	A population in a low quality habitat in which birth rate is generally less than the death rate and population density is maintained by immigrants from source populations.
<i>Source</i>	A habitat in which local reproductive success exceeds local mortality for a given species.
<i>Source Population</i>	A population in a high-quality habitat in which birth rate greatly exceeds death rate and the excess individuals leave as migrants.
<i>Step down Management Plans</i>	Step-down management plans provide the details necessary to implement management strategies and projects identified in the comprehensive conservation plan.
<i>Strategy</i>	A specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives.
<i>Threatened Species</i>	Species listed under the Endangered Species Act that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.
<i>Understory</i>	Any vegetation with canopy below or closer to the ground than canopies of other plants.

Wildlife Corridor

A landscape feature that facilitates the biologically effective transport of animals between larger patches of habitat dedicated to conservation functions. Such corridors may facilitate several kinds of traffic, including frequent foraging movement, seasonal migration, or the once in a lifetime dispersal of juvenile animals. These are transition habitats and need not contain all of the habitat elements required by migratory species for long-term survival or reproduction.

Wildlife-dependent Recreation

A use of a refuge involving hunting, fishing, wildlife observation, wildlife photography and environmental education and interpretation. The National Wildlife Refuge System Improvement Act of 1997 specifies that these are the six priority general public uses of the system.



Coot
USFWS Photo

APPENDIX B. REFERENCES

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APPENDIX C. RELEVANT LEGAL MANDATES

NATIONAL WILDLIFE REFUGE SYSTEM AUTHORITIES

The mission of the Fish and Wildlife Service is to conserve, protect, and enhance the Nation's fish and wildlife and their habitats for the continuing benefit of the American people. The Service is the primary federal agency responsible for migratory birds, endangered plants and animals, certain marine mammals, and anadromous fish. This responsibility to conserve our Nation's fish and wildlife resources is shared with other federal agencies and state and tribal governments.

As part of this responsibility, the Service manages the National Wildlife Refuge System. This system is the only nationwide system of federal land managed and protected for wildlife and their habitats. 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.

The Bayou Cocodrie National Wildlife Refuge is managed as part of this system in accordance with the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, the Refuge Recreation Act of 1962, Executive Order 12996 (Management and General Public Use of the National Wildlife Refuge System), and other relevant legislation, Executive Orders, regulations, and policies.

KEY LEGISLATION/POLICIES FOR PLAN IMPLEMENTATION

The Bayou Cocodrie National Wildlife Refuge Comprehensive Conservation Plan describes and illustrates management area projects with standards and guidelines for future decision making and may be adjusted through monitoring and evaluation, as well as amendment and revision. The plan establishes conservation and land protection goals, objectives, and specific strategies for the refuge and its expansion. Compatible recreation uses specific to the refuge have been identified and approved by the Refuge Manager (Appendix G). This plan provides for systematic stepping down from the overall direction, as outlined, when making project or activity level decisions. This level involves site specific analysis (e.g., Forest Habitat Management Plan) to meet National Environmental Policy Act requirements for decision making.

Antiquities Act (1906): Authorizes the scientific investigation of antiquities on federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Migratory Bird Treaty Act (1918): Designates the protection of migratory birds as a federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, federal or non federal, to the hunting of migratory birds.

Migratory Bird Conservation Act (1929): Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Migratory Bird Hunting and Conservation Stamp Act (1934): Authorized the opening of part of a refuge to waterfowl hunting.

Fish and Wildlife Act (1956): Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

Fish and Wildlife Coordination Act (1958): Allows the Fish and Wildlife Service to enter into agreements with private landowners for wildlife management purposes.

Refuge Recreation Act (1962): Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Land and Water Conservation Fund Act (1965): Uses the receipts from the sale of surplus federal land, outer continental shelf oil and gas sales, and other sources for land acquisition under several authorities. 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 668ee. (Refuge Administration Act): Defines the National Wildlife Refuge System and authorizes the Secretary of the Interior to permit any use of a refuge provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the refuge system; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation, wildlife photography and environmental education and interpretation); establishes a formal process for determining compatibility; established the responsibilities of the Secretary of the Interior for managing and protecting the System; and requires a comprehensive conservation plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

Architectural Barriers Act (1968): Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

National Environmental Policy Act (1969): Requires the disclosure of the environmental impacts of any major federal action significantly affecting the quality of the human environment.

Endangered Species Act (1973): Requires all federal agencies to carry out programs for the conservation of threatened and endangered species.

Rehabilitation Act (1973): Requires that programmatic and physical accessibility be made available in any facility funded by the Federal Government, ensuring that anyone can participate in any program.

Clean Water Act (1977): Requires consultation with the U.S. Army Corps of Engineers for major wetland modifications.

Emergency Wetlands Resources Act (1986): The purpose of the Act is "To promote the conservation of migratory waterfowl and to offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes."

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species; and an interdisciplinary approach with the cooperation of other federal and state agencies.

Americans With Disabilities Act (1992): Prohibits discrimination in public accommodations and services.

Executive Order 12996, Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the system.

Executive Order 13007, Indian Sacred Sites (1996): Directs federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

Emergency Wetland Resources Act of 1986: This Act authorized the purchase of wetlands from Land and Water Conservation Fund moneys, removing a prior prohibition on such acquisitions. The Act also requires the Secretary of the Interior to establish a National Wetlands Priority Conservation Plan, requires the states to include wetlands in their Comprehensive Outdoor Recreation Plans, and transfers to the Migratory Bird Conservation Fund an amount equal to import duties on arms and ammunition.

Endangered Species Act of 1973 (16 U.S.C. 1531 1544, 87 Stat. 884), as amended: Public Law 93 205, approved December 28, 1973, repealed the Endangered Species Conservation Act of December 5, 1969 (P.L. 91 135, 83 Stat. 275). The 1969 Act amended the Endangered Species Preservation Act of October 15, 1966 (P.L. 89 669, 80 Stat. 926). The 1973 Endangered Species Act provided for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend, both through federal action and by encouraging the establishment of state programs. The Act authorizes the determination and listing of species as threatened and endangered; prohibits unauthorized taking, possession, sale, and transport of endangered species; provides authority to acquire land for the conservation of listed species, using land and water conservation funds; authorizes establishment of cooperative agreements and grants in aid to states that establish and maintain active and adequate programs for threatened and endangered wildlife and plants; authorizes the assessment of civil and criminal penalties for violating the Act or regulations; and authorizes the payment of rewards to anyone furnishing information leading to arrest and conviction of anyone violating the Act and any regulation issued hereunder.

Environmental Education Act of 1990 (20 USC 5501 5510; 104 Stat. 3325): Public Law 101 619, signed November 16, 1990, established the Office of Environmental Education within the Environmental Protection Agency to develop and administer a federal environmental education program. Responsibilities of the Office include developing and supporting programs to improve understanding of the natural and developed environment, and the relationships between humans and their environment; supporting the dissemination of educational materials; developing and supporting training programs and environmental education seminars; managing a federal grant program; and administering an environmental internship and fellowship program. The Office is required to develop and support environmental programs in consultation with other federal natural resource management agencies, including the Fish and Wildlife Service.

Executive Order 11988, Flood plain Management: The purpose of this Executive Order, signed May 24, 1977, is to prevent federal agencies from contributing to the adverse impacts associated with occupancy and modification of floodplains and the direct or indirect support of floodplain development. In the course of fulfilling their respective authorities, federal agencies shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains.

Fish and Wildlife Improvement Act of 1978: This Act was passed to improve the administration of fish and wildlife programs and amends several earlier laws, including the Refuge Recreation Act, the National Wildlife Refuge System Administration Act, and the Fish and Wildlife Act of 1956. It authorizes the Secretary of the Interior to accept gifts and bequests of real and personal property on behalf of the United States. It also authorizes the use of volunteers on Service projects and appropriations to carry out volunteer programs.

Historic Preservation Acts include:

Antiquities Act (16 U.S.C. 431 433) The Act of June 8, 1906, (34 Stat. 225) authorizes the President of the United States to designate as National Monuments objects or areas of historic or scientific interests on lands owned or controlled by the United States. The Act required that a permit be obtained for examination of ruins, excavation of archaeological sites and the gathering of objects of antiquity on lands under the jurisdiction of the Secretaries of Interior, Agriculture, and Army, and provided penalties for violations.

Archaeological Resources Protection Act (16 U.S.C. 470aa 47011) Public Law 96 95, approved October 31, 1979, (93 Stat. 721) largely supplanted the resource protection provisions of the Antiquities Act for archaeological items. This Act established detailed requirements for issuance of permits for any excavation for or removal of archaeological resources from Federal and Indian lands. It also established civil and criminal penalties for the unauthorized excavation, removal, or damage of any such resources; for any trafficking in such resources removed from Federal and Indian lands in violation of any provision of federal law; and for interstate and foreign commerce in such resources acquired, transported or received in violation of any state or local law.

Public Law 100 588, approved November 3, 1988, (102 Stat. 2983) lowered the threshold value of artifacts triggering the felony provisions of the Act from \$5,000 to \$500, made attempting to commit an action pro-

hibited by the Act a violation, and required the land managing agencies to establish public awareness programs regarding the value of archaeological resources to the nation.

Archaeological and Historic Preservation Act (16 U.S.C. 469-469c)? Public Law 86 523, approved June 27, 1960, (74 Stat. 220), and amended by Public Law 93 291, approved May 24, 1974, (88 Stat. 174), directed federal agencies to notify the Secretary of the Interior whenever a federal, federally assisted, or licensed or permitted project may cause loss or destruction of significant scientific, prehistoric, or archaeological data. The Act authorized use of appropriated, donated, and/or transferred funds for the recovery, protection and preservation of such data.

Historic Sites, Buildings and Antiquities Act (16 U.S.C. 461-462, 464-467)? The Act of August 21, 1935, (49 Stat. 666) popularly known as the Historic Sites Act, as amended by Public Law 89 249, approved October 9, 1965, (79 Stat. 971), declared it a national policy to preserve historic sites and objects of national significance, including those located on refuges. It provided procedures for designation, acquisition, administration, and protection of such sites. Among other things, National Historic and Natural Landmarks are designated under authority of this Act. As of January 1989, thirty one national wildlife refuges contained such sites.

National Historic Preservation Act of 1966 (16 U.S.C. 470-470b, 470c-470n) Public Law 89 665, approved October 15, 1966, (80 Stat. 915) and repeatedly amended, provided for preservation of significant historical features (buildings, objects, and sites) through a grant in aid program to the states. It established a National Register of Historic Places and a program of matching grants under the existing National Trust for Historic Preservation (16 U.S.C. 468-468d).

The Act established an Advisory Council on Historic Preservation, which was made a permanent independent agency in Public Law 94 422, approved September 28, 1976 (90 Stat. 1319). That Act also created the Historic Preservation Fund. Federal agencies are directed to take into account the effects of their actions on items or sites listed in, or eligible for listing in, the National Register of Historic Places. As of January 1989, ninety one such sites on national wildlife refuges are listed in this Register.

Land and Water Conservation Fund Act of 1948: This act provides funding through receipts from the sale of surplus federal land, appropriations from oil and gas receipts from the outer continental shelf, and other sources of land acquisition under several authorities. Appropriations from the fund may be used for matching grants to states for outdoor recreation projects and for land acquisition by various federal agencies, including the Fish and Wildlife Service.

Migratory Bird Hunting and Conservation Stamp Act (16 U.S.C. 718-718j, 48 Stat. 452), as amended: The Duck Stamp Act of March 16, 1934, requires each waterfowl hunter, 16 years of age or older, to possess a valid federal hunting stamp. Receipts from the sale of the stamp are deposited in a special Treasury account known as the Migratory Bird Conservation Fund and are not subject to appropriations.

National and Community Service Act of 1960 (42 U.S.C. 12401:104 Stat. 3127), Public Law 101 610, signed November 16, 1990, authorizes several programs to engage citizens of the United States in full and/or part time projects designed to combat illiteracy and poverty, provide job skills, enhance educational skills, and fulfill environmental needs. Several provisions are of particular interest to the Fish and Wildlife Service.

American Conservation and Youth Service Corps: A federal grant program established under Subtitle C of the law, the Corps offers an opportunity for young adults between the ages of 16-25, or in the case of summer programs, 15-21, to engage in approved human and natural resources projects which benefit the public or are carried out on Federal or Indian lands. To be eligible for assistance, natural resource programs must focus on improvement of wildlife habitat and recreational areas, fish culture, fishery assistance, erosion, wetlands protection, pollution control and similar projects. A stipend of not more than 100 percent of the poverty level will be paid to participants. A Commission established to administer the Youth Service Corps will make grants to States, the Secretaries of Agriculture and Interior and the Director of ACTION to carry out these responsibilities.

National Environmental Policy Act of 1959 (P.L. 91 190, 42 U.S.C. 4321-4347, January 1, 1970, 83 Stat. 852) as amended by Public Law 94 52, July 3, 1975, 89 Stat. 258, and Public Law 94 83, August 9, 1975,

89 Stat. 424). Title I of the 1969 National Environmental Policy Act requires that all federal agencies prepare detailed environmental impact statements for every recommendation or report on proposals for legislation and other major federal actions significantly affecting the quality of the human environment. The 1969 statute stipulated the factors to be considered in environmental impact statements, and required that federal agencies employ an interdisciplinary approach in related decision making and develop means to ensure that unquantified environmental values are given appropriate consideration, along with economic and technical considerations. Title II of this statute requires annual reports on environmental quality from the President to the Congress, and established a Council on Environmental Quality in the Executive Office of the President with specific duties and functions.

National Wildlife Refuge System Improvement Act of 1997: Public Law 105 57, amended the National Wildlife Refuge System Act of 1966 (16 U.S.C. 668dd ee), and provided guidance for management and public use of the refuge system. The Act mandates that the refuge system be consistently directed and managed as a national system of lands and waters devoted to wildlife conservation and management. The Act establishes priorities for recreational uses of the refuge system. Six wildlife dependent uses are specifically named in the Act: hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation. These activities are to be promoted on the refuge system, while all non wildlife dependent uses are subject to compatibility determinations. A compatible use is one which, in the sound professional judgment of the Refuge Manger, will not materially interfere with, or detract from, fulfillment of the National Wildlife Refuge System Mission or refuge purpose(s). As stated in the Act, the mission of the 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. The Act also requires development of a comprehensive conservation plan for each refuge and that management is consistent with the plan. When writing a plan for expanded or new refuges, and when making management decisions, the Act requires effective coordination with other federal agencies, state fish and wildlife or conservation agencies, and refuge neighbors. A refuge must also provide opportunities for public involvement when making a compatibility determination.

North American Wetlands Conservation Act (103 Stat. 1968; 16 U.S.C. 4401~4412) Public Law 101 233, enacted December 13, 1989, provides funding and administrative direction for implementation of the North American Waterfowl Management Plan and the Tripartite Agreement on Wetlands between Canada, the United States and Mexico. The Act converts the Pittman Robertson account into a trust fund, with the interest available without appropriation through the year 2006, to carry out the programs authorized by the Act, along with an authorization for annual appropriation of \$15 million plus an amount equal to the fines and forfeitures collected under the Migratory Bird Treaty Act. Available funds may be expended, upon approval of the Migratory Bird Conservation Commission, for payment of not to exceed 50 percent of the United States' share of the cost of wetlands conservation projects in Canada, Mexico, or the United States (or 100 percent of the cost of projects on federal lands). At least 50 percent and no more than 70 percent of the funds received are to go to Canada and Mexico each year.

Refuge Recreation Act of 1952: This Act authorizes the Secretary of the Interior to administer refuges, hatcheries, and other conservation areas for recreational use, when such uses do not interfere with the area's primary purposes. It authorizes construction and maintenance of recreational facilities and the acquisition of land for incidental fish and wildlife oriented recreational development or protection of natural resources. It also authorizes the charging of fees for public uses.

Refuge Revenue Sharing Act (16 U.S.C. 715s) Section 401 of the Act of June 15, 1935, (49 Stat. 383) provided for payments to counties in lieu of taxes, using revenues derived from the sale of products from refuges. Public Law 88 523, approved August 30, 1964, (78 Stat. 701) made major revisions by requiring that all revenues received from refuge products, such as animals, timber and minerals, or from leases or other privileges, be deposited in a special Treasury account and net receipts distributed to counties for public schools and roads. Public Law 93 509, approved December 3, 1974, (88 Stat. 1603) required that moneys remaining in the fund after payments be transferred to the Migratory Bird Conservation Fund for land acquisition under provisions of the Migratory Bird Conservation Act. Public Law 95 469, approved October 17, 1978, (92 Stat. 1319) expanded the revenue sharing system to include National Fish Hatcheries and Service research stations. It also included in the Refuge Revenue Sharing Fund receipts from the sale of salmonid carcasses. Payments to counties were established as follows: on acquired land,

the greatest amount calculated on the basis of 75 cents per acre, three fourths of one percent of the appraised value, or 25 percent of the net receipts produced from the land; and on land withdrawn from the public domain, 25 percent of net receipts and basic payments under Public Law 94 565 (31 U.S.C. 1601 1607, 90 Stat. 2662). This amendment also authorized appropriations to make up any difference between the amount in the fund and the amount scheduled for payment in any year. The stipulation that payments be used for schools and roads was removed, but counties were required to pass payments along to other units of local government within counties that suffer losses in revenues due to the establishment of Service areas.

Wilderness Act of 1954: Public Law 88 577, approved September 3, 1964, directed the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 or more acres and every roadless island (regardless of size) within National Wildlife Refuge and National Park systems for inclusion in the National Wilderness Preservation System.

APPENDIX D. BIOTA

THREATENED, ENDANGERED, AND CANDIDATE SPECIES

The federally listed Louisiana Black Bear is the only known listed species to occasionally occur on the refuge, although the Rafinesque's big eared bat is another likely candidate. Formerly listed species such as the American alligator and the bald eagle appear on the refuge. The Louisiana black bear is targeted for special reintroduction emphasis in the future as part of a population recovery effort to delist this species. The refuge will not only serve as permanent habitat for this species, but will serve as habitat linkage for the Atchafalaya population and the Tensas Basin population which will ensure genetic diversity. Other potential candidate species include the alligator snapping turtle and the wood stork. (See Figure 19 for a list of species that occur or have the potential to occur on the refuge.)

The Florida panther and the red wolf were once residents of this area, but none have been documented in the last 40 years.



Florida panther



Red wolf

USFWS Photos

Figure 19. Refuge biota

BIRDS

A=abundant; c=common; u=uncommon; r=rare

*species with confirmed breeding records

Common Name	Spring March-May	June-August	Summer Sept-Nov	Fall Winter Dec-February
Pied-billed grebe	u	r	u	u
White pelican	r		r	r
Double-crested cormorant	c	c	a	a
Anhinga*	u	c	u	r
American bittern	r		r	
Least bittern	r	r	r	
Great blue heron*	c	a	c	c
Great egret	c	a	c	u
Snowy egret*	c	a	c	r
Little blue heron*	c	a	c	
Cattle egret	c	a	c	u
Green-backed heron*	c	c	u	
Black-crowned night heron*	u	u	u	
Yellow-crowned night heron*	u	a	u	
White ibis	u	c	u	
Wood stork				r
Greater white-fronted goose				u
Snow goose				u
Ross' goose				r
Canada goose				r
Wood duck*	a	a	a	a
Green-winged teal			c	u
Black duck				r
Mottled duck				u
Mallard				a
Northern pintail				c
Blue-winged teal			c	r
Northern shoveler				c
Gadwall				u
American wigeon				u
Ring-necked duck				u
Lesser scaup				r
Hooded merganser*	u	c	u	u
Black vulture*	a	a	a	a
Mississippi kite*	c	c	c	
Bald eagle	r		r	r
Northern harrier			u	u
Sharp-skinned hawk	u		u	c
Cooper's hawk*	u	r	u	c
Red-shouldered hawk*	a	a	a	a
Broad-winged hawk	u	r	u	
Red-tailed hawk*	c	u	c	a
American kestrel	c	r	c	c
Merlin				r
Wild turkey*	c	c	c	c
Northern bobwhite*	u	u	u	u
King rail	r		r	
Sora	u		u	
Common moorhen	r		r	

Common Name	Spring March-May	June-August	Summer Sept-Nov	Fall Winter Dec-February
American coot	u		u	c
Killdeer*	a	a	a	a
Greater yellowlegs	u		u	r
Lesser yellowlegs	u		u	r
Solitary sandpiper	c		u	
Spotted sandpiper	u		u	r
Semipalmated sandpiper	u		u	
Least sandpiper	u		u	u
Pectoral sandpiper	u		u	
Western sandpiper	u		u	r
Short-billed dowitcher	u		u	u
Long-billed dowitcher	r		r	
Common snipe	u		u	c
American woodcock	u		u	c
Ring-billed gull	u		u	u
Rock dove	r	r	r	r
Mourning dove*	a	a	a	a
Common ground-dove				r
Black-billed cuckoo	u		r	
Yellow-billed cuckoo*	c	a	u	
Common barn owl	r	r	r	r
Eastern screech owl*	c	c	c	c
Great horned owl*	u	u	u	u
Barred owl*	a	a	a	a
Common nighthawk	u	c	u	
Chuck-will's-widow	u	c	u	
Whip-poor-will	u		r	
Chimney swift*	c	c	c	
Ruby-throated hummingbird*	a	a	c	
Belted kingfisher	c	c	c	c
Red-headed woodpecker*	c	c	c	a
Red-bellied woodpecker*	a	a	a	a
Yellow-bellied sapsucker	u		u	c
Downy woodpecker*	c	c	c	c
Hairy woodpecker*	u	u	u	u
Northern flicker	u	u	u	c
Pileated woodpecker*	c	c	c	c
Eastern wood-pewee*	c	c	c	
Acadian flycatcher*	a	a	a	
Eastern phoebe	u		u	c
Great crested flycatcher*	c	a	c	
Eastern kingbird	c	c	c	
Horned lark*	u	u	u	c
Purple martin	c	c	c	
Tree swallow	c		c	
Northern rough-winged swallow	c	u	c	
Barn swallow	c	c	c	
Blue jay*	c	u	c	c
American crow*	c	c	c	c
Fish crow	u	u	u	u
Carolina chickadee*	a	a	a	a
Tufted titmouse*	a	a	a	a
Red-breasted nuthatch				r
White-breasted nuthatch				r
Brown-headed nuthatch	r	r	r	r
Brown creeper				u

Common Name	Spring March-May	June-August	Summer Sept-Nov	Fall Winter Dec-February
Carolina wren*	a	a	a	a
House wren	r		r	u
Winter wren	r		r	u
Sedge wren	r		r	r
Golden-crowned kinglet	c		u	c
Ruby-crowned kinglet	a		c	a
Blue-gray gnatcatcher*	a	a	a	r
Eastern bluebird	c	c	c	c
Veery	u		r	
Gray-checked thrush	c		u	
Swainson's thrush	c		u	
Hermit thrush	c		u	
Wood thrush*	c	u	u	
American robin	c	r	c	c
Gray catbird	c	r	c	r
Northern mockingbird*	u	u	u	u
Brown thrasher	c	c	c	c
American pipit	r		r	u
Cedar waxwing	c		r	c
Loggerhead shrike*	c	c	c	c
European starling	u	u	u	u
White-eyed vireo*	a	a	a	r
Blue-headed vireo	c		u	u
Yellow-throated vireo*	c	c	u	
Red-eyed vireo*	a	a	a	
Philadelphia vireo	u		u	
Blue-winged warbler	c		u	
Golden-winged warbler	c		u	
Tennessee warbler	c		u	
Orange-crowned warbler	c		u	c
Northern parula*	c	a	c	
Yellow warbler	u		c	
Chestnut-sided warbler	c		u	
Magnolia warbler	c		u	
Yellow-rumped warbler	c		u	a
Black-throated green warbler	c		u	
Blackburnian warbler	c		u	
Yellow-throated warbler*	c	c	c	
Pine warbler	r		r	u
Prairie warbler	u		u	
Palm warbler	u		u	
Bay-breasted warbler	c		u	
Blackpoll warbler	c			
Cerulean warbler				
Black-and-white warbler	c		c	
American redstart*	c	u	c	
Prothonotary warbler*	a	a	a	
Worm-eating warbler	u		u	
Swainson's warbler*	u	u	u	
Ovenbird	c		u	
Northern waterthrush	c		u	
Louisiana waterthrush	c		u	
Kentucky warbler*	c	c	c	
Common yellowthroat*	c	u	c	u
Hooded warbler*	c	c	c	
Wilson's warbler	u		u	

Common Name	Spring March-May	June-August	Summer Sept-Nov	Fall Winter Dec-February
Canada warbler	c		u	
Yellow-breasted chat*	c	c	c	
Summer tanager*	c	c	c	
Scarlet tanager	c		u	
Northern cardinal*	a	a	a	a
Rose-breasted grosbeak	c		u	
Blue grosbeak	c	u	c	
Indigo bunting*	a	a	a	
Painted bunting*	c	c	c	
Dickcissel*	c	c	c	
Rufous-sided towhee*	c	c	c	c
Chipping sparrow	u		u	r
Field sparrow	u		u	u
Savannah sparrow	c		u	c
Fox sparrow	u		u	u
Song sparrow	c		u	c
Swamp sparrow	c		u	c
White-throated sparrow	c		u	a
Dark-eyed junco	c		u	c
Lapland longspur				u
Bobolink	u			
Red-winged blackbird*	a	a	a	a
Eastern meadowlark*	c	c	c	c
Rusty blackbird	u		u	u
Brewer's blackbird	r		r	r
Common grackle*	u	u	u	c
Brown-headed cowbird*	a	a	a	a
Orchard oriole	c	u	u	
Baltimore oriole	c		u	
Purple finch			u	u
House finch	r	r	r	r
Pine siskin				u
American goldfinch	u		u	c
House sparrow	r	r	r	r

MAMMALS

Armadillo

Bats

(Southeastern myotis, eastern pipistrelle, big brown, red, Seminole, hoary, northern yellow, evening, Rafinesque's big-eared, Brazilian free-tailed)

Beaver

Bobcat

Coyote

Feral hogs

Fox *(grey and red)*

Long-tailed weasel

Mink

Mouse *(house, deer, harvest)*

Nutria

Oposum

Otter

Rabbit *(swamp, cotton-tailed)*

Raccoon

Rats *(wood, rice, cotton)*

Shrew *(short-tailed, least)*

Squirrel *(grey, fox, flying)*

Striped skunk
White-tailed deer
Woodland vole

AMPHIBIANS AND REPTILES

Snakes

Canebrake rattle
Copperhead
Cottonmouth moccasin
Garter
King
Mud
Rat
(Various water)

Frogs

Bull
Eastern narrow-mouthed toad
Gray tree
Green
Green tree
King
Mud
Northern cricket
Southern leopard
Squirrel tree
Striped chorus
Woodhouse's toad

Alligators

Turtles

Alligator snapping
Cooters
Eastern box
False map
Mississippi map
Musk
Painted
Slider
Snapping
Spiny softshell
Stinkpot

Lizards

Borad-headed skink
Eastern fence
Five-lined skink
Green anole
Ground skink

Mussels

Fat pocketbook
Flat floater
Giant floater
Mapleleaf
Paper pondshell
Papershell
Pink papershell
Pond
Southern mapleleaf
Texas liliput
Yellow sandshell

FISH

Redbreast sunfish
Bluegill
Spotted sunfish
Redear
White crappie
Black crappie
Spotted bass
Large mouth bass
Freshwater drum
White catfish
Brownhead
Flathead

TREES-DOMINANT VEGETATION

Black willow
Cherry bark willow
Cottonwood
Cypress
Drummond red maple
Elms (winged, water, cedar)
Green ash
Gum (red, tupelo)
Hackberry
Oaks (overcup, nuttall, shumard, water, willow)
Pecans (sweet, bitter)
Red mulberry
Swamp cottonwood
Sweetgum

UNDERSTORY-SUBDOMINANT VEGETATION

Blackberry
Black locust
Box elder
Button bush
Deciduous holly
Dewberry
French mulberry
Haws
Honey locust
Honeysuckle
Hornbeam
Palmetto
Prickly ash
Smilax
Swamp dogwood
Swamp privet
Switchcane
Vines
(rattan, muscadine, poison ivy, poison oak, Virginia creeper, pepper, cross, grape)

WET SITES

Water locust
Pickerel-weed
Day lower
Water hyacinth
Iris
Spider lily
Lizard's tail
Marsh mallow
Cardinal flower
Various sedges

APPENDIX E. CONSULTATION AND COORDINATION

PUBLIC INVOLVEMENT PROCESS

Public involvement in the development of the Comprehensive Conservation Plan and Environment Assessment for Bayou Cocodrie National Wildlife Refuge, located in Concordia Parish, Louisiana, was sought throughout the planning process. Notices were mailed in September 1997, to landowners, various conservation organizations, and state and local government agencies announcing that planning was commencing, and giving dates for public scoping meetings. Using the information obtained from these meetings and written comments received by the refuge, a planning team developed a list of major issues and concerns to be addressed in the plan. Over a 3 year period, a draft plan was developed for the refuge, which, when approved by the Fish and Wildlife Service, would direct management of the refuge over a 15 year period.

Approximately 180 copies of the draft plan were made available for public review, beginning June 12, 2001, and ending August 13, 2001. Individuals reviewing this document represented landowners, conservation organizations, and state and local government agencies. Copies were also provided to local libraries. A letter announcing the 60 day comment period was sent to those on the refuge's official mailing list 1 month prior to the draft plan mailings. A flyer which announced the dates of the comment period, and the date and location of a public meeting to discuss the draft, was mailed along with the plans. A public meeting/open house was held on June 28, 2001, from 2 p.m. until 8 p.m., at the refuge headquarters. Twenty individuals were in attendance. Three individuals submitted written comments, and two presented oral comments. One comment was received by mail. Eighteen individuals were local landowners and two individuals represented the Louisiana Department of Wildlife and Fisheries.

There were no comments, either written or oral, that questioned the refuge's proposed management action or suggested that any of the other alternatives presented be adopted. Two individuals were concerned about hunting restrictions being placed on their lands which fall within the refuge's proposed acquisition boundary. The Refuge Manager explained that the Service does not place restrictions of any kind on private property either inside or outside the proposed or approved acquisition boundaries. A majority of attendees were interested in the types of hunting opportunities available on the refuge--none wanted them removed or restricted. The Refuge Manager explained that hunting is one of the priority public uses defined in the National Wildlife Refuge System Improvement Act of 1997, and that the plan clearly supports improving hunting opportunities on the refuge.

Most comments concerning refuge management can be addressed in specific step down plans already in place, while other plans will need to be developed. Some of these comments dealt with methods of deer harvest data collection, deer herd monitoring, and baseline data collection for plant and wildlife populations (personal contact, Bill Williams); feral hog control (written comment, Richard Hennigan); and re establishment of wild turkey populations and development of education programs (personal contact, written comment, Ellis Booth). Some written comments addressed recreation uses that are not managed as priority public uses, and as such, are neither appropriate nor compatible with refuge purposes. One such comment requested that mountain bike trails be established and that the refuge offer overnight camping (written comment, Richard Hennigan); another suggested a public archery/gun range (personal and written comment, Ellis Booth). Other comments (written and verbal, Ellis Booth) requested that the refuge establish and maintain historical records of the area. Both are noteworthy endeavors, and the Refuge Manager proposed that such projects become a task of the recently formed Bayou Cocodrie Refuge Association. The Refuge Manager will discuss these tasks with its Board of Directors as soon as possible. A written comment (Ellis Booth) requested that youth hunts for deer be conducted. The Refuge Manager stated that this activity is already occurring on the refuge and will continue. One comment requested, and the Refuge Manager so noted, that a mailing address be corrected on the refuge's official mailing list. The same individual commented that the refuge should take into account the needs of the country and when setting policy for the National Wildlife Refuge System, to please use common sense (written comment, Elizabeth Terrell).

Acknowledgments

Many people contributed to discussions related to the Bayou Cocodrie National Wildlife Refuge Draft Comprehensive Conservation Plan. The Service wishes to thank the Concordia Parish Policy Jury and the following individuals who volunteered their services:

- Kevin Bridgewater, Natural Resource Conservation Service, Wetland Reserve Program
- Cindy Brown, The Nature Conservancy, Louisiana (land protection and conservation and ecosystem management)
- Kevin Case, Farm Service Agency Conservation Reserve Program
- Keith Ouchley, Ph.D., The Nature Conservancy, Louisiana (avian management, land protection and conservation, biological review)
- Rena Pitts, Farmer (access to property, local history)
- Burl Roberts, Farmer (access to property)
- Reggie Wycoff, Biologist, Louisiana Department of Wildlife and Fisheries (wildlife, fish and game management comments)

APPENDIX F. MANAGEMENT METHODS AND PROCEDURES

PARTNERSHIPS

The Service's Partners for Fish and Wildlife program helps accomplish its mission by offering technical and financial assistance to private landowners who voluntarily restore wetlands and other fish and wildlife habitats on their land. The program emphasizes the reestablishment of native vegetation and ecological communities for the benefit of fish and wildlife in concert with the needs and desires of private landowners.

The Service also enlists the assistance of a wide variety of other partners to help restore wildlife habitat on private lands. These partners include other Federal agencies, Native American tribes, State and local governments, conservation organizations, academic institutions, businesses and industries, school groups, and private individuals. While not a program requirement, a dollar for dollar cost share is usually sought on a project by project basis.

Since the program's inception in 1987, these partnerships have generated significant habitat restoration accomplishments on private lands, primarily focused on the restoration of wetlands, native grasslands, stream banks, riparian areas, and in stream aquatic habitats. These restored habitats now provide important food, cover, and water for federal trust species including migratory birds (e.g., waterfowl, shore and wading birds, songbirds, and birds of prey) and anadromous fish, threatened and endangered species, as well as other fish, wildlife, and plant species that have experienced population declines in the recent past. Many of these projects are located near existing National Wildlife Refuge System lands, or State Wildlife Management Areas, providing increased benefits to fish and wildlife that rely on these lands for survival.

The assistance that the Service offers to private landowners may take the form of informal advice on the design and location of potential restoration projects, or it may consist of designing and funding restoration projects under a voluntary cooperative agreement with the landowner. Under the cooperative agreement, the landowner agrees to maintain the restoration project as specified in the agreement for a minimum of 10 years.

Typical restoration projects may include, but are not limited to:

- Restoring wetland hydrology by plugging drainage ditches, breaking tile drainage systems, installing water control structures, dike construction, and re establishing old connections with waterways.
- Installing fencing and off stream livestock watering facilities to allow for restoration of stream and riparian areas.
- Removal of exotic plants and animals which compete with native fish and wildlife and alter their natural habitats.
- Prescribed burning as a method of removing exotic species and to restore natural disturbance regimes necessary for some species survival.
- Reconstruction of in stream aquatic habitat through bioengineering techniques.

In addition to providing restoration assistance to private landowners, the Service also provides biological technical assistance to U.S. Department of Agriculture agencies implementing key conservation programs of the Farm Bill. The Service's assistance helps the Department of Agriculture meet the technical challenges presented by these programs while maximizing benefits to fish and wildlife resources. The Service also assists in on the ground habitat restoration actions associated with several of these programs.

Under the Wetlands Reserve Program, conservation easements are required to protect and restore formerly degraded agricultural wetlands. The Service provides technical assistance to Department of Agriculture agencies and to private landowners on site selection, restoration planning, and compatible uses for easements offered voluntarily by interested landowners.

The Service provides technical assistance to the Farm Service Agency's farm credit programs in the implementation of three important conservation programs. Two of these programs involve conservation measures related to disposal of inventory farm property obtained through loan failure. The Service reviews these inventory properties and makes recommendations for: (1) the establishment of perpetual conservation easements for protection and restoration of wetlands and the conservation of other important natural resources; and (2) the fee title transfer of inventory properties to state or federal agencies for conservation purposes. The third area in which the Service provides technical assistance involves property owned by Farm Service Agency borrowers. The Fish and Wildlife Service assists in evaluating natural resource values of property securing Farm Service Agency loans and makes recommendations for establishment of conservation contracts where borrowers voluntarily set aside the lands for conservation in exchange for partial debt cancellation. The Fish and Wildlife Service is the primary manager of inventory easements, and receives approximately 40 percent of the fee title transfers. These lands become part of the National Wildlife Refuge System. In addition, the Service restores wetlands and other important habitats on Farm Service Agency easements and transfer properties.

AVIFAUNAL ANALYSIS

The goal for forest breeding birds in the Lower Mississippi Valley was to establish self sustaining populations for all of the roughly 70 species that breed in the valley. Although habitat objectives must ultimately address both quality and quantity, the Service initially concentrated on the size and number of forest patches in this highly fragmented landscape. A 6 step process was established to set habitat objectives and population goals. The Partners in Flight prioritization process (Hunter et al., 1993) was utilized to set breeding bird species priorities in the valley. Six of the seven highest priority species breeding in the valley nest in bottomland hardwood forests. Based on this and the historical ecosystem structure of the valley, bottomland hardwood forests were selected as the highest priority habitat type for breeding bird conservation. To determine forest patch sizes, two sources of information were used: empirical studies and a mathematically derived theoretical genetically viable population. Empirical studies were used primarily for the swallow tailed kite and the Cerulean warbler. To determine the forest patch size requirements for the theoretical genetically viable populations the following formula was used:

$$A = (N c D) + B$$

A = area of forest patch required to support a source population

N = number reproductive units (usually breeding pairs) required for a source population

D = breeding density (usually expressed as hectares/breeding pair)

B = the area of a 1-kilometer forested buffer around the forest core (N*D)

For each of several populations, the Service adopted a proposed minimum effective population size of 500 breeding adults in the recovery plan for the red cockaded woodpecker. For monogamous species this constitutes 250 breeding pairs. However, establishing conservation goals at the minimum threshold seems fraught with peril. Thus, to buffer breeding populations within forest patches, a goal of 500 breeding pairs per forest patch (N=500) was adopted.

For the value of D, average breeding densities from Breeding Bird Censuses conducted in the southeastern United States was used. Even under optimal conditions, bird density in bottomland hardwoods is determined by the frequency of occurrence of patchily distributed micro habitat features (e.g., thickets for Swainson's warblers, cypress brakes for yellow throated warblers, etc.). To account for these habitat quality factors, it was assumed that birds rarely occur in the valley at densities as high as reported in the literature, which is an additional reason for the adoption of 500 breeding pairs per forest patch as a target population.

The agricultural matrix that dominates the valley is generally considered hostile to birds breeding within forest patches. Researchers working in fragmented landscapes have found that nest predation and parasitism were high even in large forest patches (5,000 acres) in landscapes with a low percentage of forest cover. They also have found that female brown headed cowbirds travel an average of 2 miles between feeding and breeding sites. One researcher has found that male ovenbirds singing on territories less than 900 feet from the edge of the forest were more likely to be unpaired than males from the interior of

the forest. For planning purposes, it is assumed that a 0.6 mile forest buffer surrounding an interior forest core will reduce these negative impacts. Only those pairs within the forest core are assumed to reproduce at a rate sufficient to serve as a source population. Because the area of a 0.6 mile buffer will vary with the geometric configuration of each forest patch, the area requirements of each will differ. For planning purposes, until the actual areas of interior forest within each forest patch are determined, doubling the core forest area ($B=2$) will generally result in forest patch requirements that approximate or exceed a 0.6 mile buffer around the desired interior forest area.

As an example, Swainson's warblers have been noted to occur at densities generally ranging of one pair per 6 to 11 acres. Taking the average of one pair per 9 acres, if Swainson's warblers occur over a large area at this density, 500 pairs would require 4,500 acres. Applying the doubling factor as a surrogate for the 0.6 mile buffer produces a desired forest patch size of 9,000 acres. The Service made this calculation for all valley forest breeding species. For planning purposes, the Service placed species into 3 forest patch size groups designed to meet their specific area requirements: 10,000 20,000, 20,000 100,000, and >100,000 acres.

Having determined the aerial habitat requirements of the high priority species and measured the existing habitat using 1992 thematic mapper images, specific locations across the valley were identified for habitat protection/restoration. In addition to habitat requirements and existing forest locations, several other factors such as flooding frequency, current land use, adjacent land use, ownership, and reforestation potential were used to identify proposed habitat protection/restoration sites. Where possible, restoration sites were centered on existing public land. Where linkages could logically be created, existing forest patches were combined to reach target sizes. This sometimes resulted in several existing 10,000 or 20,000 acre patches being combined into a proposed 100,000 acre patch.

Ultimately 101 proposed Breeding Bird Forest Patches were identified for the valley, but the number and location of these sites are not final, and probably never will be. A massive reforestation effort will be necessary to meet these objectives and their achievement often will be opportunity driven. As new opportunities arise and old objectives become unattainable, the locations of the Breeding Bird Forest Patches will change.

For Bayou Cocodrie National Wildlife Refuge, specifically, present data suggest densities for Swainson's warblers are now about 6/100 acres in optimal habitat and that this figure is lower than found at Tensas and Atchafalaya National Wildlife Refuges in comparable habitat (Ouchley unpubl. data, pers. observ.). To support 500 pairs, assuming all acreage is suitable or optimal habitat, about 8,500 acres (without the buffer included) will be needed. However, as stated above, it is risky to accept the assumption that all habitat is suitable or optimal for any priority species within a discrete habitat patch. A better assumption is that no more than half of all forested acreage is optimal or suitable (e.g., ridges, within a ridge and swale topography) for this species and therefore 17,000 acres (with buffer included) may be necessary to support the population target of 500 pairs. This acreage requirement is well above that suggested for this species elsewhere in the valley, but where there are already larger existing forest patches, Swainson's warblers occur in higher densities.

The potential for establishing an acreage target for Bayou Cocodrie National Wildlife Refuge at 20,000 acres (with buffer included) or more of bottomland hardwoods would be made in the hope that eventually Cerulean warblers and some swallow tailed kites may re colonize the area. As efforts continue to expand forested acreage, increasing densities from 6 to 9 pairs/100 acres may be an appropriate population objective. Reproductive data collection should also be undertaken to measure whether nesting success and fledgling survival changes accordingly for this and other species on the above list.

Food is assumed to be the limiting factor for both southbound migrating shorebirds and wintering waterfowl. Following this assumption, the amount of energy required to support one bird for one day and the length of each bird's stay in the valley (wintering or transient) were calculated along with the amount of energy available from potential food sources.

$$H = \frac{P c S c E}{C c F}$$

H = amount of habitat (hectares)

P = population goal (number of birds)

S = length of stay in the Lower Mississippi Valley (days)

E = energetic requirement of one bird for one day (kilojoules [kj])

K = energetic value of food source (kj/gram)

F = available food (grams/ha)

With some adjustments, this formula was used to calculate the amount of habitat needed to support the target populations of shorebirds and waterfowl.

Transient Shorebirds

Typically, mudflat foraging habitat is abundant in the valley during the spring northward migration. In early spring the agricultural fields are bare and winter flood water is receding; in late spring rice fields are flooded. During southward migration, in late summer and fall, fields of maturing crops are dry. Therefore, the period from July 15 to September 30 is the period when foraging habitat for migrating shorebirds is least available. The objective is to ensure that adequate shallow water habitat is available in the valley to meet the foraging requirements of the species during their southward migration.

Neither census data nor any specific estimates of shorebird populations moving through the valley during southward migration currently exist. To establish such an estimate, we examined data from the International Shorebird Survey and consulted shorebird biologists (D. L. Helmers and B. A. Harrington) with knowledge of migration patterns and continental population estimates. Based on these sources, about 500,000 shorebirds are estimated to move through the valley during fall migration.

Shorebirds using the valley range in size from 30 to 200 grams (g). The average mass (weighted by abundance) is 45 g. A 45 g. shorebird requires 102.77 kilojoules (kj)/day to maintain its existence metabolic rate. For the purpose of modeling, we assumed that chironomids are the primary food item consumed by shorebirds. A gram of chironomids has a gross energy content of 23.8 kj. Because the assimilation efficiency of birds feeding on invertebrates is approximately 73 percent, the net energy content of chironomids is about 17.6 kj/g. Thus a 45 g. shorebird requires about 6 g./day ($102.77/17.6 = 5.84$) of invertebrate forage to maintain its body mass.

In addition, to provide the fat reserves necessary to complete migration, shorebirds must gain about 1 g./day. About 2 g. of invertebrate forage must be consumed each day to increase biomass by 1 g. The daily food requirement then becomes about 8 g.

We used estimates of 2 g./square meter for invertebrate food density and a 10 day stopover period for each shorebird migrating south through the Lower Mississippi Valley (D. L. Helmers, pers. comm.). The overall habitat objective for shorebird foraging habitat during southward migration is 5,000 acres. The 5,000 acre goal was distributed among valley states based on their ability to provide managed mudflat habitat during the fall migration period.

For Bayou Cocodrie National Wildlife Refuge, specifically, present and projected future refuge capabilities suggest that habitat should be provided to support about 12,000 southbound shorebirds.

Wintering Waterfowl

The valley wide goal for waterfowl is to provide enough habitat to support 4.3 million wintering ducks and 1.0 million wintering geese. The duck goal was derived from goals of the North American Waterfowl Management Plan by determining the proportion of the continental wintering population found in the valley and then multiplying the continental breeding population goal by this proportion. Duck population levels from the 1970s were used as the basis for this goal because those levels are believed to be high enough to maintain huntable populations yet attainable in today's social and economic environment. The

goose population goal was derived from the number of geese observed in the valley during the mid winter waterfowl inventories in the mid 1980s, a period when most goose populations in the Mississippi Flyway were at or near historic high levels.

As with shorebirds, it is assumed that food is the limiting factor on wintering populations. The energy value and availability of various foods (soybean, rice, corn, moist soil, and bottomland hardwood forest) were calculated, and the daily energy requirement of a female mallard (292 kilocalories/day) was used. The wintering period for waterfowl is 120 days.

Approximately 650,000 acres of foraging habitat and an additional 625,000 acres of naturally flooded habitat are needed to support the wintering waterfowl population goal. Within each state, habitat objectives are divided between public and private ownership, managed and unmanaged lands, and three foraging habitats: bottomland hardwood forests, moist soil, and agricultural fields. The availability of waterfowl foraging habitat depends on adequate precipitation and the resultant ponding or overbank flooding and water control infrastructure (e.g., levees, dikes, water control structures, pumps) to facilitate flooding.

CULTURAL RESOURCES

With the enactment of the Antiquities Act of 1906, the Federal Government recognized the importance of cultural resources to the national identity and sought to protect archaeological sites and historic structures on those lands either owned, managed, or controlled by the United States. The body of historic preservation laws has grown dramatically since 1906. Several themes are consistently present in the laws and the promulgating regulations. They include: 1) each agency to systematically inventory the "historic sites" on their holdings and to scientifically assess each site's eligibility for the National Register of Historic Places; 2) consideration of impacts to cultural resources during the agency's management activities and the avoidance or mitigation of adverse impacts; 3) protection of cultural resources from looting and vandalism 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 and African American communities, to address how a project or management activity may impact specific archaeological sites and landscapes deemed important to those groups. The objectives and strategies previously outlined are the Service's attempt to achieve mandated historic preservation responsibilities in a manner consistent with its mission and the refuge's mission.

The Fish and Wildlife Service's Regional Archaeologist coordinates a Memorandum of Understanding with pertinent federal and state agencies, such as the Louisiana Fish and Game Commission, to enhance law enforcement of the Archaeological Resources Protection Act, the Native American Grave Protection and Repatriation Act, and Section 50 of the Code of Federal Regulations, as well as to facilitate investigations of the Archaeological Resources Protection Act violations and unpermitted artifact collection on the refuge.

A review of the State Site Files located at the Louisiana Division of Archaeology has provided preliminary information on the known or potential archaeological sites and historic structures within and near the refuge. Such information will aid the Service in the development of a long term management plan for cultural resources. A comprehensive refuge wide archaeological survey is recommended so that the Service's management options can be fully realized in a cost effective manner. The survey will provide a site predictive model based upon the region's cultural history, known site distribution, oral history interviews, historic documents, historic land use patterns, topography, geomorphology, soils, hydrology, and vegetative patterns.

ECOSYSTEM MANAGEMENT

Healthy habitats are necessary to sustain fish, wildlife, and plants on lands in the system. In the past, the administrative boundaries of national wildlife refuges have often bounded the scope of planning and policy decisions. The Service develops conservation strategies at two spatial levels in a collaborative process to solve broad scale ecological problems. Within a large spatial level, the Service has developed a cross program approach for the Lower Mississippi Valley considering issues within

the ecological, political, and social boundaries. The Lower Mississippi River Ecosystem Team focuses on landscape problems affecting fish and wildlife resources, and provides specific guidance that will best serve trust species and species of concern and reduce impacts associated with forest fragmentation. At a smaller spatial level, the comprehensive conservation planning team reflects the conservation strategies for national wildlife refuges within the ecosystem and identifies select area species on which to focus management efforts.

Ecosystems are communities of living organisms interacting among themselves and with the physical component of their environment. Ecosystems are experiencing increasing impacts from human activities, the threat of which will require extraordinary flexibility and innovation to successfully conserve and manage them. In recent years, conservationists have fostered the idea that resource conservation can best be achieved by taking a holistic approach to management. The Service is working with divergent interests on ecosystem based approaches to conserve the variety of life and its processes in the Nation's diverse ecosystem.

The Service's mission is to conserve, protect, and enhance the Nation's fish and wildlife and their habitats for the continuing benefit of the American people. The Service has adopted an ecosystem approach to more effectively achieve this mission. Our objective is to implement consistent policies and procedures that will embrace the ecosystem approach in a "management environment" which considers the needs of all our resources in decision making. This holistic approach to fish and wildlife conservation will enable the Service to more efficiently and effectively maintain healthy ecosystems on a long term basis and to conserve the Nation's rich biological heritage.

An ecosystem approach to fish and wildlife conservation means protecting or restoring the function, structure, and species composition of an ecosystem while providing for its sustainable socioeconomic use. It involves recognizing that, in some way, all things are connected. The ecosystem approach emphasizes conservation and management of discrete land units, watersheds, or ecosystems and requires the identification of ecosystem goals that represent resource priorities on which all programs of the Service will collectively focus their efforts. The Service must work closely and consistently with external partners, public and private, who share responsibility for ecosystem health and biological diversity. This approach will enable the Service to fulfill its fish and wildlife trust responsibilities with greater efficiency and effectiveness.

In the Southeast Region, the Service is approaching its nationally mandated leadership role for fish and wildlife conservation on an ecosystem basis, partnering with other Service regions, with other Federal agencies, with States and their local governments and citizenry, and with non governmental organizations. By working together, the Service is able to achieve healthy, sustainable ecosystems that ensure a continuing legacy of abundant fish and wildlife resources for all Americans to use and enjoy.



USFWS Photo

APPENDIX G. COMPATABILITY DETERMINATIONS

INTRODUCTION

A compatibility determination documents the formal procedure used to determine if existing and proposed uses of national wildlife refuges are compatible with the purpose of each refuge and the mission of the National Wildlife Refuge System. Under the National Wildlife Refuge System Administration Act of 1966, the Refuge Recreation Act of 1962, and the National Wildlife Refuge System Improvement Act of 1997, the Service may not permit public recreational uses on national wildlife refuges unless the uses are determined to be compatible.

All lands of the National Wildlife Refuge System will be managed in accordance with an approved comprehensive conservation plan that will guide management decisions and set forth strategies for achieving refuge purposes. The management of all wildlife-dependent recreational activities on Bayou Cocodrie National Wildlife Refuge is directed towards providing quality, compatible, wildlife-dependent recreational opportunities for visitors in a manner that does not negatively impact wildlife population levels or the natural diversity of the area. Public use opportunities are varied and may include both consumptive and non-consumptive uses.

The following compatibility determinations rely on best estimates of current public use levels as provided by the Louisiana Department of Wildlife and Fisheries and the Fish and Wildlife Service. Information obtained by the refuge staff during the first year of refuge-administered public use activities is also incorporated. During subsequent years, the Service will continue, as indicated in the comprehensive conservation plan, to gather definitive public use data, conduct surveys to estimate wildlife populations, and assess public use impacts on the resources. If adverse impacts are identified, modifications to that particular public use activity will occur to minimize the impact. For additional details and to reference specific citations outlined, refer to the Comprehensive Conservation Plan for Bayou Cocodrie National Wildlife Refuge.

Refuge Name: Bayou Cocodrie National Wildlife Refuge

Date Established: November 6, 1990

Establishing and Acquisition Authority: Public Law 101 593 (Section 108 of H.R. 3338)

Purposes for Which the Refuge Was Established

Public Law 101 593 (Section 108 of H.R. 3338) states that the refuge will be managed for the purposes of: conservation and enhancement of wetlands; management of migratory birds; and fish and wildlife recreation activities. In establishing the purpose, Congress recognized the significance of this refuge by stating, "...the Bayou Cocodrie area is a bottomland hardwood swamp which borders (supports or harbors) over one hundred and fifty species of birds and many other types of wildlife, including several species threatened with extinction, such as the Louisiana population of black bears." The Bayou Cocodrie area includes some of the least disturbed bottomland hardwood forests in the southeast and significantly contributes to the biological diversity of the region.

Mission of the National Wildlife Refuge System

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.

Refuge Uses

This compatibility determination applies to: (1) Recreational hunting of white-tailed deer and turkey, furbearers, and migratory birds in accordance with State of Louisiana regulations; (2) recreational fishing of freshwater fish (bass, perch and catfish); (3) wildlife observation and photography and environmental education and interpretation; (4) all-terrain vehicle use associated with wildlife-dependent recreational uses; and (5) trapping of selected furbearers to achieve wildlife and habitat management objectives outlined in the comprehensive conservation plan.

Other Applicable Laws, Regulations, and Policies

Antiquities Act of 1906 (34 Stat. 225)
Migratory Bird Treaty Act of 1918 (15 U.S.C. 703 711; 40 Stat. 755)
Migratory Bird Conservation Act of 1929 (16 U.S.C. 715r; 45 Stat. 1222)
Migratory Bird Hunting Stamp Act of 1934 (16 U.S.C. 718 178h; 48 Stat. 451)
Criminal Code Provisions of 1940 (18 U.S.C. 41)
Bald and Gold Eagle Protection Act (16 U.S.C. 668 668d; 54 Stat. 250)
Refuge Trespass Act of June 25, 1948 (18 U.S.C. 41; 62 Stat. 1119)
Fish and Wildlife Act of 1956 (16 U.S.C. 742a 742j; 70 Stat. 1119)
Refuge Recreation Act of 1962 (16 U.S.C. 460k 4; 76 Stat. 653)
Wilderness Act (16 U.S.C. 1131; 78 Stat. 890)
Land and Water Conservation Fund Act of 1965
National Historic Preservation Act of 1966, as amended (16 U.S.C. 470, et seq.; 80 Stat. 915)
National Wildlife Refuge System Administration Act of 1966, as amended (16 U.S.C. 668dd, 668ee; 80 Stat. 927)
National Environmental Policy Act of 1969, NEPA (42 U.S.C. 4321, et seq; 83 Stat. 852)
Use of Off Road Vehicles on Public Lands (Executive Order 11644, as amended by Executive Order 10989)
Endangered Species Act of 1973 (16 U.S.C. 1531 et seq; 87 Stat. 884)
Refuge Revenue Sharing Act of 1973 (16 U.S.C. 1531 et seq; 87 Stat. 884)
National Wildlife Refuge Regulations for the Most Recent Fiscal Year (50 CFR Subchapter C; 43 CFR 3101.3 3)
Emergency Wetlands Resources Act of 1986 (S.B.740)
North American Wetlands Conservation Act of 1990
Food Security Act (Farm Bill) of 1990 as amended (HR 2100)
The Property Clause of the U.S. Constitution Article IV 3, Clause 2
The Commerce Clause of the U.S. Constitution Article I, Section 8
The National Wildlife Refuge System Improvement Act of 1997 (Public Law 105 57, USC668dd)
Executive Order 12996, Management and General Public Use of the National Wildlife Refuge System.
March 25, 1996
Title 50, Code of Federal Regulations, Pats 25 33
Archaeological Resources Protection Act of 1979
Native American Graves Protection and Repatriation Act of 1990

National Environmental Policy Act Compliance

Development of a public use program that provides optimum opportunities for wildlife dependent recreational uses, for provision of all-terrain vehicles, and for trapping programs focusing on selected furbearers would, as evaluated in this compatibility determination, have negligible impacts on refuge resources. Allowing these uses to be developed and/or continued is not expected to be controversial regarding the impacts on refuge resources.

In assessing the potential impacts of refuge uses, all available tools were utilized (Fish and Wildlife Service 1986). A site specific document (Final Environmental Assessment and Land Protection Plan for Proposed Establishment of Bayou Cocodrie National Wildlife Refuge), site specific personal communications (Louisiana Department of Wildlife and Fisheries), data collection from 1994-1999, development of the draft and final comprehensive conservation plans, environmental assessment and general references are considered to be sufficient bases on which to make these compatibility determinations.

Bayou Cocodrie National Wildlife Refuge is a relatively new refuge and data cover only a 5-year period. As the public use program is developed and fully implemented, refuge staff will assess any possible impacts it may have on resources and wildlife populations. Changes in the program will be implemented as needed to address impacts identified, and to respond to anticipated wildlife population changes due to implementation of state-of-the-art wildlife management activities.

During the scoping phase of preparing the comprehensive conservation plan, a public meeting was held to solicit input and comments on all aspects of refuge management. Copies of the draft comprehensive conservation plan were distributed for a 60-day review period to garner public comments, written and verbal, on the draft plan. During this review period, an open house was held to solicit comments on the draft. Each refuge use analyzed and described below is considered a separate or "stand alone" compatibility determination. For brevity, the above information in sections "Introduction" through "Other Applicable Laws, Regulations, and Policies" applies to each compatibility determination listed in this appendix.

Description of Use:

Hunting

Primitive and modern gun hunt for white-tailed deer and modern gun hunt for small game and waterfowl.

Availability of Resources: Based on a review of the refuge's budget allocated for this activity, there is adequate funding to ensure compatibility and to administer this use at its current level. Additional fiscal resources are needed to conduct this use as proposed. An additional wildlife biologist is needed to develop and implement a fish and wildlife management plan and water management activities. The addition of a permanent wildlife enforcement officer and radio communication system is needed to improve emergency response and ensure the safety of officers in the field. Additional hunter check stations, hunter safety classes, and annual hunt brochures are proposed.

Anticipated Impacts of the Use: Harvest management of upland game and furbearers (squirrel, rabbit, raccoon, opossum, beaver) is considerably different from that of both big game and migratory birds. Current literature suggests that user take (<50% of total mortality) of most upland game is compensatory; that factors such as immigration from adjacent areas and density dependent production occur in most upland game populations; and that hunting does not significantly impact populations. Hunting is substituted for natural mortality. Production of large, annual surpluses of young allows for lengthy seasons and generous bag limits with little concern for over harvest and minimal chance of population impacts in most areas (Bookhout 1994).

Harvest management of migratory birds (ducks, woodcock) is more difficult to assess. Migratory bird regulations are established at the federal level each year following a series of meetings involving both state and federal biologists. Harvest guidelines are based on population survey data with regulations that are subject to change each year, including bag limits, season lengths, and framework dates (Bookhout 1994).

Based on available information, no threatened or endangered species, other than the Louisiana black bear, have been documented on the Bayou Cocodrie National Wildlife Refuge. It is anticipated that the current levels and expected future levels of hunting or other wildlife-dependent recreation activities will not directly, indirectly, or cumulatively impact any listed, proposed, or candidate species or designated/proposed critical habitat. Data gathered from future biological surveys regarding the importance or potential importance of the refuge to threatened or endangered species or critical habitat (or proposed threatened, endangered, or critical habitat) could result in changes to public use activities across time; however, these changes will have no effect on listed species.

Disturbance to neotropical migratory birds will be minimal and temporary, as the habitat will be slightly altered for the betterment of these species. The potential of disturbance, especially during the nesting season, does exist for wading bird rookeries; however, this potential will virtually be nonexistent due to no overlap of hunting seasons with nesting season.

The refuge hunter visits have consistently been near 5,000/year. This probably reflects an increase in use because this area was hunted by private hunting parties prior to the refuge's establishment. Annual

averages on harvested species from 1994 through 1999 are as follows: 230 white-tailed deer; 2,000 squirrels; 100 rabbits; 20 feral pigs; and 5 raccoons.

Incidental take of other wildlife species, either illegally or unintentionally, may occur with any consumptive use program. At current and anticipated public use levels, incidental take will be very small and will not directly or cumulatively impact current or future populations of wildlife either on this refuge or in the surrounding areas.

Allowing the projected levels of managed hunting evaluated in this compatibility determination will have negligible impacts on refuge resources. Permitting this use should not be controversial. In assessing the potential impacts of hunting, all available tools were utilized. During the comprehensive conservation planning process, the Service evaluated the long term consequences of hunting through the preparation of an Environmental Assessment.

Public Review and Comment: Proposed uses and compatibility determinations were available for review during the Draft Comprehensive Conservation Plan and Environmental Assessment public review period which began June 12, 2001, and ended August 13, 2001. There were no comments, either written or oral, that questioned the Service's proposed management action or suggested that any of the other alternatives be adopted.

Determination (check one below):

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: Hunting will be permitted in accordance with State of Louisiana regulations and licensing requirements.

Vehicles will be restricted to existing roads. All-terrain vehicles will be restricted to designated trails/roads. Off-road travel will be limited to foot travel only. Use of horses will be restricted to designated roads and trails and allowed only in conjunction with specially permitted wildlife dependent activities. Firearms, bows, and other weapons will be prohibited except during designated hunting seasons. Hunting deer with dogs will not be allowed on the refuge. Use of dogs for hunting rabbit, squirrel, raccoon, feral hogs, and woodcock will be allowed during designed seasons only. Other dogs and pets must be confined or on a leash. Camping overnight on the refuge will be prohibited.

All hunts will be designed to provide quality user opportunities based upon known wildlife population levels and biological parameters. Hunt season dates and bag limits will be adjusted as needed to achieve balanced wildlife population levels within carrying capacities, regardless of impacts to user opportunities.

As data are collected and a long-range hunt plan developed, additional refuge-specific regulations could be implemented. These regulations could include, but may not be limited to, season dates that differ from those in surrounding state zones, refuge permit requirements, and closed areas on a permanent or seasonal basis (to reduce disturbance to specific wildlife species or habitats, such as bird rookeries, wintering waterfowl or threatened/endangered species, or to provide for public safety).

Hunting is conducted in accordance with the provisions of the approved Refuge Hunting Plan.

All hunts will be designed to provide quality user opportunities based upon known wildlife population levels and biological parameters. Hunt season dates and bag limits will be adjusted as needed to achieve balanced wildlife population levels within carrying capacities, regardless of impacts to user opportunities.

Harvest management of big game (white-tailed deer and turkey) involves combining wildlife science and wildlife objectives for the attainment of a specific management goal. Harvest management strategies should be based on objectives established as part of hunting plans developed for the area. The objective-setting process must be based on a complete analysis of biological data. Specific objectives allow the setting of hunting regulations. Results of each hunting season will be thoroughly evaluated to ensure that the harvest management program remains dynamic and responsive to an evolving management environment (Bookhout 1994).

There are very few turkeys in the area at this time and very little hunter effort directed toward this species. However, a dramatic increase in the turkey population is expected with the implementation of the management action. Until this occurs, turkey hunting will remain closed.

Implementation of an effective law enforcement program and development of site-specific refuge regulations/special conditions will eliminate most incidental take problems.

If adverse impacts to refuge resources associated with hunting are identified in future years, modifications to those programs in question will be implemented to minimize impacts.

Waterfowl hunting will be limited to 3 days per week until noon and expanded when deemed appropriate.

All hunting activities will be managed to protect the threatened Louisiana black bear.

Justification: Hunting is a priority wildlife-dependent use as listed and described in the National Wildlife Refuge System Improvement Act of 1997.

At all public meetings conducted for the comprehensive conservation planning effort, an overwhelming issue raised by the public and Louisiana Department of Wildlife and Fisheries was to increase hunting opportunities on the refuge.

Many of the local residents enjoy an informal, rural lifestyle that includes frequent recreational use of the area's natural resources. Hunting and fishing have been, and continue to be, popular uses of refuge lands. Implementation of the hunting activities described in the comprehensive conservation plan will ensure that opportunities for various types of wildlife-dependent recreation will continue for future generations.

Flooded sloughs and backwater areas of the Brooks Brake Unit provide an excellent opportunity to allow limited waterfowl hunting without causing disturbance to waterfowl using the refuge's moist-soil management units located in the Cross Bayou Unit.

Most of the refuge area is a contiguous forest of mature bottomland hardwoods. There is a great variety of tree species on the refuge that includes oak, hackberry, black gum, hickory, elm, green ash, bitter pecan, cypress, tupelo, and willow. This rich forested wetland provides good habitat for a number of game species including white-tailed deer, turkey, squirrel, raccoon, and waterfowl.

The flood plain hardwood forests of the area support high squirrel populations and have for several years. As a result, fall squirrel hunting is one of the most popular activities on the refuge. Squirrel dogs are occasionally used in late winter following leaf fall.

The raccoon population appears to be very high throughout the area, and in the absence of predators, populations rapidly build to levels resulting in disease problems and impacts to the reproduction of non-game forest breeding birds and wild turkeys. Therefore, in addition to providing hunting opportunities, harvest of raccoons is particularly important to control population levels.

Current levels and anticipated future levels of hunting are considered to be compatible with the purpose for which the refuge was established. There has been substantial historical use of this forested wetland area for hunting. Based on available information, there is no indication of long-term adverse biological impacts associated with this activity. Allowing it to continue is consistent with refuge objectives and follows current Service policy.

NEPA Compliance for Refuge Use Decision: Place an X in appropriate space.

- Categorical Exclusion without Environmental Action Statement
- Categorical Exclusion and Environmental Action Statement
- Environmental Assessment and Finding of No Significant Impact
- Environmental Impact Statement and Record of Decision

Mandatory 10- or 15-Year Re-evaluation Date: September 2016

Description of Use:

Recreational Fishing

Sport fishing including bank fishing and by canoe/small skiff on Bayou Cocodrie (mainstream).

Availability of Resources: Based on a review of the refuge's budget allocated for this activity, there is adequate funding to ensure compatibility and to administer the use at its current level. Additional fiscal resources are needed to conduct this use as proposed. To improve sport fishing opportunities, an additional game enforcement officer, as well as evaluation and development of boat and bank fishing access, is needed on the Cross Bayou.

Anticipated Impacts of the Use: There are minor wildlife conflicts when fishermen inadvertently disturb wildlife in and around the water. Allowing the projected levels of managed fishing evaluated in this compatibility determination will have negligible impacts on refuge resources. Permitting this use should not be controversial. Construction of fishing platforms will alter small portions of the natural environment. The construction of these facilities and the repair and maintenance of boat launching facilities will reduce negative biological impacts. Clearings improve access and reduce trampling of vegetation along the river bank. Negative environmental impacts will occur through illegal activities such as anglers taking species out of season, or under-sized fish. Litter, especially monofilament line that can injure and kill wildlife, is also a negative impact. Providing information to refuge visitors about rules and regulations, along with increased law enforcement patrol, will keep negative impacts to a minimum. In assessing the potential impacts of fishing, all available tools were utilized.

Recreational fishing should not adversely affect the fisheries resource or other related resources on the refuge. There may be some limited disturbance to certain species of wildlife and some trampling of vegetation; however, this should be short lived and relatively minor and will not negatively impact wetland values of the refuge. Known bird rookery sites do not occur at locations currently popular for fishing activities, therefore, disturbance should not be a problem. During the comprehensive conservation planning process, the Service evaluated the long-term consequences of fishing through the preparation of an environmental assessment.

Public Review and Comment: Proposed uses and compatibility determinations were available during the Draft Comprehensive Conservation Plan and Environmental Assessment public review period which began on June 12, 2001, and ended on August 13, 2001. There were no comments, either written or oral, that questioned the Service's proposed management action or suggested that any of the other alternatives be adopted.

Determination (check one below):

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: The refuge must first assess the fishery resource and inventory and evaluate its potential to assure that the ecological integrity of native fish populations supports sport fishery opportunities.

Fishing will be permitted in accordance with State of Louisiana regulations and licensing requirements.

The refuge will coordinate with county, state, and federal partners to develop and implement a Sport Fishing Management Plan, conduct creel surveys, and perform water quality analyses.

Only day-use activities will be permitted. Sport fishing seasons will be set to avoid conflicts with migratory bird concentrations and hunting. Proper permits through the county, state, and federal regulatory agencies will be obtained prior to any construction to ensure protection of wetlands.

If disturbance at these sites is identified as a problem in future years, closed areas will be established during nesting season to eliminate this concern. Problems associated with littering and illegal take of fish will be controlled through law enforcement activities.

Justification: Fishing is a priority wildlife-dependent use as listed and described in the National Wildlife Refuge System Improvement Act of 1997.

Sport fishing is perhaps the most common public use surrounding the refuge. Some interest was expressed by local citizens and the Louisiana Department of Wildlife and Fisheries at public meetings to improve access for fishing. The two refuge lakes offer very limited opportunities for sport fishing. Local citizens expressed that historically, refuge lakes have contained largemouth bass, crappie, and catfish and these lakes were extensively fished by local residents. Currently, access to these remote lakes is virtually nonexistent thereby nullifying all public use. However, the scenic Bayou Cocodrie River meanders through the refuge providing a variety of fish species including bass, crappie, gaspergou, bream, buffalo, and catfish.

The public is a strong advocate of fishing in the area. Allowing the public to continue to fish on the refuge would have a positive effect on public opinion and would help build support for the Service and for natural resource issues. Providing fishing opportunities will also allow the use of a renewable natural resource without adversely impacting other resource values.

Although a few refuge visitors have inquired about canoeing opportunities, no canoeists have been observed using Bayou Cocodrie. This may be attributed to a lack of sufficient access to this watercourse. Canoeing is likely to be an infrequent activity at best on refuge waters. However, the scenic Bayou Cocodrie River meanders through the refuge from north to south and would provide an excellent canoe trail during certain times of the year.

Current levels and anticipated future levels of fishing are considered to be compatible with the purpose for which the refuge was established.

There has been substantial historical use of this forested wetland area for fishing. Based on available information, there is no indication of long term adverse biological impacts associated with this activity. Allowing this use to continue is consistent with refuge objectives and follows current Service policy.

NEPA Compliance for Refuge Use Decision: Place an X in appropriate space.

- Categorical Exclusion without Environmental Action Statement
- Categorical Exclusion and Environmental Action Statement
- Environmental Assessment and Finding of No Significant Impact
- Environmental Impact Statement and Record of Decision

Mandatory 10- or 15-Year Re-evaluation Date: September 2016

Description of Use:

Wildlife Observation, Wildlife Photography, and Environmental Education and Interpretation

Wildlife observation, wildlife photography, and environmental education and interpretation on designated trails and proposed observation areas in the Brooks Brake Unit.

Availability of Resources: Based on a review of the refuge's budget allocated for these activities, funding is inadequate to ensure compatibility and to administer these uses at current or proposed levels. Additional fiscal resources are needed to conduct these uses. Current staffing is extremely limited with no public use staff. The management of a volunteer program will be essential to successfully implementing the education and visitor use program. Volunteers will be recruited and trained to assist staff in developing and implementing environmental education and interpretive programs. The addition of a permanent outdoor recreation planner/public use specialist and facilities including wildlife observation platform, boardwalks, signs, parking and trail head development, visitor center, kiosks, and environmental education materials are needed to provide and conduct wildlife observation, wildlife photography, and environmental education and interpretation activities.

Anticipated Impacts of Use: Nonconsumptive uses such as birdwatching, hiking, and nature photography are minimal at this time due to the area's distance from large metropolitan areas and the general lack of access. It is estimated that 2,000 visits/year are attributed to wildlife observation and related activities. Disturbance from environmental education activities is expected to be minimal and to have an insignificant effect on refuge resources, including fish and wildlife and their habitats and wetland values.

Wildlife observation/photography activities might result in some disturbance to wildlife, especially if visitors venture too close to the bird rookeries. Refuge road systems and all terrain vehicle trails opened to public use will be routed to minimize disturbance to these sensitive areas. If unacceptable levels of disturbance are identified at any time, these areas will be closed to public entry during the nesting season. Some minimal trampling of vegetation also may occur.

Construction of facilities such as boardwalks, kiosks, observation towers, and visitor centers will alter small portions of the natural environment on the refuge. Proper planning and placement of the facilities will ensure that wetlands, threatened and endangered species, or species of special concern are not negatively impacted. Proper permits through the parish, state, and federal regulatory agencies will be obtained prior to construction to ensure resource protection. Boardwalks will reduce human impacts and control access. Anticipated impacts from this use are minor and might include damage to vegetation, littering, increased maintenance activity, potential conflicts with other visitors, and minor disturbances to wildlife. Allowing the projected levels of managed wildlife observation, wildlife photography, and environmental education and interpretation evaluated in this compatibility determination will result in only negligible impacts on refuge resources. Permitting these uses should not be controversial. In assessing the potential impacts, all available tools were utilized. During the comprehensive conservation planning process, the Service evaluated the long-term consequences of wildlife observation, wildlife photography, and environmental education and interpretation through the preparation of an environmental assessment.

Public Review and Comment: Proposed uses and compatibility determinations were available for review by the public during the Draft Comprehensive Conservation Plan and Environmental Assessment public review period, which began June 12, 2001, and ended August 13, 2001. There were no comments, either written or oral, that questioned the proposed management action or suggested that any of the other alternatives be adopted.

Determination (check one below):

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: Wildlife observation, wildlife photography, and environmental education and interpretation activities and facilities will be reviewed and evaluated annually to ensure the quality of their contributions. Zoning of visitor activities by time and space, clustering public use facilities, proper monitoring, educating visitors, and enforcement will ensure compatibility with the purpose of the refuge and the purpose of the National Wildlife Refuge System. If human impacts are detrimental to the refuge's natural resources, actions will be taken to reduce or eliminate those impacts. Portions of the refuge will remain undeveloped.

Justification: Wildlife observation, wildlife photography, and environmental education and interpretation are priority wildlife-dependent public uses as listed and described in the National Wildlife Refuge System Improvement Act of 1997.

There are no public facilities within the parish that support wildlife observation and photography. The nearest parish schools and communities are largely unaware of the refuge's unique features, values, and management activities. Implementation of these projects will increase awareness and understanding on a variety of environmental and ecological subjects and will improve awareness and support of the refuge.

The number one attraction for the public to visit national wildlife refuges is to observe wildlife. Bayou Cocodrie Refuge's great variety and abundance of high quality forested wetland areas provide prime habitat for a number of species. Migratory and resident birds are abundant on the refuge. Wading birds frequent the wetlands and four known rookeries are present on the property. Primary species include the great blue heron, little blue heron, green heron, cattle egret, snowy egret, great egret, anhinga, and night herons (Fish and Wildlife Service 1999). Similar to wading birds, the area's habitat for neotropical migratory birds is outstanding (Fish and Wildlife Service 1992). Neotropical migratory birds use the interior hardwood forested areas and edges.

There are no primary or secondary roads or trails maintained for the public to access the refuge in order to observe and photograph wildlife. There are no regularly maintained foot trails in two management units of the refuge.

Environmental education and interpretation activities have been nonexistent in prior years. Efforts are underway to develop these programs and will be associated with structured activities conducted by refuge staff or trained volunteers.

It is anticipated that an increase in nonconsumptive wildlife-dependent uses will occur over the next few years as facilities are provided and especially as the public and conservation groups become aware of the excellent birding opportunities on the refuge. This anticipated increase will be slow in developing and due to the remoteness of the area, high numbers of users are not expected.

The current and anticipated levels of wildlife observation, wildlife photography, and environmental education and interpretation activities are compatible with the purpose for which the refuge was established. There is no indication of long term adverse biological impacts associated with these activities. Allowing these uses is consistent with refuge objectives and follows current Service policy.

NEPA Compliance for Refuge Use Decision: Place an X in appropriate space.

- Categorical Exclusion without Environmental Action Statement
- Categorical Exclusion and Environmental Action Statement
- Environmental Assessment and Finding of No Significant Impact
- Environmental Impact Statement and Record of Decision

Mandatory 10- or 15-Year Re-evaluation Date: September 2016

Description of Use:*All-Terrain Vehicle Use*

All-terrain vehicle use on designated trails during deer hunting season.

Availability of Resources: Some additional fiscal resources are needed to conduct this use as proposed. Additional trail maintenance and development can be accomplished with existing staff. However, additional game enforcement will be needed.

Anticipated Impacts of Use: In order to disperse hunters and access remote areas for hunting, refuge users have historically utilized all-terrain vehicles throughout the area resulting in a "maze" of trails to virtually every possible location. This uncontrolled use has resulted in severe rutting throughout the refuge. The increase in use has the potential to cause disturbance to wildlife species. All-terrain vehicles may flush wildlife and disturb other users. The increase in trail access could result in physical impacts to vegetation and soils. These impacts would be localized and confined to the trail.

Allowing the projected levels of managed all-terrain vehicle use evaluated in this compatibility determination will have negligible impacts on refuge resources. Permitting this use should not be controversial. In assessing the potential impacts of this use, all available tools were utilized. During the comprehensive conservation planning process, the Service evaluated the long term consequences of all-terrain vehicle use through the preparation of an environmental assessment.

Public Review and Comment: Proposed uses and compatibility determinations were available for review by the public during the Draft Comprehensive Conservation Plan and Environmental Assessment public review period, which began June 12, 2001, and ended August 13, 2001. There were no comments, either written or oral, that questioned the proposed management action or suggested that any of the other alternatives be adopted.

Determination (check one below):

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulations Necessary to Ensure Compatibility: As additional data are collected and as all terrain vehicle use increases, more refuge specific regulations could be implemented. These regulations could include, but not be limited to, season dates that differ from those in surrounding state zones, refuge permit requirements, and closed areas on a permanent or seasonal basis (to reduce disturbance to specific wildlife species or habitats, such as bird rookeries, wintering waterfowl, threatened/endangered species, or to provide for public safety).

Implementation of an effective law enforcement program and development of site specific refuge regulations/special conditions will eliminate most user-conflict problems (e.g., disturbing research or wildlife photography).

Service policy pertaining to all-terrain vehicle use requires that such use be in conjunction with wildlife-dependent activities only, and be confined to designated areas or trails identified for such use; all other off-road use is restricted to foot travel only. Approximately 13 miles of trails are designated for public use by signs and colored markers. Some modifications to this initial trail system will be necessary from time-to-time as refuge public use patterns change and/or other public use development occurs.

All-terrain vehicle use will be on a permit basis and limited to designated trails in the fall and winter. If use approaches levels potentially harmful to habitat or wildlife, the staff will reevaluate the use which could be nullified or suspended.

Justification: A large portion of the refuge is inaccessible to conventional vehicles due to either impassible roads or no roads. In order to disperse hunters and access remote areas for hunting, refuge users have historically utilized all-terrain vehicles throughout the area resulting in a "maze" of

trails to virtually every possible location. Uncontrolled off-road vehicle use has impacted the area in that severe rutting has occurred throughout, disturbance to wildlife is perhaps very high, and disturbance to refuge users very high.

Considering the topography of the area and its remoteness, the need for limited use of all-terrain vehicles by certain refuge users is apparent. It will be impossible to develop an effective public use program that provides optimum consumptive use opportunities without providing for all-terrain vehicle use.

With these regulations in place, all-terrain vehicle use on the refuge in support of wildlife-dependent activities is compatible with the purposes for which this refuge was established.

NEPA Compliance for Refuge Use Decision: Place an X in appropriate space.

- Categorical Exclusion without Environmental Action Statement
- Categorical Exclusion and Environmental Action Statement
- Environmental Assessment and Finding of No Significant Impact
- Environmental Impact Statement and Record of Decision

Mandatory 10- or 15-Year Re evaluation Date: September 2016

Description of Use:

Trapping of Selected Furbearers

Trapping of beavers and raccoons to protect forest breeding bird species.

Availability of Resources: No additional fiscal resources are needed to conduct this use. The existing staff can administer permits and monitor this use as part of routine management duties.

Anticipated Impacts of Use: Beaver activities have caused significant deterioration and loss of bottomland hardwood forests throughout the refuge. Excessive numbers of raccoons can negatively affect the reproduction of forest breeding birds and wild turkeys. Raccoons and beavers are the species upon which management activities may be directed. Both species are at a level to adversely impact ecosystem functions. Protection and restoration of bottomland hardwoods and improvements in game and nongame populations are central components of the comprehensive conservation plan. To this end, trapping and/or hunting remain the only viable methods to reduce population levels of beavers and raccoons.

No trapping program, regardless of how well it is designed, can prevent the possible take of other species. A negligible impact on other wildlife species is expected in both short term and long term. There has been substantial historical use of this forested wetland area for trapping. Based on available information, there is no indication of long-term adverse biological impacts associated with this activity.

Allowing the projected levels of managed trapping of selected furbearers evaluated in this compatibility determination will have negligible impacts on refuge resources. Permitting this use should not be controversial. In assessing the potential impacts of trapping, all available tools were utilized. During the comprehensive conservation planning process, the Service evaluated the long-term consequences of trapping uses through the preparation of an environmental assessment.

Public Review and Comment: Proposed uses and compatibility determinations were available for review by the public during the Draft Comprehensive Conservation Plan and Environmental Assessment public review period, which began June 12, 2001, and ended August 13, 2001. There were no comments, either written or oral, that questioned the proposed management action or suggested that any of the other alternatives be adopted.

Determination (check one below):

Use is Not Compatible

Use is Compatible with Following Stipulations

Stipulation Necessary to Ensure Compatibility: The Service will issue special use permits to administer a trapping program consistent with sound biology, refuge purposes, and conservation of ecosystem functions. This program will mandate accurate reports of the number of species taken which will enable refuge staff to assess the impacts of the program on wildlife. Trappers will be required to report the incidental take of other species.

Trapping will be permitted in accordance with State of Louisiana regulations and licensing requirements. A refuge special use permit will be required for trapping which contains conditions designed to meet wildlife population goals.

The trapping program will be closely monitored to assess the potential adverse effects on other wildlife as well as the benefits to game and nongame species and their habitats. Modifications to the program will be implemented as needed to maintain compatibility.

Justification: The implementation of a trapping program, under controlled conditions, provides an essential population control management tool. Trapping of selected furbearers is essential to the protection and restoration of bottomland hardwood wetlands and ultimate increases of game and nongame wildlife species on the refuge. Therefore, trapping is considered a compatible use.

Allowing this use to continue is consistent with these refuge objectives and follows current Service policy.

NEPA Compliance for Refuge Use Decision: Place an X in appropriate space.

- Categorical Exclusion without Environmental Action Statement
- Categorical Exclusion and Environmental Action Statement
- Environmental Assessment and Finding of No Significant Impact
- Environmental Impact Statement and Record of Decision

Mandatory 10- or 15-Year Re-evaluation Date: September 2016

Literature Cited

Bookhout, T.A. 1994. Research and management techniques for wildlife and habitats. Fifth edition. The Wildlife Society, Bethesda, MD 740pp.

Fish and Wildlife Service. 1986 Refuge Manual 5 RM 20, Compatibility Determinations. U.S. Department of the Interior, Fish and Wildlife Service.

Fish and Wildlife Service. 1992. Final Environmental Assessment and Land Protection Plan, Proposed Establishment of Bayou Cocodrie National Wildlife Refuge, Concordia Parish, Louisiana. U.S. Department of the Interior, Fish and Wildlife Service, Southeast Region.

Fish and Wildlife Service. 2001. Draft Comprehensive Conservation Plan and Environmental Assessment of Bayou Cocodrie National Wildlife Refuge, Concordia Parish, Louisiana. U.S. Department of the Interior, Fish and Wildlife Service, Southeast Region.

Louisiana Department of Wildlife and Fisheries. 1997 and 1999. Personal communication. District IV Biologists Reginald Wycoff and John Lincecum, Law Enforcement Captain Charles Tarver.

Approval of Compatibility Determination

The signature approval is for all compatibility determinations considered within the comprehensive conservation plan. If one of the descriptive uses is considered for compatibility outside of the plan, the approval signature becomes part of that determination.

Refuge Manager:

//S// Michael Esters
Signature/Date 9/15/04

Regional Compatibility
Coordinator:

//S// Steve Johnson
Signature/Date 9/15/04

Refuge Supervisor

//S// Pete Jerome
Signature/Date 9/15/04

Regional Chief, National
Wildlife Refuge System,
Southeast Region

//S// Jon Andrew
Signature/Date 9/15/04

APPENDIX H. FINDING OF NO SIGNIFICANT IMPACT

Bayou Cocodrie National Wildlife Refuge Comprehensive Conservation Plan Concordia Parish, Louisiana

INTRODUCTION

The U.S. Fish and Wildlife Service proposes to protect and manage certain fish and wildlife resources in Concordia Parish, Louisiana, through the Bayou Cocodrie National Wildlife Refuge. An Environmental Assessment has been prepared to inform the public of the possible environmental consequences of implementing the Comprehensive Conservation Plan for Bayou Cocodrie National Wildlife Refuge. A description of the alternatives, the rationale for selecting the preferred alternative, the environmental effects of the preferred alternative, the potential adverse effects of the action, and a declaration concerning the factors determining the significance of effects, in compliance with the National Environmental Policy Act of 1969, are outlined below. The supporting information can be found in the Environmental Assessment.

Alternatives

In developing the Comprehensive Conservation Plan for Bayou Cocodrie National Wildlife Refuge, the Fish and Wildlife Service evaluated three alternatives: Alternatives A, B, and C.

The Service adopted some components of Alternative B, the "Preferred Alternative," and some components of Alternative A, the "No Action Alternative," as the plan for guiding the direction of the refuge for the next 15 years. The overriding concern reflected in this plan is that wildlife conservation assumes first priority in refuge management; public uses are allowed if they are compatible with wildlife conservation. Wildlife-dependent recreation uses (hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation) will be emphasized.

Alternative A. No Action Alternative

Under this alternative, all lands within the approved 22,920-acre acquisition boundary would be purchased. Throughout the refuge, habitats would be protected by virtue of ownership and reforested where needed, wildfires would be suppressed, and existing forests would be left largely to let nature take its course. Minimal law enforcement activities would occur to enforce regulations and manage the hunting program. Management actions would protect threatened and endangered species. Improvements in hydrology and water impoundments in the Brooks Brake Unit would continue. Routine maintenance on refuge roads would be ongoing.

Hunting would be allowed to control wildlife population levels. Hunting opportunities to provide quality hunts would be expanded on lands that may be acquired. Public access would be expanded near the refuge headquarters for fishing and wildlife viewing. Parts of the refuge would be closed seasonally to provide maximum wildlife protection. Management would respond to the concerns of adjacent landowners by providing technical information and continuing to establish partnerships with the local community.

Alternative B.

Under this action, 42,269 acres of refuge lands would be protected, maintained, and enhanced for migratory nongame birds, threatened and endangered species, resident wildlife, waterfowl, and shorebirds. Extensive inventory activities would be initiated to develop the baseline biological information needed to implement management programs. Active habitat management would be implemented through actions such as forest management and improvement in water impoundments to achieve wildlife objectives. In addition, the main or primary gravel roads would be periodically maintained and improved for access to refuge headquarters. The refuge staff would implement a beaver control program wherever beavers impact forest songbird nesting habitat.

High quality wildlife dependent activities (i.e., hunting, fishing, wildlife observation) and environmental education opportunities would be provided. Access to support wildlife-dependent recreation would be provided at a level that does not exceed wildlife capability to tolerate human disturbance. Quality hunting and fishing opportunities would be provided consistent with sound biological principles. Fishing would be allowed in most refuge waters. Opportunities for hiking would be provided to support wildlife-dependent recreation to the extent that these opportunities do not significantly interfere with, or detract from, the achievement of wildlife conservation. Partnerships would be developed with landowners, organizations, and private firms to improve environmental awareness through education programs, and to achieve wildlife habitat and wildlife-dependent recreation objectives.

Alternative C.

Under this alternative, 59,269 acres of refuge lands would be protected, restored, and enhanced for migratory nongame birds, threatened and endangered species, and resident wildlife. Extensive inventory activities would be initiated to develop biological information needed to implement management programs. Throughout the refuge, habitats would be protected by virtue of ownership and reforested where needed, wildfires would be suppressed, and existing forests would be left largely to let nature take its course to achieve wildlife objectives. In addition, the main or primary gravel roads would be periodically maintained and improved for access to refuge headquarters. The staff would implement a beaver and feral hog control program where these animals impact forest breeding bird habitat.

Hunting would be expanded on the basis of wildlife population control and to provide quality hunting experiences. Public access would be provided only to support management and recreation programs. Fishing access would be provided in waters accessible by canoe from the Cross Bayou and Bayou Cocodrie and parish roads. Wildlife observation opportunities, including the development of boardwalks for hikers, would be provided and educational opportunities would be emphasized.

Partnerships would be established with organizations interested in habitat improvement. Expertise and funding through Partners for Wildlife projects would be provided to landowners for habitat improvements.

Selection Rationale

Components of Alternatives A and B are selected for implementation because they direct the development of programs to correct habitat and hydrological deficiencies; emphasize the restoration of forest habitats within the existing refuge boundary; collect habitat and wildlife data; and ensure long term achievement of refuge and Service objectives. At the same time, these management actions provide balanced levels of compatible public use opportunities consistent with existing laws, Service policies, and sound biological principles. They provide the best mix of program elements to achieve desired long term conditions.

Under the combination of Alternatives A and B, all lands within the approved 22,920-acre acquisition boundary will be protected versus the Service protecting, maintaining, and enhancing 42,269 acres, 20,000 of which exist outside the current refuge boundary. The Service has selected the remaining part of Alternative B, minus the large land protection component, since reviewers questioned the utility of the land acquisition component of Alternative B relative to Region-wide funding and priorities. Internal discussions led the Service to conclude that if the lands within the existing refuge boundary were prioritized

for land protection and acquisition (as analyzed in Alternative A), it would best achieve national, ecosystem, and refuge specific goals and objectives within anticipated funding and staffing levels. In addition, the action positively addresses significant issues and concerns expressed by the public.

Environmental Effects

Implementation of the Service's management action is expected to result in environmental, social, and economic effects as outlined in the comprehensive conservation plan. Habitat management, population management, land conservation, and visitor service management activities on Bayou Cocodrie National Wildlife Refuge would result in bottomland forest restoration; increased migratory bird utilization and production; increased protection for threatened and endangered species; enhanced wildlife populations; and enhanced opportunities for wildlife-dependent recreation and environmental education. These effects are detailed as follows:

1. As a result of restoration and management, mature bottomland hardwood forests would be protected from loss and fragmentation. A large net increase would occur as a result of reforesting lands within the current refuge boundary as they are acquired. This would result in reforesting a 20,000-acre block of bottomland hardwoods and protect more than 13,000 acres of core habitat.
2. Migratory bird production would increase by enhancing forest habitat quality for neotropical migratory birds, habitat and food availability for wintering waterfowl, and through hydrological restoration and reforestation. Forest management practices such as reforestation, selective harvests, and preservation of mature and old-growth stand components would benefit nesting and feeding habitat for neotropical migratory birds.
3. Habitats for threatened, endangered, and candidate species would be preserved, restored, and enhanced. Black bear monitoring and providing educational awareness to landowners and local communities would be ongoing. Nesting sites for waterfowl and raptors would be protected and enhanced.
4. Restoration of hydrology and bottomland hardwood habitat, as well as habitat management, would improve food and cover for resident wildlife species and enhance wetland communities within the refuge.
5. Habitat restoration and management, along with a focus on accessibility and facility developments, would result in improved wildlife-dependent recreational opportunities. While public use would result in some minimal, short-term adverse effects on wildlife, and user conflicts may occur at certain times of the year, these effects are minimized by site design, time zoning, and implementing refuge regulations. Anticipated long-term impacts to wildlife and wildlife habitats of implementing the management action are positive. In the long run, wildlife habitat and increased opportunities for wildlife-dependent recreation opportunities could result in an increase in economic benefits to the local community.
6. Implementing the comprehensive conservation plan is not expected to have any significant adverse effects on wetlands and floodplains, pursuant to Executive Orders 11990 and 11988, as actions would not result in development of buildings and/or structures within floodplain areas, nor would they result in irrevocable, long-term adverse impacts. In fact, a major thrust of the management action is to implement large-scale hardwood forest restoration within the wildlife communities of the refuge that have been severely impacted by actions of previous landowners. Implementing the management action would result in substantial enhancement of forest wetland communities and net increases to the Nation's bottomland hardwood forest acreage and quality.

Potential Adverse Effects and Mitigation Measures

Wildlife Disturbance

Disturbance to wildlife at some level is an unavoidable consequence of any public use program, regardless of the activity involved. Obviously, some activities innately have the potential to be more disturbing than others. The management actions to be implemented have been carefully planned to avoid unacceptable levels of impact.

As currently proposed, the known and anticipated levels of disturbance of the management action are considered minimal and well within the tolerance level of known wildlife species and populations present in the area. Implementation of the public use program would take place through carefully controlled time and space zoning such as establishment of black bear sanctuary areas, establishment of protection zones around key sites, such as rookeries and eagle nests (if necessary), closures of all-terrain vehicle trails, and routing of roads and trails to avoid direct contact with sensitive areas, such as nesting bird habitat and black bear dens, etc. All hunting activities (season lengths, bag limits, number of hunters) would be conducted within the constraints of sound biological principles and refuge-specific regulations established to restrict illegal or non-conforming activities. Monitoring activities through wildlife inventories and assessments of public use levels and activities would be utilized, and public use programs would be adjusted as needed to limit disturbance.

User Group Conflicts

As public use levels expand across time, some conflicts between user groups may occur. Programs would be adjusted, as needed, to eliminate or minimize these problems and provide quality wildlife-dependent recreational opportunities. Experience has proven that time and space zonings, such as establishment of separate use areas, use periods, and restricting numbers of users, are effective tools in eliminating conflicts between user groups.

Effects on Adjacent Landowners

Implementation of the management action would not impact adjacent or in holding landowners. Essential access to private property would be allowed through issuance of special use permits. Future land acquisition would occur on a willing-seller basis only, at fair market values within the approved acquisition boundary. Lands are acquired through a combination of fee title purchases and/or donations and less-than-fee title interests (e.g., conservation easements, cooperative agreements) from willing sellers. Funds for the acquisition of lands within the approved acquisition boundary would likely come from the Land and Water Conservation Fund which was established by law. The management action contains neither provisions nor proposals to pursue off refuge stream bank riparian zone protection measures (e.g., fencing) other than on a volunteer/partnership basis.

Land Ownership and Site Development

Proposed acquisition efforts by the Service would result in changes in land and recreational use patterns, since all uses on national wildlife refuges must meet compatibility standards. Land ownership by the Service also precludes any future economic development by the private sector. Potential development of access roads, dikes, control structures, and visitor parking areas could lead to minor short-term negative impacts on plants, soil, and some wildlife species. When site development activities are proposed, each activity will be given the appropriate National Environmental Policy Act consideration during pre-construction planning. At that time, any required mitigation activities will be incorporated into the specific project to reduce the level of impacts to the human environment and to protect fish and wildlife and their habitats.

As indicated earlier, one of the direct effects of site development is increased public use; this increased use may lead to littering, noise, and vehicle traffic. While funding and personnel resources will be allocated to minimize these effects, such allocations make these resources unavailable for other programs.

The management action is not expected to have significant adverse effects on wetlands and floodplains, pursuant to Executive Orders 11990 and 11988.

Coordination

The management action has been thoroughly coordinated with all interested and/or affected parties.

Parties contacted include:

All affected landowners
Congressional representatives
Governor of Louisiana
Louisiana Department of Wildlife and Fisheries
Louisiana State Historic Preservation Officer
Louisiana Department of Natural Resources, Coastal Management Division
Kisatchie-Delta Regional Planning and Economic Development District
Local community officials
Interested citizens
Conservation organizations

Findings

It is my determination that the management action does not constitute a major federal action significantly affecting the quality of the human environment under the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969 (as amended). As such, an environmental impact statement is not required. This determination is based on the following factors (40 C.F.R. 1508.27), as addressed in the Environmental Assessment for the Bayou Cocodrie National Wildlife Refuge:

1. Both beneficial and adverse effects have been considered and this action will not have a significant effect on the human environment. (Environmental Assessment, page 109).
2. The actions will not have a significant effect on public health and safety. (Environmental Assessment, page 109).
3. The project will not significantly affect any unique characteristics of the geographic area such as proximity to historical or cultural resources, wild and scenic rivers, or ecologically critical areas. (Environmental Assessment, pages 114 and 119).
4. The effects on the quality of the human environment are not likely to be highly controversial. (Environmental Assessment, pages 109-113, and page 120).
5. The actions do not involve highly uncertain, unique, or unknown environmental risks to the human environment. (Environmental Assessment, pages 109-113, and page 120).
6. The actions will not establish a precedent for future actions with significant effects nor do they represent a decision in principle about a future consideration. (Environmental Assessment, pages 109-114, and 116-119).
7. There will be no cumulatively significant impacts on the environment. Cumulative impacts have been analyzed with consideration of other similar activities on adjacent lands, in past action, and in foreseeable future actions. (Environmental Assessment, pages 119-120).
8. The actions will not significantly affect any site listed in, or eligible for listing in, the National Register of Historic Places, nor will they cause loss or destruction of significant scientific, cultural, or historic resources. (Environmental Assessment, pages 113, 114 and 119).

9. The actions are not likely to adversely affect threatened or endangered species, or their habitats. (Environmental Assessment, page 110).

10. The actions will not lead to a violation of federal, state, or local laws imposed for the protection of the environment. (Environmental Assessment, page 120).

Supporting References

Fish and Wildlife Service. 2001. Draft Comprehensive Conservation Plan and Environmental Assessment for Bayou Cocodrie National Wildlife Refuge, Ferriday, Louisiana. U.S. Department of the Interior, Fish and Wildlife Service, Southeast Region.

Fish and Wildlife Service. 2001. Final Comprehensive Conservation Plan for Bayou Cocodrie National Wildlife Refuge, Land Protection Plan, pp. 177-180, Ferriday, Louisiana. U.S. Department of the Interior, Fish and Wildlife Service, Southeast Region.

Document Availability

The Environmental Assessment was an appendix to the Draft Comprehensive Conservation Plan for Bayou Cocodrie National Wildlife Refuge and was made available in June 2001. Additional copies are available by writing: U.S. Fish and Wildlife Service, 1875 Century Boulevard, Atlanta, GA 30345.


//S// **Sam D. Hamilton**

Sam D. Hamilton
Regional Director



Date