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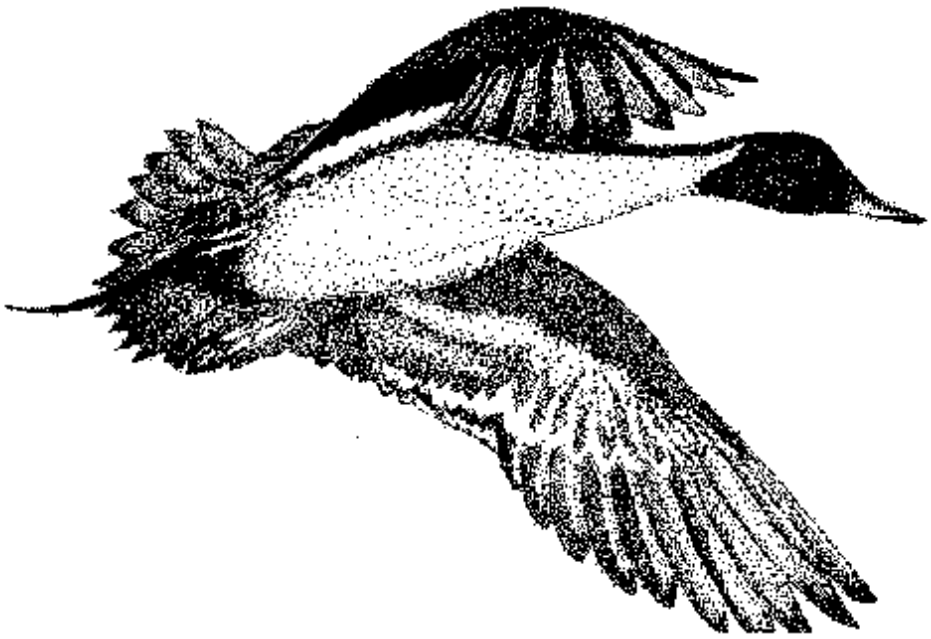
SECTION A. CAMERON PRAIRIE NATIONAL WILDLIFE REFUGE DRAFT COMPREHENSIVE CONSERVATION PLAN



I. Background

UNITED STATES FISH AND WILDLIFE SERVICE

The mission of the Service is working with others to "conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

The United States Fish and Wildlife Service (Service) is the primary Federal agency responsible for conserving, protecting, and enhancing the Nation's fish and wildlife resources and their habitats. Responsibilities are shared with other Federal, state, tribal, and local entities; however, the Service has specific responsibilities for endangered species, migratory birds, inter-jurisdictional fish, and certain marine mammals, as well as for lands and waters administered by the Service for the management and protection of these resources. It also operates national fish hatcheries, fishery resource offices and ecological services field stations. The agency enforces Federal wildlife laws, administers the Endangered Species Act, manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitat such as wetlands, and helps foreign governments with their conservation efforts. It also oversees the Federal Aid program that distributes hundreds of millions of dollars from excise taxes on fishing and hunting equipment to state fish and wildlife agencies.

THE NATIONAL WILDLIFE REFUGE SYSTEM

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 Service manages the 95-million acre National Wildlife Refuge System, which encompasses 545 national wildlife refuges, thousands of small wetlands and other special management areas. The majority of these lands, 77 million acres, are in Alaska, with the remaining acres spread across the other 49 states and several territories. Approximately 82 million acres in the System were reserved from the public domain. The remainder has been acquired through purchase, from other Federal agencies, as gifts, or through easement and lease agreements.

NATIONAL WILDLIFE REFUGE SYSTEM IMPROVEMENT ACT OF 1997

An important milestone occurred in 1997 with the passage of the National Wildlife Refuge System Improvement Act (Act), which has been called the "Organic Act" of the Refuge System. The Act established, for the first time, a clear legislative mission of wildlife conservation for the National Wildlife Refuge System.

The Act also recognized the outstanding recreational opportunities on refuges. The Refuge System has long provided some of the nation's best hunting and fishing, and our refuges continue to support these deeply rooted American traditions. The law established compatible wildlife-dependent recreation such as hunting, fishing, wildlife

observation, photography, environmental education, and interpretation as priority public uses of the Refuge System.

Among other things, this far-reaching law required comprehensive conservation planning for each refuge, and set standards to assure that all uses of refuges were compatible with their purposes and the System's wildlife conservation mission. It also required the Service to conserve the biological integrity, diversity, and environmental health of refuges, and consider the conservation of the ecosystems of the United States in planning the growth of the Refuge System.

The Service's planning process is premised on strong partnerships with State fish and wildlife agencies. It provides an opportunity to use science in managing refuges, assuring an ecological perspective as to how refuges fit into the greater surrounding landscapes. The planning process also provides citizens with a meaningful role in helping to shape future management of individual refuges and recognizes the important roles they play in the lives of nearby communities.

The Act states that each refuge shall be managed to:

- Fulfill the mission of the National Wildlife Refuge System.
- Fulfill the individual purpose of each refuge.
- Consider the needs of wildlife first.
- Fulfill requirements of comprehensive conservation plans that are prepared for each unit of the Refuge System.
- Maintain the biological integrity, diversity, and environmental health of the Refuge System.
- Recognize that wildlife-dependent recreation activities including hunting, fishing, wildlife observation, wildlife photography; environmental education and interpretation are legitimate and priority public uses.
- Allow refuge managers authority to determine compatible public uses.

CAMERON PRAIRIE NATIONAL WILDLIFE REFUGE COMPREHENSIVE CONSERVATION PLAN

The mission of Cameron Prairie National Wildlife Refuge is to manage, protect, and perpetuate coastal marshes to provide high-quality food and habitat for wintering migratory waterfowl, and other migratory birds and native wildlife.

This draft Comprehensive Conservation Plan (CCP) for Cameron Prairie National Wildlife Refuge (Refuge), the 447th refuge in the National Wildlife Refuge System, is being prepared as mandated by the Act to guide management actions and direction for the Refuge for the next 15 years. Fish and wildlife conservation will receive first priority in refuge management; wildlife-dependent recreation will be allowed and encouraged as long as it is compatible

with, and does not detract from, the mission of the Refuge or the purposes for which it was established.

PURPOSE AND NEED FOR PLAN

The purpose of the CCP is to ensure that each refuge in the System contributes to the System's mission to provide a 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.

Specifically, the CCP is needed to:

- Provide a clear statement of refuge management direction.
- Provide refuge neighbors, visitors, and government officials with an understanding of Service management actions on and around the refuge.
- Ensure that Service management actions, including land protection and recreation and education programs, are consistent with the mandates of the National Wildlife Refuge System.
- Ensure that refuge management is consistent with the purpose for which the Refuge was established.
- Ensure that refuge management is consistent with Federal, state, and local plans and contributes to the mission of the ecosystem it is located in.
- Provide a basis for the development of budget requests for operations, maintenance, and capital improvement needs.

LEGAL POLICY CONTEXT

Administration of national wildlife refuges is guided by the mission and goals of the National Wildlife Refuge System, Congressional legislation, Presidential Executive Orders, and international treaties. Policies for management options of refuges are further refined by administrative guidelines established by the Secretary of the Interior and by policy guidelines established by the Director of the Fish and Wildlife Service. Refer to Appendix C for a complete listing of relevant legal mandates.

Lands within the National Wildlife Refuge System are closed to public use unless specifically and legally opened. All programs and uses must be evaluated based on mandates set forth in the National Wildlife Refuge System Improvement Act.

Those mandates are to:

- Contribute to ecosystem goals, as well as refuge purposes and goals.
- Conserve, manage, and restore fish, wildlife, and plant resources and their habitats.

- Monitor the trends of fish, wildlife, and plants.
- Manage and ensure appropriate visitor uses (hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation) as those uses benefit the conservation of fish and wildlife resources and contribute to the enjoyment of the public.
- Ensure that visitor activities are compatible with refuge purposes.

RELATIONSHIP TO STATE WILDLIFE AGENCY

A provision of the Act, and subsequent agency policy, is that the Service shall ensure timely and effective cooperation and collaboration with other Federal agencies and state fish and wildlife agencies during the course of acquiring and managing refuges. State wildlife management areas and national wildlife refuges provide the foundation for protection of species, and contribute to the overall health and diversity of fish and wildlife species in the State of Louisiana.

The Louisiana Department of Wildlife and Fisheries (LDWF) is a state-partnering agency with the Service, charged with enforcement responsibilities relating to migratory birds and endangered species, as well as managing state natural resources and approximately 1.4 million acres of coastal marshes and wildlife management areas. LDWF coordinates the state wildlife conservation program and provides public recreation opportunities on state wildlife management areas. The state's participation and contribution throughout this comprehensive conservation planning process provides for ongoing opportunities and open dialogue to improve the ecological health and diversity of fish and wildlife. A vital part of the comprehensive conservation planning process is integrating common mission objectives where appropriate.

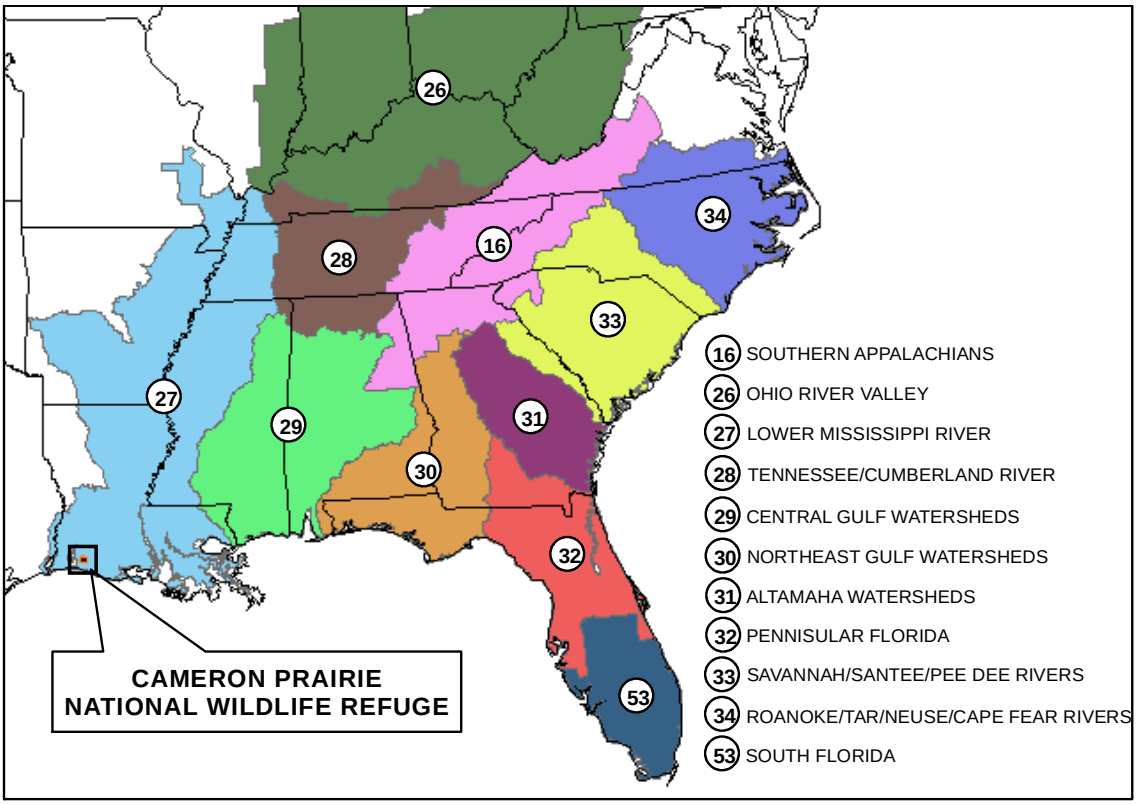
ECOSYSTEM CONTEXT

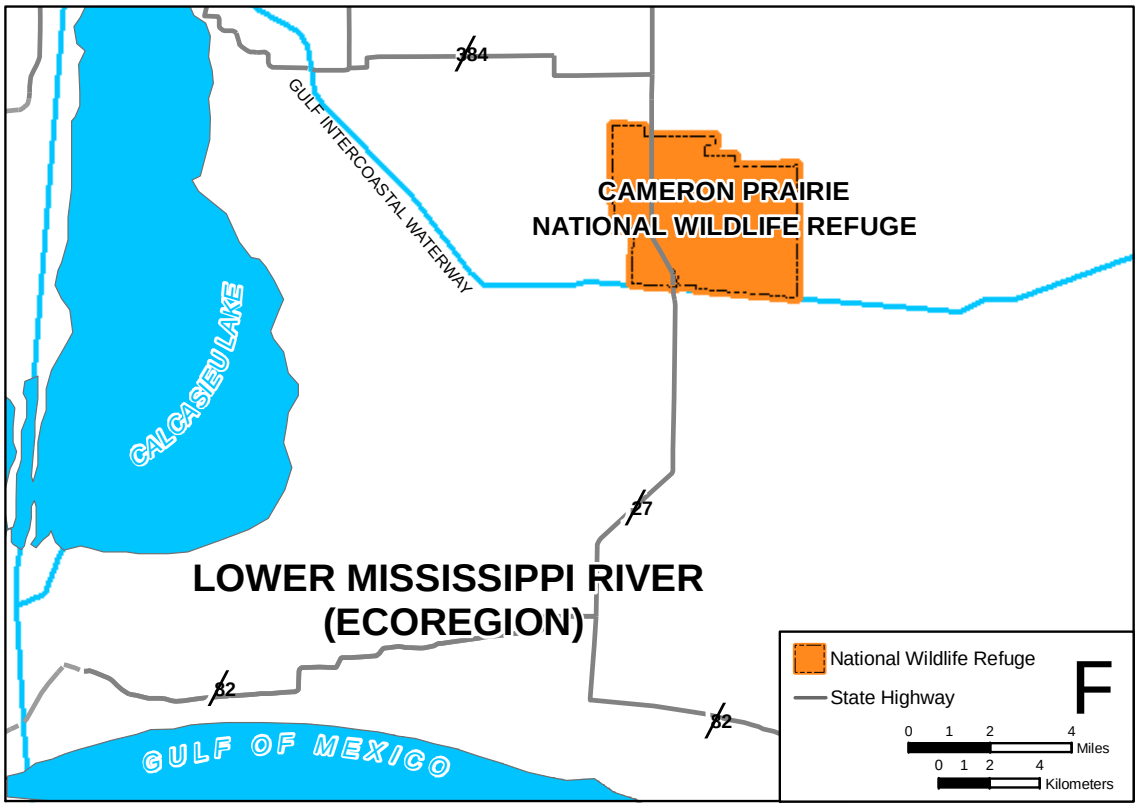
OVERVIEW

The Service is increasing its efforts to adopt collaborative resource partnerships with private landowners and local communities as well as state and Federal governments within ecosystems to reduce the declining trend of fish and wildlife populations and biological diversity, establish conservation priorities, clarify goals, and solve common threats and problems associated with fish and wildlife resources. The synergy of all Federal, state, tribal, and private organizations working together will ensure that the Service not only protects the more important areas, but also reduces redundancy and overlap.

Cameron Prairie is a member and active participant of the Service's Lower Mississippi River Ecosystem (LMRE) Team (Figure 1). The ecosystem serves as the primary wintering habitat for mid-continent waterfowl populations, as well as breeding and migration habitat for migratory songbirds returning from Central and South America, and numerous resident wildlife species.

Figure 1. U.S. Fish and Wildlife Service Region 4 Ecosystems





Geographically, the Refuge lies on the extreme southwestern boundary of the ecosystem and has few opportunities to contribute to many of the goals and objectives of the LMRE. There are some common targets that are applicable to the Refuge and to which they contribute, but the Refuge would more appropriately contribute to the objectives of the Service's Texas Gulf Coast Ecosystem (TGCE). The TGCE lies between the Sabine River and the mouth of the Rio Grande and inland to include the historical coastal prairie. It is considered by many to be part of a larger ecological Gulf Coast system that also includes portions of coastal Louisiana and Mexico. The TGCE team has requested Region 4 refuges in nearby Louisiana participate in their ecosystem team meetings.

LOWER MISSISSIPPI RIVER ECOSYSTEM PRIORITIES

Priorities identified by the LMRE to which the Refuge can contribute include:

- Continue to work with the Louisiana Coastal Wetlands Task Force, private landowners, and other entities to protect and restore coastal wetlands, consistent with the Coast 2050 Plan and associated project planning, evaluation and implementation activities.
- Consider all grant opportunities available to the LMRE Team and partners and work to improve internal coordination of these programs to assure that the contributions to these programs are of maximum benefit to the resource.
- Support environmental education efforts underway by Service offices to enhance and expand knowledge, awareness and appreciation of trust resources.
- Restore native prairie.
- Control invasive and exotic species.
- Build regional and national support for the Service's Fisheries program.

TEXAS GULF COAST ECOSYSTEM PRIORITIES

Priorities identified by the TGCE to which the Refuge can contribute include:

- Restore, conserve, enhance and maintain approximately 500,000 acres of the historic Gulf Coast prairies in Louisiana, Texas, and Mexico to ensure the continued existence of native flora and fauna.
- Maintain, restore, enhance and create wetlands and associated habitats to achieve a net gain in wetland quality, quantity (based on National Wetland Inventory data), and natural productivity.
- Increase ecological monitoring and research efforts and improve information management capabilities in the Texas Gulf Coast Ecosystem.

- Encourage Region 4 field stations with similar coastal resource objectives to participate in Ecosystem Team meetings.

- Develop partnerships with other Service Regions, Mexico, natural resource agencies, universities, and non-governmental organizations to plan and implement outreach programs.
-

ECOLOGICAL THREATS AND PROBLEMS

National wildlife refuges in the Lower Mississippi Valley serve as part of the last safety net to support biological diversity—the greatest challenge facing the Service. According to the LMRE Team, the greatest threats to biological diversity within the Lower Mississippi Valley include:

- The loss of sustainable communities, including the loss of 20 million acres of bottomland hardwood forests.

- The loss of connectivity between bottomland hardwood forest sites, e.g., forest fragmentation.

- The effects of agricultural and timber harvesting practices.

- The simplification of the remaining wildlife habitats within the ecosystem and gene pools.

- The effects of constructing navigation and water diversion projects.

- The cumulative habitat effects of land and water resource development activities.

Specific threats applicable to Cameron Prairie National Wildlife Refuge include:

- Colonization of invasive plant and animal species which displace natural vegetation and deteriorate those habitats on which native animal species depend.

- Prolonged flooding within Refuge units which interferes with management strategies developed for ideal habitat conditions.

- Problems associated with the adjacent Gulf Intracoastal Waterway including soil erosion caused by wave action and contamination resulting from barge accidents.

CONSERVATION PRIORITIES AND INITIATIVES

Conservation priorities for national wildlife refuges in the Lower Mississippi Valley focus on threatened and endangered species, trust species, and species of local concern. Goals and objectives in this CCP are stepped down from the following plans: Partners in Flight Bird Conservation Plan, North American Waterfowl Management Plan (Gulf Coast Joint Venture, Chenier Plain Initiative), North American Waterbird Conservation Plan, the

United States Shorebird Conservation Plan, Coastal Wetlands Planning Protection and Restoration Act, Coast 2050 – Towards a Sustainable Coastal Louisiana, Louisiana Coastal Area Ecosystem Restoration Plan, and the Fisheries Vision for the Future.

PARTNERS IN FLIGHT BIRD CONSERVATION PLAN

The National Fish and Wildlife Foundation led efforts in the 1990's to form the Partners in Flight program to combine resources and knowledge of many people to jointly protect the natural diversity of our continent. Many partners have made the program successful by participating in Working Groups to develop Regional Bird Conservation Plans. Cameron Prairie is located within the Coastal Prairie Physiographic Area 6 and can contribute to the plan's actions for marsh restoration projects to benefit migrant landbirds.

NORTH AMERICAN WATERFOWL MANAGEMENT PLAN

The North American Waterfowl Management Plan (NAWMP) was signed by the United States and Canadian governments in 1986 and undertook an intensive effort to protect and restore North America's waterfowl populations and their habitats. With its update in 1994, Mexico became a signatory to the Plan. Restoration of wetlands and associated ecosystems is the main premise of the plan in order to restore waterfowl populations to levels observed in the 1970's.

GULF COAST JOINT VENTURE (CHENIER PLAIN INITIATIVE)

Regional partnerships or joint ventures composed of individuals, sportsmen's groups, conservation organizations, and local, state, provincial, and Federal governments were formed under the NAWMP. One such partnership—the Gulf Coast Joint Venture (GCJV)—formed to conserve priority waterfowl habitat range along the Western United States Gulf Coast, one of the most important waterfowl areas in North America. The Gulf Coast is the terminus of the Central and Mississippi Flyways which provides both wintering and migration habitat for significant numbers of the continental goose and duck populations. The Gulf Coast Joint Venture's greatest contribution to the North American Waterfowl Management Plan is to provide wintering grounds for waterfowl. A great diversity of birds, mammals, fish, shellfish, reptiles and amphibians also rely on the wetlands of the Gulf Coast for part of their life cycles.

The GCJV is divided geographically into six initiative areas, one of which is the Chenier Plain Initiative area of southwest Louisiana and southeast Texas. The goal of the Chenier Plain Initiative is to provide wintering and migration habitat for significant numbers of dabbling ducks, diving ducks and geese (especially lesser snow (*Chen caerulescens*) and greater white-fronted (*Anser albifrons*)), as well as year-round habitat for mottled ducks (*Anas fulvigula*).

The Refuge contributes to the objectives of this Initiative by increasing moist soil management capabilities on 1,391 acres through cooperative efforts with Ducks Unlimited, providing resting and breeding habitat for mottled ducks, banding approximately 200 mottled ducks per year in cooperation with the Louisiana Department

of Wildlife and Fisheries, and managing fields and creating grit sites to promote use by geese. In addition, Refuge personnel have been instrumental in improving wintering waterfowl habitat through cooperative efforts with the multi-agency Cameron Creole Watershed Project. Through partnerships, 55,000 feet of terraces were constructed on the East Cove Unit of Sabine National Wildlife Refuge, which is managed and administered by Cameron Prairie National Wildlife Refuge.

NORTH AMERICAN WATERBIRD CONSERVATION PLAN

The North American Waterbird Conservation Plan was developed under a partnership, the Waterbird Conservation for the Americas, which is a group of individuals and organizations having interest and responsibility for conservation of waterbirds and their habitats in the Americas. Cameron Prairie is located in the Southeast U.S. Regional Waterbird Conservation Planning Area. The Refuge can contribute to a key objective of this region, which is to standardize data collection efforts and analysis procedures to allow better tracking of regional movements and the association of these movements with environmental or land use changes.

UNITED STATES SHOREBIRD CONSERVATION PLAN

The United States Shorebird Conservation Plan is a partnership involving organizations throughout the United States committed to the conservation of shorebirds. Cameron Prairie National Wildlife Refuge is located within the Lower Mississippi, Western Gulf Coast Shorebird Planning Region. On a regional scale, the Refuge can help ensure that adequate quantity and quality of habitat is identified and maintained to support the different shorebirds that breed in, winter in, and migrate through the area.

COASTAL WETLANDS PLANNING, PROTECTION AND RESTORATION ACT (CWPPRA)

In 1990, legislation passed generating millions annually for Louisiana wetland projects via a 75/25 Federal-State cost share and called for the development of a comprehensive Louisiana Coastal Wetlands Restoration Plan. Funding of proposed projects is determined by a state and Federal task force. As mandated by CWPPRA, the task force developed a detailed Coastal Wetlands Restoration Plan in 1993 that describes what restoration actions and projects should be implemented to address Louisiana's coastal land loss crisis. A Priority Project List is developed and approved by the task force each year, outlining which projects will receive CWPPRA funding.

COAST 2050: TOWARDS A SUSTAINABLE COASTAL LOUISIANA

Coast 2050 is a comprehensive, ecosystem-based plan developed to address coastal wetland loss throughout southern Louisiana by private citizens, local, state and Federal agencies, and the scientific community. This plan, which is recognized by the state of Louisiana, five Federal agencies, and local coastal parish governments, serves as the joint coastal restoration plan for CWPPRA. The goals of the plan are to assure vertical accumulation (soil, vegetation and other organic material) to achieve sustainability,

maintain estuarine gradient to achieve diversity, and to maintain exchange and interface to achieve system linkages. Cameron Prairie National Wildlife Refuge is included in Region 4 of this plan.

LOUISIANA COASTAL AREA ECOSYSTEM RESTORATION PLAN

The Louisiana Coastal Area Ecosystem Restoration Plan (LCA) evolved from the Coast 2050 Plan with the overarching goal of reversing the current trend of degradation of the coastal ecosystem. This plan formed the basis for the Louisiana Coastal Area Ecosystem Restoration Study, designed to identify critical ecological needs, identify restoration efforts, establish restoration priorities, and identify scientific uncertainties to present a strategy for addressing long-term needs of coastal Louisiana restoration.

Cameron Prairie National Wildlife Refuge is located within Sub-province 4 for LCA. The restoration plans identified in LCA relate directly and indirectly to the Refuge through long-term efforts to explore large scale restoration projects that will influence the entire coastal zone of Louisiana.

FISHERIES VISION FOR THE FUTURE

In 2001, the U.S. Fish and Wildlife Service worked with partners to refocus its Fisheries Program and develop a vision. This vision of the Service and its Fisheries Program, "*is working with partners to restore and maintain fish and other aquatic resources at self-sustaining levels and to support Federal mitigation programs for the benefit of the American public"*. To achieve the vision, the Fisheries program works with its partners to:

- Protect the health of aquatic habitats.
- Restore fish and other aquatic resources.
- Provide opportunities to enjoy the benefits of healthy aquatic resources.

Together, the group developed a series of goals, objectives, and implementation actions to focus on key needs. Cameron Prairie can contribute to the program's recreational fishing goal to provide quality opportunities for responsible fishing and other related recreational enjoyment of aquatic resources on Service lands.

II. Refuge Description

INTRODUCTION

Created in 1988, Cameron Prairie National Wildlife Refuge was the 447th refuge established within the National Wildlife Refuge System and the first created under the goals of the North American Waterfowl Management Plan, a continental conservation effort among Canada, Mexico, and the United States. Land was purchased on December 28, 1988, with funding provided by the Migratory Bird Stamp Act (USFWS 2003; 1998). The Refuge administers two units, the 9,621-acre Gibbstown Unit (Figure 2) and the 14,927-acre East Cove Unit, originally established under nearby Sabine National Wildlife Refuge.

This CCP will not address the East Cove Unit; although East Cove was administratively transferred to Cameron Prairie in 1992, the Service has not finalized the transfer. An administrative decision to exclude the East Cove Unit from the scope of this CCP and include it under the Sabine CCP was made in 2002.

The Refuge was administratively combined with nearby Sabine National Wildlife Refuge in 2000, and is now part of the Southwest Louisiana National Wildlife Refuge Complex (USFWS 2001). Lacassine National Wildlife Refuge joined the Complex in April of 2004. Cameron Prairie serves as the Headquarters for the Complex.

Figure 2. Aerial view of Cameron Prairie

L. Kolankiewicz

Cameron Prairie National Wildlife Refuge is located about 25 miles southeast of Lake Charles, Louisiana, in north central Cameron Parish (county) (Figure 3). The 9,621-acre Refuge and the 64,000-acre multi-agency Cameron Creole Watershed Project, managed by Cameron Prairie, contains freshwater marsh, coastal prairie, and moist soil units and is managed to preserve and protect wintering waterfowl and their habitat. It is located four miles west of the western boundary of Lacassine National Wildlife Refuge, and is bordered on the north and west by private land. The Gulf-Intracoastal Waterway forms the southern boundary of the unit, while North Canal forms the eastern boundary (USFWS 2003).

Resource management programs on Cameron Prairie are directed at preserving, protecting, and improving wildlife habitat. Historically, approximately 4,969 acres within the Refuge were farmed for rice. This land is now managed for annual plants that provide food for wildlife. Prairie lands within the Refuge are being restored by periodic burning, discing, and mowing, while earthen levees and water control structures have been repaired or installed to maximize water management in the marshes. Certain marshes are drained or burned periodically to promote the growth of natural waterfowl and shorebird foods

PURPOSE

Cameron Prairie National Wildlife Refuge was established "... *for use as an inviolate sanctuary, or for any other management purpose, for migratory birds*" (16 U.S.C. 715d (Migratory Bird Conservation Act)).

During acquisition planning, justification for the Refuge included the following: 1) provide additional sanctuary to wintering waterfowl that would offer additional management opportunities, particularly for geese; 2) assure long-term preservation of important wintering habitat for waterfowl as the Louisiana coastline continues to move further inland; 3) provide additional sanctuary for wintering waterfowl in the leading harvest parish in North America; 4) provide additional relief or another alternative resting location to the high concentrations of waterfowl found at Lacassine National Wildlife Refuge; and 5) provide a variety of quality recreational opportunities such as hunting, fishing, wildlife observation, photography, and other compatible wildlife-dependent activities.

Since establishment, management goals for Cameron Prairie are to:

Provide the highest quality wintering waterfowl habitat possible.

- Allow compatible public uses, such as hunting, fishing, environmental education, wildlife observation, and photography.
- Promote research on marsh and aquatic wildlife (USFWS 2002c).
- Provide for the needs of any endangered plants and animals.

REFUGE ENVIRONMENT AND OTHER RELATED INFORMATION

FISH, WILDLIFE, AND PLANT POPULATIONS

Cameron Prairie is located in the transition zone between higher agricultural land and the coastal marshes, and contains species from both habitat types. The Refuge is predominantly freshwater marsh (Figure 4) and has a high plant and animal species diversity due to its many different elevations and water depths. Cameron Prairie's marshes provide valuable habitat for resident and migratory populations of ducks, geese, shorebirds and wading birds. Alligators (*Alligator mississippiensis*) are often seen sunning along the wildlife drive and in the canals adjacent to Louisiana State Highway 27 (SH 27). Its moist prairies are home to songbirds, Northern bobwhite quail (*Colinus virginianus*), mourning doves (*Zenaida macroura*), and white-tailed deer (*Odocoileus virginianus*). Every winter, the Refuge welcomes thousands of waterfowl escaping frozen northern breeding grounds.

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Figure 3. Location of refuges within Southwest Louisiana National Wildlife Refuge Complex.

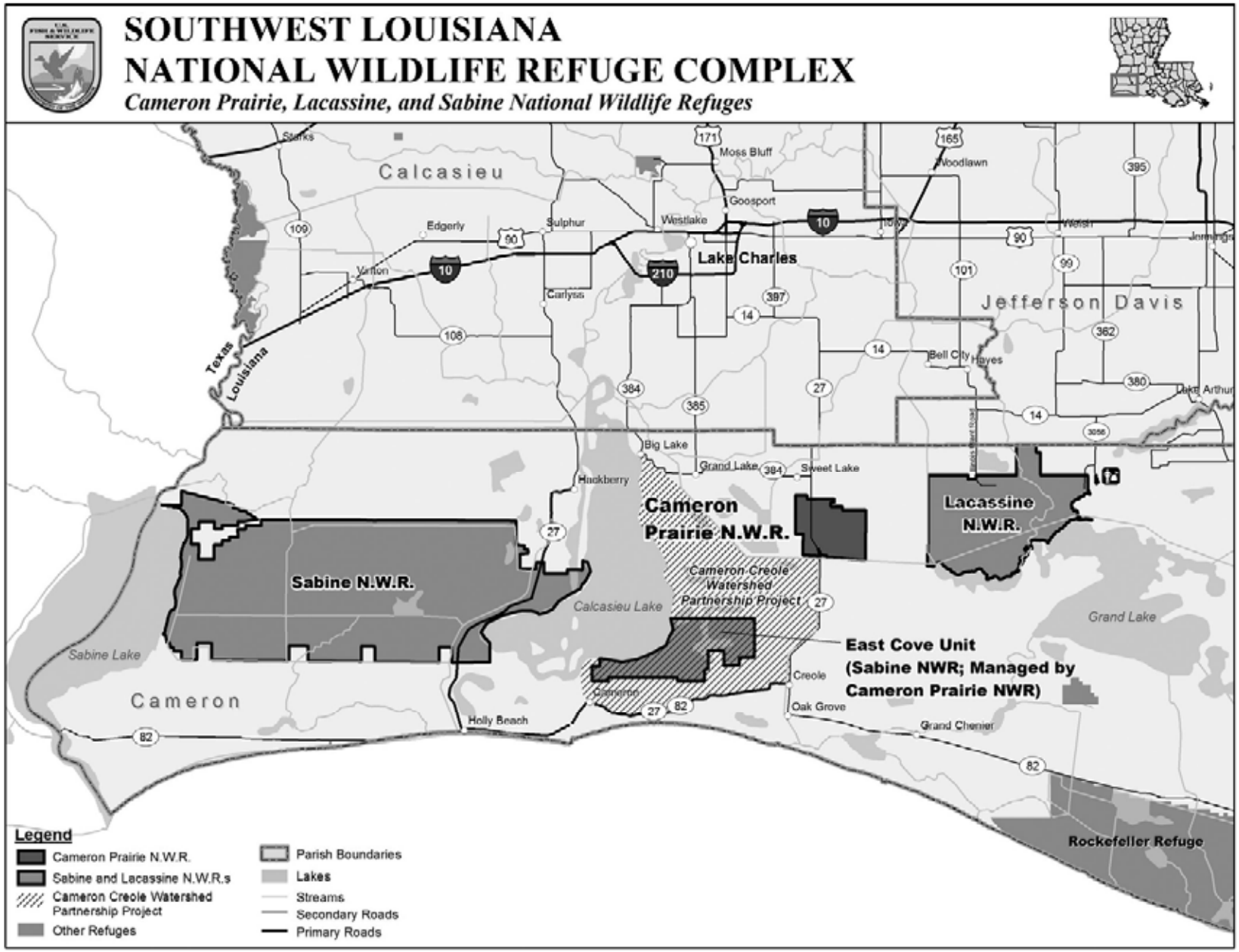
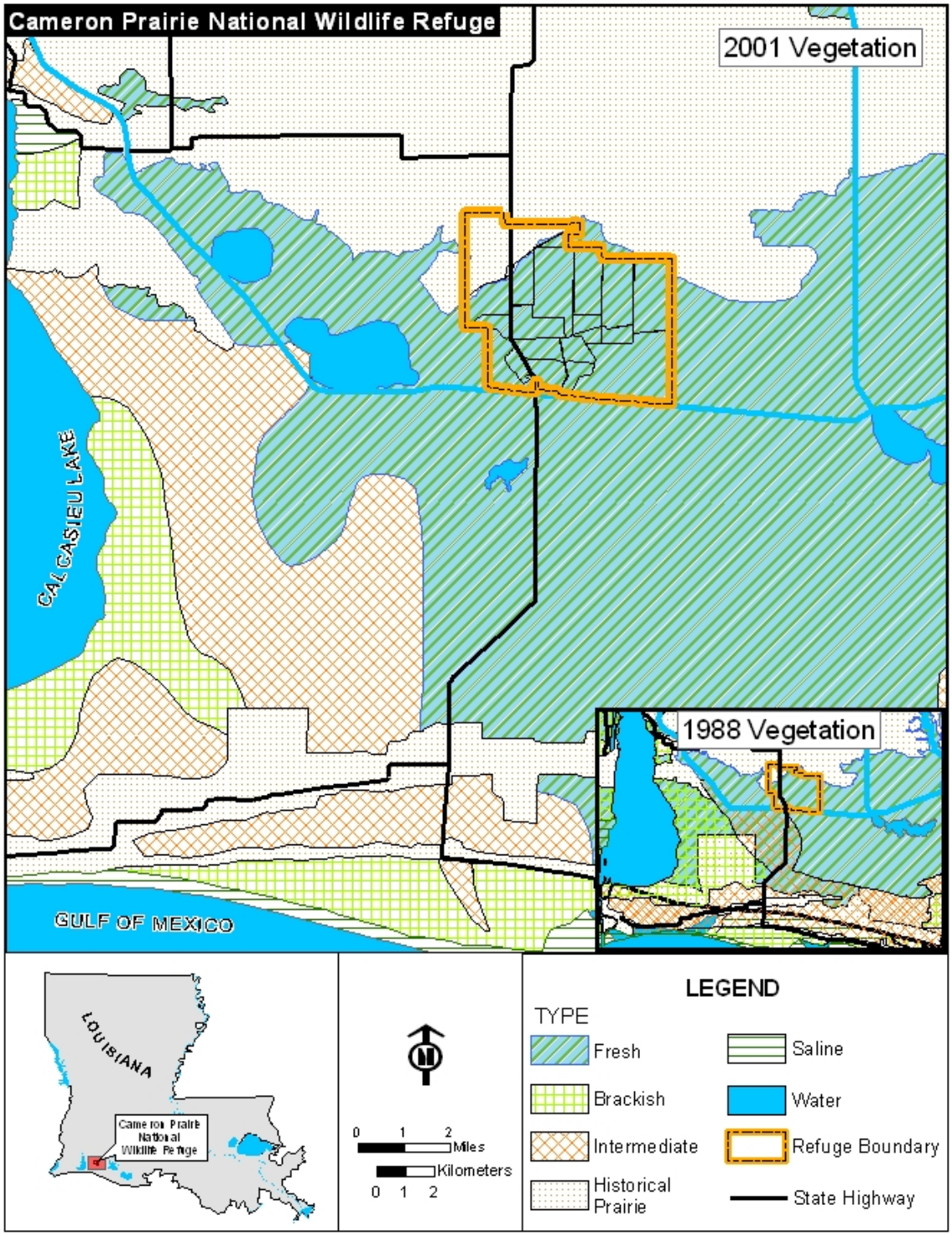


Figure 4. Marsh types in Cameron Parish



Snow geese are the most abundant goose species while green-winged teal (*Anas crecca*) and ring-necked ducks (*Aythya collaris*) are the most numerous ducks. In the spring, just as neotropical migratory songbirds are arriving, these waterfowl depart for their northern nesting grounds. Other ducks remain at Cameron Prairie and breed here, of which the mottled and fulvous whistling (*Dendrocygna bicolor*) ducks are the most abundant. The Refuge's wading birds, such as white (*Eudocimus albus*) and white-faced (*Plegadis chihi*) ibis, egrets:snowy (*Egretta thulon*), great (*Ardea alba*) and cattle (*Bubulcus ibis*), purple gallinules (*Porphyrio martinica*), common moorhens (*Gallinula chloropus*), roseate spoonbills (*Platalea ajaia*), and several species of herons, are a showy and sometimes spectacular attraction.

There have been more than 200 bird species recorded on Cameron Prairie (USFWS 2002c). The Refuge's bird checklist is presented in Appendix D.

Threatened and Endangered Species and Species of Management Concern

Cameron Prairie currently has no threatened and endangered species (USFWS 2002a), but some species of management concern are expected to occur on the Refuge. Those species are the alligator snapping turtle (*Macroclemys temminckii*), black rail (*Laterallus jamaicensis*), buff-breasted sandpiper (*Tryngites subruficollis*), and loggerhead shrike (*Lanius ludovicianus*) (USFWS 2004).

A 1988 amendment (Public Law 100-653, Title VIII) to the Fish and Wildlife Conservation Act of 1980 mandated the Service to " identify species, subspecies, and populations of all migratory non-game birds, that without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973 (ESA)." *Birds of Conservation Concern 2002* (BCC 2002) is the most recent effort to carry out this mandate. The report strives to accurately identify migratory and non-migratory bird species (beyond those already designated as Federally-threatened or endangered) that represent the Service's highest conservation priorities to draw attention to species in need of conservation action. BCC 2002 lists birds of conservation concern at three geographic scales – North American Bird Conservation Initiative Bird Conservation Regions, U.S. Fish and Wildlife Service Regions, and National – to maximize the utility of the lists for partners, agencies, and organizations.

In addition, three National Plans were used to place birds on the lists: Partners In Flight, United States Shorebird Conservation Plan, and the North American Waterbird Conservation Plan. Current conservation assessment scores for each species were taken from the three plans which were based on several factors, including population trends, threats, distribution, abundance, and area importance.

While all the bird species included in BCC 2002 are priorities for conservation action, the lists make no finding with regard to whether they warrant consideration for ESA listing. The Service's goal is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions.

Table 1 lists birds known or expected to occur on Cameron Prairie National Wildlife Refuge that are of management concern. Refer to Appendix D for scientific names.

Table 1. Birds of management concern to the Refuge

Common Name	Bird Conservation Region 37 List	USFWS Region 4 List	National List
American Bittern	X		
Little Blue Heron		X	X
Reddish Egret	X	X	X
White ibis	X		
Northern Harrier	X		X
Peregrine Falcon	X	X	X
Yellow Rail	X	X	X
Black Rail	X	X	X
American Golden-Plover	X		X
Wilson's Plover	X	X	
Upland Sandpiper			X
Whimbrel	X	X	X
Long-billed Curlew	X	X	X
Marbled Godwit	X	X	X
Red Knot	X	X	X
Stilt Sandpiper	X		X
Short-billed Dowitcher	X		X
Buff-breasted Sandpiper	X	X	X
Gull-billed Tern	X	X	X
Common Tern			X
Least Tern	X	X	X
Black Tern	X		
Black Skimmer	X	X	X
Black-billed Cuckoo			X
Burrowing Owl		X	X
Short-eared Owl	X	X	X
Chuck-will's Widow		X	X
Whip-poor-will			X
Red-headed Woodpecker	X	X	X
Olive-sided Flycatcher		X	X
Scissor-tailed Flycatcher			X
Sedge Wren	X		X
Wood Thrush			X
Golden-winged Warbler		X	X
Prairie Warbler		X	X
Cerulean Warbler		X	X
Prothonotary Warbler	X	X	
Worm-eating Warbler		X	X
Louisiana Waterthrush			X
Kentucky Warbler	X		X
Canada Warbler			X
LeConte's Sparrow	X	X	X
Nelson's Sharp-tailed Sparrow		X	X

Waterfowl

The Refuge is managed to provide habitat for wintering waterfowl (Figure 5) and other water birds and provides a winter home to about 24,000 ducks and 8,000 geese, and a spring and summer home to numerous migrating songbirds (USFWS 1998; USFWS 2002c). During migration the Refuge is a critical stopover point for songbirds. Refuge management units are shown in Figure 6.

Figure 5. Mallard ducks along Pintail Drive

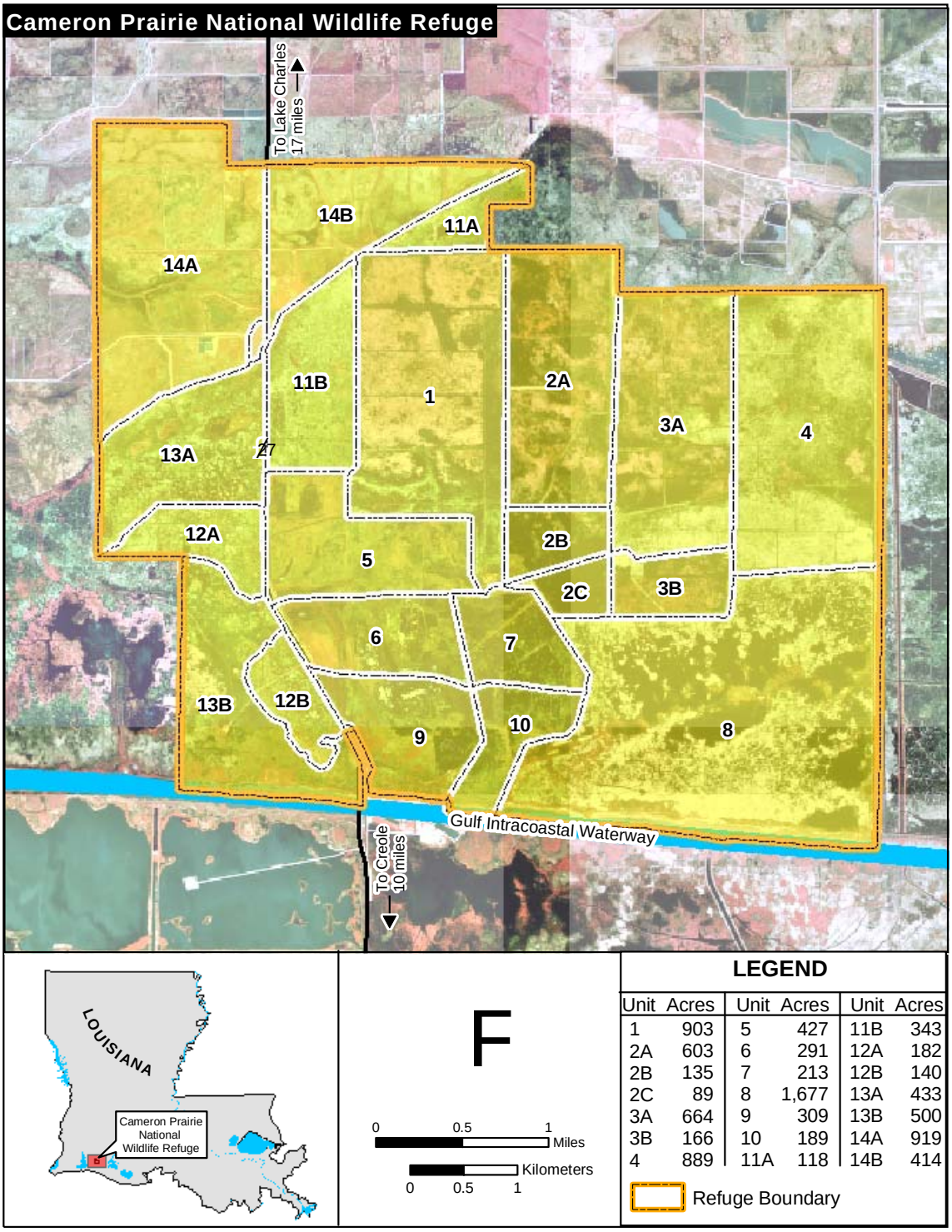
Mike Hoff

Aerial waterfowl surveys are periodically conducted to estimate the number of birds using the Refuge. Fluctuations in waterfowl numbers are often attributed to environmental conditions beyond the Refuge's control, i.e. temperature, rainfall, etc. Approximately 3,230 acres (34 percent) of the Refuge are surveyed, and an expansion multiplier of 2.94 is used to estimate the total number of waterfowl across the entire Refuge (USFWS 2001). Data and trends for peak populations of ducks and geese on the Refuge are presented in Table 2.

Table 2. Peak waterfowl numbers from annual aerial surveys

Year	Approximate Number Of Ducks Observed	Approximate Number Of Geese Observed
1990	25,500	22,000
1991	23,500	3,000
1992	23,000	5,000
1993	31,000	3,000
1994	20,000	2,500
1995	34,500	4,000
1996	21,500	11,000
1997	45,500	3,500
1998	18,000	12,000
1999	6,500	2,500
2000	24,000	8,250
2001	16,500	20,000
2002	17,500	10,000
2003	20,924	17,858
Sources: USFWS 2001; 2002a; 2003		

Figure 6. Cameron Prairie Management Units and acreages



Unit	Acres	Unit	Acres	Unit	Acres
1	903	5	427	11B	343
2A	603	6	291	12A	182
2B	135	7	213	12B	140
2C	89	8	1,677	13A	433
3A	664	9	309	13B	500
3B	166	10	189	14A	919
4	889	11A	118	14B	414

The most abundant duck on the Refuge during the spring and summer is the mottled duck. This species is a year-round resident and frequently nests (Figure 7) on the Refuge each spring. By May and June, young mottled duck broods can be observed using a variety of the Refuge's habitat types (USFWS 2001). In 2000, 26 mottled duck pairs with fairly well established territories were frequently observed using the Refuge. The total estimated number of nesting mottled ducks was 37 pairs (USFWS 2002a).

Figure 7. Mottled duck nest

Mike Hoff

In 1993, a grit site was placed on the Refuge; two more sites were added in 1995. Two of these sites (one in Unit 6 and one in Unit 14b) have experienced excellent daily use by geese during winter. The third grit site, located behind the Visitor Center in Unit 14a, had increased goose use toward the end of the 2000 wintering period (USFWS 2001).

Wading Birds (Water and Marsh Birds)

Cameron Prairie boasts high wading bird diversity and abundance with a peak of 15,000 or more wading birds roosting on the Refuge. Common nesting and visiting water birds on the Refuge include: white, white-faced, and glossy (*Plegadis falcinellus*) ibis; green, great blue, tri-colored, and little blue herons (*Egretta caerulea*); yellow-crowned (*Nycticorax violacea*) and black-crowned (*Nycticorax nycticorax*) night herons; American and least bitterns *(Ixobrychus exilis*); snowy, great, and cattle egrets; and roseate spoonbills (USFWS 2002a; 2001; 1998).

Figure 8. Ibis nesting colony In Unit 1

Mike Hoff

Unit 1 on the Refuge typically has the highest populations of roosting and nesting birds (Figure 8) on the Refuge, as shown in Table 3 (USFWS 2002a). Nesting and roosting habitat for wading birds on Cameron Prairie is provided by levees and old oil locations grown over by shrubs and trees, such as willow, Chinese tallow (*Sapium sebiferum*), and Macartney rose (*Rosa bracteata*). Stands of California bulrush (*Scirpus californicus*) provide good nesting habitat for the white, white-faced, and glossy ibis, as well as black-crowned night herons. The largest rookery for roseate spoonbills and snowy, great, and cattle egrets is located at an old oil operation in Unit 2. The preferred nesting area for green herons consists of shrubs in Unit 1(USFWS 2002a; 2001).

Table 3. Results of the 2001 Aerial Nesting Wading Birds Survey

Species	Number of Birds Observed				
	Unit 1 North	Unit 1 Central	Unit 1 South	Unit 1 Location	Bank Fishing Road
Cattle egret		485		50	
Snowy egret		195			
Great egret		275		20	
Cormorant		120		20	
Anhinga		5		2	
Roseate spoonbill		80		5	
White faced ibis	300	450	500		
White ibis	500		5		
Little blue heron		35		2	20
Tri-colored heron		15			
Great blue heron		50			
Black-crowned night heron		20			
Green heron		30			
Source: USFWS 2002a					

Sandhill Cranes

Sandhill cranes (*Grus canadensis*) have been observed using the Holmwood area, approximately eight miles north of Cameron Prairie. Yearly surveys to determine the wintering population in the area have been conducted since 1989, when only 12 individuals were recorded. This number increased to approximately 670 sandhill cranes by 1999. During the winters of 2001 and 2002, approximately 550 and 650 sandhill cranes were estimated in the Holmwood area respectively (USFWS 2003).

Shorebirds, Gulls, Terns, and Allied Species

The three most widespread birds of this group found on the Refuge are the killdeer (*Charadrius vociferus*), black-necked stilt (*Himantopus mexicanus*), and Forster's tern (*Sterna forsteri*). Common snipe (*Gallinago gallinago*) are also prevalent on the Refuge during the winter. Yellowlegs and dowitchers are found on the Refuge's shallow water areas during the fall and winter. In addition, four woodcock were repeatedly observed on the Refuge in early 2000 (USFWS 2001).

Figure 9. Water buffalo

USFWS

Shorebird management is likely to increase in the future, as more areas are restored to allow better water management, including early flooding, timely dewatering, and water buffaloing (use of mechanized farm equipment in combination with land rolling equipment to improve seed-soil contact) (Figure 9) of moist soil units to create muddy areas (USFWS 2001).

Raptors

Cameron Prairie's raptors include red-tailed hawks (*Buteo jamaicensis*), sharp-shinned hawks (*Accipter striatus*), merlins (*Falco columbarius*), kestrels, Cooper's hawks (*Accipter cooperi*), northern harriers (*Circus cyaneus*), and occasionally peregrine falcons (*Falco peregrinus*) and ospreys (*Pandion haliaetus*) (USFWS 2001). Few hawks winter on the Refuge.

The American kestrel (*Falco sparverius*), northern harrier, and red-tailed hawk are the most common raptors on the Refuge. Peregrine falcons have also been observed. During the winter of 1999-2000, one peregrine falcon was repeatedly seen in Unit 6 near the observation blind. In the fall of 2000, two peregrine falcons were observed on the Refuge: one in Unit 6 and one near the Visitor Center (USFWS 2001). Again, in 2001, wintering peregrine falcons were commonly reported on the Refuge. On two occasions, a peregrine was seen taking a drake northern shoveler (*Anas clypeata*) in mid-flight (USFWS 2002a).

The Refuge recorded a new raptor species, the Northern caracara (*Caracara cheriway*), in March 2000. During rehabilitation of moist soil units in Unit 14b, a single caracara was observed on the newly created bare earth areas (USFWS 2001).

Other Migratory Birds

One major attraction of Cameron Prairie Refuge is the considerable number of neotropical migratory birds that rest here each spring after their trans-Gulf flight. While the Refuge does not have many trees or shrubs for these species to use, those that are available are extremely important to the migrants. Mourning doves are commonly seen along fencerows, levees, roads, and disced fields at the Refuge. Blackbirds, including red-winged (*Agelias phoeniceus*) and grackles (*Quiscalus quiscula*), are also common (USFWS 2001).

Mammals

An abundant mammal on the Refuge is the non-native but naturalized nutria (*Myocastor coipus*), introduced to the United States from South America in 1899 (Willner et.al 1979). Nutria were released, either intentionally, or accidentally, in the Louisiana marshes in the 1930's. Although the nutria can be destructive to levees and vegetation, the species is beneficial in that it is available as a food source for the Refuges alligator population. The Refuge also has an abundant coyote (*Canis latrans*) population, which feed on rabbits and other rodents that are plentiful. Other mammals commonly seen around Cameron Prairie include raccoons (*Procyron lotor*), otters (*Lutra canadensis*), opossum (*Didelphis marsupialis*), and mink (*Mustela vison*) (USFWS 2001).

Three species of game mammals are found on the Refuge, all with productive populations: the white-tailed deer, swamp rabbit (*Sylvilagus aquaticus*), and cottontail rabbit (*Sylvilagus floridanus*).

Amphibians and Reptiles

Figure 10. Eastern hog-nosed snake

Raymond Matlack
Kansas State University

Except for the American alligator, little information is currently available about reptile and amphibian populations on the Refuge. A reptile and amphibian survey was conducted by Kansas State University on the Refuge in 2001, which resulted in the identification of 11 species (USFWS 2002a). Species identified were: American alligator, eastern narrow-mouthed toad (*Gastrophryne carolinensis*), Gulf Coast toad (*Bufo valliceps valliceps*), Northern cricket frogs (*Acris crepitans crepitans*), eastern hog-nosed snake (*Heterodon platirhinos*) (Figure 10), western ribbon snake (*Thamnophis poximus proximus*), common kingsnake (*Lampropeltis getulus*), slider (*Trachemys scripta*), green anole (*Anolis carolinensis*), ground skink (*Scinella lateralus*), and five-lined skink (*Eumeces fasciatus*). Personal observations by staff include: pig frog (*Rana grylio*), bullfrog (*Rana catesbeiana*), mud snake (*Farancia abacura*), cottonmouth (*Agkinstodon piscivorous*), and stinkpot turtle (*Sternotherus odoratus*).

A 2002 survey discovered 18 alligator nests in Unit 8 of the Refuge. Alligators are harvested annually on the Refuge by two permittees chosen by random selection. Harvest quotas for Cameron Prairie are determined annually, approximating limits set by the Louisiana Department of Wildlife and Fisheries. These quotas are based on annual aerial alligator nesting surveys (USFWS 2002a).

Aquatic Species

Fish species present include gar, catfish, bowfin (*Amia calva*), bluegill (*Lepomis macrochirus*), largemouth bass (*Micropterus salmoides*), and crappie (USFWS 2002b; 2001).

Invasive Plant Species

Also known as exotic or non-native species, several invasive plant species pose problems at Cameron Prairie, as they do at many national wildlife refuges. In general, invasive plant species are problematic because they outcompete native vegetation on which native animal species have come to depend over many millennia of adaptation and co-evolution. At Cameron Prairie, invasive plant species include the Chinese tallow tree (*Sapium sebiferum*), water hyacinth (*Eichhornia crassipes),* hydrilla (*Hydrilla verticillata*), Eurasian milfoil (*Myriophyllum spicatum* L.), and common salvinia (*Salvinia minima*) (USFWS 2003).

The Chinese tallow tree, a non-native small to medium-sized tree, has been reduced in occurrence on the Refuge through moist soil management, but remains a problem on several levees around moist soil units (USFWS 2002a). The tallow tree typically grows on elevated and undisturbed ground along fencerows and levees (USFWS 2001). The best control methods for this species on the Refuge have been herbicides on the levees

and manipulation of the fields (USFWS 2002a). However, the tallow tree is a very resilient species, and tends to re-sprout shortly after the herbicide is no longer available (USFWS 2001).

Water hyacinth (Figure 11) and common salvinia have clogged the majority of Refuge canals, delaying water movement to the point that pumping operations have become more expensive to operate (USFWS 2003). The Refuge currently uses herbicides to try to control water hyacinth (USFWS 2001). Hydrilla and Eurasian milfoil exclude native and more beneficial species from establishing where they occur (USFWS 2003).

Figure 11. Water hyacinth chokes Unit 1 canal

Mike Hoff

Invasive Animal Species

One exotic species, the nutria, is the most abundant mammal on the Refuge. Although the nutria can be destructive to levees and vegetation, the species is beneficial as a food source for the Refuges alligator population (USFWS 2001). Control of other invasive species will be managed if need arises.

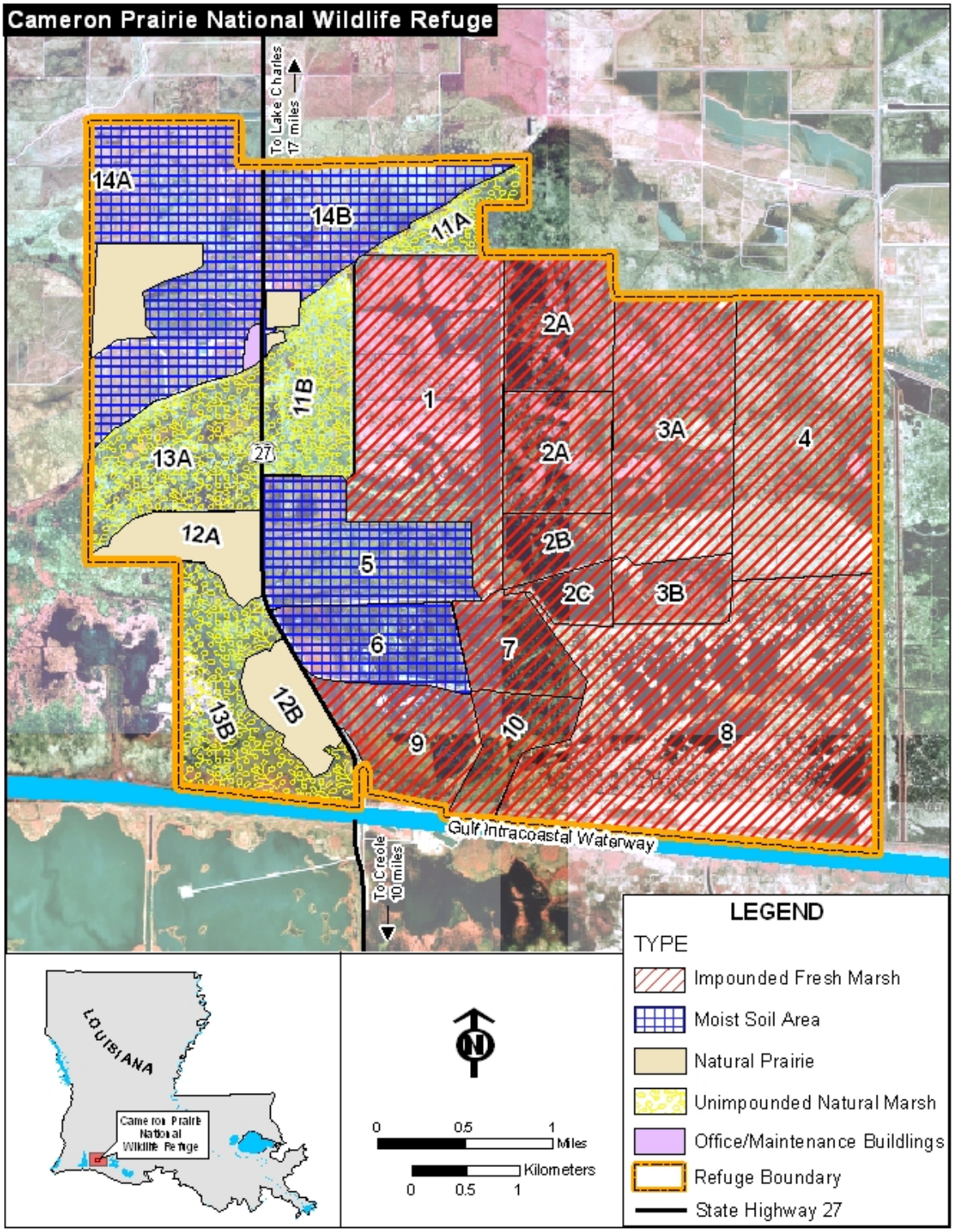
Habitats

The Refuge consists of 9,621 acres of freshwater marsh, coastal prairie, and former agriculture (rice) fields converted to moist soil habitat (Figure 12). Table 4 shows a breakdown of land cover and habitat types on the Refuge.

Table 4. Land cover and habitat types on Cameron Prairie

Habitat/Cover	Acres
Agricultural Land (Fallow Pasture; Reverted to Marsh)	1,093
Natural Freshwater Marsh	1,402
Impounded Freshwater Marsh	4,796
Moist Soil Areas	1,493
Prairie	315
Canals, Roads, Levees, Spoil Banks, Etc.	522
Total	9,621
Sources: USFWS, 2003; 2002a, 2001	

Figure 12. Cameron Prairie habitat management types



Wetlands (Marshes and Moist Soil Areas)

Cameron Prairie is located at the point of transition between prairie habitat and that of coastal marsh habitat. The 9,621-acre Refuge contains these habitat types along with habitats created through purposeful human manipulations of the land. Prior to the establishment of the Refuge, these manipulations were for commercial production of rice. Current manipulations are for the creation of early successional wetlands. These wetlands are now managed for the production of annual plants that produce both vegetation and seeds for use by geese, ducks and other wetland bird species. Early successional wetlands are commonly known as moist soil habitats. The name, moist soil, refers to the way water is used to create the desired plant community. As was done with rice farming, moist soil habitats are manually disturbed using mechanical equipment, tractors and disks. Following this artificial disturbance, native plant seeds already existing within the soil are allowed to germinate and then the soil is flooded to a shallow depth. Once plants reach maturity, fields are once again disturbed using tractors and water buffalos to create interspersed open water areas; it is the target to produce a 50:50 ratio of open water to standing vegetation in a design that produces maximum amounts of edge habitat between the two. Once accomplished, these broken vegetation styles are referred to as a “hemi-marsh” (Figure 13).

Figure 13. Mechanically created hemi-marsh

Mike Hoff

Marsh and moist soil habitat account for 8,784 acres on the Refuge. Water level management in the marshes is conducted with the use of earthen levees and other water control structures. Some of the marshes are occasionally drained or treated with prescribed fire to promote native vegetation and reduce undesired species. These areas are flooded in early winter to benefit waterfowl (USFWS 1998).

Marsh management has been difficult on the Refuge due to insufficient pumping capabilities, changes to natural hydrology, and increases in populations of invasive species. In particular, management by pumping water off of Units 1 and 2, which are large impounded freshwater systems, has been largely ineffective (USFWS 2002a).

In 2002, water level management was made somewhat easier with the addition of new stoplog structures. These structures allow the Refuge to hold the desired water level in the marsh, while allowing excess rainwater to leave the impoundments by gravity drainage. The structures were effective for much of the year, with the exception of September through December, during which time rainfall was well above average and water levels outside of the impoundment backed water into the impoundment (USFWS 2003).

In the late 1990’s and early 2000’s, the Refuge’s flooded freshwater marshes suffered from below normal precipitation. As a result, the substrate in several units was exposed, allowing invasive species to become established. The most common of these species crowding the open water region are frogbit *(Limnobium spongia*), cattail (*Typa spp.*),

maidencane (*Panicum hemitomon*), cutgrass (*Zizaniopsis miliacea*) and California bulrush (*Scirpus californicus)* (USFWS 2001).

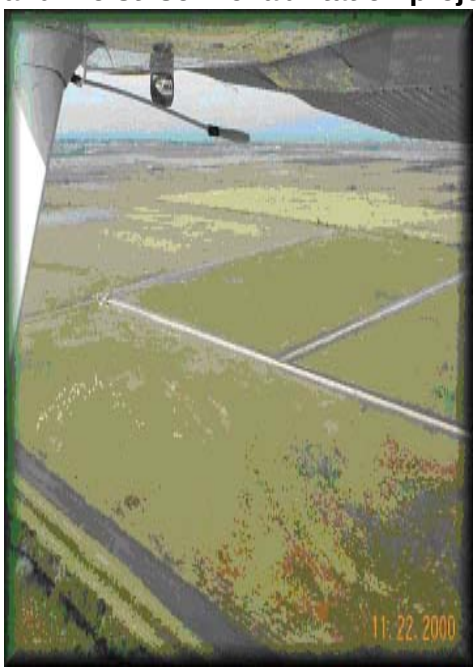
Moist soil management occurs on the upland areas of Units 5, 6, 7, 9, 14A and 14B of the Refuge. Historic levees constructed during the rice farming days have complicated the Refuge's ability to move water as efficiently as new moist soil management techniques require. The Refuge has redesigned its moist soil units to maximize acreages and improve water movement ability (USFWS 2002a).

The public use area behind the Visitor Center is managed for moist soil plants. This field is water buffaloed each fall to increase bird usage and provide quality viewing for the public (USFWS 2002a).

In the past, many of the Refuge's moist soil areas did not allow for water level management across the units. Due to drier than normal conditions in early 2000, Cameron Prairie staff were able to remedy this by constructing or rehabilitating approximately 16,000 feet of levee in Unit 14b and installing 18 new water control structures. This project provided nearly 158 acres of moist soil units that are capable of optimal water level management. In fall 2000, after a wet summer, dry conditions returned to the Refuge allowing a second moist soil project. The area had been dominated by an undesirable species, Vasey grass (*Paspalum urvillei*). Construction of a new levee in the unit would allow the Refuge to better manage water levels in the field and provide better habitat for moist soil species as well as minimize Vasey grass. Due to heavy rains in November 2000, this project was not able to be completed as scheduled (USFWS 2001). Heavy precipitation also prevented total completion of the project in 2002 (USFWS 2003).

In 2003, Refuge staff renovated some fields in Unit 14A (Figure 14). New levees were constructed to create subunits for improved water management capability. The new fields were disced and leveled. Vegetation in these fields responded well as did wintering waterfowl in the area. On several occasions 2,000 geese and 1,000 ducks used the area. Preparing moist soil fields for wintering waterfowl usually requires either mowing or rolling to provide an open area for birds to land in. In 2003, instead of opening up entire fields, Refuge staff used the hemi-marsh concept and tried to create a more natural marsh appearance. Waterfowl responded very well to the created marsh conditions, especially ducks and feeding geese. Since snow geese seem to prefer fields that are more open, a combination of opening an entire field surrounded by the hemi-marsh pattern may provide the best situation for all wintering waterfowl.

Figure 14. Unit 14A levee construction and moist soil rehabilitation project



Mike Hoff

Forests

Trees on the Refuge are limited to those along levees and spoil banks. The most common trees include black willow (*Salix nigra*), hackberry (*Celtis laebigata*), Chinese tallow, and toothache tree (*Zanthoxylum clava-herculis*). Woody shrubs include wax-myrtle (*Myrica cerifera*) and baccharis (*Baccharis halimifolia*). There are also a few pine and cypress trees, which are important to perching birds (USFWS 2001).

Prairie

There are approximately 315 acres of high marsh habitat classified as “prairie” on the Refuge. This prairie habitat is interspersed with “pimple mounds,” geologic formations about 20 to 40 feet in diameter that are 1 to 1.5 feet above the elevation of the surrounding terrain. One species of interest occurring in prairie habitat on the Refuge is gamma grass (*Tripsacum dactyloides*), which has been identified as a native plant to coastal prairies (USFWS 2001). The Cameron Prairie staff are restoring and maintaining prairie habitat on the Refuge by periodic prescribed burning, mowing, and discing (USFWS 2001; 1998). In October 2001, Unit 14A, Field A, 121 acres, was prescribed burned and subsequently disced. This was the first prescribed burn that occurred on the Refuge since 1998 (USFWS 2002a).

VISITOR SERVICES

The six priority general public uses on National Wildlife Refuges are hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation. These wildlife-dependent uses are the Service’s primary focus for the development of visitor use programs to increase awareness and appreciation of fish and wildlife resources on the National Wildlife Refuge System. All of these uses are available on Cameron Prairie National Wildlife Refuge as described below.

There are no designated hiking trails on Cameron Prairie, but visitors are permitted to walk along levees and dikes. The Refuge Visitor Center (Figure 15) is located on SH 27, and is open year-round, Monday through Saturday. A 10-minute, site-specific audio-visual program designed for welcoming and orienting is shown to visitors. There are currently no fees charged to visitors to the Refuge. Other programs and materials offered at the Center are discussed below (USFWS 2002c).

Figure 16 shows annual visitation to the Refuge for the past decade. These numbers include all hunters, fishermen, wildlife drive users, and Visitor Center visitors. The Refuge typically receives visitors from nearly all states and about 20 countries annually (USFWS 2003; 2002a, 2001).

Figure 15. Existing visitor facilities at Cameron Prairie National Wildlife Refuge

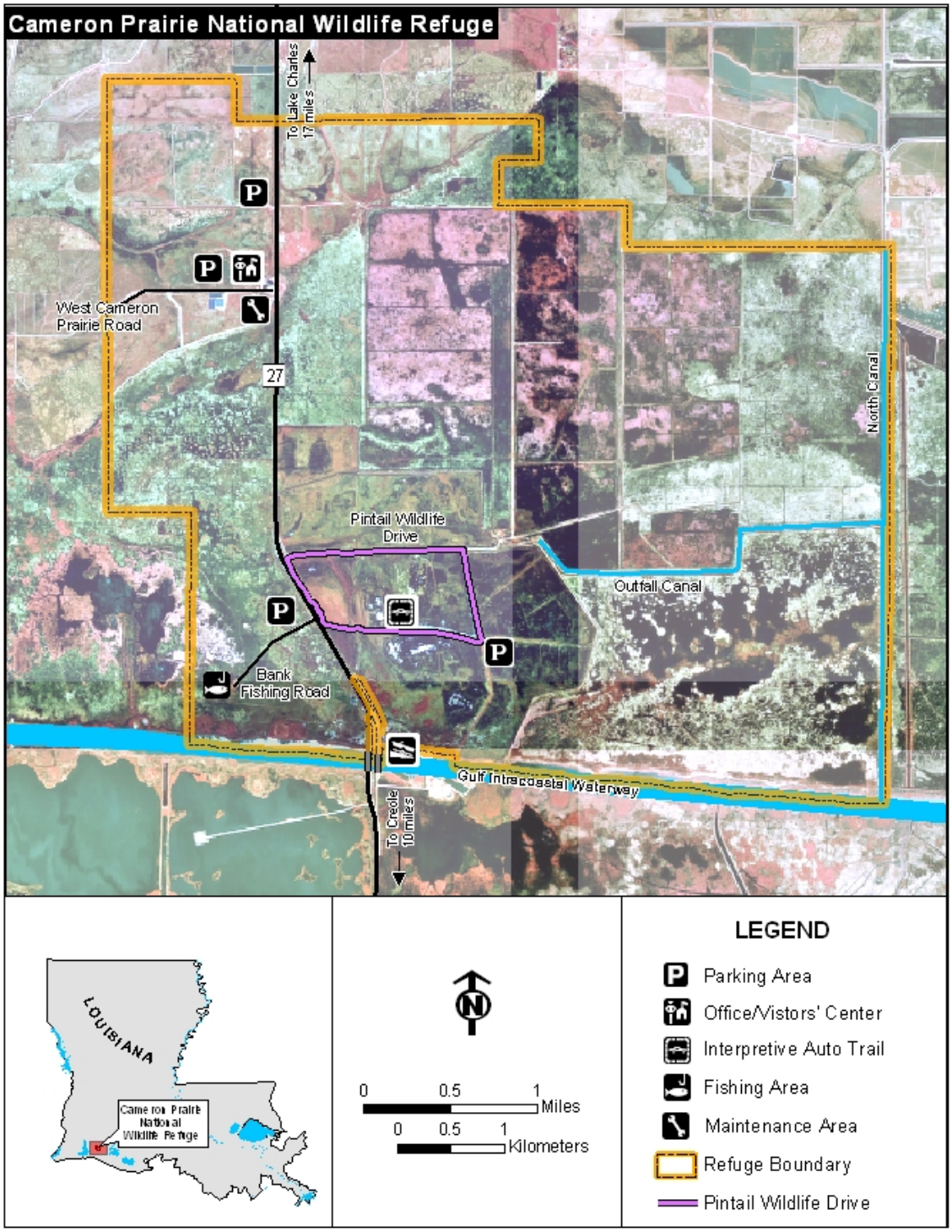
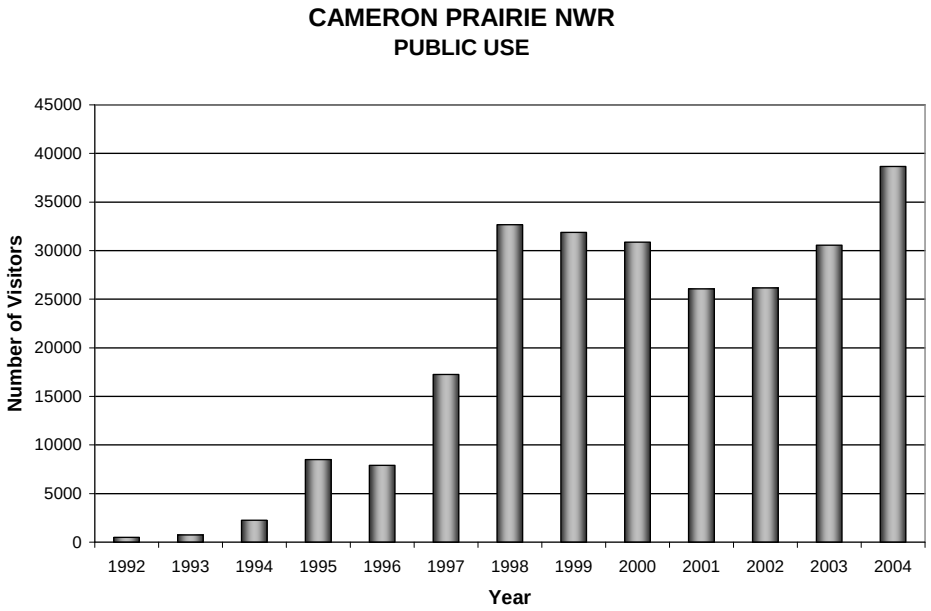


Figure 16. Annual Visitation for Cameron Prairie National Wildlife Refuge



Hunting

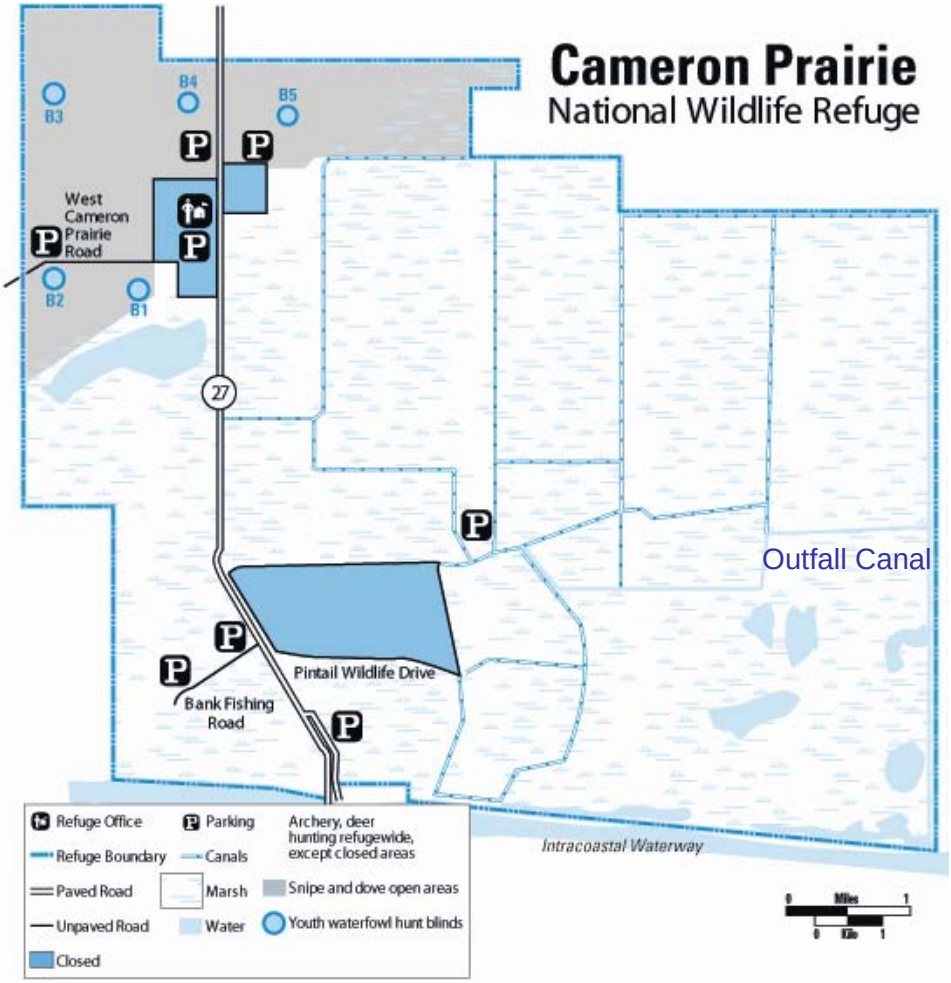
Hunting is allowed in designated areas (see Figure 17) of the Refuge during certain times of the year. Seasons and bag limits are within the guidelines established by the Louisiana Wildlife and Fisheries Commission but are generally more conservative to assure compatibility with other refuge objectives. The Refuge's hunting program is reviewed annually, and consists of the following:

- Big Game: Archery hunt for white-tailed deer, open October only in all other areas other than those listed as closed to all hunting.

- Waterfowl (ducks, geese, gallinules): Youth hunts including five blinds with decoys (two dozen duck and one dozen white-fronted geese). Participants are chosen by lottery for all Saturdays and select holidays during the State waterfowl season.

- Other migratory birds (initiated in 2002): Hunting for snipe is permitted during the remaining portion of the State-designated season following the closure of the State waterfowl season. Hunting for dove is permitted during the first split of the State-designated season. All state regulations are applicable for these two hunts.

Figure 17. Cameron Prairie hunt area map



Fishing

Fishing on the Refuge is permitted from March 15th through October 15th, and is limited to the canals adjacent to Bank Fishing Road, the SH 27 ditch (the most frequently used fishing area on the Refuge), and the Outfall Canal (accessible only via boat) (USFWS 1998; 2002b). However, fishing has been minimal at best in recent years due to increases in undesirable aquatic vegetation (USFWS 2002b). There are no boat ramps available on the Refuge, but boats can be launched from a public boat launch off SH 27. Motorized boat use is permitted only in Outfall Canal; the bank fishing area is restricted to non-motorized boat use (USFWS 1998; 2002b).

Wildlife Observation and Photography

Pintail Wildlife Drive, a three-mile graveled auto tour route, is located two miles south of the Visitor Center. The drive provides excellent wildlife observation and photography opportunities. There are five interpretive signs along the route describing wildlife species and marsh and plant ecology. Visitors can see wading birds, waterfowl, and alligators. The Service also maintains a photo-blind (Figure 18) along Pintail Wildlife Drive which is available by reservation only and is typically used two to three times per year.

Figure 18. Refurbished photo blind

James D. Ashfield, Jr.

In addition, SH 27, which bisects the Refuge, is part of the Creole Nature Trail, a National Scenic Byway and an All American Road (USFWS 2002c; 1998). Visitors pass through several marsh habitats along the Creole Nature Trail and can pull into nine access areas for wildlife viewing and photography.

The Visitor Center has an orientation video, species check lists, interpretive signs, wildlife displays, exhibits, dioramas, and a calendar of natural events to promote wildlife observation and appreciation. In addition, brochures listing optimum wildlife viewing times, access point information, and regulations are available at the Center (USFWS 2002c). Visitors are encouraged to use the Refuge viewing platform located a short walk from the rear of the Visitor Center. From the platform, visitors can observe an example of moist soil management and birds that seek the annual plant seeds produced by this management technique.

Environmental Education and Interpretation

The primary themes interpreted at Cameron Prairie include the area's ecology, native fauna and flora, the Service's mission, and why the Service manages for fish, wildlife, plants, and habitats. The majority of interpretation at the Refuge occurs in the Visitor Center.

Environmental education and interpretive programs at the Refuge are coordinated and managed by the Southwest Louisiana Refuges Complex Outreach Coordinator. The Coordinator is stationed at Sabine National Wildlife Refuge and provides guidance and oversight to the Refuge. Currently, Cameron Prairie staff conducts two to three on-site programs and four to five off-site programs annually. In addition, each year seven to eight school groups visit the Refuge (USFWS 2002c).

Refuge staff occasionally participates in radio and television interviews and distributes news releases off-Refuge to inform the public of special events, openings, Refuge conditions, and wildlife viewing opportunities. Staff also host interpretive programs and talks at schools, clubs, the Southwest Louisiana Convention and Visitor Bureau, etc. (USFWS 2002c). Topics range from basic plant and wildlife identification for elementary school students to refuge management seminars at the local university (USFWS 2001).

REFUGE ADMINISTRATION

Refuge administration refers to the operation and maintenance of Refuge programs and facilities and includes new construction.

Refuge Staff

The Refuge was administratively combined with nearby Sabine National Wildlife Refuge in 2000. Lacassine National Wildlife Refuge joined the Complex in April of 2004. The three Refuges now comprise the Southwest Louisiana National Wildlife Refuge Complex with Cameron Prairie serving as Complex Headquarters and management of the Cameron Creole Watershed Project. Various positions throughout the Complex have or will be targeted as positions with Complex-wide responsibilities. The Complex staff will support, direct, and manage the needs, resources, and staff of Cameron Prairie, Sabine, and Lacassine National Wildlife Refuges. Future plans to house the majority of the Complex staff at Cameron Prairie will only be accomplished with a building addition and additional support resources (equipment, vehicles, etc.).

At establishment, Cameron Prairie had eight full-time positions. The Refuge staff now consists of 5.5 permanent, full-time employees, with an occasional volunteer worker. Full-time positions include one Refuge Manager, one Assistant Refuge Manager, two Equipment Operators, one Electrical Equipment Repairer and one part-time Office Automation Clerk. In the fall of 2003, the vacant Refuge Biologist was converted to a Complex Biologist with responsibilities for all three refuges. There is also one additional employee who began working in 2002 under the Student Temporary Employment Program (STEP) (USFWS 2003).

Three of the 5.5 staff members presently are responsible for management and biological activities on the East Cove Unit, formerly a part of Sabine National Wildlife Refuge. The 14,927-acre East Cove Unit is part of the larger multi-agency Cameron Creole Watershed Project (64,000 acres), a marsh restoration effort for which the Service has management responsibility, as described in an Operations and Maintenance Agreement, dated December 18, 1981. The Refuge Manager spends 50 percent of his time on biological and management duties for the East Cove Cameron Creole Watershed Project while the Maintenance Worker spends 100 percent of his time on the Project. The Refuge Manager also serves as the Deputy for the Complex. The Complex Biologist is heavily involved in overseeing many of the responsibilities of managing the 64,000-acre watershed.

COORDINATION AND COOPERATIVE PROGRAMS

Refuge staff coordinates and cooperates extensively with state agencies, tribes, landowners, the public, conservation groups, oil and gas companies, and local agencies and organizations.

FACILITIES AND EQUIPMENT

Equipment

Cameron Prairie has earth-moving, vegetation control, and water management machinery and equipment that are vital to pursuing its purpose. The following equipment is kept at the maintenance compound south of the Visitor Center:

Airboat, 1997, 14” Kline
Airboat, 2001, 14’ Kline
ATV, Honda Fourtrax 450, 4x4 - 2)
Boat, Mud, Aluminum 16’
Dozer, International TD-20
Dozer, John Deere 650
Excavator, Caterpillar 325L
Forklift, Clark
Grader, Caterpillar 3304G-45
Implement, Bush Hog, Land Pride 14’
Implement, Bush Hog, 20’
Implement, Disc, John Deere 24’
Implement, Disc, Rome 17’
Implement, Disc, 12’
Implement, Ditching Machine, Land Pride
Implement, Land Leveler, Rayne Plane
Implement, Water Buffalo, 20’
Mower, John Deere 855 with 8’ bush hog
Mower, Lawn Grasshopper Zero Turn
Mower, Lawn Kubota 72” Zero Turn
Power Unit, Cummings 205 HP
Power Unit, Cummings 174 HP
Power Unit, Deutz Drive
Power Unit, Deutz Drive, Mobile
Pump, Gator 12” (2)
Pump, Gator, 16”
Pump, 10” natural gas, Lo-Lift Moline
Pump, Lo-Lift, 20”
Pump, Lo-Lift, 24” (3)
Pump, Lo-Lift, 30”
Tractor, Case
Tractor, Ford
Tractor, John Deere 4960
Tractor, John Deere 7600
Tractor, John Deere 6410/Boom Mower
Tractor, Kubota 90 HP 4x4
Trailer, Texas Brag, 18-foot
Truck, Tractor Trailer, Low Boy

Roads

The most prominent road on Cameron Prairie is Louisiana SH 27 (Figure 19), which bisects the Refuge and accesses the Visitor Center. About 20 percent of the Refuge is to the west of SH 27, and 80 percent to the east. This road is the only paved road on the Refuge, and is maintained by the Louisiana Department of Transportation. While the Service has no regulatory authority on SH 27, which is designated as a Hurricane Evacuation Route, the Refuge cooperates with local law enforcement authorities during emergency situations (USFWS 2002c). During mandatory hurricane evacuation, law enforcement officials maintain an Emergency Command Post on the Visitor Center parking lot, stopping all traffic going south.

Three gravel roads provide the remaining public access on the Refuge. Bank Fishing Road is an old oil access road on the southern portion of the Refuge that provides access to the fishing area. West Cameron Prairie Road, which starts at the Visitor Center parking area, is used by hunters during Refuge hunts and by private land owners to access their properties to the west of the Refuge. East Cameron Prairie Road, also known as Pintail Wildlife Drive, provides wildlife observation and photography opportunities.

O'Blanc Road is open to Refuge personnel only to access the northeastern portion of moist soil Unit 14B.

Visitor parking is available at four lots on the Refuge, two adjacent to SH 27, one at the walk-in hunting area, and one at the Visitor Center (USFWS 2002c).

Figure 19. State Highway 27 bisects the Refuge

Leon Kolankiewicz

RESEARCH NATURAL AREAS

Research Natural Areas are designated by Federal land management agencies to preserve plant and animal communities in a natural state for research purposes. They protect vanishing native habitats that exhibit outstanding ecological value by preventing unnatural encroachments and activities that might modify ecological processes. At this time Cameron Prairie has no designated Research Natural Areas.

WILDERNESS REVIEW

As part of the CCP process, lands within the legislative boundaries of Cameron Prairie National Wildlife Refuge were reviewed for wilderness suitability. No lands were found suitable for designation as wilderness as defined by the Wilderness Act of 1964.

Cameron Prairie does not contain a roadless area of 5,000 or more acres, nor does the Refuge have any units of sufficient size to make their preservation practicable as wilderness. The lands of the Refuge have been substantially affected by humans, particularly through agriculture, water manipulation, and through seismic exploration. As a result of both extensive modification of natural habitats and ongoing manipulation of natural processes, adopting a "hands-off" approach to management at the Refuge *per se* would not facilitate the restoration of a pristine or pre-settlement condition which is the goal of wilderness designation.

ARCHAEOLOGICAL AND HISTORICAL RESOURCES

In addition to the natural habitat and wildlife that Cameron Prairie National Wildlife Refuge encompasses, it also holds resources of archaeological and cultural value. The Refuge is located in a region with a rich human history and pre-history. While cultural resources or properties have yet to be discovered at Cameron Prairie, it should be emphasized that they may well be present.

Prior to the arrival of Euro-Americans (pre-contact), it was inhabited by the Atakapa Indians. The Atakapa occupied the coastal and bayou areas of southwestern Louisiana and southeastern Texas until the early 1800s (Couser 2002). Archaeological evidence suggests that settlements have been present in this area since before American Indians learned to make pottery, approximately two thousand years ago. While “Atakapa” means "eaters of men" in the language of the neighboring Choctaw, it is unknown whether the Atakapas' supposed cannibalism was for subsistence or ritual. Pre-contact Atakapans were hunters, gatherers, and fishers. Their society consisted of loose bands that moved on a regular basis from place to place within a given territory, gathering, hunting, and fishing. The alligator was very important to them, because it provided meat, oil, hides, and even insect repellent (oil). The Atakapan language has fascinated linguists and is among the better-recorded Native American languages. At one time it was believed to be associated with other languages of the Lower Mississippi River, but later this theory was abandoned and it is now classified as an isolated language.

Most of what is known about the appearance and culture of the Atakapa comes from eighteenth and nineteenth century European descriptions and drawings. The Atakapan people were said to have been short, dark, and stout. Their clothing included breechclouts and buffalo hides. They did not practice polygamy or incest. Their customs included the use of wet bark for baby carriers and Spanish moss for diapers. According to another custom, a father would rename himself at the birth of his first son or if the son became famous. In the creation myth of the Atakapa, humans were said to have been cast up from the sea in an oyster shell. The Atakapas also believed that men who died from snakebite and those who had been eaten by other men were denied life after death, a belief that may have lent support to the notion that they practiced ritual cannibalism.

The various bands of the Atakapas were reported to have traded not only with other Indians but with early French and Spanish explorers and traders as well. After the appearance of these Europeans, the Atakapa dwindled rapidly. An estimated 3,500 still survived in 1698; by 1805, only 175 remained in Louisiana. Just nine known descendants were recorded in 1909. Their downfall was brought about primarily by the invasion of and devastation of European diseases rather than through any direct confrontation with European settlers.

The next major phase of the area’s human habitation occurred after the Treaty of Paris in 1763 concluded the French and Indian Wars (Feldman 1998). The British had already expelled French-speaking settlers—the Acadians—from Nova Scotia (in what is now one of the Maritime Provinces of Canada), in 1755. Their exile occurred as a result of the widespread turmoil and upheaval sweeping through French and British colonies in North America as England gained the upper hand in its struggle with France for the control of North America. The Acadians first arrived in “New Acadia,” now Louisiana, then a colony of Spain, in 1764, and this migration continued for the next two decades (Hebert 2003). Even after all their wanderings following their expulsion from Acadia, the adjustment from Maritime Canada, with its sub-arctic climate and rocky, hilly terrain, to the Mississippi Delta, with its nearly subtropical climate and bayous, must have been difficult for the Acadians. Yet over time, the Acadians, later referred to as Cajuns, flourished and developed their own subsistence culture based on hunting, fishing, trapping, and some agriculture, that produced a unique cuisine and music, among other things. One of the most vivid exhibits at Cameron Prairie’s Visitor Center consists of a talking mannequin of

a woman, Taunt Marie, in a boat with her fishing rod describing the intimate relationship of the Cajuns to the land, the bayou, and its wildlife and fish.

Southern Louisiana is also known for its Creole culture and cuisine, although these are more noted in urban areas like New Orleans. While the Cajuns were specifically French in origin, the Creoles trace their heritage to Spanish, African, Italian, as well as French influences, indeed, to any other peoples who chose to live in New Orleans (Royal Café no date). The roots of Creole culture date to the early 1700s, with the French settlement of La Nouvelle Orleans under its founder Jean Baptiste Le Moyne, Sieur de Bienville, governor of the Louisiana Territory. In 1763 the Louisiana Territory was traded to Spain, and Spanish influence increased. German and Italian immigrants and African slaves also contributed heavily to Creole culture, cuisine and music.

As stated above, no archaeological or historical sites have been documented at Cameron Prairie, but this does not mean they do not exist. The generally wet or even inundated condition of soils in the area, within marshes, bayous, and former rice fields, is not conducive to conducting archaeological surveys.

The Refuge at present does not have a Cultural Resources Management Plan (CRMP). The CRMP, when completed eventually, will specify what measures need to be taken at Cameron Prairie to identify, protect, and interpret the area's rich cultural history.

SOCIO-ECONOMIC PROFILE

Cameron Prairie Refuge is located in 1,313 square-mile Cameron Parish, Louisiana, one of the largest parishes (i.e., county equivalents) in the state. Cameron Parish is situated in the extreme southwestern corner of Louisiana, abutting the Gulf of Mexico to the south and Texas to the west. In 2003, the population of the parish was estimated at 9,708, a slight decline (3%) from the 2000 Census (USCB 2004). The median household income of the parish in 1999 was $34,232, compared to $32,566 for Louisiana as a whole. The same relative prosperity is reflected in a poverty rate below the state average. Approximately 12% of Cameron Parish residents lived below the poverty line in 1999, compared to almost 20% for all of Louisiana. Educational attainment is below the state average however, with only 8% of the population aged 25 or higher having a Bachelor's degree or higher, as opposed to the statewide average of 19%.

In 2003 transportation and warehousing was the largest of 20 major economic and employment sectors in the parish (STATS Indiana 2004). The Census Bureau classified occupations in Cameron Parish as shown in Table 5.

Table 5. Occupations of employed civilian population 16 years and older (2000)

Cameron Parish - Occupations of employed civilian population 16 years and older (2000)		
Occupation	**Number**	**Percent**
Management, professional, and related occupations	772	18.5
Service occupations	718	17.2
Sales and office occupations	954	22.8
Farming, fishing and forestry occupations	199	4.8
Construction, extraction and maintenance occupations	594	14.2
Production, transportation, and material moving	947	22.6
Source: U.S. Census Bureau, Census 2000, Summary File 3, Profile of Selected Economic Characteristics		

In terms of employment by industrial sector, the primary industries lumped as “agriculture, forestry, fishing and hunting, and mining” predominate in Cameron Parish, as shown in Table 6.

In terms of its racial and ethnic breakdown, as reported in the 2000 Census, Cameron Parish is 92.5% white, non-Hispanic, 3.9% black or African American, 0.4% American Indian, 0.4% Asian, and 2.2% Hispanic or Latino origin (USCB 2004). (The percentages do not add up precisely to 100% because of the difference between designated races — white, black, Native American, and Asian — and ethnicities, which are Latino and non-Latino.) In addition, 1.6% in the Census reported some other race or two or more races. Overall, the population of Cameron Parish has a greater percentage of non-Hispanic whites (92.5%) than the state as a whole (62.5%). That is, it is less diverse and has fewer minorities.

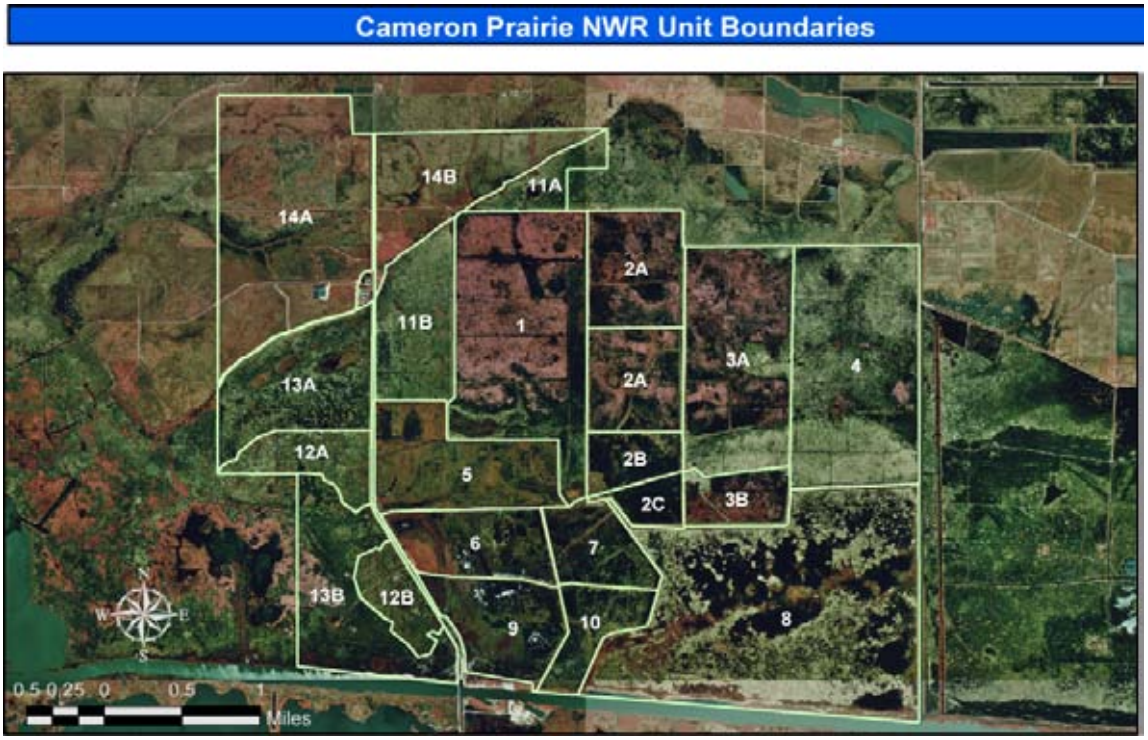
Table 6. Employment of civilian population 16 years and older by industry (2000)

Cameron Parish – Employment of civilian population 16 years and older by industry (2000		
Industry	Number	Percent
Agriculture, forestry, fishing and hunting, and mining	696	16.6
Construction	470	11.2
Manufacturing	295	7.1
Wholesale trade	143	3.4
Retail trade	426	10.2
Transportation and warehousing, and utilities	396	9.5
Information	52	1.2
Finance, insurance, real estate, and rental and leasing	155	3.7
Professional, scientific, management, administrative, and waste management services	206	4.9
Educational, health and social services	677	16.2
Arts, entertainment, recreation, accommodation and food services	269	6.4
Other services (except public administration)	213	5.1
Public administration	186	4.4
Source: U.S. Census Bureau, Census 2000, Summary File 3, Profile of Selected Economic Characteristics		

LAND PROTECTION AND CONSERVATION

In keeping with the purpose for its creation, management efforts at Cameron Prairie are oriented toward the improvement of habitats under its jurisdiction for the benefit of waterfowl, wading and shorebirds, threatened and endangered species (in general, for there are none at the present time on the Refuge), and all other native wildlife. To this end, Refuge staff undertakes a vigorous program of active habitat restoration, management, and manipulation that includes levee and drainage canal construction and upkeep, discing, prescribed fire, planting, and exotic plant control. Table 7 shows the Refuge's management units and proposed management goals for each. Figure 20 is a map of Cameron Prairie showing the location of each management unit.

Figure 20. Cameron Prairie Management Units



Left to the whims of the weather, most Refuge habitats would be either too wet or too dry to be optimal for wildlife. Thus, staff members are always attempting to improve water level management on the Refuge through a variety of means. For example, in 2002 new aluminum stoplog structures were added in several locations. These new structures allow Refuge staff to set the desired water level while allowing excess rainwater to leave the impoundments by gravity drainage. As part of the Louisiana SH 27 construction project that started in 2000, an underground irrigation system was installed. This system greatly increases the Refuge's ability to move water north and south.

Table 7. Cameron Prairie National Wildlife Refuge Management Units

Unit	Acres	Description	Current Management
1; 2A; 2B; 2C; 3A; 3B; 4	3196	Impounded Freshwater Marsh	Passive/permanent water
5; 7	619	Moist Soil	Passive/limited pumping
6	263	Moist Soil	Moist soil/limited pumping
8	1600	Impounded Freshwater Marsh	Passive/permanent water
9; 10	474	Moist Soil	Passive/permanent water
11A; 11B 13A; 13B	1402	Unimpounded Natural Marsh	Passive
12A; 12B	315	Natural Prairie	Passive
14A; 14B	1230	Moist Soil	Moist soil/prairie
Source: USFWS, 2003			

Nevertheless, the Refuge's water level management continues to be ineffective due to inadequate pumping capacity in certain locations, such as Units 1 and 2, which are two of the Refuge's largest impounded freshwater systems. Since these units are impounded, water level management is crucial to providing a productive marsh and maximizing wintering bird capacity. Yet in recent times the Refuge was unable to pump water off these units and had to rely on gravity drainage. Pumps need to be kept in a state of repair.

Inadequate levees have been one of Cameron Prairie's biggest impediments to moist soil management, but the Refuge has received occasional funding to deal with failing levees and canals. Refuge personnel annually mow all accessible levees, approximately 97 linear miles, to control unwanted exotic and native woody species.

Dry weather promotes soil conditions that allow staff to work in units that would normally be saturated and unworkable. For example, dry conditions in early 2000 allowed for work in fields that are normally too wet. Staff took advantage of these conditions and started a major project in cooperation with the Ducks Unlimited Marsh program. Many of the Refuge's moist soil areas did not allow for optimal and uniform water levels across the units. To remedy this, Cameron Prairie staff rehabilitated approximately 16,000 linear feet of levee in Unit 14b and installed 18 new plastic or aluminum water control structures. This project provided 158 acres of moist soil units capable of optimal waterfowl and shorebird management.

Figure 21. Native Walter's millet

Mike Hoff

The dry fall of 2000 allowed maintenance staff to start another moist soil project in Unit 14a, Field C. This area had become dominated by an undesirable species, Vasey grass. A 2001 levee project improved the ability to control water levels across the field to minimize Vasey grass, which prefers drier sites, and to manage for beneficial moist soil species.

Following heavy rains in November, this area received high goose use rates once it was flattened with a "water buffalo."

In recent years, the Refuge's flooded freshwater marshes have suffered from below normal precipitation. In 2000, water levels in Units 1, 2a, 2b, 2c, 3a, 3b, and 4 were the lowest recorded since Cameron Prairie was established in 1989. In the largest portions of these units the substrate was exposed, thus allowing many species to become established that normally are not found within the units. The most common species crowding the open water region are water hyacinth, frogbit, maidencane, cutgrass, California bulrush, and cattail.

Units 5, 6, and 9 were rolled flat with the "water buffalo" to provide access for wintering waterfowl. The border of Unit 6 is the Pintail Wildlife Drive. Pintail Drive also benefited from the dry spring. Following discing and land leveling in early spring, the area produced high yields of excellent waterfowl foods such as Walter's millet, Figure 21,

(*Echinochola walter)* and smartweed (*Polygonum spp)*. The Pintail Drive also has a moist soil area around the grit site that was again very popular with geese.

Typically the only management option in Unit 11 is prescribed fire. However, on occasion, staff can move a tractor and bush hog into the area to manage the rank vegetation. As soon as the water returns, white-tailed deer, waterfowl, and wading birds are observed using such mowed areas.

DETAILED UNIT HISTORY

Each of the 21 units and sub-units at Cameron Prairie has its own management capabilities and constraints that figure into management prescriptions for that unit or sub-unit. The history for each unit is described briefly in the following pages.

Unit 1

During the 1950's, approximately 852 acres of freshwater marsh was leveed and pumped to create agriculture fields. From the 1950's to 1985 the areas were dewatered and rice cultivated on a 2-3 year rotation. Two large low-lift pumps were used to dewater the area to allow soil manipulation with farm equipment. Personal conversations with individuals with knowledge of these farming operations disclosed that the pumps were run practically year-round to keep areas dry. Fuel costs during this time were of no concern, since the pumps were fueled by natural gas supplied by pipelines crossing the property at no cost to property owners. For roughly 25-30 years the area was drained and disced. Farming operations ceased in 1985.

Upon termination of farming operations the properties were leased for a commercial duck hunting facility. Dewatering of the area on a yearly basis ceased. Years of drying and discing caused the rich organic soils in the area to oxidize, eventually lowering the soil levels. When the commercial hunting facility was established, the areas were allowed to fill with water. Field depths were approximately 18 - 36 inches deep, with deeper areas in old canals. Water shield (*Brasenia schreberi*) and white water lily (*Nymphaea odorata*) quickly became established in the area. With water shield being the predominant aquatic species, numerous wintering waterfowl were attracted to the area.

To facilitate access and travel between several impounded areas, the farming infrastructure (drainage and flood canals) was breached to allow boat traffic between units. This created approximately two large units of 1,500 acres or more. When the Refuge was purchased, several of the breaches in the levees were closed to try and facilitate better water control and management in these units. However, with deterioration of canal systems through vegetation encroachment and lack of funds to operate pumps year round, the units began to close in through vegetation succession. Since purchase of the Refuge in 1988, the quality of wintering waterfowl habitat in these areas has declined due to the expansion of emergent vegetation, primarily California bullwhip (also called California bulrush) and maidencane.

Prior to Service acquisition, the water-to-emergent vegetation ratio in these units was approximately 75 percent water to 25 percent emergent vegetation. Currently (2000) the water-to-emergent ratio is roughly 35 percent water to 65 percent emergent vegetation. The Refuge currently has partial control capabilities through pumping to dewater the area; however, water can no longer be pumped into the units.

Unit 2A
From the 1950's until 2001-2002, the history of this sub-unit is very similar to that of Unit 1 above. During 2001 – 2002, the Refuge constructed a levee across Unit 2 to create two units of approximately the same size. The plans were to dewater a small area, thus decreasing time required prior to manipulation. The southern unit created by the cross levee was dewatered and an initial discing took place in the late summer. Unfortunately, a tropical storm producing heavy rains flooded the area. With the fall and winter quickly approaching, the water was left on the unit.

Unit 2B
From the 1950's until 1985, the history of this sub-unit is very similar to that of Unit 1 above. When farming operations stopped, the properties were leased for a commercial duck hunting facility. Annual dewatering of the area ceased. By the time the Refuge was purchased, Unit 2B was dominated by maidencane, with very little open water. Over the years these open water areas have all but disappeared. The area now has very little or no value as waterfowl habitat.

Unit 2C
The history of this sub-unit is identical to that of Unit 2B above. Unit 2C has very little or no value as waterfowl habitat, as in the case of Unit 2B.

Unit 3A & 3B
The history of this unit, with its two sub-units, is similar to the history of the previous units. The Refuge currently has minimal capabilities to manage water within this unit.

Unit 4
Much of this unit's history was similar to that of Unit 1. However, only a small portion of the unit was ever pumped for rice production; most was generally used for cattle grazing. Because Unit 4 was not farmed, the soils did not oxidize to the same extent as the farmed units. Under private ownership, the area was dominated by maidencane with small open water areas. With the cattle grazing aspect removed from the area, maidencane stands began to become very dense and encroached into the watered areas. The unit is now virtually 100% dominated by maidencane. Over the past four years two wildfires have occurred within this unit.

Unit 5
Unit 5 has a similar history to most of the others. During the 1950's approximately 435 acres of freshwater marsh was leveed and pumped to create agriculture fields on which rice was cultivated until 1985 on a 2-3 year rotation. One large low-lift double discharge pump was used to dewater and flood the area and for 25 - 30 years the area was drained and disced.

Upon termination of farming operations the properties were leased for a commercial duck hunting facility. Dewatering of the area on a yearly basis ceased. When the Refuge was purchased, the dominant vegetation within the unit was four corner grass (*Eleocharis quadrangulata*), maidencane, and other vegetation with low wildlife value. The old pump and engine were replaced; however, the deteriorated canals and levees made water management difficult. Funding levels were not sufficient to operate the pump adequately to maintain the area in an early vegetation stage, thus the unit began to close in through vegetation succession.

Unit 6
Unit 6's history is much like Unit 5's: from the 1950's to the mid-1980's, it was drained and disced regularly to cultivate rice on 2-3 year rotations. Later it was leased for commercial duck hunting. When the Refuge was purchased, the dominant vegetation within the lower areas within the unit was four corner grass, maidencane, and other vegetation with low wildlife value; the higher elevations were dominated by Vasey grass, sumpweed (*Iva annua*), and other grasses and forbs. With no agricultural practices the levees and higher portions of the fields were being colonized by wax-myrtle, marsh elder (*Iva frutescens*), Chinese tallow and other woody plants. The old pump and engine were replaced. The Refuge tries to maintain this area in early succession, since it is contained within the Pintail Wildlife Drive.

Unit 7
During the 1950's approximately 184 acres of coastal prairie and freshwater marsh were leveed and pumped to create agriculture fields. With the same low-lift pump used practically year-round on Units 6, 9, and 10, Unit 7 was dewatered, a total of 921 acres were disced and cultivated for rice. Farming operations stopped in 1985, at which time Unit 7, along with others, was leased for commercial duck hunting. When the Refuge was purchased, the dominant vegetation within the unit was four corner grass, maidencane, cattail, and other plants with little wildlife value. The old pump, engine and pump house have been replaced. The pump is inefficient at managing water within all four units. The Refuge has attempted to improve water management capabilities through levee and canal maintenance; however, it has proven to be difficult and costly.

Unit 8
During the 1950's approximately 1,600 acres of freshwater marsh were impounded to create a reservoir for farming operations. From the 1950's - 1985 the area was maintained as a reservoir in case of low rainfall for irrigation purposes. After farming ceased, the area was utilized for waterfowl hunting. With little maintenance, levees deteriorated, eventually breaching near the Gulf Intracoastal Waterway. Water level management within the unit is difficult, if not impossible.

Dominant vegetation within the unit is four corner grass, maidencane, cattail, white water lily (*Nymphaea odorata*), water shield and other submerged and emergent vegetation. The unit has proven to be very attractive to wintering pintail and mallards utilizing the Refuge. The Refuge has attempted to improve water management capabilities through levee and canal maintenance but this is difficult and expensive.

Unit 8 was proposed as a public fishing area in February, 1992. Fishery biologists recommended the area be opened for fishing in March of 1992. It was announced shortly after in a news release by the Refuge that "Work continues on renovation and development of the 1,600-acre impoundment that will be stocked with sport fish for future fishing opportunities." It was determined that a levee on the south end of the unit would have to be constructed and other surrounding levees improved sufficiently to maintain water levels two feet deeper than existing water levels.

In 1992, the Refuge submitted requests for funding this project through its fiscal database. To date, no funding has been provided to upgrade this Unit for additional fishing opportunities. The most current guidance projects funding to be available in the year 2011.

Unit 9
The history of Unit 9 from the 1950's to the 1980's parallels that of units 6, 7, and 10. Like those units, Unit 9's 317 acres were dominated by plants with low wildlife value when the Refuge was purchased. In addition to four corner grass, maidencane, and cattail, Unit 9 had large quantities of Chinese tallow, black willow, and wax-myrtle. The Refuge has attempted to improve water management capabilities through levee and canal maintenance, but this is difficult and costly.

Unit 10
This unit's 157 acres share a common history of rice cultivation, dewatering, discing, and subsequent duck hunting with units 6, 7, and 9. As in the case of those units, water management in Unit 10 has proved difficult and costly.

Unit 11A & B
While most of the lands that now comprise the Refuge were converted to agricultural fields, Units 11 A & B remained unimpounded and in a somewhat natural state. The areas were used for cattle grazing and for recreational hunting. Prior to the purchase of the Refuge these activities kept several ponds and canals free of vegetation and accessible. However with removal of these activities, many of the ponds and canals became vegetated, reducing water flow, access and value as wildlife habitat. On several occasions the Refuge has been approached by local politicians as to the possibility of improving water movement from the area, as it affects a small community north of the Refuge. To date the Refuge has not had adequate funding or equipment to improve drainage in these areas.

Dominant vegetation within the unit is maidencane, giant cut-grass (*Zizaniopsis miliacea*), sawgrass (*Cladium jamaicense)*, phragmites (*Phragmites communis*), and cattail. On higher elevations and along canal banks, black willow and Chinese tallow have become established.

Unit 12A & B
Like Unit 11, Units 12 A & B remained unimpounded, in a somewhat natural state, and were used for cattle grazing and recreational hunting. The previous landowners utilized these activities as well as using fire in attempts to control unwanted vegetation while providing access and recreation activities. However, with removal of these activities much of the area has become dominated by undesirable vegetation, reduced water flow, decreased access and reduced value as wildlife habitat. In the 14-year history of the Refuge this area has been prescribed burned only once. Unique features of the area are pimple mounds, small mounds 30 – 40' round and one to two feet higher in elevation than the surrounding area. Shrubs growing on these pimple mounds are important to many grassland dependant birds, both migratory and non-migratory. Dominant vegetation within the unit is identical to Unit 11's with the addition of wax-myrtle on higher elevations and canal banks.

Unit 13A & B
The history of this unit is virtually identical to the history of Unit 12 just above.

Unit 14A & B
Units 14A & B are located in the margin or ecotone where historical coastal marshes met the more upland coastal prairies. During the 1950's approximately 1,400 acres of coastal prairie were leveed, pumped, and leveled for commercial rice production. These areas

were farmed on a 2-3 year rotation until the Refuge was established in 1988, after which farming acreage declined each year until it ceased altogether in 1995. After farming stopped, the plant community changed and came to be dominated by Vasey grass by 1999. The Refuge has been trying to improve water management capability in 14A & B to create quality moist soil units for reliable food production each fall. This has been achieved by creating more manageable units or fields.

REFUGE RELATED PROBLEMS

INTRODUCTION

Management and control of water flows, levels, and moist soil units are Cameron Prairie's greatest long-term challenges. There is a need to improve the Refuge's capability and flexibility to manage several of the impoundments and moist soil sites through better water control and vegetative control methods. Optimal moist soil management requires very precise methods to control water levels, such as pumps, wells, irrigation, and leveling. Several important impoundments now lack drawdown capabilities (that would be provided by pumping). They also lack sub-levees, fire, and soil disturbance at times to maintain preferred vegetation-water ratios, desirable foraging plants, and water levels.

UNDESIRABLE OR INVASIVE SPECIES

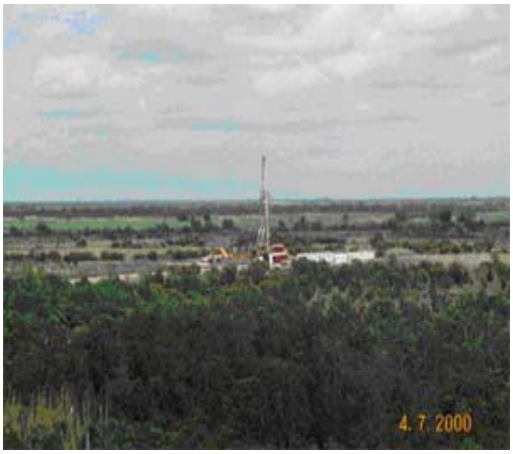
Hydrilla, water hyacinth, salvinia, and Eurasian milfoil are common nuisance exotic species that infest the Refuge. Water hyacinth and salvinia have clogged most of the Refuge canals to the point that pumping operations have become more costly to conduct. Other undesirable aquatic plants exclude native and more beneficial species from establishing in the areas in which they occur.

OIL AND GAS ACTIVITIES

General Information

Cameron Prairie does not hold the mineral rights for any of the acreage in its trust. Historically, a total of 19 wells have been dug on the land comprising Cameron Prairie National Wildlife Refuge, with 6 of these occurring since the Refuge was established. All have been plugged. The earliest known well dug was in 1953. Numerous seismic surveys have been conducted on the Refuge. The latest seismic activity occurred in 1996 on a total of 6,019 acres. Existing oil and gas infrastructure consists of three active underground transmission pipelines crossing the Refuge. These lines do not service producing wells on the Refuge, but move product through it.

Figure 22. Oil and gas test well



Mike Hoff

Owners of the mineral rights infrequently request access to their oil and gas exploration rights. As recently as 2000, the Refuge permitted an exploratory well in Unit 9 (Figure 22). Nothing was found and the drilling activity required significant oversight and

involvement by Refuge personnel to ensure proper cleanup and disposal of hazardous materials.

As the need for oil and gas increases, the Refuge will likely find itself with additional oil and gas related activities including wells, storage facilities, and pipelines. Additional coordination between oil companies and Refuge maintenance staff is required when actively managing the units containing these pipelines. Acquisition deeds stipulated that oil and gas operations were not to interfere with the purpose of the Refuge, but ultimately stated that the Refuge could not prevent the sub-surface owner from exercising their rights to access and develop their minerals. A mutually agreed upon Special Use Permit is issued for all oil and gas operations to communicate Service expectations and environmental concerns to all operating companies.

In accordance with current U. S. Fish and Wildlife Service policy which is derived from a July 17, 1986, Department of the Interior Solicitors Office Opinion and Louisiana State mineral rights law, owners of sub-surface oil and gas mineral rights must be granted a reasonable and necessary means of extraction and production.

In more explicit terms the Solicitor's opinion states:

The United States has a number of rights as a surface owner of refuge lands in Louisiana:

1. It may request the mineral owner to alter its proposed operation to accommodate existing and planned uses of the refuge, provided that the burden on the mineral owner is not unreasonable.

2. It may insist that the mineral owner use only the minimum amount of land that is required to carry out the operations.

3. The necessary operations that are performed on the refuge must be carried out in a manner which is least injurious to refuge resources.

4. Upon conclusion of each separable phase of operation the mineral owner must restore the surface to its original condition, insofar as is practicable. This will include filling pits no longer required, leveling land, cleaning up spilled oil and salt water, reseeding, and repair or replacement of damaged improvements.

5. Access roads damaged by the mineral operator must be put in a condition for use by the United States, although they need not be completely regraded if damage is recurring and unavoidable.

The United States may not:

1. Charge a mineral operator for excavation of dirt on the lease where the dirt is required in order to carry out the operation.
2. Charge for destruction of timber unless such right was reserved by the United States "grantor".

3. Interfere with the reasonable and necessary operations of the mineral owner.

Mitigation

The Refuge initiated a 250-acre marsh restoration project in Unit 2 with mitigation funds from oil and gas activities. The goal of this project was to restore the southern half of Unit 2A to a state that mimicked the marsh conditions present when the Refuge was first acquired. Lack of soil manipulation had converted this unit from Brasenia flats to undesirable plants not attractive to waterfowl. Other oil and gas mitigation funds were used to acquire vegetation maps and a computer and software for geographic information databases which aid in monitoring and inventory of Refuge habitat.

Contamination

Historically, wells were drilled using open, earthen pits for mud circulation and storage during drilling operations. The drilling mud was oil based and the cuttings that were removed from down hole have been known to contain heavy metals, naturally occurring radioactive material (NORM), and other forms of contamination. These open earthen pits were closed or capped, but remain on the Refuge. Information exists on the locations of these closed pits, and plans for testing are being considered to try and detect if any leeching or other residual impacts have occurred.

Transmission Pipeline Right-of-Ways

Right-of-ways were inherited for transmission lines that traverse the Refuge for the purpose of transporting oil, natural gas, synthetic liquid or gaseous fuels, or any refined petroleum based product. Transmission lines are usually large in diameter and transport product to or from large processing plants. These pipelines do not service mineral production from sub-surface minerals, but require a corridor of refuge land for transportation. In contrast, flowlines are usually the smallest in diameter and transport raw product from individual wells, from sub-surface mineral production, through the production separation process. Gathering lines, similar to flowlines, usually “gather” the production from multiple wells and transport it to production facilities. Permits for right-of-ways are not issued for flowlines and gathering lines.

Existing oil and gas transmission lines and their associated right-of-ways on Southwest Louisiana National Wildlife Refuges that have been in place for decades have become manageable over the years. Their long-term effects on the environment, which have been identified as creating pathways for saltwater intrusion into freshwater marshes, are being indirectly addressed through numerous wetlands management programs and laws such as the Louisiana Coastal Act, the Coastal Louisiana Wetlands Planning Protection and Restoration Act, the North American Wetlands Conservation Act and many local government and private watershed initiatives such as the Cameron Creole Watershed Management Plan. These laws and initiatives have led to the development of significant wetland restoration projects which have mitigated the effects of some negative impacts associated with oil and gas transmission lines and associated right-of-ways.

Future Management

Existing oil and gas transmission lines on approved U.S. Fish and Wildlife Service right-of-ways currently within a National Wildlife Refuge will be managed as per U.S. Fish and Wildlife Service Policy 603 FW 2 in general, and explicitly under section 2.11D which states:

Existing right-of-ways: We will not make a compatibility determination and will deny any request for maintenance of an existing right-of-way that will affect a unit of the National Wildlife Refuge System unless (1) the design adopts appropriate measures to avoid resource impacts and includes provisions to ensure no net loss of habitat quantity and quality; (2) restored or replacement areas identified in the design are afforded permanent protection as part of the national wildlife refuge or wetland management district affected by the maintenance; and (3) all restoration work is completed by the applicant prior to any title transfer or recording of the easement, if applicable. Maintenance of an existing right-of way includes minor expansion or minor realignment to meet safety standards. Examples of minor expansion or minor realignment include: expand the width of a road shoulder to reduce the angle of the slope; expand the area for viewing on-coming traffic at an intersection; and realigning a road to reduce the amount of curve.

New construction for oil and gas transmission line right-of-ways will not be permitted because they can significantly contribute to further land loss on coastal Louisiana national wildlife refuges. Canals built for the construction and repair of oil and gas transmission lines allow saltwater to penetrate further inland, particularly during droughts and storms and can have severe effects on wetlands (Wang 1987). This is evident for the oil and gas transmission line right-of-ways which were established in accordance with the Federal Department of Transportation and Louisiana Department of Transportation regulations already established on Sabine National Wildlife Refuge. Oil and gas transmission lines constructed since the 1940's are still readily apparent. Compaction and displacement of hydric soils during oil and gas transmission lines repair or construction reduces water exchange and can result in increased waterlogging and plant mortality (Swenson and Turner 1987). Excavation necessary for oil and gas transmission line construction causes significant hydrological changes. Exposing hydric soil to oxygen changes the natural ecological processes, including chemical transformations, sediment transport, vegetation health, and migration of organisms. Furthermore, by altering salinity gradients and patterns of water flow, the natural process by which coastal marshes are replenished and protected cannot occur (U.S. Army Corps of Engineers 2004).

Restoration of coastal marsh is a priority on national wildlife refuges in the Louisiana coastal zone. Approximately $10 million from various funding sources has been spent on refuges within the Southwest Louisiana National Wildlife Refuge Complex trying to restore marsh. Extensive changes and alterations due to new pipeline right-of-ways could negatively affect restoration project predictability and life span. The stability created through these restoration projects could be jeopardized when major hydrologic changes occurred due to new pipeline construction. Therefore, managing existing pipelines and right-of-ways in accordance with current Service Policy, and state and Federal law is permissible under current conditions. Any expansion beyond the current conditions would be an inappropriate use considering the current status of Louisiana's coastal wetlands and the Fish and Wildlife Service's role in managing and protecting this state's coastal resource.

CATTLE

Cattle occasionally enter the Refuge from adjacent private properties. Wildlife disturbance may occur when access is granted to recover cattle. Moreover, a major highway (SH 27) bisects the Refuge. Trespassing cattle may wander near or on the

highway, posing safety concerns to motorists and visitors using Refuge resources and facilities.

ADJACENT PROPERTY ACCESS

Access to adjacent landowners' property is only possible by going through the Refuge. This area, though technically not an inholding of the Refuge, acts as one because other than the Refuge access, the property is surrounded by water. People using this road through the Refuge can greatly disturb migratory birds and local wildlife.

REFUGE CONSERVATION PRIORITIES

During the week of March 25 - 29, 2002, a diverse team of about 25 biologists, ecologists, planners, and other natural resources specialists from the Service, university, state, and non-governmental organizations participated in a Biological Review of Cameron Prairie's wildlife and habitat. The review was multi-purpose in nature, being driven largely by the Refuge System Improvement Act of 1997 requiring each refuge to prepare a CCP, giving priority to: wildlife first; original purpose of Refuge establishment; mission of the Refuge System; biological integrity; and the six priority public uses. In addition, the review enabled a more holistic look at how the Refuge could fit into accomplishing numerous system-wide and landscape conservation needs.

The team presented a list of their recommendations and identified the Refuge's top four biological needs.

TOP BIOLOGICAL RECOMMENDATIONS

1. The Refuge needs to place highest priority on more intensive and systematic monitoring, recording, and refining of management actions (i.e. adaptive management). This can be accomplished by placing additional emphasis on inventorying and recording the current habitat conditions and results of passive and active management actions.

2. Second in priority is the need to improve the Refuge's capability and flexibility to manage several of the impoundments and moist soil sites via better water control and vegetative control methods.

   Moist soil management will require very precise methods to control water levels (pumps, wells, irrigation, leveling probably required). This may require new wells, special pumps, and a 4-wheel drive tractor.

   Several key impoundments need to have drawdown capabilities (pumping) and at times sub-levees or fire or soil disturbance to maintain preferred vegetation-water ratios, desirable foraging plants, and water levels. This will also require invasive vegetation control in several drainage canals. New water control structures, better two-way pumps, etc., will be required.

3. Third in priority is the need to provide and ensure a rotational mix of habitat types on the 9,621-acre Gibbstown portion of the Refuge. This will require (1) early-water habitat types, (2) shallow mud flats for shorebirds and (3) fall/winter habitats/water depths for waterfowl and other water birds. The Refuge should

work toward a mosaic of habitat types that are beneficial to game and non-game avian species.

4. Fourth of the top biological needs is to ensure that public uses and other human activities do not impact the sanctuary requirements of migratory birds (foraging, roosting, nesting, pairing, rookeries, etc.) to a point where daily disturbance is overbearing. Additionally, public uses should not increase to the point where Refuge staff's time cannot be adequately devoted to a "Wildlife First" priority regarding management, inventory, and monitoring needs of the Refuge.

III. Plan Development

OVERVIEW

The process for developing this plan first began in March of 2002 with a biological review conducted by representatives of the Service and conservation partners from McNeese State University in nearby Lake Charles, Louisiana Department of Wildlife and Fisheries, and the Gulf Coast Joint Venture Office of the North American Waterfowl Management Plan. Over 25 biologists spent a week conducting a critical review of the Refuge's existing biological programs and developing a set of recommendations for future desired conditions. A comprehensive public use review was held in June of 2002 with ten reviewers representing the Service, the Creole Nature Trail, and Louisiana Department of Wildlife and Fisheries. Their recommendations helped determine the proposed alternatives, goals, objectives, and strategies found in this document.

A series of scoping meetings were held to obtain input from the general public. Meetings were held in various communities in Cameron Parish in 2002 as follows: October 1, Carlyss; October 8, Grand Lake; October 10, Cameron; October 16, Hackberry; and October 17, Johnson Bayou. Approximately 25 people in total attended these meetings. On January 16, and February 4, 2003, public open house meetings were held in Lake Charles with a total of 33 people attending. Comment forms were placed in the Refuge Visitor Center and invitations to comment or provide input were issued at various special events. Various issues emerged from these meetings and were considered during the preparation of the plan.

ISSUES

Issues identified during public scoping meetings were primarily requests to expand existing hunting programs on the Refuge. Written comments on the Refuge were received from four people.

Comments from the public included:

- Extend the deer hunting season on the Refuge to allow hunting during the duck season split (a planned interruption during the 60-day hunting season to extend the season to allow hunting when waterfowl are still abundant) and the first two weeks of January.
- Open non-waterfowl management areas of the Refuge for additional bowhunting opportunities.
- Maintain and mow roads and levees to improve hunter access.
- Expend funds on wildlife rather than on buildings.

Comments and recommendations expressed during the biological and public use reviews are listed below. Of concern to the biological and public use review teams were maintenance and upkeep of water delivery systems, the need for improved survey and monitoring, control of undesirable species, use of fire for habitat improvement, establishing native habitats, aging infrastructure, declining habitat conditions, providing

additional public use opportunities, and finding solutions to conflicts between the needs of people and the needs of wildlife.

HABITAT

- Infrastructure for water management is deteriorated.
- Expansion of native coastal prairie is needed.
- There are a lack of baseline surveys and studies on the Refuge.
- Data collecting and archiving of management actions and results are needed.
- Fire management needs to be utilized.
- Control of exotics and invasive species such as Chinese tallow trees and maidencane needs to be developed.
- Aging equipment, costly repairs, and lack of equipment deter improvements to habitat.
- Obtain or replace pumps to better manage water levels.

WILDLIFE

- Waterfowl numbers are declining due to deteriorating habitat conditions.
- Exotic nutria may impact, damage, or alter habitat conditions.
- There is no management emphasis on certain wildlife species, including fish, reptiles, and amphibians.

PEOPLE

- Determine if there is a need for increased fishing opportunities.
- Monitor and control public use to minimize disturbance to wintering waterfowl.
- The lack of staff to manage Refuge biological programs is an issue that would be improved if two biological science technicians were hired.
- Since most of the Refuge boundary has not been surveyed, it is difficult to enforce game violations and protect wildlife and habitat near Refuge boundaries.
- The public access road behind the Visitor Center is in disrepair, floods during high water, is unsafe, and needs to be improved.
- The Refuge provides access for adjacent private landowners and their guests with no other access to their land. Acquisition of this property would result in fewer disturbances to wildlife and eliminate law enforcement problems.

- The Refuge should enroll in the Recreation Fee Program for hunting programs.
- Develop Visitor Services, Interpretive, and Volunteer Plans.
- Develop and implement an environmental education program that complements the one at Sabine National Wildlife Refuge.
- Increase fishing opportunities especially for youth.
- Upgrade kiosks, video, and other interpretive exhibits.
- Extend Boardwalk all the way around the building to connect to the back observation deck.
- Staff should seek opportunities to be more involved in the community.
- Hire a law enforcement officer and an education specialist.

In addition to the above concerns identified by the public and the biological and public use reviews, the Service identified the protection and preservation of its cultural resources and the Refuge's potential for wilderness designation as important issues.

IV. Management Direction

INTRODUCTION

On national wildlife refuges, the Service manages fish and wildlife habitats by taking into account the needs of all resources in decision-making. First and foremost, however, fish and wildlife conservation assumes priority in refuge management. The National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the National Wildlife Refuge System Improvement Act of 1997, clearly establishes that wildlife conservation for the benefit of present and future generations of Americans is the singular National Wildlife Refuge System mission. *House Report 105-106* accompanying the National Wildlife Refuge System Improvement Act of 1997 states "…the fundamental mission of our System is wildlife conservation: wildlife and wildlife conservation must come first."

However, the Improvement Act also recognizes that wildlife-dependent recreational uses involving hunting, fishing, wildlife observation and photography, and environmental education and interpretation, when determined to be compatible, are legitimate and appropriate public uses of the Refuge System and that these compatible wildlife-dependent recreational uses are the priority general public uses of the Refuge System.

Another requirement of the Improvement Act is for the Service to maintain the ecological health, diversity, and integrity of refuges. National wildlife refuges in the Chenier Plain of the Gulf Coast include both brackish and freshwater marshes, in addition to coastal prairies, agricultural areas and some woodlands and swamps. Valuable coastal marshes in the region have declined tremendously in quantity and quality over the past century, due to both human and natural causes. To offset these historic and continuing habitat losses within the broader coastal ecosystem, Cameron Prairie National Wildlife Refuge and other public lands provide a biological "safety-net" for migratory waterfowl and non-game birds, threatened and endangered species, and resident species.

VISION

Cameron Prairie National Wildlife Refuge will become a haven of prime habitat for the benefit of migratory birds and other wildlife. Visitors to the Refuge will enjoy a quality outdoor experience which will result in an enhanced appreciation of wildlife and their habitats. The Refuge will be a showcase of excellent land management stewardship, demonstrating a balance between intensive wildlife management strategies and safeguarding the Refuge's ecological integrity, for the conservation and preservation of wildlife and their habitats. The Refuge will serve as the Headquarters for the Southwest Louisiana National Wildlife Refuge Complex which will support the needs, resources, and staff of Cameron Prairie, Lacassine, and Sabine National Wildlife Refuges.

GOALS, OBJECTIVES, AND STRATEGIES

The goals, objectives, and strategies addressed below are the Service's response to the issues, concerns, and needs expressed by the planning team, Refuge staff, and public. These goals, objectives, and strategies reflect the Service's commitment to achieve the mandates of the National Wildlife Refuge System Improvement Act of 1997, the mission of the National Wildlife Refuge System, the North American Waterfowl Management Plan and other special purpose management plans, and the purpose and vision for Cameron Prairie National Wildlife Refuge.

In addition, implementation of the goals, objectives, and strategies will help the Refuge maintain and restore, where appropriate, the biological integrity, diversity, and environmental health of the Refuge. The Refuge will also contribute to the biological integrity, diversity, and environmental health at larger landscape scales (regional, ecosystem, and national levels). Examples of the Refuge's commitment to the principles of biological integrity, diversity, and environmental health are restoration of native prairie, mimicking hydrological processes for habitat restoration, and providing habitat for endemic species such as mottled ducks.

Depending upon the availability of funds and staff, the Refuge staff intends to accomplish these goals, objectives, and strategies over the next 15 years.

GOAL A: HABITAT — Preserve, restore, and enhance diverse habitats to provide favorable conditions for migratory and native wildlife species.

Objective A—1: Moist Soil Units — Establish adaptive management capabilities on Units 5, 6, 7, 9, 10, and 14A and B (2,586 acres) to provide shallow water and emergent wetland plant species for waterfowl, shorebirds, and wading birds.

Discussion: When farming operations halted at Cameron Prairie in the 1980s, many of these units were leased for a commercial duck hunting facility. Dewatering of the area on a yearly basis ceased. When the Refuge was purchased, four corner grass, maidencane, and other vegetation with low wildlife value dominated many areas. Even with replacement of old pumps and engines, deteriorated canals and levees made water management difficult. Funding levels were not sufficient to operate pumps adequately to maintain the area in an early vegetation stage; thus these units began to close in through vegetation succession.

Strategy (a) — Moist soil units will be maintained in early successional native plant communities for the production of annual seed crops to encourage and improve use by wading birds, shorebirds, and several waterfowl groups. Management actions will include drawdown timing and duration, fire, discing, soil disturbance, mowing, herbicide application, and water buffaloing.

Strategy (b) — Provide moist soil habitat and mudflats from mid-August through October for early migrating waterfowl and shorebirds.

Strategy (c) — Provide moist soil habitat from November through March for wintering waterfowl.

Strategy (d) — Upgrade pumps and pumping capacity of the Refuge and keep canals relatively free of excessive vegetation to improve water movement capability.

Strategy (e) — Rehabilitate existing levees and canal systems to help keep canals relatively free of excessive vegetation.

Strategy (f) — Plan, monitor, document, and archive plant and wildlife responses to moist-soil management actions utilizing standardized techniques and refuge-wide sampling techniques.

Strategy (g) — Document water movement patterns on the Refuge.

Strategy (h) — Hire a mechanic to maintain and operate pumps.

Strategy (i) – The Refuge will consider implementation of cooperative rice farming as an alternative management option, particularly in years when budget constraints limit fuel purchases and operation of pumps, tractors, and other equipment.

Objective A—2: Impoundments — Actively manage impoundment Units 1, 2A, 2B, 2C, 3A, 3B, 4, and 8 (4,796 ± acres) to improve waterfowl food production.

Discussion: Drying and discing during years of farming operations caused the rich organic soils in the area to oxidize, eventually lowering the soil levels. When the commercial hunting facility was established, the areas were allowed to fill with approximately 18 - 36 inches of water, with deeper areas in old canals. Water shield and white water lily quickly became established, the former attracting numerous wintering waterfowl to the area.

However, with deterioration of canal systems through vegetation encroachment and lack of funds to operate pumps year round, the units began to close in through vegetation succession. Since the purchase of the Refuge in 1988, the quality of wintering waterfowl habitat in these areas has declined due to the expansion of emergent vegetation, primarily California bulrush and maidencane. When the Refuge was purchased, the water to emergent vegetation ratio in these units was approximately 75% water : 25% emergent vegetation. By 2000, this ratio had almost reversed itself, to roughly 35% water : 65% emergent vegetation. The Refuge currently has partial control capabilities through pumping to dewater the area, but water can no longer be pumped into the units.

Strategy (a) — On a rotational basis, utilize drawdowns, pumping, canals, levees, deep-water flooding, fire and sub-dividing of impoundments to maintain a complex of more native-like aquatic plants (submerged or rooted with floating leaves) preferred by diving and dabbling ducks.

Strategy (b) — Improve water management capabilities by purchasing and strategically placing 2-3 pumps and other water control structures to allow drawdowns to help maintain these areas for desirable aquatics and better ratio of open water to vegetation composition.

Strategy (c) — Improve levees and drainage capabilities.

Strategy (d) — Collect and archive baseline water quality data for approximately three continuous years for the major inflow sources of water supplying the Refuge. Ensure water gauges exist to record water levels in the units.

Strategy (e) — Establish sampling schemes, (transects, sampling points, etc.) to monitor, record, and archive current plant conditions and to document plant community responses to treatments. Record management treatments (drawdowns, water levels, timing, mechanical activities, climatic conditions, etc.) in such a way that they can be repeated and evaluated.

Objective A—3: Unimpounded Marsh – Increase the species diversity and decrease the vegetation density in Units 11A & B and 13A & B through the appropriate use of fire to improve wildlife habitat for mottled ducks and grassland dependent species as well as promoting coastal prairie habitat.

Discussion: Historically, Units 11A & B and Units 13A & B remained in an unimpounded natural state when the majority of Refuge acreage was converted to agriculture under private ownership. These areas were used for cattle grazing and recreational hunting. The removal of these activities under Service ownership has caused many of the ponds and canals to become densely vegetated, thereby reducing water flow, access, and wildlife habitat value. Through the use of fire, plant diversity should increase and improve wildlife habitat.

Strategy (a) — Utilize fire to improve and maintain wildlife habitat value (especially mottled duck nesting habitat) and restore the hydrology (improved water flows) of the units.

Strategy (b) — Update the Refuge's Fire Management Plan to include management of Units 11A & B and 13A & B.

Strategy (c) – Monitor use of Units 11A & B and 13A & B by birds, mammals, and reptiles.

Objective A—4: Native Prairie — Preserve, enhance, and restore up to 400 acres of native prairie grasses in Units 12A and B and portions of 14A and B.

Discussion: Cameron Prairie's native moist prairies provide habitat for resting mottled ducks, resident songbirds, northern bobwhites, mourning doves, wintering grassland birds, and white-tailed deer. By preserving, enhancing and restoring this habitat, the Refuge will contribute to one of the priorities of the Texas Gulf Coast Ecosystem, which is to restore, conserve, enhance and maintain approximately 500,000 acres of the historic Gulf Coast prairies in Louisiana, Texas, and Mexico to ensure the continued existence of native flora and fauna.

Strategy (a) — Utilize various techniques such as fire, mechanical control, and seed planting to improve and maintain native prairie communities.

Strategy (b) — Survey, inventory, monitor, and archive grassland bird populations using area searches and transect protocols focusing on wintering species.

Strategy (c) — Improve prairie grasses on 12 acres in Unit 14B to be used as an outdoor classroom for environmental education groups and as a seed production source for other prairie restoration areas.

Objective A—5: Levees — Ensure some vegetated levees on the Refuge provide suitable foraging habitat for forest dwelling land birds on their northward and southward migratory journeys.

Discussion: Because of the higher elevation, Cameron Prairie's levees are the only sites on the Refuge suitable for the growth of woody vegetation (shrubs and small trees) required by migrating forest-dwelling land birds. This gives them an important habitat to manage for migratory birds.

Strategy (a) — Promote fleshy-fruit producing shrubby conditions through appropriate use of fire and restoration techniques.

Strategy (b) — Monitor bird population responses to habitat restoration and manipulation on vegetated levees using a standardized migration monitoring protocol for tracking timing and extent of transient land bird use of the Refuge.

Objective A—6: Undesirable Plants and Animals — Reduce to lowest practical level all undesirable plants and animals on the Refuge to minimize negative effects on native flora and fauna.

Discussion: Also known as exotic, invasive, or non-native species, several plant species pose management problems at Cameron Prairie, as they do at many national wildlife refuges. In general, invasive species are troublesome because they displace natural vegetation on which native animal species have come to depend. At Cameron Prairie, undesirable species include the Chinese tallow tree, water hyacinth, hydrilla, Eurasian milfoil, maidencane, cattail, and *common salvinia.*

The Chinese tallow tree, a non-native small to medium-sized tree, has been reduced in occurrence on the Refuge through moist soil management, but remains a problem on several levees around moist soil units. The tallow typically grows on elevated and undisturbed ground along fencerows and levees. The best control method for this species on the Refuge has been herbicide application on the levees and mechanical manipulation of the fields. However, this tree is very resilient, and tends to re-sprout shortly after the herbicide degrades.

Floating aquatics, water hyacinth and common salvinia have clogged the majority of Refuge canals, delaying water movement to the point that pumping operations have become more expensive to conduct. The Refuge currently uses herbicides to control water hyacinth. Submerged aquatics, hydrilla and Eurasian milfoil inhibit native and more beneficial species from establishing.

It is also necessary to monitor and, in some situations, to control populations of selected wildlife species, such as nutria (exotic) to protect and benefit native habitats and other wildlife, maintain productive wildlife populations, and provide for the safety of visitors. The nutria is an exotic herbivore that can cause significant damage to marsh habitats when populations become elevated, an event referred to as "eat outs." Nutria are such a problem in some areas that the state has begun to administer a new program that pays

a $4.00 bounty for each nutria killed. At the present time, nutria populations on the Refuge and in the general area are relatively low, causing minimal damage to habitats with a minimum of population control. Nutria have high reproductive potential and the population can expand rapidly.

Strategy (a) — Develop an Undesirable Plants and Animals step-down Management Plan by 2010.

Strategy (b) — Explore and study effective methods to control and reduce maidencane, tallow trees, water hyacinth, etc.

Strategy (c) — Utilize specialized ditching equipment, drawdowns, discing, fire, approved chemical spraying, and possibly mechanical harvesting to control plant infestations that clog drainage canals.

Strategy (d) — Update the Refuge's Fire Management Plan to include management of undesirable and invasive species.

Strategy (e) — Inventory tallow tree infestations and eliminate problems by using chemical injections, deep flooding, and cutting or grinding.

Strategy (f) — Survey and monitor nutria and other potentially injurious species (coyote, etc.) to determine if population numbers need further control using various techniques.

Strategy (g) — Document habitat impacts by nutria.

Strategy (h) — Develop and write a Pesticide Use and Disposal Plan by 2010.

Objective A—7: Fire Management – Use fire as a multi-purpose management tool to reduce hazardous fuels and promote habitat diversity. Utilize prescribed fire on approximately 2,500 – 3,000 acres per year.

Strategy (a) — Develop a Fire Management Plan by 2005**.**

Strategy (b) — Develop a Fire Effects Monitoring plan by 2005.

Strategy (c) — Reduce hazardous fuels and the potential for uncontrollable wildfires using prescribed fire, mechanical or chemical treatments to protect life, property, and natural resources on the Refuge.

Strategy (d) — Consult with the Regional Fire Ecologist and the Refuge's Fire Management Officer for fire related management.

Objective A—8: Habitat Management Plan — By 2010, prepare a step-down Habitat Management Plan for all units to provide specific guidelines for management actions.

Strategy (a) — Ensure the major emphasis of this plan adequately addresses water management.

GOAL B: WILDLIFE — **Promote and protect native and migratory wildlife populations on the Refuge to contribute to the purpose for which it was established and to the mission of the National Wildlife Refuge System.**

Objective B—1: Waterfowl — Provide wintering habitat for ducks and geese to contribute to the objectives (historic 1970's population levels) of the North American Waterfowl Management Plan's Gulf Coast Joint Venture, Chenier Plain Initiative (4,500,000 ducks and 526,000 geese respectively).

Discussion: Coastal Louisiana is one of the most important waterfowl wintering areas in North America. Cameron Prairie's freshwater marshes, moist soil management units, and impoundments can support a diversity of plants favorable for waterfowl as well as provide feeding and resting sites to many species of ducks and geese.

Strategy (a) — Provide structures and water delivery sufficient to manage wetlands and provide habitat for early migrating ducks and wintering waterfowl.

Strategy (b) — Seek funding to replace structures and maintain levees critical to protecting the hydrological integrity of the Refuge.

Strategy (c) — Continue to coordinate with partners (Migratory Bird Office, Louisiana Department of Wildlife and Fisheries) in the midwinter waterfowl surveys and ground counts.

Strategy (d) — Provide the highest quality wintering habitat for migratory waterfowl to ensure survival and their return to the breeding grounds in good condition.

Strategy (e) — Update the Refuge's Fire Management Plan to use fire as a management tool to help provide high quality wintering waterfowl habitat.

Strategy (f) — Encourage and support research on the Refuge.

Strategy (g) — Promote education and public awareness of the importance of the Refuge, its habitat, and sanctuary value to waterfowl.

Strategy (h) — The Complex Biologist will serve as Co-Chairman of the Gulf Coast Joint Venture, Chenier Plain Initiative Working Group.

Objective B—2: Mottled Ducks — Provide nesting, brood rearing, and molting habitat for mottled duck populations to contribute to the goals and objectives of the North American Waterfowl Management Plan's Gulf Coast Joint Venture, Chenier Plain Initiative.

Discussion: Mottled ducks are a resident species with a range limited to the western Gulf Coast and Florida. The Louisiana Chenier Plain population estimate is about 170,000 birds, making this region one of the most important in the world for this species. Gulf Coast habitats are entirely responsible for the well-being of this species. As such, special consideration is warranted to ensure that their unique needs are met.

Mottled ducks must meet all their life cycle requirements from their year-round home of Gulf Coast marshes and associated agricultural habitats. These habitat requirements

vary seasonally. Cameron Prairie provides some of the rare freshwater habitats preferred for nesting and brood rearing.

Analysis of banding and recovery data obtained as part of an ongoing 10-year banding effort provides information on range-wide movements and allows monitoring of regional differences and trends in population parameters including annual survival rates.

Strategy (a) — Control Chinese tallow and other severe woody vegetation encroachment using fire and other management tools on areas suitable for mottled duck nesting.

Strategy (b) — Provide water for brood rearing during March-August during years when units are not being managed for waterfowl food production in one to two of the following units: 1, 2A, 2B, 3A, 4, and 8. Utilize nocturnal surveys to locate preferred brood rearing pools or impoundments and maintain them to provide late spring and summer brood habitat. Limit disturbance on pools and levees.

Strategy (c) — Provide protective habitat for mottled ducks during July-August, in one of the following units: 1, 2A, 2B, 3A, 4, and 8. Limit human disturbance in this habitat.

Strategy (d) — Participate in multi-agency efforts to capture and band pre-season mottled ducks consistent with coordinated banding objectives.

Strategy (e) — Monitor population trends through fall and winter aerial surveys as well as other scientifically designed surveys as feasible.

Strategy (f) — Support mottled duck research that seeks to identify limiting factors.

Strategy (g) — Provide ample breeding and post-breeding habitat for resident waterfowl such as mottled ducks and whistling ducks (Fulvous and black-bellied).

Objective B—3: Geese — Annually provide 200-300 acres of green browse for goose usage. Additionally provide one to three grit sites for geese.

Discussion: Geese ingest sand and pebbles to supply their gizzards with a mechanical aid for the purpose of breaking down hard foods, such as seeds. This sand and pebble mixture is termed as grit, and geese must constantly resupply the grit material within their gizzard. The soil in Louisiana contains little grit, and therefore, supplying artificial grit sites are needed to benefit geese. Recent scientific research documented snow geese traveling from Sweet Lake and Thornwell, Louisiana, to use these sites; these documented distances traveled by geese to obtain grit have been up to 36 miles. Cameron Prairie maintains grit sites primarily for use by snow and Ross's geese, but other waterfowl and bird species benefit from the artificial supply of grit.

Strategy (a) — Focus browse areas in "open" sites most conducive to goose use (geese prefer larger open sites)—some areas most likely with potential are: Units 14A, 14B, 11B, 5 or 6.

Strategy (b) — Maintain grit sites of high quality grit located away from hunted areas.

Strategy (c) – Utilize fire and discing to provide green browse habitat for goose use.

Objective B—4: Shorebirds — Provide seasonal foraging habitat for migratory shorebirds to contribute to the goals of the United States Shorebird Conservation Plan.

Discussion: The northern Gulf coast provides critical habitat for migrating shorebirds. Shallow water mudflats provide much of the needed food resources for these shorebirds. Northbound migrants are attracted to the Refuge in the spring because field preparation results in desirable habitat. The southbound migration generally starts in early July, but does not peak until August and September. Unfortunately, because of the hydrologic modifications and a typical lack of rainfall in late summer and early fall, it is during this period of migration that mudflat habitat is at its least availability. Moist-soil management at Cameron Prairie holds promise for providing excellent habitat for migrating shorebirds. If 200-600 acres of moist soil fields are used to create shallow flooded mudflat habitat in late summer and early fall, the needs of migratory shorebirds can be met until greater amounts of this habitat are created on private lands throughout the region; private lands are flooded for crawfish production and waterfowl hunting.

Strategy (a) — Conduct shorebird monitoring surveys using the International Shorebird Survey protocol along levee roads bordering impoundments (at least 6 sites) to track occurrence, relative abundance, and response to management regimes.

Strategy (b) — Maintain shallow (i.e., <6”) mudflats from late summer through spring as a component of a mosaic of habitats available throughout the Refuge.

Strategy (c) — Management units should be flooded July-August prior to migration and allow sufficient invertebrate accumulation.

Objective B—5: Colonial Waterbirds — Provide habitat for colonial waterbirds to contribute to the goals and objectives of the North American Waterbird Conservation Plan.

Discussion: Cameron Prairie provides excellent habitat for breeding and nesting waterbirds (indicated by six active rookeries). In addition, shallow water areas found on the Refuge during late summer and fall provide critical foraging opportunities for long-legged wading birds such as herons, egrets, ibis, and roseate spoonbills.

Strategy (a) — Survey colonies of tree- and ground-nesting waterbirds once a month between March and June to determine the locations and species composition of each rookery, determine potential disturbance factors, and minimize problems as much as possible.

Strategy (b) — Maintain at least six existing impoundments to provide critical foraging habitat for late summer and fall migrant waterbirds, with an emphasis on priority species.

Strategy (c) — Identify and protect feeding areas from disturbance for late summer and fall migrant waterbirds.

Objective B—6: Non-game Migratory Landbirds — Improve habitat values of marshes, impoundment levees, and grasslands for non-game migratory landbirds to contribute to the Partners in Flight (PIF) objectives as outlined in the Coastal Prairies (Physiographic area #06) PIF Bird Conservation Plan.

Discussion: Cameron Prairie furnishes important habitat for a variety of migratory land birds, including marsh birds, transient songbirds, and grassland birds. Management of marshes, impoundment levees, and grasslands, particularly through coastal prairie restoration, will improve habitat values for non-game migratory landbirds and contribute to the Partners in Flight (PIF) objectives as outlined in the Coastal Prairies (Physiographic area #06) PIF Bird Conservation Plan. Although forest breeding birds are often the focus of PIF Bird Conservation Plans, Cameron Prairie does not have large forested blocks of habitat and consequently should not focus on attempts to manage for these habitats or the related priority species. In general, the Refuge will attempt to maintain a diversity of marsh plant and grassland communities and a predominance of fleshy fruit shrubs and preferred trees on spoil banks, which includes the use of moist-soil management.

Marsh bird species are mostly found at the Refuge during winter migration, but a few species breed in small numbers during other time periods. Included in this broad species group are "secretive marsh birds" (rails, bitterns, grebes, moorhens, and coots), wrens and sparrows (principally sedge and marsh wrens as well as Nelson's sharp-tailed sparrows), and raptors (most notably northern harrier and short-eared owl) and the loggerhead shrike. No specific population objectives have been established for land bird species at this time within the coastal prairies along the northern Gulf coast. The implementation of inventory, survey, and monitoring programs, however, would be valuable for tracking peak movements in and out of the Refuge and to document responses to habitat management.

Strategy (a) — Determine marsh bird use of impoundment habitats and responses to various water management regimes, with special emphasis on black and yellow rails and least bitterns.

Strategy (b) — Establish sampling locations most likely to support secretive marsh birds and survey throughout the year (seasonally) to determine distribution and abundance of black rails, king rails, yellow rails, and American and least bitterns.

Objective B—7: Grassland Birds — Maintain up to 400 acres of open grassland habitat consisting of grassy-herbaceous dominated ground conditions throughout the next 15 years to support priority grassland bird species.

Discussion: Although some grassland areas occur on the Refuge, an emphasis on grassland birds would mostly be restricted to coastal prairie restoration sites more often dominated by grasses and forbs. Species using more open environments are mostly found at the Refuge during migration and winter, but a few species may breed during summer in small numbers. Included in this broad species group are sparrows, principally LeConte's sparrow and dickcissel, and less commonly Henslow's sparrow. Also included in this group are raptors (most notably northern harrier and short-eared owl) and loggerhead shrike, Sprague's pipit, and sedge wren. No specific population objectives have been established for these species within the coastal prairies area along the north Gulf Coast. However, the implementation of a survey, inventory, and monitoring program would be valuable for tracking peak movements in and out of the Refuge and to document responses to habitat management.

Strategy (a) — Determine the location of existing coastal prairie sites within the Refuge and promote the maintenance and development of grassy-herbaceous groundcover using prescribed fire or other appropriate management tools.

Strategy (b) — Survey, inventory, and monitor grassland bird populations using area standardized searches and transect protocols focusing on wintering species of grassland birds.

Objective B—8: Alligators — Annually establish a minimum alligator population/nest density objective and harvest strategies in coordination with Louisiana Department of Wildlife and Fisheries.

Discussion: It is necessary to monitor and, in some situations, to control populations of selected wildlife species, such as nutria (exotic) and alligators (large predators), to protect and benefit native habitats and other wildlife, maintain productive wildlife populations, and provide for the safety of visitors.

American alligators are opportunistic carnivores and a top predator on the Refuge with virtually no enemies other than humans. Smaller alligators (less than 5 feet long) primarily feed on crustaceans, fish, and insects. Larger alligators feed on mammals (nutria and muskrat), birds, fish, reptiles, and crustaceans. In dense populations, alligators become cannibalistic.

Harvesting (regulated) has long proven to be an effective means of controlling certain wildlife species and should be maintained as a population control tool used on the Refuge. Because of the potential hazardous situation created by population control of alligators, it is recommended that commercial hunting (as opposed to sport harvest) be the preferred method of population control.

The Refuge should work with and consult the Louisiana Department of Wildlife and Fisheries (LDWF) to customize Refuge harvest strategies to help achieve statewide and Refuge target population levels (including desired age and sex composition of the alligator population).

Strategy (a) — Continue consulting with the LDWF to monitor and conduct more intensive aerial alligator nest surveys (about 15 percent of Refuge currently covered).

Strategy (b) — Consult with LDWF to develop a customized harvest strategy that will focus on achieving target population goals (including desired age/sex composition).

Strategy (c) —Monitor annual harvest of alligators and collect all data necessary to make sound biological decisions.

Strategy (d) — By 2010, revise the Alligator and Furbearer Harvest Plan.

Objective B—9: Fisheries — Identify and implement ways to improve fishery habitat in Unit 8 and other areas of the Refuge.

Strategy (a) — The Complex Fisheries Biologist and managers will consult with fishery biologists at the Service's Baton Rouge Fishery Resource Office and the Louisiana Department of Wildlife and Fisheries**.**

Strategy (b) —By 2015, update the Fishery Resources Management Plan. The plan should try to mesh needs of fish with other wildlife.

Strategy (c) - Improve habitat on 500 to 1,000 acres for the benefit of fisheries.

Strategy (d) – Construct or rehabilitate ring levees and a series of interior canals and raised berms to produce water bodies with depths of 4 feet or greater in at least 30 percent of the area and 6 – 7 feet deep in at least 5 – 10 percent of the area for fishery creation.

Strategy (e) – Ensure that canal depths (7 feet deep) and bottom widths (30 foot minimum) allow for improved water circulation, adequate refuge during summer droughts, and enhanced angler access.

Strategy (f) – With partners, periodically sample and maintain fish population data via netting, electrofishing, and angler surveys using proportional stock density (psd) as an index of sport fish population structure. If PSD calculations indicate a need, establish length or slot limits on largemouth bass.

Strategy (g) – Maintain ring levees and water control structures to prevent breaching and pool drainage.

Objective B—10: Inventory — Inventory and monitor wildlife responses and uses of Refuge habitats utilizing biologically sound, repeatable methods.

Discussion: Linked to the actions of inventorying and monitoring is the process of adaptive management to assess and modify management strategies to better achieve objectives. One definition of adaptive management is making the best possible decision with the available information, recognizing that one may need to revise decisions as new data and scientific information are gathered from inventory and monitoring actions. The effectiveness of habitat management actions to meet Refuge and landscape objectives can be best determined via monitoring and subsequent evaluation of results. Monitoring, inventory, evaluation and proper data recording and archiving followed by revisions to biological management actions are needed at Cameron Prairie. Methods and treatments, as well as protocols should be documented in the annual narrative, as well as the pertinent results.

Strategy (a) — Utilize scientific protocol and procedures (sampling design) to inventory wildlife responses and record data in a standardized format.
Strategy (b) — The Refuge should seek additional funds to perform basic wildlife surveying, inventorying and monitoring.

Strategy (c) — Explore opportunities with other Louisiana refuges to aerially survey all refuges during the same period – each refuge sharing in the contracted costs.

Strategy (d) — Explore possibility of a Service pilot biologist being paid for by all Louisiana refuges.

Strategy (e) — By 2009, develop and write a step-down plan for Population Management which will include a section on Inventory and Monitoring.

GOAL C: PEOPLE — Provide opportunities for safe, quality, compatible, wildlife-dependent public use and recreation, which includes hunting, fishing, environmental education, interpretation, wildlife observation, and photography.

Objective C—1: Public Use Management — Within the next 10 years, complete steps to develop the Refuge's infrastructure and operations to provide for quality, wildlife-dependent public use.

Discussion: As a relatively new Refuge, Cameron Prairie is still in the process of developing facilities and staff support for visitor use and wildlife-based recreation (Figure 23). There are certain specific and general actions that Cameron Prairie can take that will make it even more "visitor-friendly" than at present. However public use programs must be compatible with the purpose of the Refuge which ensures the existence of adequate foraging, molting, nesting, and roosting habitat for waterfowl.

Cameron Parish and southwest Louisiana have some of the most heavily hunted habitats in the United States. In order for waterfowl to meet life history needs associated with required body maintenance and caloric/energy needs, pairing activities, molting activities, roosting, and nesting requirements, disturbance should be low for this "small" 9,621-acre Refuge. These very critical acres of Refuge lands near Gibbstown can play an important role in providing several area sanctuary needs. Some low degree of disturbance can be tolerated, but too much avian movement and frequent flying caused by human disturbance can have immediate direct and indirect negative impacts.

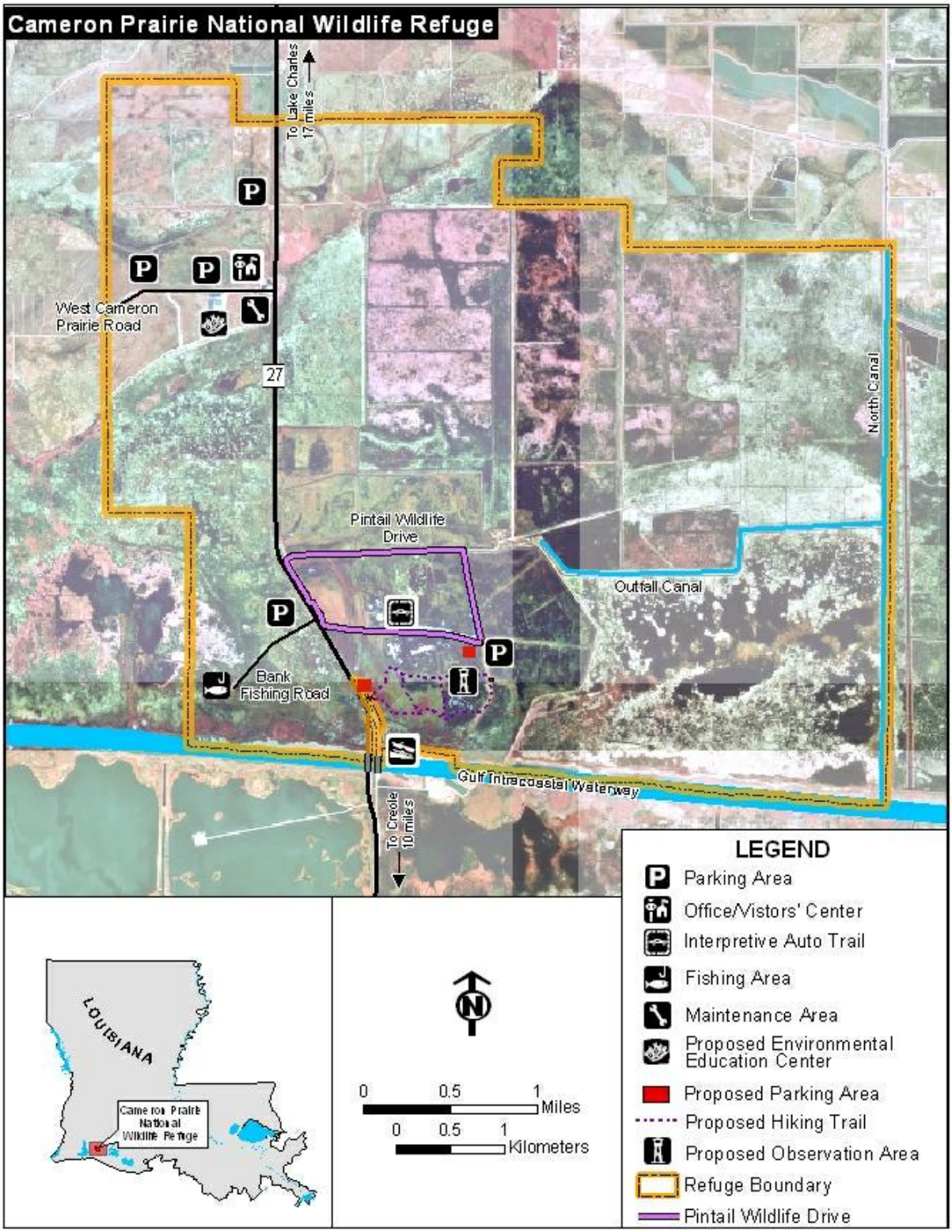
In April of 2004, nearby Lacassine National Wildlife Refuge was added to the Southwest Louisiana Refuges Complex, which already included Cameron Prairie and Sabine National Wildlife Refuges. All three refuges are located within the same parish and often receive the same visitors. Public use programs should enhance and complement each refuge's opportunities as directed by the Complex Outreach Coordinator. Sabine and Cameron Prairie both lie along the Creole Nature Trail, a National Scenic Byway and All American Road. Cameron Prairie will take the lead in the Complex to develop an environmental education program and will become the primary focal point on the Complex for these programs.

Strategy (a) — By 2010, develop an up-to-date step-down management plan for Visitor Services that includes recommendations for wildlife-dependent recreation. The Visitor Services Plan will encompass environmental education, interpretation, wildlife observation, photography and outreach.

Strategy (b) — Develop the means to obtain accurate visitor counts and projected visitation by partnering with a college or university, or the Creole Nature Trail and Visitor Bureau.

Strategy (c) — Improve quality and quantity of information about the Refuge, including signs and radio messages.

Figure 23. Proposed visitor facilities on Cameron Prairie



Strategy (d) — Make various specific improvements to the facilities and operation of the Visitor Center and vicinity over the coming five years, including the following:

- Coordinate Visitor Center hours with Sabine National Wildlife Refuge to best accommodate the most number of visitors.
- Make certain that there is someone to “meet and greet” whenever the Visitor Center is open (consider using volunteers to assist with this task).
- Update the kiosk in front of Visitor Center.
- Make brochures available when the Visitor Center is closed.
- Move “hours” sign in parking area so it is more visible to visitors.

Strategy (e) — Develop a Law Enforcement Step-down Plan by 2009.

Strategy (f) — Hire one full-time law enforcement officer.

Strategy (g) — Hire a Park Ranger (Public Use) for visitor services including environmental education and interpretation to work under the direction and guidance of the Complex Outreach Coordinator.

Strategy (h) – Incorporate fire education programs as needed.

Objective C—2: Hunting — Offer quality hunting experiences for hunters and review the Refuge hunting program on an annual basis to monitor its success.

Discussion: In order to establish hunting opportunities, habitat and population management goals and objectives for the Refuge should be met to ensure the hunter’s experience is fulfilling. The Refuge manages hunt programs, according to approved step down plans that are reviewed annually. Management of wildlife remains a collaborative effort with the Louisiana Department of Wildlife and Fisheries (LDWF) by means of an annual coordination meeting and through consultations with LDWF area personnel.

Expansion of hunting seasons, maintenance of roads and levees to improve hunter access, and opening new areas for hunting requires additional staff and funds to manage and regulate these activities and provide a safe and enjoyable experience for the hunter.

There are no specific programs for disabled hunters; however, special access is granted to state certified disabled individuals during the Refuge archery hunt.

Strategy (a) — Waterfowl (ducks, geese, coots, and gallinules) hunting will remain for youth only with adult supervision in accordance with State and Federal regulations.

Strategy (b) — Archery deer hunting will be permitted within existing Refuge seasons and as appropriate in accordance with State and Federal regulations.

Strategy (c) – Snipe hunting will be permitted during the remaining portion of the State-designated season following the closure of the State waterfowl season. State regulations are applicable.

Strategy (d) – Hunting for dove will be permitted during the first split of the State-designated season. State regulations are applicable.

Strategy (e) – All hunters must posses a signed copy of the Refuge hunting regulations. Following all hunts, hunters must fill out a self-clearing harvest information form.

Strategy (f) — The experimental hunt for rabbits will be discontinued. Minimal interest by the public and low numbers of rabbits in early to mid-winter has helped influence this decision.

Strategy (g) — The Refuge staff will investigate the feasibility of enrolling in the Recreational Fee Program to charge a nominal fee for youth waterfowl hunting to replace equipment (decoys) and maintain quality of blinds.

Strategy (h) — The Refuge will offer on-site programs for the state hunter education curriculum and the mandatory archery safety course. This strategy could only be fulfilled with the hiring of an additional staff member (i.e., law enforcement officer or park ranger).

Objective C—3: Fishing — Offer quality fishing experiences for anglers and review the Refuge fishing program on an annual basis to monitor its success.

Discussion: Fishing on Cameron Prairie is limited to the Bank Fishing Road, SH 27 ditch, and the outfall canal. The outfall canal is accessible only by boat. The Bank Fishing Road has a parking area at the end of the road. The SH 27 ditch is the most used fishing area on the Refuge. The Visitor Center parking lot and the bank fishing entrance parking area are the two primary parking areas to access fishing in the ditch. Vehicles frequently park on the highway shoulder to have immediate access to the entire ditch. However, the Refuge is in close proximity to Lake Charles, Calcasieu Lake, Sweet Lake, the Gulf of Mexico and the Intracostal Waterways. These areas provide unlimited fishing opportunities for the general public and thus, the demand for fishing at the refuge is very limited.

The Refuge participates in National Fishing Week to inform the public about fishing facts, regulations, and promote safe, family fun while fishing.

Strategy (a) — The canal along the Bank Fishing Road does not currently offer a quality fishing experience for the public. The ditch is overgrown with vegetation and open water is limited. The canal should be dredged to restore water flow resulting in improved access by fish and initiate aquatic exotic plant control in partnership with Louisiana Department of Wildlife and Fisheries. This improvement will provide enhanced fishing opportunities for anglers.

Strategy (b) — To provide additional fishing opportunities, the Refuge staff should improve parking and access to the canal that runs adjacent to SH 27. For safety reasons, the public will be discouraged from parking on the shoulder along the highway

and will be directed to fish along the interior bank. The Refuge will keep this area mowed and maintained for fishing access.

Strategy (c) — The Refuge will provide additional fishing opportunities near West Cameron Prairie Road on designated special fishing days, i.e. National Fishing Week or state-designated Special Fishing Days for special groups such as youth or handicapped people.

Strategy (d) — Special event fishing days will be managed through partnerships with corporate sponsors or with other state and Federal conservation agencies.

Strategy (e) —By 2010, the Sport Fishing Plan will be updated to offer specific guidance on how Cameron Prairie can offer quality fishing experiences for certain types of fisheries and anglers.

Strategy (f) — Procedures will be implemented for reviewing the Refuge fishing program on an annual basis to monitor its success and evaluate whether any changes are warranted.

Strategy (g) — Provide additional boat launches and access to improve fisheries opportunities where open water is managed for public use. Specific recommendations include allowing fishing from March 15 to October 15 annually.

Objective C—4: Wildlife Observation and Photography — Enhance existing opportunities for wildlife observation and wildlife photography by adding certain facilities over the coming decade.

Discussion: Wildlife observation and wildlife photography are appropriate, wildlife-dependent recreational uses of Refuge System lands, when compatible. Cameron Prairie's current facilities for wildlife observation and photography include:

- *Pintail Wildlife Drive, which is a three-mile graveled auto tour route that provides opportunities for visitors to observe some of the Refuge wildlife.*
- *One observation platform located at the rear of the Visitor Center, well placed to see optimum wildlife populations while limiting disturbance.*
- *One photo-blind on the Pintail Wildlife Drive; it is used 2-3 times per year.*

Both the photo-blind and the wildlife drive benefit from the addition of a grit site that increases the chance of observing fall and winter birds. Visitors also benefit from moist soil management techniques along public roads as areas are rolled or mowed to reduce vegetation that limits observation.

The Refuge's species check lists, regulatory brochures, interpretive signs, a calendar of natural events and exhibits in the Visitor Center provide information and promote wildlife observation opportunities.

Strategy (a) — Within the next 15 years, develop a 2-mile trail with an observation tower in Unit 9 to provide additional opportunities for wildlife observation and photography. Improvements will include a parking area and restroom facilities.

Strategy (b) — Replace the mile-per-hour sign and interpretive panels on Pintail Drive. Ensure panels are readable from vehicles.

Strategy (c) — On the main sign at Pintail Drive inform visitors to remain in car except in designated parking areas to minimize disturbance to wildlife and explain the reason.

Strategy (d) — Improve the trail and bridge to the photo-blind. Make the bridge safer. Put a sign at the bridge that explains the procedure for reserving the photo-blind. In order to comply with the “stay in the car” guidelines, put a one-car parking area beside the bridge that is designated “Reserved Parking For Photo-blind Users Only.”

Strategy (e) – Allow commercial guiding for ecotourism, including birding, tour buses and other non-consumptive wildlife and recreation activities. Each guide would be covered by a special use permit.

Objective C—5: Environmental Education — Within next five years, develop and implement a quality environmental education program, under the responsibility of the Complex Outreach Coordinator.

Discussion: Cameron Prairie will become the focal point for environmental education programs within the Southwest Louisiana National Wildlife Refuge Complex. At the present time, Cameron Prairie conducts 2-3 onsite programs and 4-5 offsite programs each year and has 7-8 school groups visit each year. Staff are planning to enhance and expand the environmental education program but limited funding and lack of staff impose special problems. One Refuge complex staff member has been designated as environmental education program coordinator and teacher contact. A minimum of one additional staff member is needed to ensure a quality environmental education program in the future.

Strategy (a) — Consider effective ways to coordinate the environmental education program with the other two refuges in the complex.

Strategy (b) — Area schools and teachers should be polled to determine their needs and logistical limitations. School requests and visits should be documented to determine needs.

Strategy (c) — The Refuge should develop a self-guided packet, Environmental Educator’s Guide, and other materials for teachers.

Strategy (d) — When appropriate, based on teacher needs and station programs, conduct teacher workshops for Refuge-specific curriculum.

Strategy (e) — Work with the school system to offer “in-service” training opportunities for teachers.

Strategy (f) — Develop relationships with scout groups, youth councils, 4-H, science clubs, and environmental education clubs.

Strategy (g) — One full-time employee (proposed park ranger) should be responsible for environmental education at the Refuge under the direction of the Complex Outreach Coordinator. This could only be accomplished with an additional hire.

Strategy (h) — Create a small parking lot in Unit 14B near the prairie demonstration and restoration site to be used seasonally by school groups as an outdoor classroom.

Strategy (i) — Throughout the life of the plan, staff will develop key issues to communicate with off-site audiences. Primary audiences to target with information about Refuge-related issues and actions include Congress, corporate sponsors, communities, conservation groups, and communications media.

Strategy (j) – Incorporate fire education programs as needed.

Strategy (k) – Construct an environmental education shelter near the Visitor Center and Observation Deck.

Objective C—6: Interpretation — Within seven years, develop and begin to implement a quality interpretive program at Cameron Prairie National Wildlife Refuge.

Discussion: The primary themes now interpreted on the Refuge include the ecology of the area, the native flora and fauna, and Service-wide mission and why we manage for fish, wildlife, plants, and their habitats. Most interpretation takes place within the Visitor Center. A small contact station is available at the Refuge Headquarters. The Visitor Center is wheelchair accessible. Most of the current exhibits are professionally designed and fabricated, and were designed for a general audience. Some exhibits are interactive. Minimal accommodations have been made for the hearing and visually disabled.

Strategy (a) — Interpretation at the Refuge will include Service, Refuge System and Refuge-specific messages such as wetland loss, coastal erosion, habitat restoration and creation, importance of Refuge for migratory birds, and the Service's trust responsibilities. Additional themes to consider: neotropical migrants, marsh ecosystems, prairie decline and restoration, furbearers, oil and gas, alligators and harvest, fire management, cultural themes such as Cajun names of wildlife, subsistence lifestyles.

Strategy (b) — Develop new video for the Visitor Center using footage that is specific to Cameron Prairie and have the video available for visitors to watch on a regular basis.

Strategy (c) — Renovate exterior kiosks with current information and install a panel explaining what priority public uses are permitted on Refuges.

Strategy (d) — Develop seasonal interpretive programming (based on staff availability) such as alligator talk, shorebird talk, Pintail Drive waterfowl talk, friendly flames fire talk, etc.

Strategy (e) — Interpret what the visitors are seeing from the observation deck behind the Visitor Center (seasonal management changes, moist soil management, birds, etc.).

Strategy (f) — Extend the front boardwalk around the side of the Visitor Center and connect to back boardwalk.

Strategy (g) – Incorporate interpretive signage about fire management where appropriate.

Objective C—7: Volunteers — By 2007, develop and begin to implement a Volunteer, Friends, and Partnership Program Plan that will guide the Refuge in attracting dedicated volunteers to assist staff on certain tasks amenable to non-employees or non-specialists.

Discussion: The Cameron Prairie staff manages volunteers on a limited basis as time allows. The Outreach Coordinator at Sabine NWR manages the volunteer program for the Complex. In recent years, volunteers have provided grounds maintenance around the Visitor Center. Staff and funding shortages prevent the refuge from expanding the volunteer program. Volunteer management will involve additional staff to orient and manage volunteers and provide needed services to supplement current Refuge programs.

Volunteers would greatly enhance current programs. Volunteers are needed to conduct fish and wildlife population surveys, lead tours, provide information and interpretation at the Visitor Center, take part in bird banding, perform grounds maintenance, and work with local communities and schools. There are currently no living quarters to house volunteers. This greatly reduces the likelihood of recruitment. Generally, no special skills are required to be a volunteer, but staff must provide on-the-job training and supervision. As time allows, there is a need to develop specific volunteer position descriptions for some immediate needs (i.e. part-time greeters and roving interpreters/historians) before recruiting for these activities.

Strategy (a) — Develop volunteer job descriptions, and train all staff members on managing and supervising volunteers.

Strategy (b) — Develop camper pads to the south of maintenance compound for RV campers and interns for on-Refuge accommodations.

Strategy (c) — Develop a “Friends” group that would support the Refuge with volunteers and in the community at large.

GOAL D: CULTURAL RESOURCES — Protect Refuge cultural resources in accordance with Federal and state historic preservation legislation and regulations.

Discussion: 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 owned, managed, or controlled by the United States. The body of historic preservation laws has grown dramatically since 1906. Several themes recur in the laws and the promulgating regulations. They include: 1) each agency is to systematically inventory the “historic properties” on their holdings and to scientifically assess each property’s eligibility for the National Register of Historic Places; 2) Federal agencies are to consider the impacts to cultural resources during the agencies’ management activities and seek to avoid or mitigate adverse impacts; 3) the protection of cultural resources from looting and vandalism are to be accomplished through a mix of informed management, law enforcement efforts, and public education; and 4) the increasing role of consultation with groups, such as Native American tribes 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 below

outline the Service's attempt to achieve their mandated historic preservation responsibilities in a way consistent with the agency's and the Refuge's mission.

Objective D—1: Survey — Over the life of the Comprehensive Conservation Plan, assess the feasibility of conducting a Refuge-wide archaeological survey.

Strategy (a) — Contact the State Historic Preservation Officer to determine if any known archaeology sites exist within the vicinity of the Refuge.

Strategy (b) — Determine the cost of conducting the study and seek funding to accomplish the work.

Strategy (c) — Consult the Regional Preservation Officer for guidance.

Objective D—2: Education — Develop and implement an educational program that will provide an understanding and appreciation of the Refuge's ecology and the human influence on the region's ecosystems.

Strategy (a) — Work with local ethnic groups (Native American, African American, Creole, Cajun, etc.) to develop education programs regarding cultural heritage and history.

Objective D—3: Cultural Resources Management Plan — By the year 2019, develop a step-down Cultural Resources Management Plan.

Strategy (a) — Consult the Regional Preservation Officer for guidance.

GOAL E: REFUGE COMPLEX OPERATIONS: Develop and maintain the Southwest Louisiana National Wildlife Refuge Complex Headquarters to support, direct, and manage the needs, resources, and staff of Cameron Prairie, Sabine, and Lacassine National Wildlife Refuges, their relationship with each other, and the role of the Service as a partner in the multi-agency Cameron Creole Watershed Project.

Discussion: Each Refuge that comprises the Southwest Louisiana National Wildlife Refuge Complex is known throughout the area for their distinctive features. Because the three refuges are identified by their individuality, each one will focus on the priorities that best represent their individuality. See the objectives and strategies for wildlife, habitat, and visitor services earlier in this section for this Refuge's priorities.

At Cameron Prairie, walking across the boardwalk and observing alligators, egrets, and other wildlife is a welcoming outdoor experience for the public as they approach the Visitor Center. Once indoors, many interpretive displays from wildlife to cultural history will allow visitors to learn to appreciate its uniqueness as a haven for wildlife and their diverse habitats and will be a priceless gift for present and future generations to enjoy. Cameron Prairie will serve as an outstanding location for environmental education programs for area students. Existing facilities as well as planned facilities at the Refuge will form the perfect setting for outdoor learning. Habitat and wildlife management programs will complement the environmental education emphasis.

During winter migration, visitors flock to Lacassine National Wildlife Refuge's freshwater pool to observe large concentrations of waterfowl and other migratory birds. Its 3-mile wildlife drive is interpreted with educational signs and is ideal for visitors to learn about its wildlife and habitat. This Refuge will serve as the Complex's focal point for wildlife observation, photography, and interpretive programs. Habitat and wildlife management programs will complement these interpretive programs.

Sabine National Wildlife Refuge is the largest coastal marsh refuge on the Gulf of Mexico. Its vast habitats of brackish, intermediate, and saltwater marshes attract wintering and migrating waterfowl. Marsh restoration sites co-exist with oil and gas facilities that do not substantially interfere with the naturalness of the area and its ability to attract wildlife. It is ideal as an outdoor facility for scientists and will serve as a unique setting for wildlife and wetland research. Research will complement habitat and wildlife management programs and public use.

Objective E-1: Complex Staffing - By 2015, staff members with responsibilities for Complex-wide programs will be stationed at the Cameron Prairie Headquarters.

Strategy (a) – Current office space will be expanded by about 2,500 square feet and will include additional restrooms, offices, and storage.

Strategy (b) – Staff members within the entire Complex will be provided adequate equipment such as computers, vehicles, and supplies as well as training needed to perform their jobs.

Strategy (c) – Staff members will be provided a safe and healthy working environment.

Objective E-2: Complex Support – The Southwest Louisiana National Wildlife Refuge Complex will encourage and support each Refuge's major emphasis (environmental education, interpretation, and research) and the relationship of these programs to wildlife and habitat management objectives and strategies.

Strategy (a) – Funding and resources needed to attain success in achieving the objective will be allocated in a fair and equitable manner.

Strategy (b) – Complex staff will support individual Refuge needs and will provide expertise and assistance to each Refuge's staff.

V. Plan Implementation

INTRODUCTION

The following projects reflect the basic needs of the Refuge as identified during the development of this Comprehensive Conservation Plan. There are no assurances that these projects will be fully or even partially funded. This plan focuses on the importance of funding the operations and maintenance needs of the Refuge to ensure it can achieve the goals and objectives identified as critical to fulfill the mission for which the Refuge was established. The Refuge's role in providing sanctuary for waterfowl in Southwest Louisiana is critical to allow sufficient waterfowl utilization of Cameron Prairie Refuge's foraging, molting, nesting, and roosting habitats.

Cameron Prairie's Complex Wildlife Biologist serves as Co-Chairman for the Gulf Coast Joint Venture's Chenier Plan Initiative working group. The co-chairmen are advisors to the Chenier Plan Initiative Board on all migratory birds being managed under the North American Waterfowl Management Plan, the United States Shorebird Conservation Plan, the North American Colonial Waterbird Conservation Plan, and the Partners in Flight Coastal Prairies Bird Conservation Plan. Other activities include solicitation of grant ideas from partners for grant submission including North American Waterfowl Conservation Act grants.

LIST OF PROJECTS

HABITAT

Project 1 — Expand and Enhance Moist Soil Management

In order to adequately conserve, restore, and enhance diverse habitats to provide favorable conditions for migratory birds and native terrestrial and aquatic species, water management capabilities must be improved by upgrading pumps, increasing pumping capacity, installation of water control structures, and improve drainage capabilities of the Refuge. Water movement patterns on the Refuge must be monitored. Plant and wildlife responses to moist soil management actions must be monitored and documented. A water management step down plan must be developed.

All moist soil units (5, 6, 7, 9, 10, and 14B) need to have the existing levees and canal systems rehabilitated. Levees in each unit will have a roughly 15' crown, 50' base, and 4 – 5' height. The units should be managed intensively for the production of moist soil vegetation, on a three-year rotational basis. Areas will need initial manipulation each year to control undesirable plants. Units will be dewatered in March – April, then disced, land leveled, and water buffaloed. The units will be water buffaloed in Years 2 and 3 during November through January, hold water during May through June, water buffaloed once, then again dewatered. Dewatering dates are delayed to allow growth of desirable plants with a 60-90 maturation date, thus maturing with the arrival of wintering waterfowl.

The screw type water control structure will be replaced with a spillway or stop log type structure constructed of either concrete or sheet pile in Unit 5. A new pumping facility to house the pump and engine unit will be constructed to increase efficiency of pumping.

Unit 6 will have the undersized slide gate water control structure replaced with stop log type structures. Undesirable vegetation will be controlled within the canal systems to promote efficient water management.

Costs for this project are shown in Table 8. (Note: Pumping would occur on these units on a 3-year rotation. Costs identified for fuel and maintenance for tractors and pumps would be necessary only if or when work is occurring or when each unit's rotation is employed.)

Table 8. Costs to Expand and Enhance Moist Soil Management Units

Project Type & Number	Projects	Estimated Costs (Excludes Mandatory Engineering Fees of 17.5 percent of Project Total)	
	Develop Partnerships	One-time	Annual
RONS 04011	Administrative costs of Complex Biologist to serve as Co-Chairman of the Gulf Coast Joint Venture's Chenier Plain Initiative	0	$4000
	Boundary Integrity		
SAMMS 04134722	Survey and post Refuge boundary	$105,000	
	Staff		
RONS 04019	Mechanic to operate and maintain pumps	$58,000	$58,000
Sub-TOTAL		$58,000.00	$62,000
	Unit 5		
SAMMS 04133891	Rehabilitate levees	$467,000	0
SAMMS 04133893; 894	Replace 2 water control structures	$18,000	0
SAMMS 04133897; 01113390	Refurbish pump facility and replace lolift pump	$276,000	0
SAMMS 04134684	Construct underground irrigation system	$389,000	0
RONS 04003	Tractor (fuel and maintenance)	$30,000	$15,500
RONS 04004	Pumping (fuel and maintenance)	$25,000	$1,000

SAMMS 04133895	Replace water control structure	$9,000	0
Sub-TOTAL		$1,214,000.00	$16,500.00
	Unit 6		
SAMMS 04133902	Rehabilitate levees and canals	$263,000	0
SAMMS 04134702	Improve water management capabilities	$143,000	0
SAMMS 02119548	Repair pumping station	$89,000	0
SAMMS 01112798	Replace pump	$26,000	0
SAMMS 98101778	Rehabilitate pumping unit components	$82,000	0
SAMMS 03124952	Replace Cummings power unit	$16,000	0
SAMMS 02119717	Remove old power lines	$26,000	0
RONS 04003	Tractor (fuel and Maintenance)	$30,000	$15,500
RONS 04004	Pumping (fuel and maintenance)	$25,000	$1,000
Sub-TOTAL		$700,000.00	$16,500.00
	Unit 7		
SAMMS 04133906	Rehabilitate levees and canals	$214,000	0
SAMMS 04133907	Replace water control structure	$214,000	0
RONS 04003	Tractor (fuel and Maintenance)	$30,000	$15,500
RONS 04004	Pumping (fuel and maintenance)	$25,000	$1,000
Sub-TOTAL		$483,000.00	$16,500.00
	Unit 9		
SAMMS 04133944 – 948	Rehabilitate levees and canals	$325,000	0
SAMMS 04133908	Replace water control structure	$272,000	0
RONS 04003	Tractor (fuel and Maintenance)	$30,000	$5,000
RONS 04004	Pumping (fuel and maintenance)	$25,000	$5,000
Sub-TOTAL		$652,000.00	$10,000.00
	Unit 10		
RONS 04006	Construct rookery	$115,200	0
SAMMS 04133949; 950	Rehabilitate levees	$149,000	0

SAMMS 4134705	Replace water control structure	$214,000	0
RONS-04003	Tractor (fuel and Maintenance)	$30,000	$5,000
RONS-04004	Pumping (fuel and maintenance)	$25,000	$5,000
Sub-TOTAL		$533,200.00	$10,000.00
	Unit 14A & B		
SAMMS 04133951	Replace water control structure	$8,000	0
SAMMS 04133953; 958; 959; 961; 963; 978; 980; 987; 994; 996; 04134450; 545; 573; 625; 634; 653; 674; 681;	Rehabilitate levees & canals	$2,331,000	0
SAMMS 04134690; 692; 696;	Improve water management capability	$999,000	0
SAMMS 01112827	Replace lolift pump	$26,000	0
SAMMS 01112853	Replace Deutz engine	$21,000	0
RONS 04007	Construct pumping station	$174,000	$30,000
RONS 04003	Tractor (fuel and Maintenance)	$30,000	$5,000
RONS 04004	Pumping (fuel and maintenance)	$25,000	$5,000
Sub-TOTAL		$3,614,000.00	$40,000.00
TOTAL		$7,351,208.00	$171,500.00

Project 2 — Restore and Monitor Freshwater Wetland Impoundments

With deterioration of canal systems through vegetation encroachment and lack of funds to operate pumps year round, these units have begun to close in through vegetation succession. As stated above, the quality of wintering waterfowl habitat in these areas has declined due to the expansion of emergent vegetation, primarily California bulrush, cattail and maidencane. The Refuge currently has partial control capabilities through pumping to dewater the area, but water can no longer be pumped into the units.

Water management capabilities must be improved through drawdowns, pumping, canals, levees, deep-water flooding, fire and sub-dividing of impoundments to maintain a complex of more native-like submerged or floating aquatic plants preferred by diving and dabbling ducks. To enhance these units, purchase and strategic placement of 2-3 pumps and water control structures will allow drawdowns to help maintain these areas for desirable aquatics and better ratio of open water to plant composition. Improvements to levees will result in improved drainage.

All impoundment units (1, 2A, 2B, 2C, 3A, 3B, 4, and 8) need to have levees constructed or rehabilitated to create smaller manageable units. By reducing the size of the units, the Refuge would be more likely to afford dewatering and allow for mechanical manipulation of soils after vegetation production. Smaller units would be managed on a three-year rotational basis to promote desirable vegetation growth. The levees in these units will have roughly a 15' crown, 50' base, and 4-5' height.
Unit 1 and 2A will have a pumping unit constructed to increase efficiency and reduce pumping times.

Unit 2B and 2C need to have drainage laterals constructed for greater water management. Portable pumping units will be used to dewater the areas. Other treatments include burning, discing, mowing, and herbicide application. After treatments the areas will be flooded to promote waterfowl use.

Units 3A, 3 B and 4 will have water control via spillway stop log structures constructed of either concrete or sheet pile. A pumping unit would be installed at the southern end of a common canal between Units 3 and 4.

Unit 8 existing levees would be rehabilitated and one levee would be constructed along the south unit boundary. A spillway type water control structure to regulate water levels would be installed. The unit will be passively managed to maintain relative static water levels. If or when sufficient water is available, the unit's potential for public fishing opportunities would be assessed.

Costs for this project are shown in Table 9. (Note: Pumping would occur on units on a 3-year rotation. Costs identified for fuel and maintenance for tractors and pumps would be necessary only if or when work is occurring or when each unit's rotation is employed.)

Table 9. Costs to Restore and Monitor Freshwater Wetland Impoundments

Project Type and Number	Impoundment Projects	Estimated Costs (Excludes Mandatory Engineering Fees of 17.5 percent of Project Total	
		One-time	Annual
	Unit 1		
SAMMS 04133776; 792; 793; 794; 857; 859; 860	Rehabilitate levees and canals	$1,226,000	0
SAMMS 99101779	Repair moist soil levees 57, 61, and 144 and canal 47 and pumping costs	$164,000	0
SAMMS 04134003; 004	Replace 2 water control structures	$642,000	0
SAMMS 02119984	Replace water control structure in Unit 1S	$91,000	0

SAMMS 01113197	Replace 30” pump, 1 engine, delivery system	$65,000	0
SAMMS 01113202	Replace mobile Deutz engine	$21,000	0
RONS 04001	Repair levee 275 in Unit 1	$53,000	$20,000
RONS 04003	Tractor (fuel and Maintenance)	$30,000	$15,000
RONS 04004	Pumping (fuel and maintenance)	$25,000	$10,000
Sub-TOTAL		$2,317,000.00	$45,000.00
	Unit 2A		
SAMMS 04133861; 862; 865; 867; 869; 870	Rehabilitate levees and canals	$637,000	0
SAMMS 04134006; 007; 010	Replace 3 water control structures	$642,000	0
RONS 04003	Tractor (fuel and Maintenance)	$30,000	$5,000
RONS 04004	Pumping (fuel and maintenance)	$25,000	$10,000
Sub-TOTAL		$1,334,000.00	$15,000.00
	Unit 2B		
SAMMS 04133871	Rehabilitate levees and canals	$241,000	0
SAMMS 04134012	Replace water controls structure	$214,000	0
RONS 04003	Tractor (fuel and Maintenance)	0	$5,000
RONS 04004	Pumping (fuel and maintenance)	0	$10,000
Sub-TOTAL		$455,000.00	$15,000.00
	Unit 2C		
SAMMS 04133876	Rehabilitate levees and canals	$196,000	0
SAMMS 01114761	Replace 10” pump	$40,000	
RONS 04003	Tractor (fuel and Maintenance)	$30,000	$5,000
RONS 04004	Pumping (fuel and maintenance)	$25,000	$5,000
Sub-TOTAL		$291,000.00	$10,000.00
	Unit 3A & 3B *		
SAMMS 04133877; 878; 881; 883; 884; 885; 886	Rehabilitate levees and canals	$1,195,000	0
SAMMS 04134014	Replace water control structure	$642,000	0

RONS 04002	Construct pumping station (Unit 3 & 4) and install 2 spillway controls	$713,000	0
RONS 04003	Tractor (fuel and Maintenance)	$30,000	$10,000
RONS 04004	Pumping (fuel and maintenance)	$25,000	$15,000
Sub-TOTAL		$2,605,000.00	$25,000.00
	Unit 4		
SAMMS 04133887; 888	Rehabilitate levees and canals	$305,000	0
RONS 04003	Tractor (fuel and Maintenance)	$30,000	$10,000
RONS 04004	Pumping (fuel and maintenance)	$25,000	$15,000
Sub-TOTAL		$360,000.00	$25,000.00
	Unit 8		
SAMMS 04133934; 935; 938; 939	Rehabilitate levees and canals	$569,000	0
SAMMS 92110057	Rehabilitate levees and canals (completion of this project would allow the Service to flood the unit to improve fishing opportunities)	$743,000	0
	Maintenance	0	0
Sub-TOTAL		$1,312,000.00	0
TOTAL		$8,674,000.00	$135,000.00

Project 3 — Improve Habitat Quality in Natural Freshwater Marsh and Prairie Habitat

Fire use is the preferred management strategy for Units 11A, 11B, 12A, 12B, 13A, 13B and 14A. Fire, herbicide treatments, mechanical control, and seed plantings will improve prairie communities. As these areas have become dominated by climax wet prairie vegetation, maidencane, and Chinese tallow trees, their value as wildlife habitat has decreased. Through the use of fire, increased vegetation diversity will improve wildlife habitat. By increasing the diversity and decreasing vegetation density, mottled duck nesting activities should increase, while at the same time maintain and possibly improve habitat for grassland-dependant species. The prescribed fire program for the area will be on a two to three year rotation, with growing season burns targeted to promote growth of prairie plants.

It is imperative that these areas receive high priority in the prescribed fire plan, as fire will be the only active form of management feasible within these units. However, due to the unit's close proximity to a major state highway, great emphasis must be given to smoke management and public safety considerations. Through the use of prescribed fire, the possibility of wildfires will be reduced. Restoring the hydrology to the area by

improving water flow through the unit would aid in management of Unit 14 B to the north by reducing drainage times and excess ponding.

The Refuge's Fire Management Plan must be updated to incorporate management strategies for these units. In addition, a plan should be developed for inventorying and monitoring of grassland bird populations, focusing on wintering species.

Improving efforts to enhance and create prairie will contribute to the goals and objectives of the Lower Mississippi River Ecosystem and the Texas Gulf Coast Ecosystem.

Costs for these projects are shown in Table 10.

Table 10. Costs to Improve Habitat Quality in Natural Freshwater Marsh and Prairie

Project Type and Number	Prairie Projects	Estimated Costs (Excludes Mandatory Engineering Fees of 17.5 percent of Project Total	
		One-time	**Annual**
	Units 11A&B, 12A&B, 13A&B, & 14A		
SAMMS 04134018	Replace culverts	$7,000	0
RONS 04026	Restore 400 acres of prairie through planting and mechanical control	$235,000	$10,000
RONS 04012	Prescribed fire to provide quality habitats for nesting coastal marsh bird species	$48,000	$12,000
RONS 04004	Coastal Prairie Inventory	$25,000	$1000
TOTAL		$315,000.00	$23,000.00

Project 4 — Control Undesirable Plant and Animal Species

Also known as exotic or non-native species, several invasive plant species pose problems at Cameron Prairie, as they do at many national wildlife refuges. In general, invasive plants are troublesome because they displace native vegetation on which native animal species have come to depend on over many millennia of adaptation and co-evolution. At Cameron Prairie, invasive plant species include the Chinese tallow tree, water hyacinth, hydrilla, Eurasian milfoil, and common salvinia.

It is also necessary to monitor and, in some situations, to control populations of selected wildlife species, such as nutria (exotic) to protect and benefit native habitats and other wildlife, maintain productive wildlife populations, and provide for the safety of visitors. The Refuge will need to utilize specialized ditching equipment, drawdowns, discing, fire, approved chemical spraying, and possibly mechanical harvesting to control plant

infestations that clog drainage canals. Staff will inventory tallow tree infestations and eliminate problems via use of chemical injections, deep flooding, and cutting or grinding.

Effective control of undesirable species will contribute to the goals and objectives of the Lower Mississippi River Ecosystem. Costs of this project are shown in Table 11.

Table 11. Costs to Control Undesirable Plants and Animals

Project Number	Description	Estimated Costs	
		One-time	Annual
RONS 04023	Eliminate non-native invasive species	$275,000	$25,000
TOTAL		$275,000.00	$25,000.00

Project 5 — Meet and Fulfill Heavy Equipment Needs

Effective moist soil management is time-consuming and requires numerous resources and equipment. The Refuge could significantly reduce the cost of moist soil management with the addition of a few mechanical implements and replacement of aging equipment. Seed bed preparation is currently done using a land plane. Though this implement works well the Refuge is forced to level fields while preparing the seed bed. The addition of a spring tooth harrow would allow for seed bed preparation without leveling the field with each pass. Annual precipitation on the Refuge is about 60 inches per year. Projects on the Refuge are negatively affected by untimely rainfall. Each year some projects do not reach completion due to these rains and the need to work under dry conditions to achieve Refuge moist soil objectives is imperative. The addition of a water blade would allow Refuge staff to prepare fields even in the wettest of years. The estimated cost of adding these new implements is $42,000.

Current Refuge equipment is getting very old. Replacing aged equipment would reduce annual repair costs and improve moist soil unit efficiency by allowing workers more time in the field. The major concern is the two tractors used to manipulate the units. These tractors are underpowered for the implements they are required to pull increasing the maintenance costs and time. Replacing both of these worn-out tractors with more powerful ones needed to properly do the job would cost about $320,000. Other equipment needed is also shown in Table 12 below.

Table 12. Costs to Meet and Fulfill Heavy Equipment Needs

Project Number	Description	Estimated Costs	
		One-time	**Annual**
SAMMS 01114335; 347;	Replace 2 tractors (4960 and 7600)	$290,000	0
SAMMS 01114068; 355;	Replace tractor truck and 75 ton gooseneck trailer	$276,000	0
SAMMS 01114079	Replace 650g dozer	$121,000	0
SAMMS 01114088	Replace excavator	$248,000	0

SAMMS 01114128	Replace 20 foot bush hog	$20,000	0
SAMMS 01114296	Replace Rayne plane	$20,000	0
SAMMS 00101780	Replace Rome plow	$20,000	0
SAMMS 02119980	Replace 14 foot bush hog	$13,000	0
SAMMS 04133898	Replace 1994 Model 630 John Deere plow	$20,000	0
	TOTAL	$1,028,000.00	0

WILDLIFE

Project 6 — Inventory and Monitor Wildlife Populations and Responses to Management Actions

Linked to the actions of inventorying and monitoring is the process of adaptive management to assess and modify management strategies to better achieve objectives. One definition of adaptive management is making the best possible decision with the available information, recognizing that one may need to revise decisions as new data and scientific information are gathered from inventory and monitoring actions. The effectiveness of habitat management actions to meet Refuge and landscape objectives can be best determined through monitoring and subsequent evaluation of results. Monitoring, inventorying, data management and synthesis of data for development of management recommendations followed by revisions to management actions are needed at Cameron Prairie. Methods, treatments, and protocols should be developed and fully documented in the annual narrative, along with pertinent results and management recommendations. This should be one of the highest priorities at the Refuge.

Operational funds should be dedicated for performing basic wildlife inventorying and monitoring on the Refuge. The Refuge's biological program needs trained personnel to operate each of the required activities. The biological program should include at minimum one biologist and two bio-technicians. Monitoring protocols and procedures should exist for all activities and be based on study designs and standardized collection procedures which provide the most efficient design in context of the subject and use resources at the staff's disposal.

The first priority for the biological program should be to establish sampling schemes (transects, sampling point, etc.) to evaluate and monitor plant conditions and to archive plant community responses to management treatments. The monitoring design should direct management actions (drawdowns, fire, water levels, timing, mechanical activities, climate conditions, etc.) in such a way that they are repeatable and suitable for proper evaluation. Proper computer resources should exist to record, store and process data. These computer resources should include a field computer, and GIS (e.g., ArcView 8.3), database and statistical programs.

Habitat monitoring and evaluation should be considered a priority in helping the Refuge meet its mission. Habitat sampling protocols need to be developed based on the

Refuge's objectives, management treatments, comparing or contrasting management units, and level of sensitivity needed to detect changes.

Inventories, monitoring and population management of animal species, including fish, amphibians, reptiles, birds, and mammals should be conducted as resources are available. Protocols existing nationally should be used to allow ecosystem-wide trend analysis. Surveys should include those focused on waterfowl, colonial nesting birds, grassland birds, marsh birds, and amphibians. Surveys seen as providing benefit to the staff's ability to make management recommendations should be considered prior to others.

Following years of neglect, restoration activities should be considered a priority. Areas of the Refuge are assumed to contain coastal prairie habitat; however, little documentation exists. These sites should be documented and restoration plans developed.

Implementation of this project will contribute to the goals and objectives of the Texas Gulf Coast Ecosystem.

Costs for this project are shown below in Table 13:

Table 13. Costs to Inventory and Monitor Wildlife Populations and Responses to Adaptive Management Techniques

Project Type and Number	Staff	One-time	Annual
RONS 04015	Biologist	0	$74,000
RONS 04016	Bio-technician	0	$61,000
RONS 04017	Bio-technician	0	$61,000
Sub-TOTAL			$196,000.00
	Computer Resources		
RONS 04020	Field computer; ArcView 8.3; database; and statistical package	$8600	$2,200
Sub-TOTAL		$8,600	$2,200
	Habitat Monitoring		
RONS 04020	Supplies, water level monitoring equipment, vehicle fuel	$21,000	$8,000
Sub-TOTAL		$21,000.00	$8,000.00
	Inventories & Surveys		
RONS 04020	Waterfowl (Flights, fuel, supplies)	$5,000	$5,000
RONS 04020	Colonial Nesting Birds (Misc., fuel)	$1,000	$1,000

RONS 04020	Grassland Birds (Fuel, equipment)	$2,000	$2,000
RONS 04020	Marsh Birds (Misc. supplies, fuel)	$2,000	$2,000
Sub-TOTAL		$10,000	$10,000
TOTAL		$39,600.00	$216,200.00

PEOPLE

Project 7 — Improve Visitor Services

As a relatively new Refuge, Cameron Prairie is still in the process of developing facilities and staff support for visitor use and wildlife-based recreation. There are certain specific and general actions that Cameron Prairie can take that will make it even more “visitor-friendly” than at present. One of the first priorities of the Refuge is to develop an up-to-date step-down management plan for Visitor Services that includes recommendations for wildlife-dependent recreation. A means to obtain accurate visitor counts and projected visitation will be developed and included in the Visitor Services Plan.

Presently, the Complex Outreach Coordinator provides direction and guidance for visitor services at the Refuge. In order for the visitor services program to be more effective, the Refuge will need to hire a Park Ranger or Public Use Aid. This will allow expansion of the environmental education program, make certain that there is someone to “meet and greet” and welcome visitors in the Visitor Center, and provide expertise to maintain and improve the Visitor Center exhibits and interpretive messages. This employee would be able to provide interpretative talks to visiting students or other special groups. An environmental education shelter could be built behind the Visitor Center utilizing portable bathrooms when school groups use the Refuge as an outdoor classroom. Under the direction and supervision of the Complex Outreach Coordinator, the Park Ranger could coordinate formulation of volunteer programs, a Friends group, and help with other outreach opportunities.

Several upgrades to the Visitor Center complex need to be accomplished. New videos should be developed using footage that is specific to Cameron Prairie or emphasize the importance of the Refuge as sanctuary for migratory birds, marsh ecosystems, prairie decline and restoration, or cultural themes such as Cajun names of wildlife or subsistence lifestyles.

The front boardwalk around the side of the building should be extended and connected to the back boardwalk.

New interpretive panels should interpret what the visitors are seeing from the observation deck and could focus on seasonal management changes, fire management, moist soil management, and birds likely to be viewed there.

Kiosks in the Visitor Center vicinity need improvement and updated information about the Refuge. One panel should include information about the six priority uses allowed at

the Refuge. A dispenser for brochures should be installed so that visitors can obtain information when the Visitor Center is closed.

A radio message should be developed that will allow visitors to hear about the Refuge and its programs and invite them to stop as they pass by on SH 27, which bisects the Refuge.

The Pintail Wildlife Drive needs upgrading with parking areas built for visitors who want to hike on the levees or use the photo blind. Signs need to be upgraded both with current Refuge information and regulations and special rules to observe while on the drive, as well as new placement for more effective visibility. Interpretive panels on the Drive need revamping with new messages, larger text for ease of reading, and signs raised higher on posts and angles adjusted for improved readability.

The trail and bridge to the photo-blind need improvement especially for visitor safety.

The West Cameron Prairie Access Road needs improvement; it floods easily, becomes impassable, and is unsafe.

The costs for these projects are shown in Table 14.

Table 14. Costs to Improve Visitor Services

Project Number	Description	Costs	Costs
		One-time	**Annual**
	Visitor Facilities		
SAMMS 99123197	Develop prairie habitat trail and parking area in 14B	$298,000	$15,000
RONS 04013	Develop nature trail in Unit 9	$222,000	$15,000
RONS 04014	Construct 10-person observation platform with interpretive displays	$22,000	$1,000
RONS 99023	Native Prairie Restoration/Education Site (12 acres)	$29,000	$12,000
RONS 04021	Extend boardwalk around building to connect front and back walkway	$30,000	0
Sub-TOTAL		$601,000.00	$43,000.00
	Staff		
RONS 04018	Park Ranger Public Use	$50,000	$50,000
RONS 03003	Park Ranger Law Enforcement	$66,572	$62,428
Sub-TOTAL		$116,572.00	$112,428.00

	Interpretation and Education		
RONS 04024	Construct environmental education shelter	$50,000	$4,000
RONS 04024	Improve counting procedures for visitation estimates (car counter and surveys)	$10,000	$1,000
RONS 04024	Purchase new Refuge-specific video	$25,000	0
RONS 04024	Replace interpretive panels on Wildlife Drive	$10,000	0
RONS 04024	Improve trail and bridge to photo blind	$5,000	0
RONS 04024	Replace interpretive panels on observation deck	$6,000	0
RONS 04024	Improve kiosks	$13,000	0
RONS 04024	Develop radio message & purchase hardware	$10,000	0
RONS 04024	Replace signs on Wildlife Drive	$1,000	0
SUB-TOTAL		$130,000.00	$5,000.00
	Roads/Parking Lots		
SAMMS 00101783	Upgrade 3-mile Pintail Wildlife Drive	$375,000	0
SAMMS 00101783	Build parking area on Wildlife Drive	$100,000	0
SAMMS 04133976 B; 04133785C	Improve West Cameron Prairie Road for visitor access	$998,000	0
SAMMS 03124962	Improve old office road for visitor (hunter) access	$47,000	0
Sub-TOTAL		$1,520,000.00	0
TOTAL		$2,367,572.00	$160,428.00

Project 8 — Improve and Enhance Fishing Opportunities

In the short-term, quality fishing opportunities for the public may be enhanced through improvements to existing areas and by promoting various initiatives. Currently, conditions along the Bank Fishing Road need improvement. The ditch is overgrown with vegetation and open water is limited. The canal should be dredged to restore water flow resulting in improved access by fish and initiate aquatic exotic plant control in

partnership with Louisiana Department of Wildlife and Fisheries. Improvements should be made to the parking area to access the canal that runs adjacent to SH 27.

The Refuge will provide additional fishing opportunities on West Cameron Prairie Road on designated special fishing days, i.e. National Fishing Week or state-designated Special Fishing Days for special groups such as youth or handicapped people. Special event fishing days will be managed through partnerships with corporate sponsors or with other state and Federal conservation agencies.

By 2007, the Refuge should assess the feasibility and need of providing 500 – 1,000 acres of pools (impoundments) and canals where open fisheries water is managed for public use. Specific recommendations, if additional fishing opportunities are deemed necessary, will be requested from the Service's Baton Rouge Fisheries Office.

Costs for these projects are shown in Table 15.

Table 15. Costs to Provide Enhanced Fishing Opportunities

Project Number	Description	One-time	Annual
SAMMS 04133793	Dredge canal on Bank Fishing Road	$82,000	0
SAMMS 00101783	Improve parking and access to Hwy 27 canal	$5,000	0
SAMMS 04136181	Build parking lot at rehabilitated area along Bank Fishing Road	$13,000	0
RONS 04024	Partnerships will be developed with others to promote special fishing days for targeted populations	$2,000	$2,000
TOTAL		$102,000.00	$2,000.00

CURRENT AND PROPOSED STAFFING

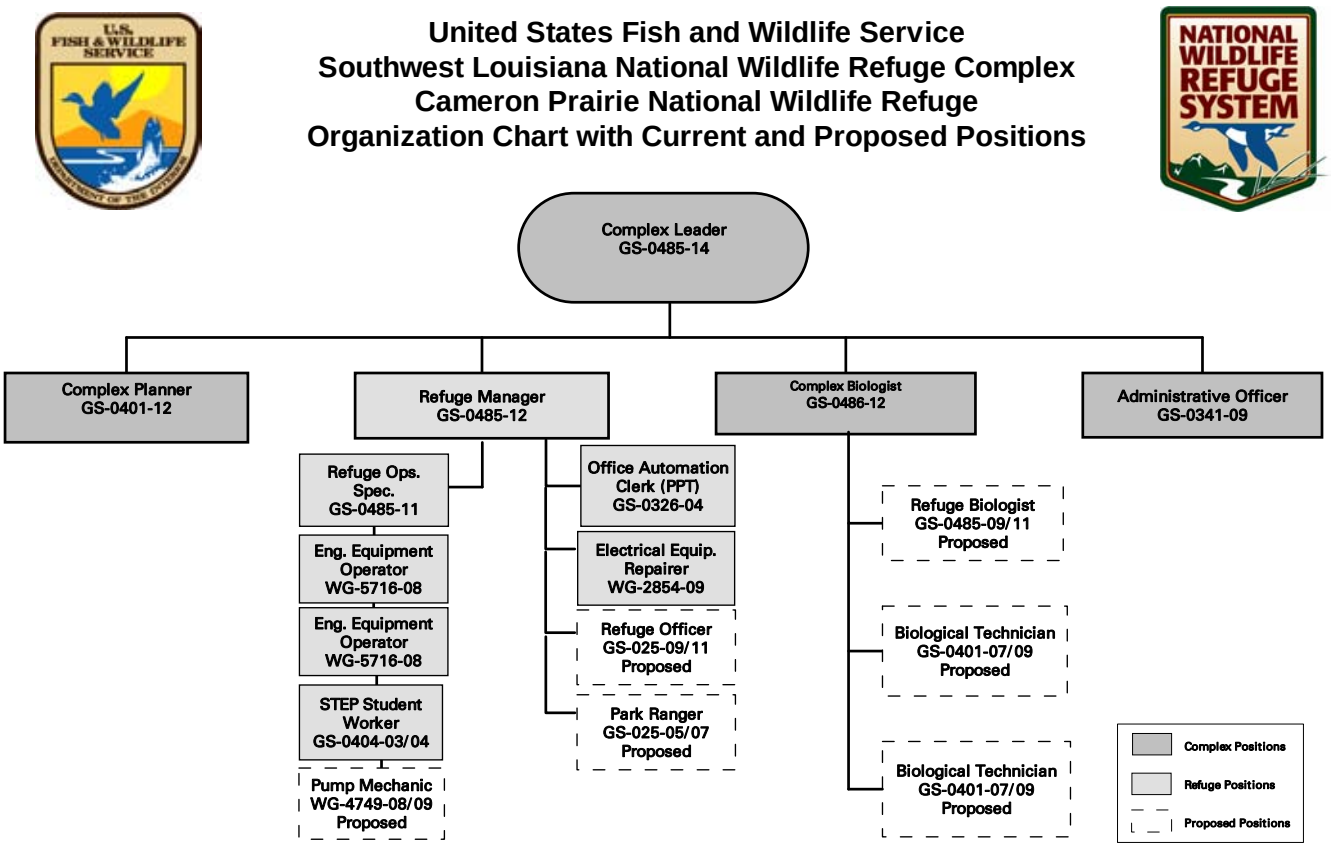
Three of the staff members are responsible for management activities on the East Cove Unit of nearby Sabine National Wildlife Refuge. The 14,927-acre East Cove Unit is part of the larger multi-agency Cameron Creole Watershed Project (64,000 acres), a marsh restoration effort for which the Service has management responsibility. The Refuge Manager spends 50 percent of his time on management of the Cameron Creole Watershed Project while the Electrical Equipment Repairer spends 100 percent of his time on biological and maintenance duties for the Project. The Complex Biologist is heavily involved in overseeing many of the responsibilities of managing the multi-agency watershed project.

In order for the Refuge to fully implement the goals, objectives, and strategies identified in this CCP, additional staffing will be necessary. Table 16 identifies costs of existing and proposed staffing and Figure 24 is an organization chart of Cameron Prairie National Wildlife Refuge's current and proposed staffing.

Table 16. Cost of existing and proposed positions

Position	Annual Costs of Positions*	Annual Costs of Proposed Positions*
Complex Positions assigned to Headquarters		
Complex Leader, GS 14		
Natural Resource Planner, GS 12**		
Complex Biologist, GS 12		
Complex Administration Officer, GS 9		
Salary Total for Existing Complex Positions	**$336,555.00**	
Cameron Prairie Existing Positions		
Refuge Manager, GS 12		
Refuge Operations Specialist, GS 11		
Electrical Equipment Repairer, WG 9		
Engineering Equip. Operator, WG 8		
Engineering Equip. Operator, WG 8		
Office Assistant, GS 4		
STEP Student , GS 4		
Salary Total for Refuge Positions	**$415,029.00**	
Sub-Total	**$751,584.00**	
Proposed Positions		
Refuge Biologist, GS 9 - 11		
Biological Technician, GS 5 - 7		
Biological Technician, GS 5 - 7		
Refuge Officer, GS 9		
Park Ranger (Public Use), GS 9 - 11		
Pump Mechanic, WG 8		
Salary total for Proposed Positions		**$383,879.00**
Total (Existing and Proposed)		**$1,135,463.00**
*** 2005 Salary Rates and Benefit Additives; **Position will transfer when CCP's are completed;**		

Figure 24. Current and proposed staffing for Cameron Prairie



Summary Table of Costs for 2004 – 2019

The costs of completing projects described in this chapter are shown in Table 17.

Table 17. Summary of Costs for 2005 – 2019

Project Number	Project Title	One-time Costs	Annual Costs
1	Expand and enhance moist soil management	$7,351,208.00	$171,500.00
2	Restore and monitor freshwater impoundments	$8,674,000.00	$135,000.00
3	Improve habitat quality in natural marsh and prairie	$315,000.00	$23,000
4	Control undesirable plants and animals	$275,000.00	$25,000.00
5	Meet and fulfill heavy equipment needs	$1,028,000.00	0
6	Inventory and monitor wildlife populations and responses to	$39,600.00	$20,200.00

	adaptive management		
7	Improve Visitor Services	$2,367,572.00	$160,428.00
8	Improve and enhance fishing opportunities	$102,000.00	$2,000.00
	Existing staff costs, Complex – 4 FTE's (Based on FY05 salary costs)	0	$336,555.00
	Existing staff costs, Refuge – 5.5 FTE's (Based on FY05 salary costs)		$415,029.00
	Proposed staff costs – 6 FTE's (Based on FY05 salary costs)		$383,879.00
	Base Operations		$75,000.00
Total		$20,152,380.00	$1,747,591.00

Although there is no guarantee that funding and staffing increases will be allocated, implementation of projects identified in the preferred alternative would be achieved when possible.

STEP-DOWN PLANS

Cameron Prairie has the following step-down management plans: Alligator and Furbearer Harvest Plan; Aircraft Pre-accident Plan; Sport Fishing Plan; Hunt Plan; and Continuity of Operations Plan. Table 18 lists plans that need revised or written and proposed completion dates.

Table 18. Step-down Plans.

Plan Name	Fiscal Year Proposed Completion/Revision Date
Fire Management/Fire Effects Monitoring	2005
Volunteers, Friends, and Partnerships	2007
Population Management	2009
Law Enforcement	2009
Visitor Services	2010
Sport Fishing	2010
Habitat/Water Management Plan	2010
Exotic Species	2010
Pesticide Use and Disposal	2010
Alligator & Furbearer Harvest Plan	2010
Fisheries Resources	2015
Cultural Resources	2019

PARTNERSHIP OPPORTUNITIES

Cameron Prairie National Wildlife Refuge has historically partnered with many others to improve management of the Refuge. It is anticipated that these partnerships will continue and opportunities to develop additional partnerships will be pursued.

Partnerships are very important to the Refuge to achieve its goals, objectives, and strategies, leverage funds, minimize costs, and bridge relationships with others.

Presently, the Refuge has cooperated with the Louisiana Department of Fisheries and Wildlife, Louisiana Department of Natural Resources, Louisiana Department of Transportation and Development, U.S. Army Corps of Engineers, U.S. Geological Survey Wetlands Research Center, National Resources Conservation Service, National Oceanic and Atmospheric Administration, North American Wetlands Conservation Council, City of Lake Charles, Lake Charles Visitors and Convention Bureau, Cameron Parish Police Jury, Creole Nature Trail, Miami Corporation, Sweet Lake Land and Oil, McNeese State University, Louisiana State University, Ducks Unlimited, Coastal Prairie Conservancy, and Texas Parks and Wildlife.

Other opportunities to support environmental education, public awareness, and outreach, development of a formal volunteer program and helping establish a Friends group will be a high priority for the Refuge.

MONITORING AND ADAPTIVE MANAGEMENT

The goals and objectives found in this plan have designated various strategies that will improve the Refuge's capability to apply adaptive management techniques and monitor the success of management actions. Monitoring is critical to successful implementation of this plan and is necessary to evaluate the progress toward achieving objectives and to determine if Refuge conditions are changing. All projects and associated strategies are, of course, contingent upon funding.

PLAN PERFORMANCE

This plan will be reviewed annually to determine if any revisions are necessary. Priorities will be assessed. Step-down management plans will be developed to address completion of strategies that support goals and objectives. Any revision or major variances to this plan would be carried out under policies set forth in the National Environmental Policy Act of 1969 and would include opportunities for public review. A new plan is required after 15 years.

Annual narratives will contain documentation of successful implementation of the goals, objectives, and strategies within the Plan. Various means to inform the public of accomplishments may also be carried out through news releases, newsletters, and personal communications.

VI. List of Preparers

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Roy Walter, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service, Sabine National Wildlife Refuge, Hackberry, Louisiana – Provided maps and editing

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CONTRIBUTORS:
Pre-planning for this CCP began in early 2002 when Biological and Public Use Reviews of Cameron Prairie National Wildlife Refuge were held. Experts and specialists submitted recommendations for future management. These recommendations were used extensively during the development of this Plan. Contributors include
:

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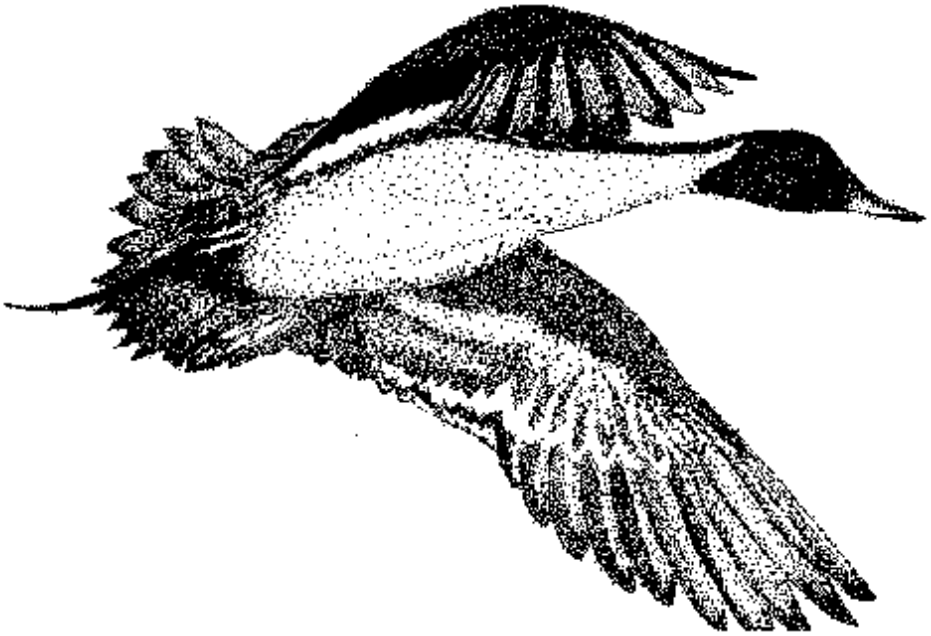
SECTION B. DRAFT ENVIRONMENTAL ASSESSMENT



Cameron Prairie National Wildlife Refuge

Bell City, Louisiana

Draft Environmental Assessment

for the

Comprehensive Conservation Plan

I. Background

INTRODUCTION

This Environmental Assessment (EA) for Cameron Prairie National Wildlife Refuge has been prepared in compliance with the National Environmental Policy Act. It discusses the purpose and need for the Comprehensive Conservation Plan (CCP) for the Refuge which is located in Cameron Parish, Louisiana, (Figure 1), and provides an analysis of the environmental impacts that could be expected from each of the management proposals outlined in the plan. This analysis assists the Fish and Wildlife Service in determining if it will need to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI) for the Refuge's proposed CCP.

The U.S. Fish and Wildlife Service (Service) is the Nation's primary conservation agency concerned with the protection and long-term management of wildlife resources. The Service administers the National Wildlife Refuge System, a system of more than 540 national wildlife refuges embracing over 93 million acres, much of which is primarily managed for the enhancement of migratory bird populations and federally listed threatened and endangered fish, wildlife, and plants. Of particular concern in the Lower Mississippi Valley Ecosystem and the adjacent Texas Gulf Coast Ecosystem is the plight of migratory bird populations—migratory waterfowl and shorebirds as well as neotropical migrant songbirds—and the loss of coastal marshland from both natural and human causes. As a result, the Service is emphasizing the maintenance and restoration of coastal wetlands and productive bird populations in the proposed management plan for Cameron Prairie National Wildlife Refuge.

PURPOSE AND NEED FOR ACTION

The purpose of the CCP and EA is to establish and implement management direction for Cameron Prairie National Wildlife Refuge for the next 15 years.

The EA is needed to set forth and evaluate a range of reasonable management alternatives for the Refuge. Each alternative was generated with the potential to be fully developed into a final CCP and to describe the predicted biological, physical, social, and economic impacts of implementing each alternative. The Fish and Wildlife Service will select an alternative to be fully developed for this refuge.

The Service identified issues, concerns, and needs through discussions with the public, agency managers, conservation partners, and others. In particular, the Service's planning team identified a range of alternatives, evaluated the possible consequences of implementing each, and selected Alternative B as the proposed management action. In the opinion of the Service and the planning team, Alternative B is the best approach to guide the Refuge's future direction.

There is no current plan that identifies priorities and ensures consistent and integrated management of the Refuge, thus necessitating the need for this plan. The National Wildlife Refuge System Improvement Act of 1997 requires that all national wildlife refuges have a CCP in place within 15 years.

DECISIONS TO BE MADE

Based on the assessment described in this document, the Fish and Wildlife Service will select an alternative to implement the Final Comprehensive Conservation Plan for Cameron Prairie National Wildlife Refuge. A FONSI is a statement explaining why the selected alternative will not have a significant effect on the quality of the human environment. This determination is based on an evaluation of the Service and refuge system mission, the purpose(s) for which the Refuge was established, and other legal mandates. Assuming no significant impact is found, implementation of the plan will begin and will be monitored annually and revised when necessary.

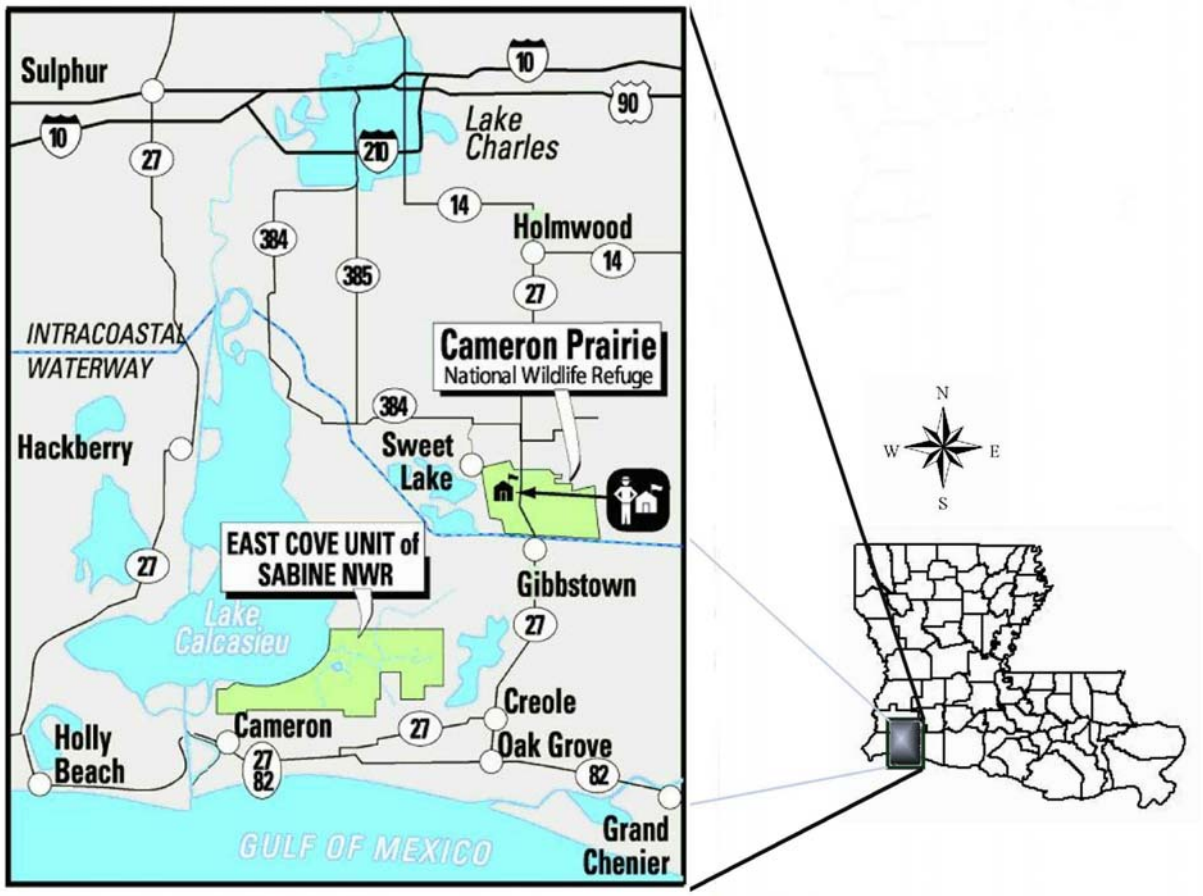
PLANNING STUDY AREA

Cameron Prairie National Wildlife Refuge is located approximately 25 miles southeast of Lake Charles, Louisiana, in north central Cameron Parish, and consists of two separate and distinct units (Figure A). The Gibbstown Unit contains 9,621 acres of freshwater marsh, coastal prairie, and early successional wetlands, and is managed to preserve and protect wintering waterfowl and their habitat. This unit is located four miles west of the western boundary of Lacassine National Wildlife Refuge, and is bordered on the north and west by private land. The Gulf-Intracoastal Waterway forms the southern boundary of the unit, while north canal forms the eastern boundary (USFWS, 2003).

The East Cove Unit was established in 1937 as part of Sabine National Wildlife Refuge. This unit, administratively transferred to Cameron Prairie NWR from Sabine in 1992, consists of 14,927 acres of brackish to intermediate marsh, which are managed as a nursery for brown and white shrimp, blue crab, and many fish species. Located in Cameron Parish in the southwest corner of Louisiana, the East Cove Unit is bordered on the west by Calcasieu Lake, and on the north, east, and south by privately owned marshes (USFWS, 2002a; 2002b; 2001; 1998). Because it has never been legally transferred to Cameron Prairie, the East Cove Unit is being addressed in the CCP for Sabine National Wildlife Refuge.

Cameron Prairie is part of the Southwest Louisiana National Wildlife Refuge Complex, which also includes Sabine to the west and Lacassine National Wildlife Refuge to the east. While these three refuges within the complex share certain staff and coordinate on a good deal of planning and management activities, this EA, and the CCP it covers, focuses only on Cameron Prairie.

Figure 25. Location of Cameron Prairie National Wildlife Refuge in Louisiana



COMPREHENSIVE CONSERVATION PLANNING PROCESS AND ISSUE IDENTIFICATION

A mailing list of organizations and individuals was compiled to ensure that the Refuge was contacting a wide array of “stakeholders”—including interested people, user groups such as hunters, bird watchers, and anglers, and agencies representing tribes, the State of Louisiana, and local jurisdictions. A series of open houses and scoping meetings were held in early 2003 at various convenient locations in several communities throughout the area. The scoping meetings covered comprehensive conservation planning occurring simultaneously at Cameron Prairie, Sabine and Lacassine National Wildlife Refuges, and attendees were invited to register their comments, input, observations and preferences on any or all three refuges.

Announcements giving the location, date, and time for the first scoping meeting appeared in local newspapers and were furnished to local residents. Input obtained from the scoping meeting and discussions held with state and local officials, civic groups, and

conservation organizations were used to develop the draft plan. Very few comments from the public were received about Cameron Prairie per se during these meetings and the overall scoping period.

Beginning with the development of the draft plan, the planning team identified a list of issues and concerns likely to be associated with the management of the Refuge. These issues and concerns were expanded to include those ideas generated by citizens from the local community. Refuge staff contacted local civic groups, as well as federal, tribal, state, and local agency representatives to gather additional issues and concerns and to respond to preliminary alternatives developed by the planning team in 2003.

Together with refuge goals, key issues, and a range of management options, a basis was formed for the development and comparison of the management alternatives described in this document. Comments received from the internal agency review, open house, and other responses from the public will be forthcoming following review of this Draft CCP and Draft EA and will assist the Service in refining the range of alternatives described in this section, especially the preferred alternative that constitutes the proposed CCP. Several significant key issues or problems formed the basis for the development and comparison of the different alternatives described in Chapter III.

II. Alternatives

FORMULATION OF ALTERNATIVES

After conducting internal and external scoping meetings, the planning team developed four broad goals for Cameron Prairie, the pursuit of which would help realize its purpose and vision. These goals apply to each of the alternatives described below.

Alternatives are different approaches or combinations of management objectives and strategies designed to achieve the Refuge purpose, vision, and the goals identified in the Comprehensive Conservation Plan; the priorities and goals of the Lower Mississippi Valley Ecosystem Team; the goals of the National Wildlife Refuge System; and the mission of the United States Fish and Wildlife Service. Alternatives are formulated to address the significant issues, concerns, and problems identified by the Service and the public during scoping meetings.

The three alternatives identified and evaluated represent different approaches to provide permanent protection and restoration of fish, wildlife, plants, habitats, and other resources at Cameron Prairie National Wildlife Refuge.

The planning team assessed biological conditions and analyzed external relationships affecting the Refuge. This information contributed to the development of goals and objectives and, in turn, alternative formulation. As a result, each alternative presents different sets of objectives and strategies for reaching long-term goals. Each alternative was evaluated based on how much progress it will make and how it will address core habitat issues, problems, and wildlife threats.

Problems and threats — which can also be expressed as issues, concerns and opportunities — provide important perspective and guidance in developing alternatives. Trends in habitat and wildlife uses were evaluated, as was the capability of refuge habitat to support these uses.

Overall, the greatest risk to fish, wildlife, plants, and habitat in the Chenier Plain of the Gulf Coast Ecosystem is from extensive wetland habitat degradation and loss that has occurred over the past century. Louisiana has the highest rate of wetland loss of any state in the nation, estimated at 25-35 square miles a year, accounting for 80 percent of the national total (Esslinger and Wilson, 2001). Wetland area in the Chenier Plain declined 16 percent from the mid-1960's to 1990. These habitat losses have led to commensurate impacts on wildlife populations, especially of those species dependent on wetlands. As a result, the Service has identified wetland preservation and restoration as the most important wildlife conservation priority in the Gulf Coast Ecosystem.

DESCRIPTION OF ALTERNATIVES

Serving as a basis for each alternative, sets of objectives were developed by the planning team that lead to the fulfillment of the Refuge purpose and the National Wildlife Refuge System mission. Objectives are desired conditions or outcomes that are grouped into sets and for this planning effort, consolidated into three alternatives. These alternatives, overall, represent a range of different management treatments, approaches, or priorities for managing the Refuge over a 15-year time frame. The three preliminary

alternatives are summarized below. Following the summary descriptions is a table that depicts the objectives formulated for each alternative.

ALTERNATIVE A — NO ACTION (CURRENT MANAGEMENT DIRECTION)

Under the No Action Alternative, Refuge management would not change. It would continue with approximately the same direction, emphases, constraints, and priorities that have characterized management decisions and actions in recent years. Cameron Prairie's size would remain at 9,621 acres and all wetlands would continue to be 100 percent freshwater.

Under this alternative, the Refuge would continue the following actions related to habitat management:

- Actively manage 800 acres of moist soil units;
- Keep moist soil areas in an early successional stage, however, doing minimally as at present, hindered by insufficient funding, equipment, and staff;
- Maintain two to four pumped impoundments totaling 1,300 to 1,400 acres;
- Maintain 1,800-1,900 acres as passive management impoundments, wetlands, and non-impoundments;
- Conduct prescribed burns on approximately 2,000-3,000 acres per year;
- Maintain 1,500 acres of deeper water impoundments;
- Prohibit grazing by cattle (grazing occurred in the 1980's and was later eliminated on the Refuge);
- Keep 100-200 acres of green browse specifically for geese;
- Continue three grit sites for the benefit of waterfowl;
- Manage up to 100 acres of natural prairie.

Under the No Action Alternative, the quality of sanctuary available to waterfowl on the Refuge would continue to decline, as a result of perpetuating recent habitat changes and succession that have been largely unfavorable to ducks and geese.

With regard to public use, existing opportunities would continue under the No Action Alternative. The Visitor Center along SH 27, which bisects the Refuge, would keep the same exhibits, schedule and hours of operation. One observation platform behind the Visitor Center would be maintained. The Pintail Wildlife Drive, a three-mile graveled auto tour route south of the Visitor Center on the opposite side of SH 27, would continue to provide opportunities for visitors to observe some of the Refuge wildlife and habitat resources. Additionally, the photography blind near the wildlife drive would continue to be managed and maintained for the benefit of the visiting public.

The current hunting program involves resident big game, small game, and migratory bird hunting which consists of a youth waterfowl hunt. A lottery alligator hunt also occurs. These would remain the same under the No Action Alternative.

Fishing opportunities would remain the same under this alternative. Fishing would continue to be limited to Bank Fishing Road, the SH 27 ditch, and the outfall canal. Access to these sites would remain as it is today. Bank Fishing Road has a parking area at the end of the road. SH 27 ditch is the most used fishing area on the Refuge. The

Visitor Center parking lot and the bank fishing parking area are the two primary parking areas to access fishing in the ditch. The outfall canal is accessible only by boat.

Limited environmental education and wildlife interpretation facilities, opportunities and activity levels would continue under the No Action Alternative. There would continue to be no staff person, such as an outreach coordinator, dedicated to these functions.

ALTERNATIVE B — MAXIMIZE QUALITY AND QUANTITY OF HABITAT FOR WINTERING WATERFOWL (PROPOSED ACTION)

Alternative B, the Proposed Action, would maximize the quality and quantity of habitat for wintering waterfowl by focusing on a more adaptive management approach through improved biological monitoring. As with Alternative A, Cameron Prairie's size would remain at 9,621 acres and all wetlands would continue to be 100 percent freshwater.

Under this alternative, the Refuge would take the following actions related to habitat management:

- Rehabilitate and improve capacity of water delivery and pumping systems;
- Actively manage 1,500 acres of moist soil units;
- Intensively manage highly productive wetlands or moist soil units;
- Keep moist soil units in early successional stage beyond what is done now;
- Inventory plant species and their seed production (biomass production) to determine desired plant mix for high quality waterfowl habitat;
- Increase acreage of highly productive waterfowl habitat;
- Improve capabilities to reverse progression of succession through drawdowns, prescribed fire, plowing and discing;
- Reduce organic materials in impoundments through drawdowns, prescribed fire, plowing and discing (equipment would need replacing and would need larger implements);
- Increase use of fire, pumping, etc. to achieve goal of reducing organic materials (equipment would need replacing and would need larger implements);

Finding increased funding would be a practical problem potentially impeding the full implementation of this alternative. It would be more expensive to manage the Refuge in this manner.

In general, wildlife observation, photography, interpretation, and environmental education opportunities would increase under Alternative B, but hunting and fishing opportunities would remain the same as in the No Action Alternative (A). Working with the Complex's outreach coordinator, Cameron Prairie would also develop new materials and exhibits for use in environmental education and interpretation.

ALTERNATIVE C — DEGRADE ALL LEVEES AND HOLD REFUGE IN CUSTODIAL FORM

Under this alternative, Cameron Prairie would degrade all levees and hold Refuge property in custodial form. Alternative C would degrade levees to an extent defined as the "nearest marsh elevation found in the area."

After this, no active habitat management would be applied. Instead, Refuge staff would serve as good caretakers or custodians of the Refuge, observing and monitoring the natural forces and ecological succession that would shape its habitats and effectively determine their suitability for wildlife. A “hands off” or passive approach to refuge management in an area that has been so heavily altered by a century of human activity — including crop cultivation; grazing; oil and gas exploration and development; canal, drainage ditch, levee and road building; hunting; introduction of exotic species; and so forth — would not lead to habitat conditions resembling those that would have occurred on the site today if these interventions had never taken place. Some of these interventions produced long-lived or virtually permanent results that cannot be undone simply by degrading levees and ceasing all active management.

Alternative C would entail the following for habitat at Cameron Prairie:

- Abandon water delivery and pumping systems;
- Do not actively manage any moist soil units;
- Stop management of highly productive wetlands;
- Inventory plant species to determine the effects of succession;
- Units 1, 2, & 8 would change due to succession and loss of open water for waterfowl (would become predominantly emergent vegetation reducing accessible water habitat);
- Conduct no prescribed fire, plowing or discing;
- Limit fire management to hazardous fuel reduction and suppression of wildfires;
- Result in reduced capabilities to reverse progression of succession.

Under Alternative C, no effort would be made to reduce organic materials in impoundments through drawdowns, prescribed fire, plowing and discing. There would be no need to replace and upgrade equipment and facilities such as pumps, tractors, and water control structures.

This alternative would result in very little effective high quality sanctuary. That is, high ground would succeed to a mix of Chinese tallow, willow, and hackberry, while lower ground reverted to dense stands of maidencane. There would be few open areas.

With regard to public use, each of the six priority public uses would be strongly encouraged by the addition of new facilities. However, actual opportunities to enjoy these on the Refuge would in all probability decline, because of the decreased value of wildlife habitat that would occur because of no active management, and the subsequent decline in wildlife diversity and abundance.

The implications for habitat of each of the three alternatives are shown in Table 19.

Table 19. Comparison of Cameron Prairie Habitats under Three Management Alternatives (in acres) (1980's to 2014)

Habitat/Mgmt. Action	**Current** (2004) Alternative A	**Proposed** (2020) Alternative B	**Custodial Management Alternative C**
Management moist soil	800-900	1300-1500	0
2-4 Pumped impoundments	1300-1400	2000-4000	0
Passive mgmt. impoundments /wetlands/non-impoundments	1800-1900	2000-3600	0
Prescribed burned/year	2000-3000	2500-3000	0
Deeper water impoundments for submerged aquatic vegetation or fish	1500	1600	0
Grazed by cattle	0	0	0
Green browse specifically for geese	100-200	200-300	0
Grit sites	3	3	0
Freshwater percent	100%	100%	100%
Refuge size	9621	9621	9621
Natural Prairie Management	# 100	200-400	0

Note: Acreages depicted in management actions do not add up to Refuge total acreage since some actions can occur on the same habitat type.

COMPARISON OF ALTERNATIVES

Each alternative differs in the type of land management, conservation and protection it would confer on Cameron Prairie NWR to achieve long-term wildlife and habitat goals and objectives. In particular, Alternative C varies markedly from Alternatives A and B in its approach to habitat management — passive vs. active — and in the probable outcome for habitat conditions and wildlife abundance and diversity.

However, two of the three alternatives are similar in their approach to managing the Refuge. Alternatives A and B would each protect and enhance a variety of freshwater marsh and upland prairie habitats. These two would also be consistent with the following: Partners-in-Flight Plan; North American Waterfowl Management Plan; Lower Mississippi Valley Joint Venture; Chenier Plain Initiative of the Gulf Coast Joint Venture; Endangered Species Act; National Wildlife Refuge System Improvement Act; Migratory Bird Conservation Act; and mission and goals of the National Wildlife Refuge System. Alternative B would perform more highly in approaching the intent of these plans and statutes, but it would also cost more to implement than Alternative A. It is doubtful that the approach embodied in Alternative C would be considered consistent with the intent of the above plans and statutes.

Table 20 identifies and compares management actions as a means of responding to the issues raised by Service managers and the public. These management actions were summarized into the three alternatives described above to accomplish the refuge system mission, the authorized purpose of the refuge, and to address significant threats, problems, and issues raised by public agencies and private citizens.

Table 20. Comparison of Objectives by Management Alternative

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
Goal A: Habitat — Preserve, restore, and enhance diverse habitats to provide favorable conditions for migratory and native wildlife species.		
	Objective A—1: Moist Soil Units	
Maintain 800-900 acres of the Refuge in moist soil units to provide shallow water and emergent wetland plant species for waterfowl, shorebirds, and wading birds.	Establish adaptive management capabilities on Units 5, 6, 7, 9, 10, and 14A and B (2,586 acres) to provide shallow water and emergent wetland plant species for waterfowl, shorebirds, and wading birds.	Eliminate all actively-maintained moist soil units to stop management intervention in habitat succession.
Strategies: Same as Alternative B.	Strategies: (a) — Moist soil units will be maintained in early successional native plant communities for the production of annual seed crops to encourage and improve use by wading birds, shorebirds, and several waterfowl groups. Management actions will include drawdown timing and duration, fire, discing, soil disturbance, mowing, and water buffaloing. (b) — Provide moist soil habitat from mid-August through October for early migrating waterfowl and shorebirds. (c) — Provide moist soil habitat from November through March for wintering waterfowl. (d) — Upgrade pumps and pumping capacity of the Refuge and keep canals relatively free of excessive vegetation to improve water movement capability. (e) — Rehabilitate existing levees and canal systems to help keep canals relatively free of excessive vegetation. (f) — Plan, monitor, document and archive plant and wildlife responses to moist-soil management actions utilizing	Strategies: (a) — Degrade levees to an extent defined as the “nearest marsh elevation found in the area.” (b) — Cease pumping.

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	standardized techniques and refuge-wide sampling techniques. (g) — Document water movement patterns on the Refuge. (h) — Hire a mechanic to maintain and operate pumps. (i) - The Refuge will consider implementation of cooperative rice farming as an alternative management option, particularly in years when budget constraints limit fuel purchases and operation of pumps, tractors, and other equipment.	
	Objective A—2: Impoundments	
Actively manage 1300-1400 acres of the Refuge as impoundments to improve waterfowl food production. <u>Strategies</u>: (a) — Utilize drawdowns, pumping, canals, levees, deep-water flooding, fire and sub-dividing of impoundments to maintain a complex of more native-like submerged or floating aquatic plants preferred by diving and dabbling ducks. (b) — Establish sampling schemes, (transects, sampling points, etc.) to be able to monitor and record current plant conditions and to archive plant community responses to treatments. In a standard format protocol – record management treatments (draw downs, water levels, timing, mechanical activities, climatic conditions, etc.) in such a way that they can be repeated and evaluated.	Actively manage impoundment Units 1, 2A, 2B, 2C, 3A, 3B, 4, and 8 (4,796 ± acres) to improve waterfowl food production. <u>Strategies</u>: (a) — On a rotational basis, utilize drawdowns, pumping, canals, levees, deep-water flooding, fire and sub-dividing of impoundments to maintain a complex of more native-like aquatic plants (submerged or rooted with floating leaves) preferred by diving and dabbling ducks. (b) — Improve water management capabilities by purchasing and strategically placing 2-3 pumps and water control structures to allow draw downs to help maintain these areas for desirable aquatics and better ratio of open water to plant composition. (c) — Improve levees and drainage capabilities. (d) — Collect and archive baseline water quality data for approximately three continuous years for the major inflow sources	Degrade levees and eliminate impoundments so that waterfowl fend for themselves and find food in a less artificial environment. <u>Strategies</u>: (a) — Cease management intervention in habitat succession and allow nature to run its course. (b) — Accurately monitor changes in habitat composition and quality and waterfowl use of former impoundment areas.

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	of water supplying the Refuge. Ensure water gauges exist to record water levels in the units. (e) — Establish sampling schemes, (transects, sampling points, etc.) to monitor, record, and archive current plant conditions and to document plant community responses to treatments. Record management treatments (draw downs, water levels, timing, mechanical activities, climatic conditions, etc.) in such a way that they can be repeated and evaluated.	
	Objective A—3: Unimpounded Marsh	
Continue passively managing Units 11A & B and 13A& B as unimpounded marsh. Strategies: (a) — Monitor habitat changes over time under passive management approach. (b) — Monitor use of Units 11A & B and 13A & B by birds, mammals and reptiles.	Increase species diversity and decrease the vegetative density in Units 11A & B and 13A & B through the appropriate use of fire to improve wildlife habitat for mottled ducks and grassland dependent species. Strategies: (a) — Utilize fire to improve and maintain wildlife habitat value (especially mottled duck nesting habitat) and restore the hydrology (improved water flows) of the units. (b) — Update the Refuge's Fire Management Plan to include management of Units 11A & B and 13A & B. (c) — Monitor use of Units 11A & B and 13A & B by birds, mammals and reptiles.	Continue passively managing Units 11A & B and 13A& B as unimpounded marsh. Strategies: Same as Alternative A.
	Objective A—4: Native Prairie	
Maintain and enhance up to 100 acres of native prairie grasses in Units 12A and B and 14A.	Preserve, enhance, and restore up to 400 acres of native prairie grasses in Units 12A and B and 14A and B.	Cease active prairie management. Natural succession and encroachment by non-native species would eventually result in zero acres of native prairie grasses.

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
Strategies: Same as Alternative B.	Strategies: (a) — Utilize various techniques such as fire, mechanical control, and seed planting to improve and maintain native prairie communities. (b) — Survey, inventory, monitor, and archive grassland bird populations using area searches and transects protocols focusing on wintering species. (c) — Improve prairie grasses on 12 acres in Unit 14B to be used as an outdoor classroom for environmental education groups and as a seed production source for other prairie restoration areas.	Strategies: (a) — Stop use of prescribed fire, mechanical control and planting on prairie on prairie sites in order to allow plant community succession to run its course. (b) — Monitor results of ecological succession on prairie grassland sites and record changing species and structural composition.
Objective A—5: Levees		
Ensure vegetated levees on the Refuge provide suitable foraging habitat for forest dwelling land birds on their northward and southward migratory journeys. Strategies: Same as Alternative B.	Ensure vegetated levees on the Refuge provide suitable foraging habitat for forest dwelling land birds on their northward and southward migratory journeys. Strategies: (a) — Promote fleshy-fruit producing shrubby conditions through appropriate use of fire and restoration techniques. (b) — Monitor bird population responses to habitat restoration and manipulation on vegetated levees using a standardized migration monitoring protocol for tracking timing and extent of transient land bird use.	Allow vegetation and habitat on levees to revert to opportunistic species, including non-natives, which may or may not be advantageous for neotropical, forest dwelling land birds. Strategies: (a) — Monitor bird population responses to habitat changes as natural succession is allowed to run its course on vegetated levees using standardized migration monitoring protocols for tracking timing and extent of transient land bird use of the Refuge.
Objective A—6: Undesirable Plants and Animals		
Maintain reduced levels of undesirable plants and animals impacting native flora and fauna. Strategies: Same as Alternative B.	Reduce to lowest practical level all undesirable plants and animals on the Refuge to minimize negative effects on native flora and fauna. Strategies: (a) — Develop an Undesirable Plants and Animals Species step-down Management plan within the	Monitor impacts caused by undesirable plants and animals on native flora and fauna. Strategies: (a) — Monitor the spread of undesirable plants and animals and record any injurious effects.

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	next 5 years. (b) — Explore and study effective methods to control and reduce maidencane, tallow trees, water hyacinth. (c) — Utilize specialized ditching equipment, drawdowns, discing, fire, approved chemical spraying, and possibly mechanical harvesting to control plant infestations that clog drainage canals. (d) — Update the Refuge's Fire Management Plan to include management of undesirable and invasive species. (e) — Inventory tallow tree infestations and eliminate problems by using chemical injections, deep flooding, and cutting or grinding. (f) — Survey and monitor nutria and other potentially injurious species (coyote, etc.) to determine if numbers need further control using various techniques. (g) — Document habitat impacts by nutria. (h) — Develop and write Pesticide Use and Disposal Plan by 2010.	(b) — Employ minimal methods to avoid clogging of drainage canals by plants.
	Objective A—7: Fire Management	
Use fire as a multipurpose management tool to reduce hazardous fuels and promote habitat diversity. <u>Strategies</u>: Same as Alternative B.	Use fire as a multipurpose management tool to reduce hazardous fuels and promote habitat diversity. Utilize prescribed fire on approximately 2,500 to 3,000 acres per year. <u>Strategies</u>: (a) — Develop a Fire Management Plan by 2005**.** (b) — Develop a Fire Effects Monitoring plan by 2005.	Use fire and mechanical treatments to reduce hazardous fuels. <u>Strategies</u>: Same as Alternative B, exclude (c). (a) — Determine the historical fire regime for Refuge plant

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	(c) — Reduce hazardous fuels and the potential for uncontrollable wildfires using prescribed fire, mechanical or chemical treatments to protect life, property, and natural resources on the Refuge. (d) — Consult with the Regional Fire Ecologist and the Refuge's Fire Management Officer for fire related management.	communities.
Objective A—8: Habitat Management Plan		
By 2007, prepare a step-down Habitat Management Plan for all units to provide specific guidelines for management actions. Water management would be a major component of the Plan.	By 2007, prepare a step-down Habitat Management Plan for all units to provide specific guidelines for management actions. Strategies: (a) – Ensure the major emphasis of this plan adequately addresses water management.	There would be no need to prepare a step-down Habitat Management Plan under Alternative C, since there would be no active management of Refuge habitats or intervention in the process of ecological succession.

Goal B: Wildlife — Promote and protect native and migratory wildlife populations on the Refuge to contribute to the purpose for which it was established and to the mission of the National Wildlife Refuge System.

Objective B—1: Waterfowl		
Provide wintering habitat for ducks and geese to partially contribute to the objectives (historic1970's population levels) of the North American Wildlife Management Plan's Gulf Coast Joint Venture, Chenier Plain Initiative (4,500,000 ducks and 526,000 geese respectively), while recognizing that limited ability to manipulate habitats will constrain results. Strategies: Same as Alternative B.	Provide wintering habitat for ducks and geese to contribute to the objectives (historic1970's population levels) of the North American Waterfowl Management Plan's Gulf Coast Joint Venture, Chenier Plain Initiative (4,500,000 ducks and 526,000 geese respectively). Strategies: (a) — Provide structures and water delivery sufficient to manage wetlands and provide habitat for early migrating ducks and wintering waterfowl. (b) — Seek funding to replace structures and maintain levees	Provide 9,621 acres of passively managed open space containing mixed terrestrial, wooded, and freshwater habitats that will provide some benefit for wintering waterfowl, thereby contributing modestly to the North American Waterfowl Management Plan's Gulf Coast Joint Venture, Chenier Plain Initiative. Strategies: Same as Alternative B, exclude (a), (b), (d), (e), (f).

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	critical to protecting the hydrological integrity of the Refuge. (c) — Continue to coordinate with partners (Migratory Bird Office, Louisiana Department of Wildlife and Fisheries) in the midwinter waterfowl surveys and ground counts. (d) — Provide the highest quality wintering habitat for migratory waterfowl to ensure survival and their return to the breeding grounds in good condition. (e) — Update the Refuge's Fire Management Plan to use fire as a tool to help provide high quality wintering waterfowl habitat. (f) — Encourage and support research on the Refuge. (g) — Promote education and public awareness of the importance of the Refuge, its habitat, and sanctuary value to waterfowl. (h) —Complex Biologist will serve as Co-Chairman of the Chenier Plain Initiative Working Group.	
	Objective B—2: Mottled Ducks	
Provide nesting, brood rearing, and molting habitat for mottled duck populations to contribute to the goals and objectives of the North American Waterfowl Management Plan's Gulf Coast Joint Venture, Chenier Plain Initiative. <u>Strategies</u>: Same as Alternative B.	Provide nesting, brood rearing, and molting habitat for mottled duck populations to contribute to the goals and objectives of the North American Waterfowl Management Plan's Gulf Coast Joint Venture, Chenier Plain Initiative. <u>Strategies</u>: (a) — Control Chinese tallow and other severe woody vegetation	Monitor trends in nesting, brood rearing, and molting in mottled ducks in response to habitat changes from custodial, non-interventionist approach to habitat management, in order to gauge contribution over time of Refuge to goals and objectives for mottled ducks in the North American Waterfowl Manage-ment Plan's Gulf Coast Joint Venture, Chenier Plain Initiative. <u>Strategies</u>: Same as Alternative B, exclude (a) and (b).

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	encroachment using fire and other management tools on areas suitable for mottled duck nesting. (b) Provide water for brood rearing during March-August during years when units are not being managed for waterfowl food production in one to two of the following units: 1, 2A, 2B, 3A, 4, and 8. Utilize nocturnal surveys to locate preferred brood rearing pools and impoundments and maintain them to provide late spring and summer brood habitat. Limit disturbance on pools & levees. (c) — Provide protective habitat for mottled ducks during July-August, in one of the following units: 1, 2A, 2B, 3A, 4, and 8. Limit human disturbance in this habitat. (d) — Participate in multi-agency efforts to capture and band pre-season mottled ducks consistent with coordinated banding objectives. (e) — Monitor population trends through fall and winter aerial surveys as well as other scientifically designed surveys as feasible. (f) — Support mottled duck research that seeks to identify limiting factors. (g) – Provide ample breeding and post-breeding habitat for resident waterfowl such as mottled ducks and whistling ducks (Fulvous and black-bellied).	

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	Objective B—3: Geese	
Annually provide 100-200 acres of green browse for goose usage via, burning, discing, or some combination of all. Additionally provide one to three grit sites for geese. Strategies: Same as Alternative B.	Annually provide 200-300 acres of green browse for goose usage. Additionally provide one to three grit sites for geese. Strategies: (a) — Focus browse areas in "open" sites most conducive to goose use (geese prefer larger open sites)—some areas most likely having potential are: Units 14A, 14B, 11B, 5 or 6. (b) — Maintain grit sites of high quality grit located away from hunted areas. (c) – Utilize fire and discing to provide green browse habitat for goose use.	Annually provide 0 acres of green browse for goose and 0 grit sites for geese. Strategies: (a) — Closely monitor temporal and spatial patterns of goose usage of the Refuge to assess its benefits to wintering mid-continental goose populations and contribution to objectives of the Chenier Plain Initiative of the Gulf Coast Joint Venture of the North American Waterfowl Management Plan.
	Objective B—4: Shorebirds	
Provide late summer/fall foraging habitat for shorebirds to contribute to the goals of the United States Shorebird Conservation Plan. Strategies: Same as Alternative B.	Provide seasonal foraging habitat for migratory shorebirds to contribute to the goals of the United States Shorebird Conservation Plan. Strategies: (a) — Conduct shorebird monitoring surveys using the International Shorebird Survey protocol along levee roads bordering impoundments (at least 6 sites) to track occurrence, relative abundance, and response to management regimes. (b) — Maintain shallow (i.e., <6") mudflats from late summer through spring as a component of a mosaic of habitats available throughout the Refuge. (c) — Management units should be flooded July-August prior to migration and allow sufficient invertebrate accumulation.	Provide seasonal foraging habitat for shorebirds to contribute to the goals of the United States Shorebird Conservation Plan. Strategies: (a) – Conduct shorebird monitoring surveys using the International Shorebird Survey protocol [along levee roads bordering impoundments (at least 6 sites)] to track occurrence, relative abundance, and response to absence of management intervention. (b) – Minimize management of water flows and storage specifically for shorebirds.

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
Objective B—5: Colonial Waterbirds		
Provide habitat for colonial waterbirds to contribute to the goals and objectives of the North American Colonial Waterbird Conservation Plan. Strategies: (a) — Annually determine locations of nesting colonies and as best as possible estimate the number of pairs for each species present at each colony. Additional monitoring may not be necessary unless a specific need is identified to address other management activities. All others same as Alternative B.	Provide habitat for colonial waterbirds to contribute to the goals and objectives of the North American Colonial Waterbird Conservation Plan. Strategies: (a) — Survey colonies of tree- and ground-nesting waterbirds once a month between March and June to determine the locations and species composition of each rookery and determine potential disturbance factors and minimize problems as much as possible. (b) — Maintain at least six existing impoundments to provide critical foraging habitat for late summer and fall migrant waterbirds, with an emphasis on priority species. (c) — Identify and protect feeding areas from disturbance for late summer and fall migrant waterbirds.	Provide open space and sanctuary for colonial waterbirds to contribute to the goals and objectives of the North American Colonial Waterbird Conservation Plan. Strategies: Same as Alternative B, exclude (b).
Objective B—6: Non-game Migratory Landbirds		
Maintain habitat values on marshes, impoundment levees, and grasslands for non-game migratory landbirds to contribute to the Partners in Flight (PIF) objectives as outlined in the Coastal Prairies (Physiographic area #06) PIF Bird Conservation Plan. Strategies: Same as Alternative B.	Improve habitat values of marshes, impoundment levees, and grasslands for non-game migratory landbirds to contribute to the Partners in Flight (PIF) objectives as outlined in the Coastal Prairies (Physiographic area #06) PIF Bird Conservation Plan. Strategies: (a) — Determine marsh bird use of impoundment habitats and responses to various water management regimes, with special emphasis on black and yellow rails and least bitterns. (b) — Establish sampling locations most likely to support secretive marsh birds and survey	Monitor habitat values on unmanaged marshes, impoundment levees, and grasslands for non-game migratory landbirds to contribute to the Partners in Flight (PIF) objectives as outlined in the Coastal Prairies (Physiographic area #06) PIF Bird Conservation Plan. Strategies: Same as Alternative B, exclude (a). (a) — Determine marsh bird use of Refuge habitats and responses to various water conditions, with special emphasis on black and yellow rails and least bitterns.

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	throughout the year (seasonally) to determine distribution and abundance of black rails, king rails, yellow rails, and American and least bitterns.	
	Objective B—7: Grassland Birds	
Maintain up to 100 acres of open habitat consisting of grassy-herbaceous dominated ground conditions throughout the next 15 years to support priority grassland bird species. Strategies: Same as Alternative B.	Maintain up to 400 acres of open grassland habitat consisting of grassy-herbaceous dominated ground conditions throughout the next 15 years to support priority grassland bird species. Strategies: (a) — Determine the location of existing coastal prairie sites within the Refuge and promote the maintenance and development of grassy-herbaceous groundcover using prescribed fire or other appropriate management tools. (b) — Survey, inventory, and monitor grassland bird populations using area standardized searches and transects protocols focusing on wintering species of grassland birds.	Monitor use of existing (2004) prairie habitats by grassland birds to record changes as these habitats evolve through natural community succession, which will be allowed to proceed unchecked. Strategies: (a) — Same as Alternative B, exclude (a).
	Objective B—8: Alligators	
Annually establish an alligator population/nest density objective and harvest strategies in coordination with Louisiana Department of Wildlife and Fisheries (LDWF). Strategies: Same as Alternative B.	Annually establish a minimum alligator population/nest density objective and harvest strategies in coordination with LDWF. Strategies: (a) — Continue consulting with the LDWF to monitor and conduct more intensive aerial alligator nest surveys (about 14-15 percent of Refuge currently covered). (b) — Consult with LDWF to develop a customized harvest strategy that will focus on achieving target population goals (including desired age/sex composition). (c) —Monitor the annual harvest of alligators and collect all data	Annually establish an alligator population/nest density objective and harvest strategies in coordination with LDWF. Strategies: Same as Alternative B.

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	necessary to make sound biological decisions. (d) — By 2005, revise the Alligator and Furbearer Harvest Plan.	
	Objective B—9: Fisheries	
Identify and implement ways to improve fishery habitat in Unit 8 and other areas on the Refuge. <u>Strategy</u>: Same as Alternative B.	Identify and implement ways to improve fishery habitat in Unit 8 and other areas on the Refuge. <u>Strategy</u>: (a) — Consult with fishery biologists at the Service's Baton Rouge Fishery Resource Office and the Louisiana Department of Wildlife and Fisheries**.** (b) – Within the next 10 years, update the Fishery Resources Management Plan. The plan should try to mesh needs of fish with other wildlife. (c) – Improve habitat on 500 to 1,000 acres for the benefit of fisheries. (d) – Construct or rehabilitate ring levees and a series of interior canals and raised berms to produce water bodies with depths of 4 feet or greater in least 30 percent of the area and 6-7 feet deep in at least 5-10 percent of the area for fishery creation. (e) – Ensure that canal depths (7 feet deep) and bottom widths (30 foot minimum) allow for improved water circulation, adequate habitat during summer droughts, and enhanced angler access. (f) – With partners, periodically sample and maintain fish population data via netting, electrofishing, and angler surveys using proportional stock density (psd) as an index of sport fish population structure. If PSD calculations indicate a need,	Identify and implement ways to improve fishery habitat in Unit 8 and other areas on the Refuge. <u>Strategy</u>: (a) — Same as Alternative B, exclude (c), (d), (e), (f), (g).

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	establish length or slot limits on largemouth bass. (g) – Maintain ring levees and water control structures to prevent breaching and pool drainage.	
	Objective B—10: Inventory	
Inventory and monitor wildlife responses and uses of Refuge habitats utilizing biologically sound repeatable methods. Strategies: Same as Alternative B.	Inventory and monitor wildlife responses and uses of Refuge habitats utilizing biologically sound, repeatable methods. Strategies: (a) — Utilize scientific protocol and procedures (sampling design) to inventory wildlife responses and record data in a standardized format. (b) — The Refuge should seek additional funds to perform basic wildlife surveying, inventorying and monitoring. (c) — Explore opportunities with other Louisiana refuges to aerially survey all refuges during the same period – each refuge sharing in the contracted costs. (d) — Explore possibility of a Service pilot biologist being paid for by all Louisiana refuges. (e) —By 2008, develop and write a step-down plan for Population Management which will include a section on Inventory and Monitoring.	Inventory and monitor wildlife responses and uses of Refuge habitats utilizing biologically sound repeatable methods. Strategies: Same as Alternative B.

Goal C: People — Provide opportunities for safe, quality, compatible, wildlife-dependent public use and recreation, which includes hunting, fishing, environmental education, interpretation, wildlife observation, photography.

	Objective C—1: Public Use Management	
Within the next 10 years, complete steps to develop the Refuge's institutional capacity, both its infrastructure and operations, to provide for quality, wildlife-dependent public use.	Within the next 10 years, complete steps to develop the Refuge's infrastructure and operations — to provide for quality, wildlife-dependent public use.	Within the next 10 years, complete steps to develop the Refuge's institutional capacity, both its infrastructure and operations, to provide for quality, wildlife-dependent public

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
Strategies: Same as Alternative B.	Strategies: (a) — By 2010 develop an up-to-date Visitor Services Plan that includes recommendations for wildlife-dependent recreation. The Visitor Services Plan will encompass environmental education, interpretation, wildlife observation and photography, and outreach. (b) — Develop the means to obtain accurate visitor counts and projected visitation by partnering with a college or university, the Creole Nature Trail and Visitor Bureau. (c) — Improve quality and quantity of information about the Refuge, including signs and radio messages. (d) — Make various specific improvements to the facilities and operation of the Visitor Center and vicinity over the coming five years, including the following: • Coordinate Visitor Center hours with Sabine NWR to best accommodate the most number of visitors. • Make certain that there is someone to “meet and greet” whenever the Visitor Center is open (consider using volunteers to assist with this task). • Update the kiosk in front of Visitor Center. • Make brochures available when VC is closed. • Move “hours” sign in parking area so it is more visible to visitors. • (e) — Develop a Law Enforcement Plan by 2008. (f) — Hire one full-time law	use. Strategies: Same as Alternative B.

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	enforcement officer. (g) — Hire a Park Ranger (Public Use) for Visitor Services (environmental education, interpretation, etc.) to work under the direction and guidance of the Complex Outreach Coordinator. (h) – Incorporate fire education programs as needed.	
	Objective C-2: Hunting	
Offer quality hunting experiences for hunters and review the Refuge hunting program on an annual basis to monitor its success. <u>Strategies</u>: Same as Alternative B.	Offer quality hunting experiences for hunters and review the Refuge hunting program on an annual basis to monitor its success. <u>Strategies</u>: (a) — Waterfowl (ducks, geese, coots, and gallinules) hunting will remain for youth only with adult supervision in accordance with State and Federal regulations. (b) — Archery deer hunting will be permitted within existing Refuge seasons and as appropriate in accordance with State and Federal regulations. (c) – Snipe hunting will be permitted during the remaining portion of the State-designated season following the closure of the State waterfowl season. State regulations are applicable. (d) – Hunting for dove will be permitted during the first split of the State-designated season. State regulations are applicable. (e) – All hunters must possess a signed copy of the Refuge hunting regulations. Following all hunts, hunters must fill out a self-clearing harvest information form. (f) — The experimental hunt for rabbits is discontinued. Minimal interest by the public and low	Offer quality hunting experiences for hunters and review the Refuge hunting program on an annual basis to monitor its success. <u>Strategies</u>: Same as Alternative B.

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	numbers of rabbits in early to mid-winter has helped influence this decision. (g) — The Refuge staff will investigate the feasibility of enrolling in the Recreational Fee Program to charge a nominal fee for youth duck hunting to replace equipment (decoys) and maintain quality of blinds. (h) — The Refuge will offer on-site programs for the state hunter education curriculum and the mandatory archery safety course. This strategy could only be fulfilled with the hiring of an additional staff member (i.e., law enforcement officer or park ranger).	
	Objective C—3: Fishing	
Offer quality fishing experiences for anglers and review the Refuge fishing program on an annual basis to monitor its success. <u>Strategies</u>: Same as Alternative B.	Offer quality fishing experiences for anglers and review the Refuge fishing program on an annual basis to monitor its success. <u>Strategies</u>: (a) — The canal along Bank Fishing Road does not currently offer a quality fishing experience for the public. The ditch is overgrown with vegetation and open water is limited. The canal should be dredged to restore water flow resulting in improved access by fish and initiate aquatic exotic plant control in partnership with Louisiana Department of Wildlife and Fisheries. This improvement will provide enhanced fishing opportunities for anglers. (b) — To provide additional fishing opportunities, the Refuge staff should improve parking and access to the canal that runs adjacent to SH 27. For safety reasons, the public should be discouraged from parking on the	Offer quality fishing experiences for anglers and review the Refuge fishing program on an annual basis to monitor its success. <u>Strategies</u>: Same as Alternative B.

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	shoulder along the highway and should be directed to fish along the interior bank. The Refuge will keep this area mowed and maintained for fishing access. (c) — The Refuge will provide additional fishing opportunities near West Cameron Prairie Road on designated special fishing days, i.e. National Fishing Week or state-designated Special Fishing Days for special groups such as youth or handicapped people. (d) — Special event fishing days will be managed through partnerships with corporate sponsors or with other state and Federal conservation agencies. (e) — Within two years of the completion and approval of the CCP, the Refuge Fishing Plan will be updated to offer specific guidance on how Cameron Prairie can offer quality fishing experiences for certain types of fisheries and anglers. (f) — Procedures will be implemented for reviewing the Refuge fishing program on an annual basis to monitor its success and evaluate whether any changes are warranted. (g) — Provide additional boat launches and access to improve fisheries opportunities where open water is managed for public use. Specific recommendations include allowing fishing from March 15 to October 15 annually.	

Objective C—4: Wildlife Observation and Photography

Maintain existing opportunities for wildlife observation and wildlife photography.	Enhance existing opportunities for wildlife observation and wildlife photography by adding certain facilities over the coming decade.	Enhance existing opportunities for wildlife observation and wildlife photography by adding certain facilities over the coming decade.

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
Strategies: Same as Alternative B.	Strategies: (a) — Within the next 15 years, develop a 2-mile trail with an observation tower in Unit 9 to provide additional opportunities for wildlife observation and photography. Improvements will include a parking area and restroom facilities. (b) — Replace mile per hour sign and interpretive panels on Pintail Drive. Ensure panels are readable from vehicles. (c) — On the main sign at Pintail Drive, state that visitors must stay in car except in designated parking areas to minimize disturbance to wildlife and explain the reason. (d) — Improve the trail and bridge to the photo-blind. Make the bridge safer. Put a sign at the bridge that explains the procedure for reserving the photo-blind. In order to comply with the "stay in the car" guidelines, put a one-car parking area beside the bridge that is designated "Reserved Parking For Photo-blind Users Only." (e) – Allow commercial guiding for ecotourism, including birding, tour buses and other non-consumptive wildlife and recreational activities. Each guide would be covered by a special use permit.	Strategies: Same as Alternative B.

Objective C—5: Environmental Education Program

Within 5 years, develop and implement a quality environmental education program, under the responsibility of the Complex Outreach Coordinator. Strategies: Same as Alternative B.	Within the next 5 years, develop and implement a quality environmental education program, under the responsibility of the Complex Outreach Coordinator. Strategies: (a) — Consider effective ways to coordinate the environmental education program with the other	Within 5 years, develop and implement a quality environmental education program, under the responsibility of the Complex Outreach Coordinator. Strategies: Same as Alternative B.

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	two refuges in the complex. (b) — Area schools and teachers should be polled to determine their needs and logistical limitations. School requests and visits should be documented to determine needs. (c) — The Refuge should develop a self-guided packet, Environmental Educator's Guide, and other materials for teachers. (d) — When appropriate, based on teacher needs and station programs, conduct teacher workshops for Refuge-specific curriculum. (e) — Work with the school system to offer "in-service" training opportunities for teachers. (f) — Develop relationships with scout groups, youth councils, 4H, science clubs, and environmental education clubs. (g) — One full-time employee (proposed park ranger) should be responsible for environmental education at the Refuge under the direction of the Complex Outreach Coordinator. This could only be accomplished with an additional hire. (h) — Create a small parking lot in Unit 14B near the prairie demonstration and restoration site to be used seasonally by school groups as an outdoor classroom. (i) –Throughout the life of this plan, staff will develop key issues to communicate with off-site audiences. Primary audiences to target with information about Refuge-related issues and actions include Congress, corporate sponsors, communities,	

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	conservation groups, and communications media. (j) – Incorporate fire education program as needed. (k) – Construct an environmental education shelter near the Visitor Center and Observation Deck.	
	Objective C—6: Interpretation	
Within 7 years, develop and begin to implement a quality interpretive program at Cameron Prairie NWR. Strategies**:** **Same as Alternative B.**	Within 7 years, develop and begin to implement a quality interpretive program at Cameron Prairie NWR. Strategies**:** (a) — Interpretation at the Refuge will include Service, Refuge System and Refuge-specific messages such as wetland loss, coastal erosion, habitat restoration and creation, importance of Refuge for migratory birds, and the Service's trust responsibilities. Additional themes to consider: neotropical migrants, marsh ecosystems, prairie decline and restoration, furbearers, oil and gas, alligators and harvest, fire, cultural themes such as Cajun names of wildlife, subsistence lifestyles. (b) — Develop new video for the Visitor Center using footage that is specific to Cameron Prairie NWR and have the video available for visitors to watch on a regular basis. (c) — Renovate exterior kiosks with current information and install a panel explaining what priority public uses are permitted on Refuges. (d) — Develop seasonal interpretive programming (based on staff availability) such as alligator talk, shorebird talk, Pintail Drive waterfowl talk, friendly	Within 7 years, develop and begin to implement a quality interpretive program at Cameron Prairie NWR. Strategies: **Same as Alternative B.**

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
	flames talk, etc. (e) — Interpret what the visitors are seeing from the observation deck behind the Visitor Center (seasonal management changes, moist soil management, birds, etc.). (f) — Extend the front boardwalk around the side of the Visitor Center and connect to back boardwalk. (g) – Incorporate interpretive signage about fire management where appropriate.	
	Objective C—7: Volunteers	
By 2005, develop and begin to implement a Volunteer, Friends, and Partnership Program Plan that will guide the Refuge in attracting dedicated volunteers to assist staff on certain tasks amenable to non-employees or non-specialists. Strategies: Same as Alternative B.	By 2005, develop and begin to implement a Volunteer, Friends, and Partnership Program Plan that will guide the Refuge in attracting dedicated volunteers to assist staff on certain tasks amenable to non-employees or non-specialists. Strategies: (a) — Develop volunteer job descriptions, and train all staff members on managing and supervising volunteers. (b) — Develop camper pads to the south of the maintenance compound for RV campers and interns, for on-Refuge accommodations. (c) — Develop a “Friends” group to support the Refuge with volunteers and in the community at large.	By 2005, develop and begin to implement a Volunteer, Friends, and Partnership Program Plan that will guide the Refuge in attracting dedicated volunteers to assist staff on certain tasks amenable to non-employees or non-specialists. Strategies: Same as Alternative B.

Goal D: Cultural Resources — Protect Refuge cultural resources in accordance with Federal and state historic preservation legislation and regulations.

	Objective D—1: Survey	
Over the life of the CCP, assess the feasibility of conducting a	Over the life of the CCP, assess the feasibility of conducting a	Over the life of the CCP, assess the feasibility of conducting a

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
Refuge-wide archaeological survey. Strategies: Same as Alternative B.	Refuge-wide archaeological survey. Strategies: (a) — Contact the State Historic Preservation Officer to determine if any known archaeology sites exist within the vicinity of the Refuge. (b) — Determine the cost of conducting the study and seek funding to accomplish the work. (c) — Consult the Regional Preservation Officer for guidance.	Refuge-wide archaeological survey. Strategies: Same as Alternative B.

Objective D—2: Education

Develop and implement an educational program that will provide an understanding and appreciation of the Refuge's ecology and the human influence on the region's ecosystems. Strategies: Same as Alternative B.	Develop and implement an educational program that will provide an understanding and appreciation of the Refuge's ecology and the human influence on the region's ecosystems. Strategies: (a) — Work with local ethnic groups (Native American, African American, Creole, Cajun, etc.) to develop education programs regarding their cultural heritage and history.	Develop and implement an educational program that will provide an understanding and appreciation of the Refuge's ecology and the human influence on the region's ecosystems. Strategies: Same as Alternative B.

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Objective D—3: Cultural Resources Management Plan

By the year 2019, develop a step-down Cultural Resources Management Plan. Strategies: Same as Alternative B.	By the year 2019, develop a step-down Cultural Resources Management Plan. Strategies: (a) — Consult the Regional Historic Preservation Officer for guidance.	By the year 2019, develop a step-down Cultural Resources Management Plan. Strategies: Same as Alternative B.

Goal E: Refuge Complex Operations —Develop and maintain the Southwest Louisiana National Wildlife Refuge Complex Headquarters to support, direct, and manage the needs, resources, and staff of Cameron Prairie, Sabine, and Lacassine National Wildlife Refuges, their relationship with each other, and the role of the Service as a partner in the multi-agency Cameron Creole Watershed Project.

Objective E-1: Complex Operations

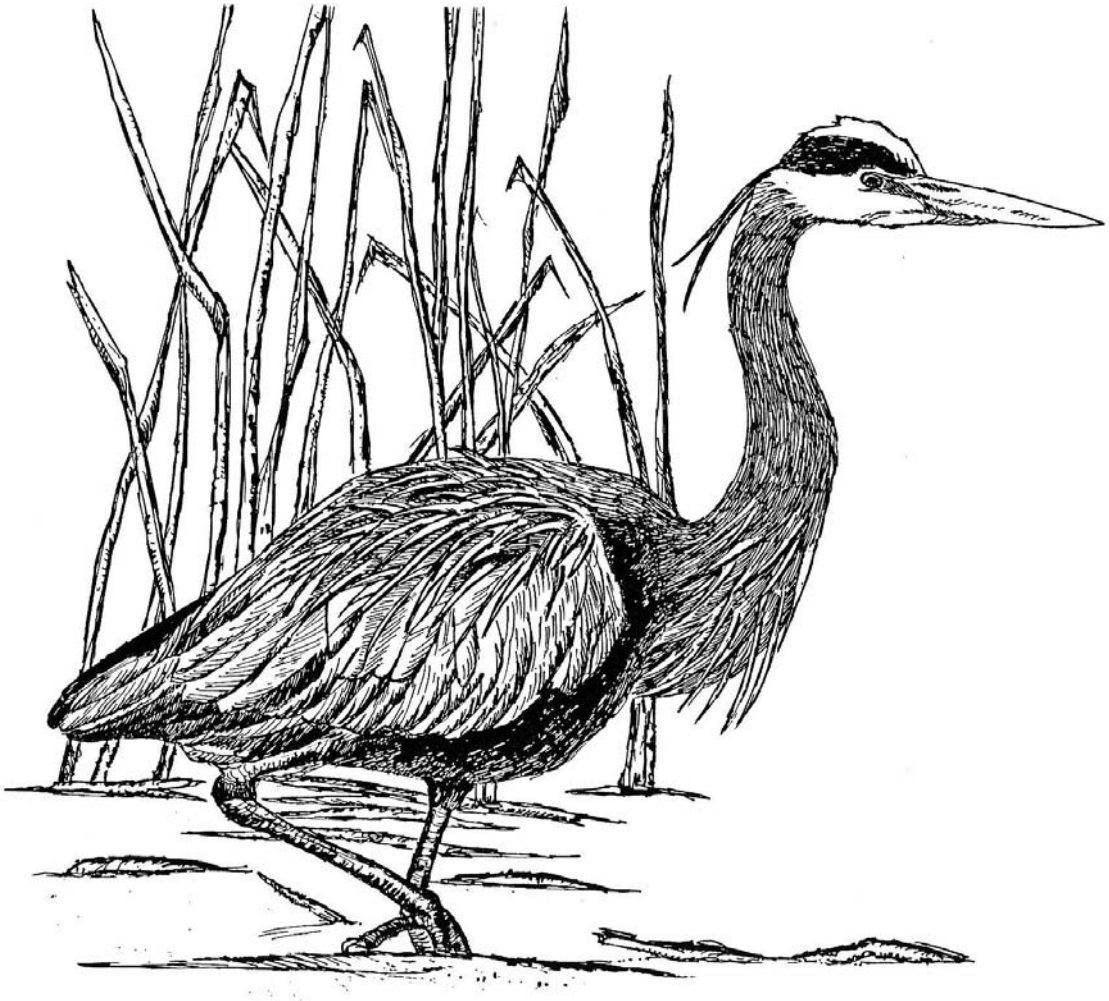
By 2015, staff members with responsibilities for Complex-wide	By 2015, staff members with responsibilities for Complex-wide	By 2015, staff members with responsibilities for Complex-

Alternative A *(No Action – Current Management Direction)*	Alternative B *(Proposed Action)*	Alternative C *(Hold Refuge in Custodial Form)*
programs will be stationed at the Cameron Prairie Headquarters. <u>Strategies</u>: Same as Alternative B	programs will be stationed at the Cameron Prairie Headquarters. <u>Strategies:</u> (a) Current office space will be expanded by about 2,500 square feet and will include additional restrooms, offices, and storage. (b) – Staff members within the entire Complex will be provided adequate equipments such as computers, vehicles, and supplies as well as training needed to perform their jobs. (c) - Staff members will be provided a safe and healthy working environment.	wide programs will be stationed at the Cameron Prairie Headquarters. <u>Strategies</u>: Office space would not be expanded under this Alternative. Budget constraints will limit acquisition of equipment and attendance at training. Same as Alternative B.
	Objective E-2: Complex Support	
The Southwest Louisiana National Wildlife Refuge Complex will encourage and support each Refuge's major emphasis (environmental education, interpretation, and research) and the relationship of these programs to wildlife and habitat management objectives and strategies. <u>Strategies</u>: Same as Alternative B.	The Southwest Louisiana National Wildlife Refuge Complex will encourage and support each Refuge's major emphasis (environmental education, interpretation, and research) and the relationship of these programs to wildlife and habitat management objectives and strategies. <u>Strategies</u> (a) – Funding and resources needed to attain success in achieving the objective will be allocated in a fair and equitable manner. (b) – Complex staff will support individual Refuge needs and will provide expertise and assistance to each Refuge's staff.	The Southwest Louisiana National Wildlife Refuge Complex will encourage and support each Refuge's major emphasis (environmental education, interpretation, and research) and the relationship of these programs to wildlife and habitat management objectives and strategies. <u>Strategies</u> Same as Alternative B.

III. Affected Environment

REFERENCE

Background information, as well as a description of the environment affected by the proposed management actions and activities, is described in Chapter 2 of the Comprehensive Conservation Plan.



IV. Environmental Consequences

OVERVIEW

Outlined below are the predicted impacts that could result from the implementation of proposed actions described in Alternatives A, B, and C. Each alternative portrays expected outcomes for fish and wildlife species through the year 2019, varying in magnitude to the intensity of management. In and of themselves, proposed management actions described in Alternative A, which in essence consist of “staying the course,” would have minimal to no negative or adverse effects on the environment. At the same time, the limitations imposed on active management of moist soil units and impoundments under Alternative A would result in a continuation of recent trends in habitat succession, which would be disadvantageous for waterfowl and other water associated and dependent species, and in turn, for public use opportunities on the Refuge.

Proposed management actions described in Alternative B, the preferred alternative, which in general would intensify active management of moist soil units and impoundments, would have beneficial effects on waterfowl and other water associated and dependent species, and therefore, on public use opportunities as well.

Alternative C, in which the Refuge would implement a passive approach to management of habitats and monitor “natural” succession and wildlife populations, would entail moderate to major adverse impacts on use by waterfowl and other water associated and dependent species as a result of declining habitat quality and quantity. While this alternative would make the same commitment to public uses as Alternatives A and B, in fact, public use opportunities would likely diminish as a result of fewer opportunities for observation, hunting, and fishing.

EFFECTS COMMON TO ALL ALTERNATIVES

This section assesses the environmental impacts of implementing the CCP on the biological, physical, social, economic, cultural, and historic resources of the Refuge. Some of the predicted impacts are common to all alternatives. A brief discussion of these impacts is outlined in the following paragraphs.

FISH, WILDLIFE, AND HABITAT

Each alternative would protect habitat for wildlife, including migratory and resident birds, mammals, reptiles, amphibians, fish, and invertebrates. The size of the Refuge — 9,621 acres — would be identical for each of the alternatives. The Refuge does not presently have any identified threatened and endangered species, so none of the alternatives would have beneficial or adverse effects on these. Alternative A would provide for a moderate amount of habitat management, while Alternative B would intensify this management to reverse unfavorable trends in habitat succession on impoundments and moist soil units. Alternative C would virtually cease intervention in the natural process of habitat succession, allowing it to unfold essentially uninterrupted. Thus, each of the alternatives would foster habitat for fish and wildlife (although the types of fish and wildlife favored by likely habitat changes would differ somewhat).

The habitats that are already present, including wetlands (both open water and marsh), woodlands, and grasslands, on the Refuge would continue under each alternative, but to differing degrees. Invasive plants and animals that now infest the Refuge would also persist to some extent under each alternative. Each of the alternatives would continue to provide sanctuary for waterfowl. In addition, each would maintain some habitat for shorebirds, wading birds, marsh birds, raptors, neotropical migrants, white-tailed deer, swamp rabbit, non-native nutria, as well as alligators and other reptiles and amphibians. Fish species such as gar, catfish, bowfin, bluegill, bass and crappie would also continue to be found at Cameron Prairie.

None of the alternatives per se would impact water quality, air quality, noise levels, or surrounding land uses. Limited oil and gas exploration and production would continue on the Refuge (because sub-surface rights are not owned by the Refuge), with some potential for localized water contamination by petrochemicals around well sites. Each of the alternatives would also continue to face problems with inholdings and occasional cattle trespass.

PUBLIC USE

Each of the three alternatives would maintain or expand public use opportunities and facilities at Cameron Prairie National Wildlife Refuge. Hunting, fishing, wildlife observation and photography, environmental education and interpretation would all be accommodated and encouraged under Alternative A (No Action), Alternative B (Proposed Action), and Alternative C (Hold Refuge in Custodial Form). Each alternative will involve preparation of a Visitor Services Plan, which would include recommendations for environmental education, interpretation, and outreach and should include recommendations for a safe, quality experience for all visitors. Each alternative would also improve services and education available to the public at the Visitor Center.

Hunting seasons for waterfowl (youth only), deer (archery), snipe, dove and rabbit would be the same under each alternative, with specific regulations in any given season a function of the status of game populations. Recreational fishing would be managed identically for all alternatives. That is, Banking Fish Road would be closed, parking and access would be improved at the canal adjacent to SH 27, and special fishing days would be held. Opportunities for wildlife observation and photography would be amplified under each alternative, including placing a kiosk and spotting scope at the entrance to Pintail Drive, adding a parking area at the southeast corner of Pintail Drive to encourage hiking on levees, and improving the trail and bridge to the photo blind. Similarly, environmental education and interpretation would be increased at the Refuge and in the surrounding community.

Each of the alternatives would offer some benefit to the local economy, through visitation and use by local residents and non-resident visitors, as well from purchases in the local economy by the Refuge and its employees. Hunting, fishing, wildlife photography and observation all contribute to local economic activity through purchases of food, lodging, gasoline, supplies, and from sales taxes. The Refuge is one of the attractions for motorists traveling the Creole Nature Trail National Scenic Byway (SH 27). In addition, the Refuge Revenue Sharing Act requires the USFWS to make payments to local taxing authorities to offset the loss in tax revenue when private land is acquired for a refuge. These payments would continue under each of the alternatives.

CULTURAL RESOURCES

Each of the alternatives would protect refuge cultural resources in accordance with federal and state historic preservation legislation and regulations. A Cultural Resources Management Plan would be prepared under each alternative and the feasibility of conducting an extensive archaeological resources survey would be determined. In addition, the Refuge would work with local stakeholders, such as American Indian tribes, Cajun, Creole and African American groups to develop an education program regarding their cultural heritage and history.

All alternatives afford additional land protection and low levels of development, thereby producing little adverse effect on the cultural and historic environment. In most cases, any management actions that would involve substantial excavation such as to create new levees would require review by the Regional Archaeologist and consultation with the Louisiana State Historic Preservation Office (SHPO), as mandated by Section 106 of the National Historic Preservation Act (NHPA). Determining whether a particular action within an alternative has the potential to affect cultural resources is an ongoing process that would occur with the planning stages of every project. USFWS management of land with known or potential archaeological or historical sites provides two major types of protection for these resources — protection from damage by federal activity and protection from vandalism or theft. The National Historic Preservation Act requires that any actions by a federal agency which may impact archaeological or historical resources be reviewed by the SHPO and that the identified impact be avoided or mitigated. Service policy is to preserve these resources in the public trust, avoiding impact whenever possible.

EFFECTS FROM IMPLEMENTING ALTERNATIVE A — “NO ACTION” (CURRENT MANAGEMENT)

Implementing Alternative A is not considered the most effective management for meeting the purpose of the Cameron Prairie Refuge. This alternative is included for purposes of establishing baseline conditions for comparison. Alternative A may not achieve long-range goals and objectives within the 15-year planning period. It is considered the basis from which to compare the other two alternatives. The “No Action” alternative would maintain the status quo, that is, current management direction. It assumes that current conservation management and land protection programs and activities by the Service, state and local agencies, and private organizations would continue to follow past trends over the next 15 years, the planning horizon for this Environmental Assessment.

FISH, WILDLIFE, AND HABITAT

The current acreages and proportions (percentages) of the respective habitat types on the Refuge are shown in Table 22. These would remain the same under the No Action Alternative. However, as a result of limited ability to manage the movement and storage of water, especially on the impounded freshwater marsh and moist soil areas that together comprise two-thirds of the Refuge, the quality of waterfowl habitat on these areas, and thus their value to waterfowl and other water-dependent birds, has diminished noticeably. For example, on Unit 1, an impounded freshwater marsh, vegetation succession is “choking” the marsh with emergent plants, as a result of funding constraints that prohibit operating pumps year-round and vegetation encroachment that has impaired the capacity of canals to move water. The quality of

wintering waterfowl habitat has declined markedly due to the expansion of emergent vegetation, primarily California bulrush and maidencane. When the Refuge was purchased, the water to emergent vegetation ratio in these units was approximately 75% water to 25% emergent vegetation. Now it is roughly 35% water to 65% emergent vegetation. This trend can be expected to continue under the No Action Alternative, leading to further deterioration in the value of the marsh for waterfowl, shorebird and wading bird habitat. Similarly, on Unit 7, a moist soil unit with limited pumping, plants of low waterfowl value (when in dense, extensive stands) such as maidencane and cattail have taken over, a situation that would not likely change, except for the worse, under the No Action Alternative.

Table 21. Cameron Prairie Land Cover/Habitat Types

Habitat/Cover	Acres	% of Refuge
Agricultural Land (Fallow Pasture; Reverted to Marsh)	1,093	11
Natural Freshwater Marsh	1,402	15
Impounded Freshwater Marsh	4,796	50
Moist Soil Areas	1,493	16
Prairie	315	3
Canals, Roads, Levees, Spoil Banks, Etc.	522	5
Total	9,621	100

Overall then, highly productive waterfowl habitat, now at 3,800 acres, will degrade to 1,500 acres in 15 years. Habitat quality in Units 1, 2, & 8 would decline due to succession and loss of open water for waterfowl. These units would become predominantly emergent vegetation, reducing accessible water habitat.

Natural succession to the detriment of wildlife has taken place even on unimpounded, more “natural” marsh areas, like Unit 13. Here, dominant vegetation is now maidencane, giant cut-grass, sawgrass, phragmites, and cattail. On higher elevations and along canal banks black willow, wax-myrtle and Chinese tallow have become established. The increasing density of this climax wet prairie vegetation has decreased its value as wildlife habitat, a trend that is anticipated to continue under Alternative A.

In sum, Alternative A will allow for the replacement of a diverse mosaic of open water and marshy vegetation by densely-packed plants with few patches of open water, and the proliferation of plants like maidencane, which occurs in thick stands, that have little value as food and cover for waterfowl. Maidencane displaces duck food plants across its range (Martin et al., 1957). These predicted changes to wetland habitats are expected to be broadly detrimental for the populations of most birds, including waterfowl, wading birds and marsh birds, shorebirds, and raptors. Similarly, predicted changes on the Refuge’s comparatively small acreage of upland habitat —particularly further encroachment by the non-native Chinese tallow — will not prove beneficial, and may prove adverse, to migrating neotropical birds.

With regard to mammals, the predicted changes in habitat will not favor the exotic nutria, due to the gradual filling in of marshes, and may actually benefit the white-tailed deer, as more sites fill it with denser vegetation and develop more upland characteristics, enabling deer to access them and forage. Maidencane itself has high forage quality and is known to be an important deer food in some locations (Anon., no date). Muskrat also feed on maidencane, although it can become so dense that it becomes less suitable habitat for this, as well as other, species.

Generally, maidencane is used as habitat by mammals, amphibians, birds, and reptiles. In Leon County, Florida, for example, it harbors eastern woodrats, northern leopard frogs, black swamp snakes, bullfrogs, green anoles, and spring peepers. Resident birds include great and snowy egrets, northern bobwhites, northern cardinals, American crows, common moorhens, great blue herons, little blue herons, northern mockingbirds, common grackles, and red-winged blackbirds. Maidencane wet prairies in south Florida support abundant vertebrate numbers as well as high densities of small fish populations, both of which attract wading birds (Wade et al., 1980). There is also evidence that male largemouth bass in Florida used the firm detritus in emergent maidencane as a nest substrate in a lake without a firm inorganic substrate (Bruno et al., 1990).

Thus, the problem with maidencane at Cameron Prairie is not that the plant itself has no value for wildlife. Rather, the dense, near-monocultures of maidencane, California bulrush, and cattail that tend to develop on wetland sites displace more valuable food plants for waterfowl, replace shallow open water, mudflats, and the aquatic invertebrates that occur there. In addition, the thick stands are simply too dense for wading birds, marsh birds, shorebirds, and even those wildlife that generally prosper in maidencane.

With regard to reptiles and amphibians, these will react differently to these predicted changes, depending on their particular life histories. The Refuge's most important reptile — the American Alligator — may be affected adversely due to the closing in of marshes with thick vegetation, as well as possible declines in populations of one of its favorite prey species — the nutria — even though alligators seem to do well along the margins of maidencane. Other reptiles, including snakes, may be aided by drier conditions and increases in prey populations, specifically mice and voles. Most amphibians, at least those that are more water-dependent, will likely decline from the overall decline in the amount of water.

PUBLIC USE

The No Action Alternative fully intends to support and expand public use opportunities, including more facilities, greater staff and volunteer support, and expanded options for use and enjoyment, as shown in Table 20. Nevertheless, Cameron Prairie could well see a decline in the quality of the visitor experience and a drop-off in public use. This is because the very wildlife that attracts the public to the Refuge for observation, photography or hunting, will probably be less abundant and less visible due to the habitat changes discussed above. This is particularly true of the waterfowl, wading birds and shorebirds that are not only visible, but showy as well. Not only are fewer numbers of ducks and geese likely to winter at Cameron Prairie, as their sources of food decrease, but fewer would be visible to the viewing public in the denser vegetation. Thus, as the opportunity to see wildlife declines, eventually the Refuge may draw fewer visitors. Hunting for deer and swamp rabbits may not be adversely affected, however, and may even benefit, if these respective populations manage to adapt to the anticipated habitat changes.

Fishing, environmental education and interpretation should not be as negatively affected as the above priority uses. Sport fishing, which occurs mostly in the canals, can still be expected to occur, although filling-in of the canals with emergent vegetation may also reduce their value to fish and anglers. Environmental education, both onsite and offsite, could still function effectively, although it may be less interesting to students with fewer

large birds or flocks to observe at the Refuge. Interpretation — which would focus on describing and explaining the habitat changes underway — would still be effective, although once again, less frequently utilized if overall visitation were to decline from reduced opportunities to view wildlife.

Any decline in visitation to the Refuge, associated with decreasing wildlife numbers and opportunities for viewing wildlife, would lead to a decline in the modest economic value of the Refuge to the surrounding community. While the number of tourists motoring past the Refuge along the newly established, 180-mile Creole Nature Trail National Scenic Byway is likely to increase regardless, over time the number of these auto tourists visiting the Refuge would probably decline if it were to develop a reputation for not offering outstanding opportunities to see and appreciate wildlife.

EFFECTS FROM IMPLEMENTING ALTERNATIVE B — THE "PROPOSED ACTION"

Implementing Alternative B is considered the most effective management approach for pursuing the purpose of Cameron Prairie NWR. Alternative B would nearly double the acreage of managed moist soil units and pumped impoundments. It would also increase the acreage of passive management impoundments, wetlands, and non-impoundments, as well as the rate of prescribed burning on the Refuge. Finally, it would increase the acreage of prairie from two to four times. See Table 20 for a summary of proposed habitat targets for this alternative. Overall, this more intensive management would improve habitats on the Refuge for waterfowl and most other wildlife.

Alternative B would pursue these goals and objectives by substantially stepping up the rate of active habitat management and intervention in the vegetative succession process. This would be achieved by constructing and rehabilitating levees and canals, upgrading pumping capacity (both to irrigate and dewater units), and more use of prescribed fire. These efforts will require greater funding resources for the Refuge, both for capital and operating expenses. Table 22 shows costs to implement proposed projects under Alternative B.

FISH, WILDLIFE, AND HABITAT

In essence, Alternative B aims to reverse the main ecological trend that has characterized the Refuge for the past decade: increasing dominance of its wetland habitats by dense stands of vegetation with low value to wildlife, at the expense of a diverse mosaic of emergent vegetation and open water that has greater wildlife value. Since water levels in impoundments and moist soil areas will be manipulated specifically to provide food and habitat for migrating shorebirds and wintering waterfowl, as well as breeding mottled ducks and secretive marsh birds, all of these can be expected to benefit from implementation of Alternative B. Each of the units and sub-units will be managed on a rotational basis, so that at any given time, there will be habitats and foods present on the Refuge to attract substantial numbers of waterfowl and other birds

Neotropical migrants will benefit from efforts to control invasive species and promote woody, fruit-bearing species on levees and other upland sites.

Table 22. Summary of Costs for 2004 – 2019 under Alternative B

Project Number	Project Title	One-time Costs	Annual Costs
1	Expand and enhance moist soil management	$8,314,340	$172,000
2	Restore and monitor freshwater impoundments	$8,535,598	$150,000
3	Improve habitat quality in natural marsh and prairie	$271,700	$22,000
4	Control undesirable plants and animals	$750,000	$25,000
5	Meet and fulfill heavy equipment needs	$985,000	0
6	Inventory and monitor wildlife populations and responses to adaptive management techniques	$29,000	$185,822
7	Improve Visitor Services	$2,124,990	$152,609
8	Improve and enhance fishing opportunities	$52,000	$4,000
	Existing Staff Costs (Based on FY04)	0	$613,732
	Base Operations		$75,000
Total		$21,062,628.00	$1,400,163.00

In general, expansion in the use of prescribed fire will enable Refuge managers to control, at least partially, infestation by undesirable plants at undesirable (excessive) densities and prepare the ground for more favorable moist soil or marsh development.

There would be a positive increase in the acreage of rare coastal prairie habitat on Cameron Prairie Refuge. The prescribed fire program will be on a 2-3 year rotation, with burns in the growing season targeted to promote the prairie plant growth.

In general, other wildlife — including other breeding birds, mammals, amphibians, and reptiles — while not specifically targeted by managers, will probably see incidental benefits from most of the proposed habitat management. Of course, whether a given species benefits or not from the proposed changes in management and predicted changes in habitat would depend on its particular ecological niche and habitat needs.

PUBLIC USE

As in the case of the No Action Alternative, Alternative B fully intends to support and expand public use opportunities, including more facilities, greater staff and volunteer support, and expanded options for use and enjoyment, as shown in Table 20 of this EA. This commitment, coupled with probable increases in populations and visibility of wintering migratory waterfowl, shorebirds, wading birds, marsh birds, and raptors, would furnish greater opportunities for public use and enjoyment of the Refuge. Thus, as the opportunity to observe wildlife increases — more numerous flocks of geese and ducks, more visible and abundant shorebirds and wading birds, greater numbers of hawks, and so forth — the Refuge is expected to draw more visitors and provide them with a higher-quality, more memorable experience. This could work hand in hand with greater use by tourists and birders of the recently established Creole Nature Trail National Scenic Byway, which passes through the Refuge adjacent to the Visitor Center.

Any increase in visitation to the Refuge would result in a corresponding increase in the value of the Refuge to the local economy, as visitor spending rose.

EFFECTS FROM IMPLEMENTING ALTERNATIVE C — "HOLD REFUGE IN CUSTODIAL FORM"

As in the case of Alternative A, the No Action Alternative described first above, implementing Alternative C is not considered the most effective approach for pursuing the purpose of the Cameron Prairie Refuge. To the extent that Alternative A is characterized by limited ability to manipulate water and habitat for the benefit of targeted wildlife species, Alternative C represents in effect a more extreme version of this situation. That is, most active habitat management would cease, levees would be degraded to allow water to move or sit "at will," and ecological succession of plant communities would be permitted to run unchecked. No pumping would be carried out to irrigate or dewater the various units, and no levees and canals would be rehabilitated or expanded. With regard to fire management, no prescribed fire would be used for habitat management or improvement, though hazardous fuel reduction could be conducted utilizing prescribed fire as a tool. Wildfires would be suppressed.

Thus, the thrust of Alternative C is passive management. Refuge staff would concentrate their efforts on monitoring ecological changes and wildlife responses to uninterrupted habitat succession and natural disturbances.

FISH, WILDLIFE, AND HABITAT

Alternative C would abandon water delivery and pumping systems and not actively manage any moist soil units. It would stop management of highly productive wetlands; there would be no prescribed fire, drawdown, plowing or discing. Not having these tools at its disposal, the Refuge would lose the ability to reverse the progression of plant community succession. Management would be limited primarily to the inventory of plant species to determine the effects of succession and monitoring wildlife populations and use of habitats to determine response to succession. Most of the Refuge's units would change due to succession and loss of open water for waterfowl. Open water areas would become predominantly emergent vegetation, thus reducing accessible water habitat for waterfowl, wading birds and shorebirds. In view of the primary purpose of the Refuge being to provide wintering habitat for migratory birds, particularly waterfowl, this would be a serious or significant detrimental impact.

Conversion of the major part of the Refuge's wetland habitat to closed marsh filled with emergent plants like maidencane, California bulrush and cattail would also have adverse effects on other wildlife, including mammals, amphibians, reptiles, and other birds. As mentioned above, the problem with these plants is not that they have no value for wildlife — each offers some value — but that the dense structure of the stands that would develop, to the exclusion of open water or submerged plants or mudflats, sharply reduces the quality of habitat for almost all species and groups. As discussed under Alternative A, the problem is not maidencane per se, but the dense thickets it forms if given a chance.
Under this alternative, upland sites that now support trees would become even more dominated by Chinese tallow and other invasive, weedy species, to the detriment of these habitats and the neotropical birds that use them during spring and fall migration.

Clogging of channels with emergent vegetation would also reduce fish habitat.

The Refuge's managed natural prairies would likely disappear under Alternative C, as a result of invasive species and succession.

In conclusion, of the three alternatives, this one would have the greatest adverse impact on the habitats that contribute to the Refuge's purpose. It would almost certainly lead to further declines in populations of waterfowl, wading bird, shorebird, and neotropical birds. Its effects on populations of other species groups — mammals, amphibians, reptiles, and fish — would be mixed, but mostly negative.

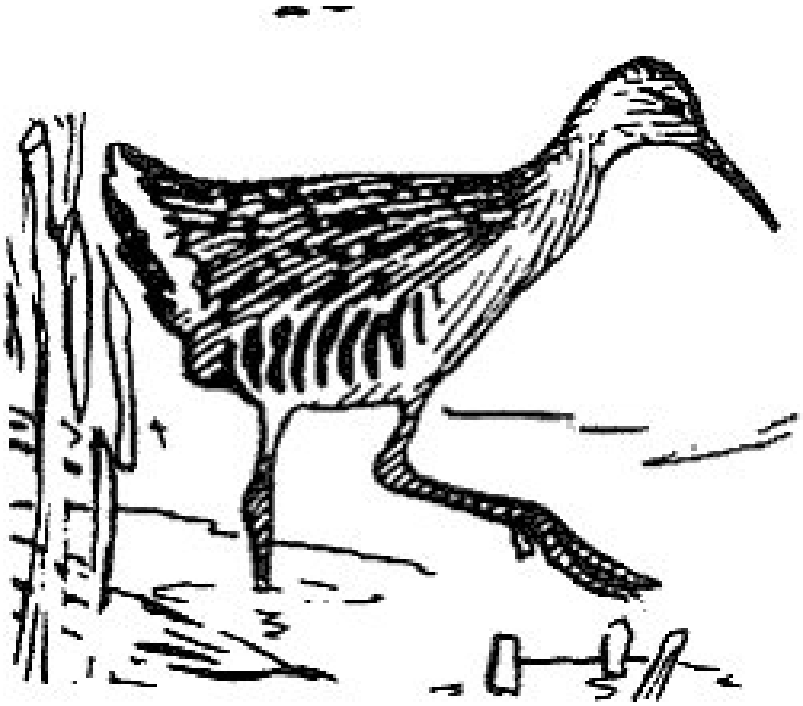
PUBLIC USE

Like Alternative A, Alternative C fully intends to support and expand public use opportunities, including more facilities, greater staff and volunteer support, and expanded options for use and enjoyment, as shown in Table 20. Nevertheless, also like Alternative A, Cameron Prairie could well see a decline in the quality of the visitor experience and a drop-off in public use. Once again, this is because the very wildlife that attracts the public to the Refuge for observation, photography or hunting, will probably be less abundant and less visible due to the predicted habitat changes described above. This is particularly true of waterfowl, wading birds and shorebirds, which are not only visible, but often spectacular as well. Not only are smaller numbers of ducks and geese likely to winter at Cameron Prairie, as their sources of food diminish, but fewer would be visible to the viewing public in the denser vegetation. Thus, as the opportunity to see wildlife declines, eventually the Refuge may draw fewer visitors. Deer hunting may not be adversely affected, however, if the deer herd adapts to the predicted habitat changes.

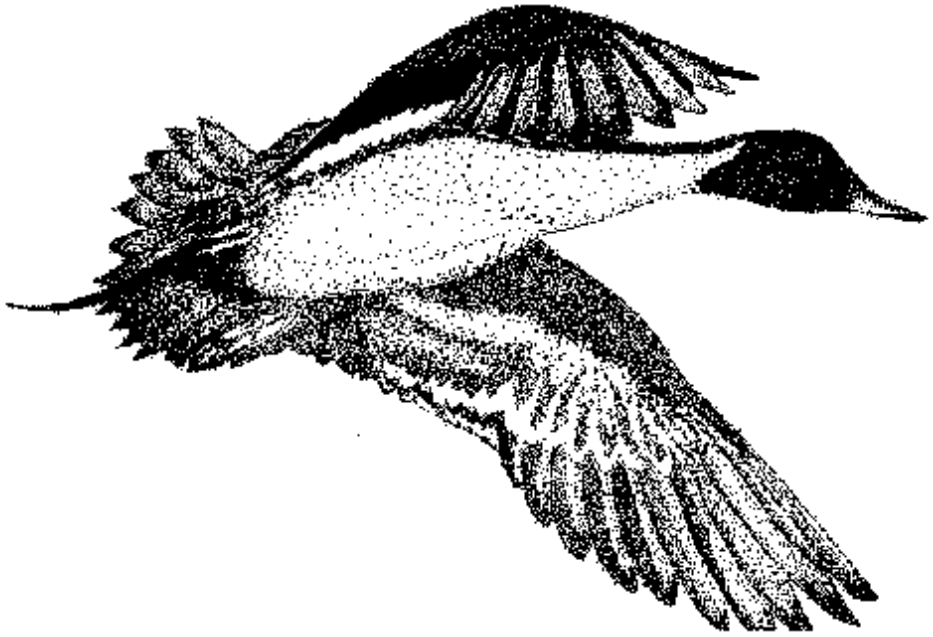
Sport fishing, which takes place mostly in the canals, may still occur under this alternative, and would be supported in principle. However, the quality of the fishing experience is expected to deteriorate even more so than in the case of Alternative A, as the canals in which fish live are progressively more choked with emergent vegetation and the shrinking volume and area of water reduce the number of fish that can survive.

Environmental education, both onsite and offsite, could still function effectively, although it may be less interesting to students with fewer large birds or flocks to observe at the Refuge. Interpretation — which would focus on describing and explaining the habitat changes underway — would still be effective, although once again, less frequently utilized if overall visitation were to decline from reduced opportunities to view wildlife. These two priority uses would have to change from their focus on waterfowl and other visible birds to a broader ecological focus that examines "the changing land" due to ecological succession and other natural processes.

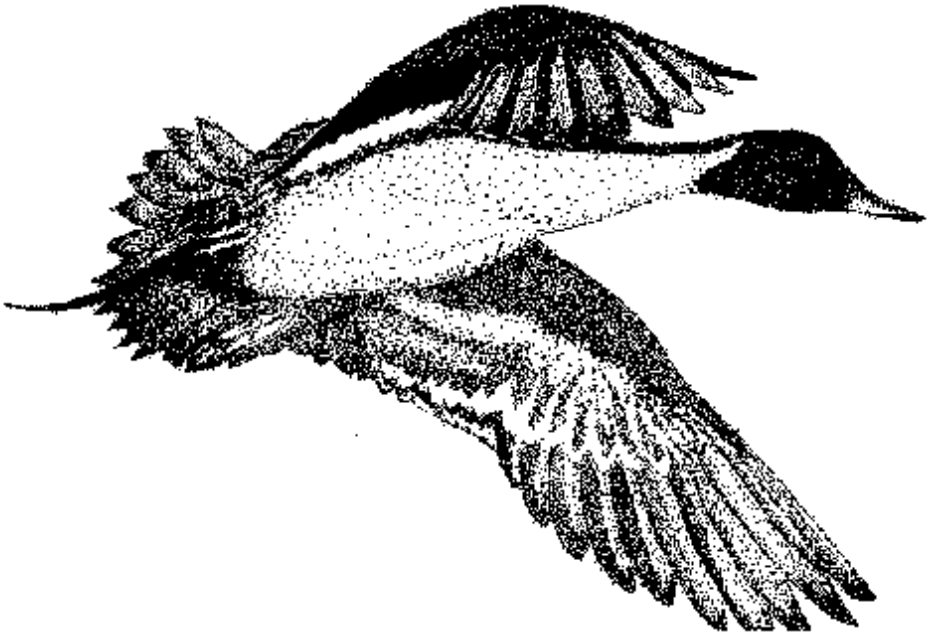
If visitation to the Refuge declines under this alternative, which seems highly probable, given decreasing wildlife numbers and opportunities for viewing, this outcome would lead to a decline in the modest economic value of the Refuge to the surrounding community. While the number of tourists motoring past the Refuge along the newly established, 180-mile Creole Nature Trail National Scenic Byway is likely to increase regardless, over time the number of these auto tourists visiting the Refuge would probably decline if it were to develop a reputation for not offering outstanding opportunities to see and appreciate wildlife.



SECTION C. APPENDICES



Appendix A – Glossary



Appendix A – Glossary

Adaptive Management	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.
Alternative	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.
Approved Acquisition Boundary	A project boundary which the Director of the Fish and Wildlife Service approves upon completion of a detailed planning and environmental compliance process.
Bayou	A minor river or secondary watercourse, usually sluggish or back flooding water flow.
Beneficial Dredge	Also know as beneficial use of dredge material. Material dredged (removed) from waterways used in a positive manner. (See Pumped and Excavated Dredge)
Biological Diversity	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.
Brackish Marsh	An area of soft, wet, low-lying land characterized by grassy-vegetation and water containing some salt, but less than seawater.
Categorical Exclusion	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.
CFR	Code of Federal Regulations.
Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA)	Passed in 1990, by Congress, this act funds wetland enhancement projects to preserve and restore Louisiana's coastal landscape. The act is also known as the "Breaux Act".
Colonial Waterbirds	Waterbird families generally containing seabirds, coastal waterbirds, and wading birds that congregate at breeding sites in numbers ranging from many to hundreds of thousands of birds.
Compatibility Determination	A required determination for wildlife-dependent recreational uses or any other public uses of a refuge.
Compatible Use	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.

Comprehensive Conservation Plan (CCP)	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.
Cooperative Agreement	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.
CRMP	Cultural Resources Management Plan
Cultural Resources	The remains of sites, structures, or objects used by people of the past.
Duck Season Split	A planned interruption during the 60-day hunting season to extend the season to allow hunting when waterfowl are still abundant.
Early Successional Wetland	Wetlands managed for the production of annual plants that produce both vegetation and seeds for use by geese, ducks and other wetland bird species. (See also Moist Soil Management)
Ecological Succession	The orderly progression of an area through time in the absence of disturbance from one vegetative community to another.
Ecosystem	A dynamic and interrelating complex of plant and animal communities and their associated non-living environment.
Ecosystem Management	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.
Ecotone	A transitional zone between two communities containing the characteristic species of each.
Ecotourism	Visits to an area that maintains and preserves natural resources as a basis for promoting its economic growth and development.
Emergent Marsh	Wetlands dominated by erect, rooted, herbaceous plants.
Endangered Species	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.
Environmental Assessment	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 finding of no significant impact.
Environmental Education	A process of building knowledge in students through hands-on activities that promotes discovery and fact-finding. It involves the integration of environmental concepts and concerns into structured educational activities.
ESA	Endangered Species Act

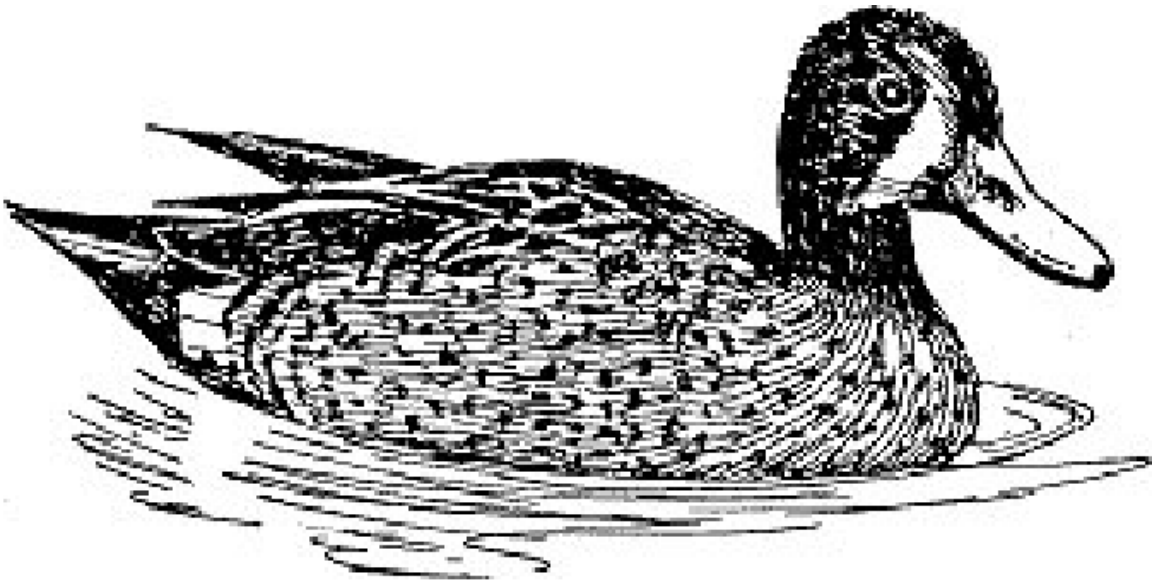
Excavated Dredge	Removal of material from a waterway bottom using excavating equipment. The dredged material is usually high in clay content and can be used for the creation of levees or earthen terraces. See beneficial dredge.
Fauna	All the vertebrate or invertebrate animals of an area.
Federal Trust Species	All species where the Federal Government has primary jurisdiction including federally threatened or endangered species, migratory birds, anadromous fish, and certain marine mammals.
Fee-Title	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 reminder of the owner's life).
Finding of No Significant Impact	A document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment, which 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.
Fire Regime	The characteristic frequency, intensity, and spatial distribution of natural fires within a given ecoregion or habitat.
Geographic Information System (GIS)	A computer system capable of storing and manipulating spatial data.
GCJV	Gulf Coast Joint Venture
Goal	Descriptive, open-ended, and often broad statements of desired future conditions that convey a purpose but does not define measurable units.
Grassland birds	These birds use prairie habitat to meet their biological needs. This group of birds includes over 300 species and over 75 % of the breeding bird species of the U.S.
GIWW	Gulf Intracoastal Water Way
Hemi-marsh	Areas of mixed open water and emergent vegetation at a ratio of one part open water to one part vegetation preferred by many species of wildlife. Interspersed areas of dense emergent vegetation provide nesting areas and cover for many species.
Herbaceous Wetland	Annually or seasonally inundated with vegetation consisting primarily of grasses, sedges, rushes, and cattail.
Habitat	The place where an organism lives. The existing environmental conditions required by an organism for survival and reproduction.
Impoundment	A body of water, such as a pool, confined by a levee or other barrier, which is used to maintain a freshwater marsh area. Rainfall is usually the only means of providing water into the area .
Indicator Species	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.

In-Holding	Privately owned land inside the boundary of a national wildlife refuge.
Intermediate marsh	This marsh type is found on the sea-ward of freshwater areas. Intermediate marsh is characterized by a diversity of species, many of which can be found in both freshwater and brackish marshes. Plants found in these marshes can tolerate slightly salty water. Intermediate marshes are also important for waterfowl, wading birds, furbearers and provide nursery habitat for brown shrimp, blue crab, and a variety of other commercially and recreationally valuable fishery resources.
Interpretation	A teaching technique that combines factual with stimulating explanatory information.
Invasive species	An alien species whose establishment does, or is likely to, cause economic or environmental harm.
Inventory	Accepted biological methods to determine the presence, relative abundance, and distribution of species.
Issue	Any unsettled matter that requires a management decision.
Kiosk	A small structure with one or more open sides that is used to display or provide information.
LCA	Louisiana Coastal Area Ecosystem Restoration Plan
LDWF	Louisiana Department of Wildlife and Fisheries
LMRE	Lower Mississippi River Ecosystem
Maintenance Management System (MMS)	The Maintenance Management System is a national database and management tool used for planning and budgeting unfunded maintenance, improvements, repairs, replacement, and construction projects required for on-going support of resource management.
Migratory	The seasonal movement from one area to another and back.
Moist Soil Unit Management	Refers to the way water is used to create a desired plant community habitat. This habitat is manually disturbed using mechanical equipment, tractors and disk. Following this disturbance, native plant seeds already existing within the soil are allowed to germinate and then the soil is flooded to a shallow depth. Once plants reach maturity, fields are again disturbed to create a 50:50 ratio of open water to standing vegetation. (See early successional wetland)
Monitoring	The process of collecting information to track changes of selected parameters over time.
National Environmental Policy Act	Requires all agencies, including the Service, to examine the Act of 1969 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.

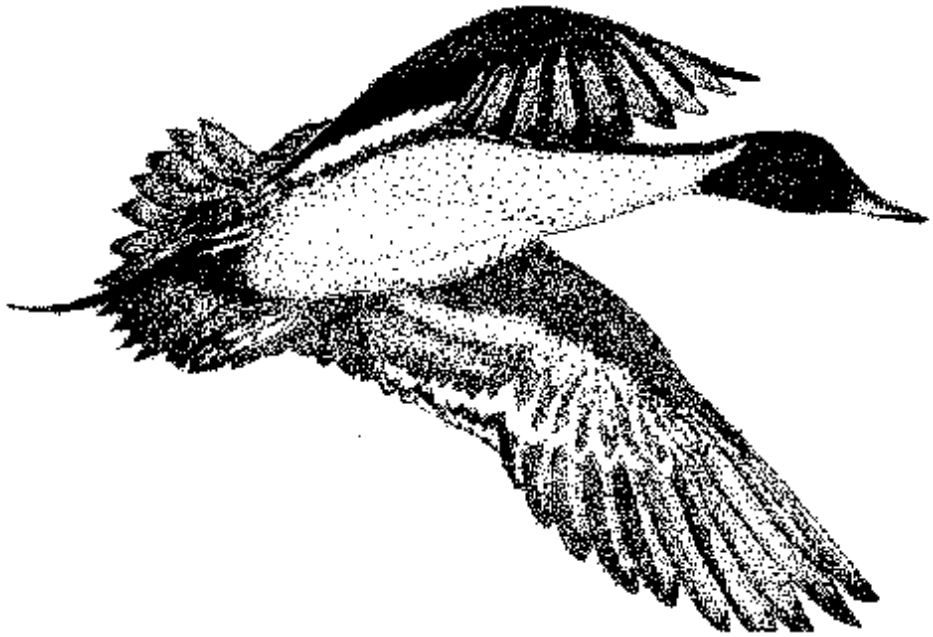
National Wildlife Refuge	A designated area of land, water, or an interest in land or water within the National Wildlife Refuge System.
National Wildlife Refuge System	Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife, including species 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.
Native Species	Species that normally live and thrive in a particular ecosystem.
Neotropical Migratory Bird	A bird species that breeds north of the United States and Mexican border and winters primarily south of that border, which includes Mexico, West Indies, Central America and part of South America.
Natural Levee	Natural embankment created by soil deposited as a stream overtops its banks. Located adjacent to a stream, a natural levee is often the highest ground in a bottomland or swamp type area.
Non-game migratory landbirds	Commonly known as Nearctic-Neotropical Migratory Birds, these birds breed in temperate latitudes but winter in tropical latitudes.
NORM	Naturally Occurring Radioactive Material
Objective	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.
Parish	An administrative district in Louisiana, corresponding to a county in other states.
Planning Area	A planning area may include lands outside existing refuge planning unit boundaries that are being studied for inclusion in the unit and partnership planning efforts. It may also include watersheds or ecosystems that affect the planning area.
Planning Team	A planning team prepares the Comprehensive Conservation Plan. Planning teams are interdisciplinary in membership and function. A team generally consists of the 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.
Preferred Alternative	This is the alternative determined by the decision maker to best achieve the refuge purpose, vision, and goals; contributes to the refuge system mission, addresses the significant issues; and is consistent with principles of sound fish and wildlife management.
Prescribed Burn	Fire intentionally ignited by refuge fire personnel for natural resource management under strict guidelines to meet specific objectives.

Pumped Dredge	As shipping channels need to be maintained for depth to allow for passage of large vessels, it is necessary to remove accumulated material from the bottom. A suction dredge brings the fine organic material to the surface where a pump system mixes the material with water and creates a slurry. This slurry can be used in coastal restoration projects to replace material lost in open-water marsh areas. See beneficial dredge.
Refuge Boundary	Lands acquired by the Fish and Wildlife Service within the current approved acquisition boundary.
Refuge Complex	Three National Wildlife Refuges (NWR's), Cameron Prairie, Lacassine, and Sabine NWR's administratively combined into the Southwest Louisiana NWR Complex. Complexing allows for better management oversight.
Refuge Operating Needs System (RONS)	This is a national database which contains the unfunded operational needs of each refuge. Projects included are those required to implement approved plans and meet goals, objectives, and legal mandates.
Refuge Purposes	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 sub-unit.
SAMMS	Service Asset Maintenance Management System
Seismic survey	A means of gathering subsurface geological information through the generation and receipt of impulses from an artificially generated shockwave (usually a dynamite charge) which predicts oil and gas deposits for further exploration.
Source	A habitat in which local reproductive success exceeds local mortality for a given species.
Source Population	A population in a high-quality habitat in which birth rate greatly exceeds death rate and the excess individuals leave as migrants.
Step-Down Management Plans	Step-down management plans provide the details necessary to implement management strategies and projects identified in the comprehensive conservation plan.
Strategy	A specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives.
Survey	A general term for any type of inventory or monitoring procedure.
Threatened Species	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.
TGCE	Texas Gulf Coast Ecosytem
Undesirable Species	A plant or animal species whose introduction does or is likely to cause economic or environmental harm, or harm to human health. These species can be native or non-native.

Water Buffalo	The use of mechanized farm equipment in combination with land rolling equipment to improve seed-soil contact, as well as to pulverize soil aggregates and leave a smooth surface.
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.
Wildland Fire	A fire that is caused naturally (lighting strike) or human caused that is unwanted.



Appendix B – References and Literature Citations



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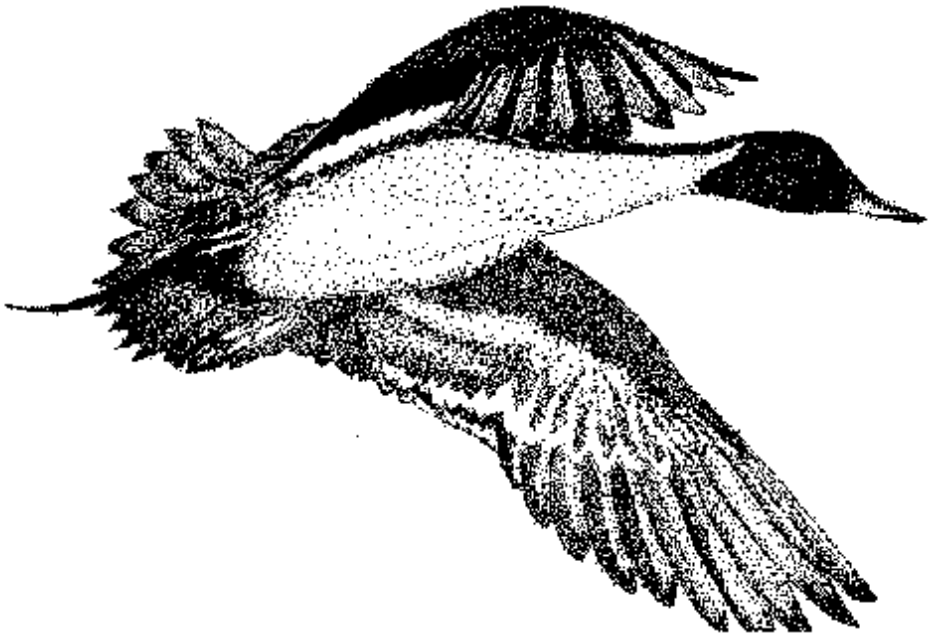
Appendix C – Legal Mandates



Appendix C – Legal Mandates

This comprehensive conservation plan and environmental assessment has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA). NEPA requires Federal agencies to consider all environmental factors related to their proposed actions. The Environmental Assessment discloses and explains both favorable and unfavorable consequences of a particular action that is being contemplated by a Federal agency. This includes effects on the natural, economic, social, and cultural resources of the area.

The service will comply with the following laws and regulations prior to, during, and following implementation of the CCP.

National Wildlife Refuge System Authorities:

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.”

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. 89669, 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 thereunder.

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

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

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 agreement with private landowners for wildlife management purposes.

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.

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.

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.

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.

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): 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 Manager, 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 be 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. 44O1~4412) 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 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 use 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.

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 the county which 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.

Historic Preservation Mandates:

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.

Antiquities Act (16 USC 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 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, or transferred funds for the recovery, protection and preservation of such data.

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.

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.

Historic Sites, Buildings and Antiquities Act (16 U.S.C. 461-462, 464467): 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. 468468d).

The Act established an Advisory Council on Historic Preservation, which was made a permanent independent agency in Public Law 94422, 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.

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 prohibited 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.

National Environmental Policy Act of 1969:

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.

Other Relevant Legal Mandates:

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.

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

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

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

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.

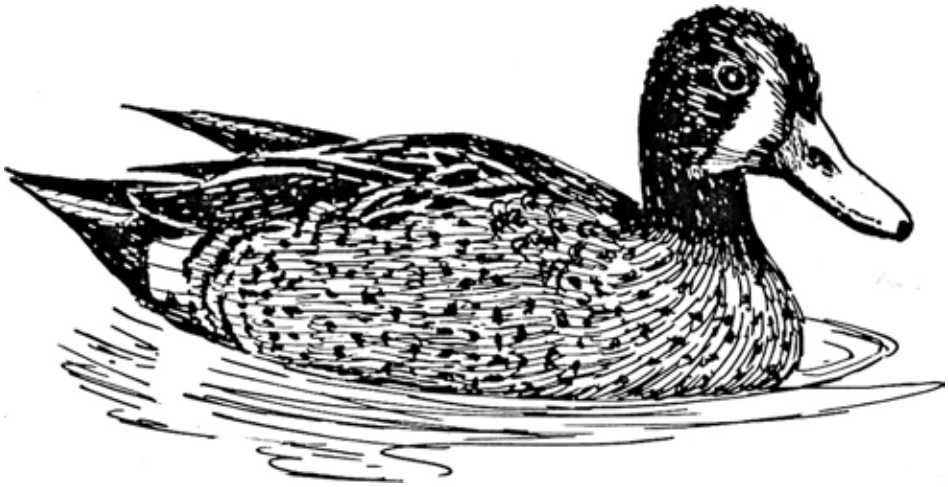
Executive Order 11988, Flood plain Management: The purpose of this Executive Order, signed May 24, 1977, is to prevent federal agencies from contributing to the “adverse impacts associated with occupancy and modification of floodplains” and the “direct or indirect support of flood plain development.” 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 flood plains.”

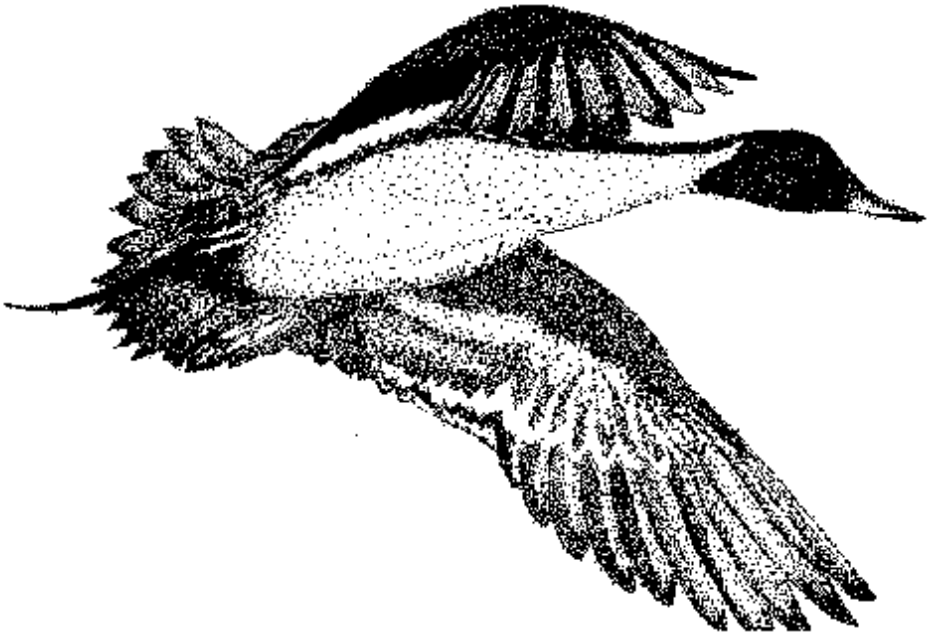
Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species; and an interdisciplinary approach with the cooperation of other federal and state agencies.

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 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.

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.



Appendix D – Biota



Appendix D – Biota

Species previously identified as occurring on Cameron Prairie National Wildlife Refuge are listed below:

Common Name	Scientific Name
BIRDS	
Loons	
Common Loon	*Gavia immer*
Grebes	
Pied-billed Grebe	*Podilymbus podiceps*
Horned Grebe	*Podiceps auritus*
Eared Grebe	*Podiceps nigricollis*
Pelicans and their Allies	
American White Pelican	*Pelecanus erythrorhynchos*
Double–crested Cormorant	*Phalacrocorax auritus*
Neotropic Cormorant	*Phalacrocorax brasilianus*
Anhinga	*Anhinga anhinga*
Magnificent Frigatebird	*Fregata magnificens*
Herons, Egrets, and Allies	
American Bittern	*Botaurus lentiginosus*
Least Bittern	*Ixobrychus exilis*
Great Blue Heron	*Ardea herodias*
Great Egret	*Ardea alba*
Snowy Egret	*Egretta thula*
Little Blue Heron	*Egretta caerulea*
Tricolored Heron	*Egretta tricolor*
Reddish Egret	*Egretta rufescens*
Cattle Egret	*Bubulcus ibis*
Green Heron	*Butorides virescens*
Black-crowned Night-Heron	*Nycticorax nycticorax*
Yellow-crowned Night-Heron	*Nycticorax violacea*
Ibis, Spoonbill, and Stork	
Glossy Ibis	*Plegadis falcinellus*
White Ibis	*Eudocimus albus*
White-faced Ibis	*Plegadis chihi*
Roseate Spoonbill	*Platalea ajaia*
Wood Stork	*Mycteria americana*
Sandhill Crane	*Grus canadensis*
Waterfowl	
Fulvous Whistling-Duck	*Dendrocygna bicolor*
Black-bellied Whistling Duck	*Dendrocygna autumnalis*
Greater White-fronted Goose	*Anser albifrons*
Snow Goose	*Chen caerulescens*
Ross's Goose	*Chen rossii*
Canada Goose	*Branta canadensis*
Wood Duck	*Aix sponsa*
Green-winged Teal	*Anas crecca*

American Black Duck	*Anas rubripes*
Mottled Duck	*Anas fulvigula*
Mallard	*Anas platyrhynvchos*
Northern Pintail	*Anas acuta*
Blue-winged Teal	*Anas discors*
Cinnamon Teal	*Anas cyanoptera*
Northern Shoveler	*Anas clypeata*
Gadwall	*Anas strepera*
American Wigeon	*Anas americana*
Canvasback	*Aytha valisineria*
Redhead	*Aythya americana*
Ring-necked Duck	*Aythya collaris*
Lesser Scaup	*Aythya affinis*
Common Goldeneye	*Bucephala clangula*
Bufflehead	*Bucephala albeola*
Hooded Merganser	*Lophodytes cucullatus*
Common Merganser	*Mergus merganser*
Red-breasted Merganser	*Mergus serrator*
Ruddy Duck	*Oxyura jamaicensis*

Vultures, Hawks, and Allies

Black Vulture	*Coragyps atratus*
Turkey Vulture	*Cathartes aura*
Osprey	*Pandion haliaetus*
Bald Eagle	*Haliaeetus leucocephalus*
Northern Harrier	*Circus cyaneus*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperii*
Red-shouldered Hawk	*Buteo lineatus*
Broad-winged Hawk	*Buteo platypterus*
Red-tailed Hawk	*Buteo jamaicensis*
American Kestrel	*Falco sparverius*
Merlin	*Falco columbarius*
Peregrine Falcon	*Falco peregrinus*
Northern Caracara	*Caracara cheriway*

Gallinaceous Birds (Quail,Turkey, and Allies)

Northern Bobwhite Quail	*Colinus virginianus*

Rails, Gallinules, Coots, and Cranes

Yellow Rail	*Coturnicops noveboracensis*
Black Rail	*Laterallus jamaicensis*
Clapper Rail	*Rallus longirostris*
King Rail	*Rallus elegans*
Virginia Rail	*Rallus limicola*
Sora	*Porzana carolina*
Purple Gallinule	*Porphyrio martinica*
Common Moorhen	*Gallinula chloropus*
American Coot	*Fulica americana*

Shorebirds

Black-bellied Plover	*Pluvialis squatarola*
American Golden-Plover	*Pluvialis dominica*
Wilson's Plover	*Charadrius wilsonia*
Semipalmated Plover	*Charadrius semipalmatus*

Killdeer	*Charadrius vociferus*
Black-necked Stilt	*Himantopus mexicanus*
American Avocet	*Recurvirostra americana*
Greater Yellowlegs	*Tringa melanoleuca*
Lesser Yellowlegs	*Tringa flavipes*
Solitary Sandpiper	*Tringa solitaria*
Willet	*Catoptrophorus semipalmatus*
Spotted Sandpiper	*Actitis macularia*
Upland Sandpiper	*Bartramia longicauda*
Whimbrel	*Numenius phaeopus*
Long-billed Curlew	*Numenius americanus*
Marbled Godwit	*Limosa fedoa*
Ruddy Turnstone	*Arenaria interpres*
Red Knot	*Calidris canutus*
Sanderling	*Calidris alba*
Semipalmated Sandpiper	*Calidris pusilla*
Western Sandpiper	*Calidris mauri*
Least Sandpiper	*Calidris minutilla*
White-rumped Sandpiper	*Calidris fuscicollis*
Pectoral Sandpiper	*Calidris melanotos*
Dunlin	*Calidris alpina*
Stilt Sandpiper	*Calidris himantopus*
Short-billed Dowitcher	*Limnodromus griseus*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Buff-breasted Sandpiper	*Tryngites subruficollis*
Common Snipe	*Gallinago gallinago*
American Woodcock	*Scolopax minor*
Laughing Gull	*Larus atricilla*
Franklin's Gull	*Larus pipixcan*
Bonaparte's Gull	*Larus Philadelphia*
Ring-billed Gull	*Larus delawarensis*
Herring Gull	*Larus argentatus*
Gull-billed Tern	*Sterna nilotica*
Caspian Tern	*Sterna caspia*
Royal Tern	*Sterna maxima*
Common Tern	*Sterna hirundo*
Forster's Tern	*Sterna forsteri*
Least Tern	*Sterna antillarum*
Black Tern	*Childonias niger*
Black Skimmer	*Rynchops niger*

Pigeons and Doves

Mourning Dove	*Zenaida macroura*
White-winged Dove	*Zenaida asiatica*

Cuckoos

Black-billed Cuckoo	*Coccyzus erythropthalmus*
Yellow-billed Cuckoo	*Coccyzus americanus*
Groove-billed Ani	*Crotophaga sulcirostris*

Owls

Barn Owl	*Tyto alba*
Eastern Screech Owl	*Megascops asio*
Great Horned Owl	*Bubo virginianus*
Burrowing Owl	*Athene cunicularia*
Short-eared Owl	*Asio flammeus*

Nightjars

Common Nighthawk	*Chordeiles minor*
Chuck-will's widow	*Caprimulgus carolinensis*
Whip-poor-will	*Caprimulgus vociferous*

Swifts and Hummingbirds

Chimney Swift	*Chaetura pelagica*
Ruby-throated Hummingbird	*Archilochus colubris*

Kingfishers

Belted Kingfisher	*Megaceryle alcyon*

Woodpeckers

Red-headed Woodpecker	*Melanerpes erythrocephalus*
Yellow-bellied Sapsucker	*Sphyrapicus varius*
Downy Woodpecker	*Picoides pubescens*
Northern Flicker	*Colaptes auratus*
Red-bellied Woodpecker	*Melanerpes carolinus*
Hairy Woodpecker	*Picoides villosus*

Flycatchers

Olive-sided Flycatcher	*Contopus cooperi*
Eastern Wood-Pewee	*Contopus virens*
Yellow-bellied Flycatcher	*Empidonax flaviventris*
Acadian Flycatcher	*Empidonax virescens*
Eastern Phoebe	*Sayornis phoebe*
Vermilion Flycatcher	*Pyrocephalus rubinus*
Great Crested Flycatcher	*Myiarchus crinitus*
Western Kingbird	*Tyrannus verticalis*
Eastern Kingbird	*Tyrannus tyrannus*
Scissor-tailed Flycatcher	*Tyrannus forficatus*

Martins and Swallows

Purple Martin	*Progne subis*
Tree Swallow	*Iridoproche bicolor*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Cliff Swallow	*Petrochelidon pyrrhonota*
Bank Swallow	*Riparia riparia*
Barn Swallow	*Hirundo rustica*

Jays and Crows

Blue Jay	*Cyanocitta cristata*
Fish Crow	*Coruus ossifragus*

Nuthatchers

Red-breasted Nuthatch	*Sitta Canadensis*

Creepers

Brown Creeper	*Certhia ameicana*

Wrens

Carolina Wren	*Thryothorus ludovicianus*
Winter Wren	*Troglodytes troglodytes*
Sedge Wren	*Cistothorus platensis*

Marsh Wren	*Cistothorus palustris*
House Wren	*Troglodytes aedon*
Carolina Chickadee	*Poecile carolinensis*
Kinglets and Gnatcatchers	
Golden-crowned Kinglet	*Regulus satrapa*
Ruby-crowned Kinglet	*Regulus calendula*
Blue-gray Gnatcatcher	*Polioptila caerulea*
Bluebirds, Thrushes and Robins	
Eastern Bluebird	*Sialia sialis*
Veery	*Catharus fuscescens*
Gray-cheeked Thrush	*Catharus minimus*
Swainson's Thrush	*Catharus ustulatus*
Hermit Thrush	*Catharus guttatus*
Wood Thrush	*Hylocichla mustelina*
American Robin	*Turdus migratorius*
Thrashers	
Gray Catbird	*Dumetella carolinensis*
Brown Thrasher	*Toxostoma rufum*
Northern Mockingbird	*Mimus polyglottos*
Pitpits	
American Pitpit	*Anthus rubescens*
Waxwings	
Cedar Waxwing	*Bombycilla cedrorum*
Starling	
European Starling	*Sturnus vulgaris*
Shrike	
Loggerhead Shrike	*Lanius ludovicianus*
Vireos	
White-eyed Vireo	*Vireo griseus*
Blue-headed Vireo	*Vireo solitarius*
Yellow-throated Vireo	*Vireo flavifrons*
Warbling Vireo	*Vireo gilvus*
Red-eyed Vireo	*Vireo olivaceus*
Philadelphia Vireo	*Vireo philadelphicus*
Warblers	
Blue-winged Warbler	*Vermivora pinus*
Golden-winged Warbler	*Vermivora chrysoptera*
Tennessee Warbler	*Vermivora peregrine*
Orange-crowned Warbler	*Vermivora celata*
Nashville Warbler	*Vermivora ruficapilla*
Yellow Warbler	*Dendroica petechia*
Chestnut-sided Warbler	*Dendroica pensylvanica*
Magnolia Warbler	*Dendroica magnolia*
Cape May Warbler	*Dendroica tigrina*
Black-throated Blue Warbler	*Dendroica caerulescens*
Yellow-rumped Warbler	*Dendroica coronata*

Black-throated Green Warbler	*Dendroica virens*
Blackburnian Warbler	*Dendroica fusca*
Yellow-throated Warbler	*Dendroica dominica*
Prairie Warbler	*Dendroica discolor*
Palm Warbler	*Dendroica palmarum*
Bay-breasted Warbler	*Dendroica castanea*
Blackpole Warbler	*Dendroica striata*
Cerulean Warbler	*Dendroica cerulea*
Black-and-white Warbler	*Mniotilta varia*
American Redstart	*Setophaga ruticilla*
Prothonotary Warbler	*Protonotaria citrea*
Worm-eating Warbler	*Helmitheros vermivorus*
Ovenbird	*Seiurus aurocapilla*
Northern Waterthrush	*Seiurus noveboracensis*
Louisiana Waterthrush	*Seiurus motacilla*
Kentucky Warbler	*Oporornis formosus*
Mourning Warbler	*Oporonis philadelphia*
Hooded Warbler	*Wilsonia citrina*
Canada Warbler	*Wilsonia canadensis*
Yellow-breasted Chat	*Icteria virens*
Northern Parula	*Parula americana*
Common Yellowthroat	*Geothlypos trichas*
Wilson's Warbler	*Wilsonia pusilla*

Tanagers

Summer Tanager	*Piranga rubra*
Scarlet Tanager	*Piranga olivacea*
Western Tanager	*Piranga ludoviciana*

New World Finches

Northern Cardinal	*Cardinalis cardinalis*
Rose-breasted Grosbeak	*Pheucticus ludovicianus*
Blue Grosbeak	*Passerina caerulea*
Indigo Bunting	*Passerina cyanea*
Painted Bunting	*Passerina ciris*
Dickcissel	*Spiza americana*

Sparrows

Eastern Towhee	*Pipilo erythrophthalmus*
Field Sparrow	*Spizella pusilla*
Vesper Sparrow	*Pooecetes gramineus*
Lark Sparrow	*Chondestes grammacus*
Savannah Sparrow	*Passerculus sandwichensis*
LeConte's Sparrow	*Ammodramus leconteii*
Nelson's Sharp-tailed Sparrow	*Ammodramus nelsoni*
Fox Sparrow	*Passerella iliaca*
Song Sparrow	*Melospiza melodia*
Lincoln's Sparrow	*Melospiza lincolnii*
Swamp Sparrow	*Melospiza Georgiana*
White-throated Sparrow	*Zonotrichia albicollis*
White-crowned Sparrow	*Zonatrichia leucophrys*
Dark-eyed Junco	*Junco hyemalis*
Chipping Sparrow	*Spizella passerine*

Blackbirds, Grackles, Cowbirds and Orioles

Red-winged Blackbird	*Agelais phoeniceus*
Eastern Meadowlark	*Sturnella magna*
Western Meadowlark	*Sturnella neglecta*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
Rusty Blackbird	*Euphagus carolinus*
Boat-tailed Grackle	*Quiscalus major*
Common Grackle	*Quiscalus quiscula*
Brown-headed Cowbird	*Molothrus ater*
Orchard Oriole	*Icterus spurious*
Altamira Oriole	*Icterus galulris*
Bobolink	*Dolichonyx oryzivorus*
Great-tailed Grackle	*Quiscalus mexicanus*

Old World Finches

Purple Finch	*Carpodacus purpureus*
American Goldfinch	*Carduelis tristis*

Weaver Finches

House Sparrow	*Passer domesticus*

MAMMALS

Marsupials

Virginia Opossum	*Didelphis marsupialis*

Edentates

Nine-banded armadillo	*Dasypus novemcinctus*

Insectivores

Least Shrew	*Cryptotis parva*

Bats

Red Bat	*Lasiurus borealis*
Seminole Bat	*Lasiurus seminolus*
Yellow Bat	*Lasiurus ega*

Carnivores

Coyote	*Canis latrans*
Gray Fox	*Urocyon cinereoargenteus*
Red Fox	*Vulpes vulpes*
Raccoon	*Procyon lotor*
Mink	*Mustela vison*
Striped Skunk	*Mephitis mephitis*
River Otter	*Lutra canadensis*
Bobcat	*Lynx rufus*

Ungulates

White-tailed Deer	*Odocoileus virginianus*

Rodents

Marsh Rice Rat	*Orysomys palustris*
Fulvous Harvest Mouse	*Reithrodontomys fulvescens*
Hispid Cotton Rat	*Sigmodon hispidus*
Muskrat	*Ondatra zibethicus*
House Mouse	*Mus musculus*
Black Rat	*Rattus rattus*

Norway Rat	*Rattus norvegicus*
Nutria	*Myocastor coypus*
Fox Squirrel	*Sciurus niger*

Lagomorphs

Swamp Rabbit	*Sylvilagus aquaticus*
Eastern Cottontail	*Sylvilagus floridanus*

REPTILES AND AMPHIBIANS

Alligator

American Alligator	*Alligator mississippiensis*

Lizards

Green Anole	*Anolis carolinensis*
Broadhead Skink	*Eumeces laticeps*
Ground Skink	*Scinella lateralis*
Five-lined Skink	*Eumeces fasciatus*
Slender Glass Lizard	*Ophisaurus attenuatus*

Turtles

Snapping Turtle	*Chelydra serpentina*
Alligator Snapping Turtle	*Macroclemys temminckii*
Mississippi Mud Turtle	*Kinosternon subrubrum hippocrepis*
Common Slider	*Trachemys scripta*
Spiny Softshell Turtle	*Apalone spinifera*
Chicken Turtle	*Deirochelys reticularia*
Eastern Box Turtle	*Terrapene carolina carolina*
Stinkpot Turtle	*Sternotherus odoratus*

Snakes

Southern Water Snake	*Nerodia fasciata*
Mississippi Green Water Snake	*Nerodia cyclopion*
Diamondback Water Snake	*Nerodia rhombifer*
Brown Snake	*Storeria dekayi*
Western Ribbon Snake	*Thamnophis proximus proximus*
Glossy Crayfish Snake	*Regina rigida*
Eastern Hognose Snake	*Heterodon platirhinos*
Mud Snake	*Farancia abacura*
Racer	*Coluber constrictor*
Rat Snake	*Drymobius elaphe*
Common Kingsnake	*Lampropeltis getulus*
Southern Copperhead	*Agkinstodon contortrix contortrix*
Cottonmouth	*Agkinstodon piscivorus*
Pigmy Rattlesnake	*Sistrurus miliarius*
Yellow-bellied Water Snake	*Nerodia erythrogaster flavigaster*
Rough Green Snake	*Opheodrys aestivus*
Graham's Crayfish Snake	*Regina grahamii*

Salamanders

Three-toed Amphiuma	*Amphiuma tridactylum*

Frogs and Toads

Gulf Coast Toad	*Bufo valliceps valliceps*
Northern Cricket Frog	*Acris crepitans crepitans*
Green Treefrog	*Hyla cinera*

Eastern Narrow-mouthed Toad	*Gastrophryne carolinensis*
Bullfrog	*Rana catesbeiana*
Pig Frog	*Rana grylio*
Southern Leopard Frog	*Rana utricularia*
Squirrel Tree Frog	*Hyla squirella*
Woodhouse Toad	*Bufo woodhousii woodhousii*

CRUSTACEA

Crustaceans

White River Crayfish	*Procambarus acutus*
Red Swamp Crayfish	*Procambarus clarkii*

Isopods and Amphipods

Wood-boring Isopod	*Limnoria tripunctata*
Rock Louse	*Ligia exotica*
Smooth-backed	*Sphaerona quadridentatum*
Fish Louse	*Cymothous spp.*
Wharf Roach	*Ligia spp.*
Beach Flea	*Orchestia grillus*
Marsh Hopper	*Talorchestia spp.*

FISH

Gars

Spotted Gar	*Lepisosteus oculatus*
Longnose Gar	*Lepisosteus osseus*
Alligator Gar	*Lepisosteus spatula*

Bowfins

Bowfin	*Amia calva*

Herrings

Gizzard Shad	*Dorosoma cepedianum*
Threadfin Shad	*Dorosoma petenense*

Lizardfishes

Inshore Lizardfish	*Synodus foetens*

Carps

Common Carp	*Cyprinus carpio*
Golden Shiner	*Notemigonus crysoleucas*

Suckers

Bigmouth Buffalo	*Ictiobus cyprinellus*

Freshwater Catfishes

Blue Catfish	*Ictalurus furcatus*
Black Bullhead	*Ictalurus melas*
Yellow Bullhead	*Ictalurus natalis*
Channel Catfish	*Ictalurus punctatus*

Sunfishes

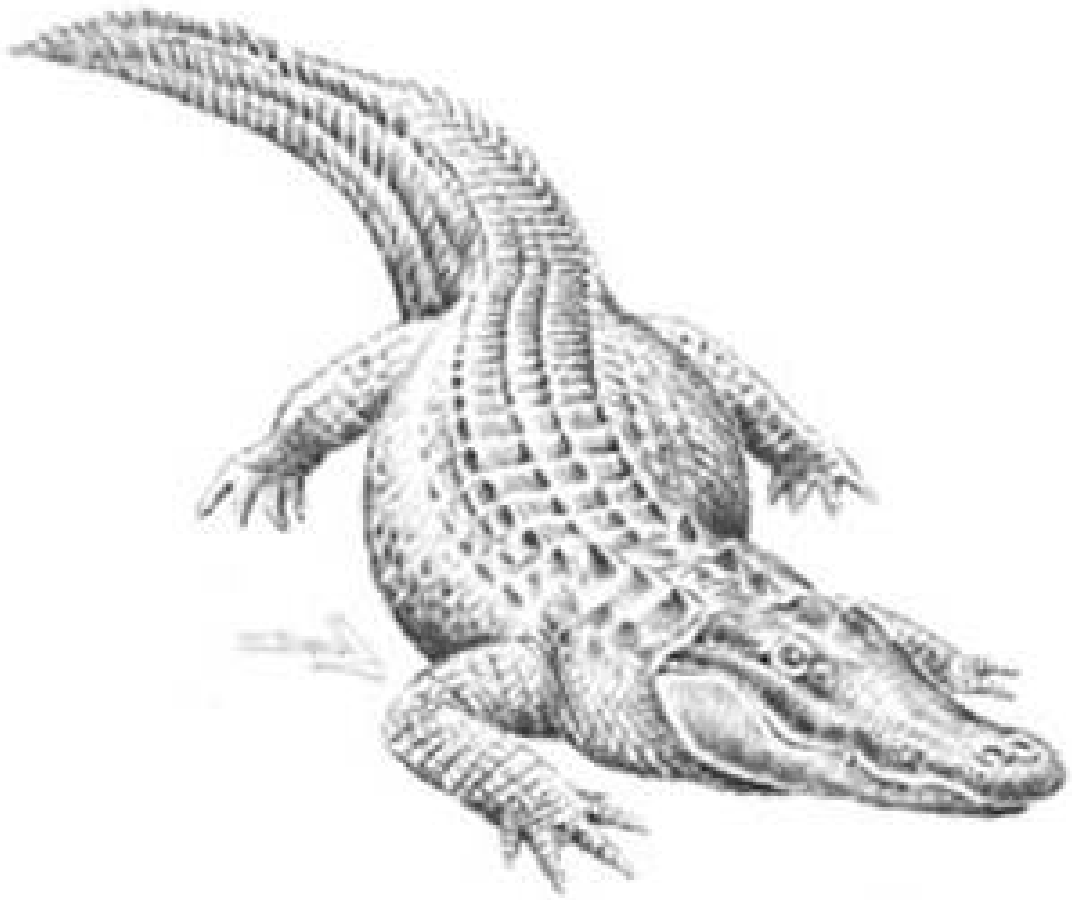
Banded Pygmy Sunfish	*Elassoma zonatum*

Warmouth	*Lepomis gulosus*
Bluegill	*Lepomis macrochirus*
Redear Sunfish	*Lepomis punctatus*
Bantam Sunfish	*Lepomis symmetricus*
Green Sunfish	*Lepomis cyanellus*
Largemouth Bass	*Micropterus salmoides*
White Crappie	*Pomoxis annularis*
Black Crappie	*Pomoxis nigromaculatus*
Drums	
Freshwater Drum	*Aplodinotus grunniens*
Spot	*Leiostomus xanthurus*
Mullets	
Striped Mullet	*Mugil cephalus*
White Mullet	*Mugil curema*

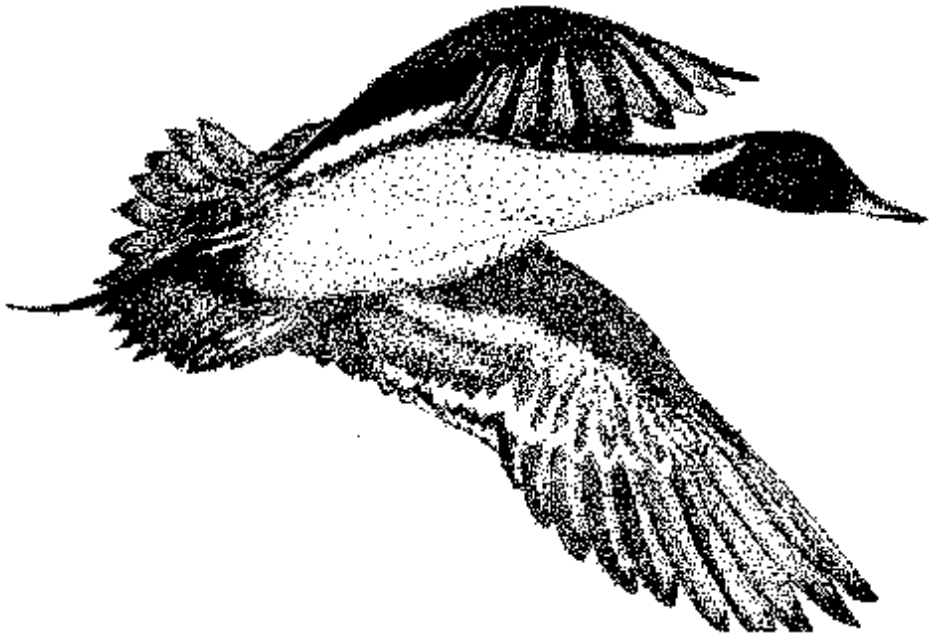
PLANTS

Alligator Weed	*Alternanthera philoxeroides*
American Lotus	*Nelumbo lutea*
Baccharis	*Baccharis halimifolia*
Baldcypress	*Taxodium distichum*
Banana Water Lily	*Nymphaea mexicana*
Barnyard Grass	*Echinochloa crusgalli*
Black Needlerush	*Juncus roemerianus*
Black Willow	*Salix nigra*
Beggar'sTick	*Bidens laevis*
Bird's Eye Bush	*Ochna serrrulata*
Blue Water Lily	*Nymphaea elegans*
Brazilian Verbena	*Verbena brasiliensis*
Brownseed Paspalum	*Paspalum plicatulum*
Bulltongue	*Sagittaria lancifolia*
Bushy Bluestem	*Andropogon glomeratus*
Buttonbush	*Cephalanthus occidentalis*
California Bulrush	*Scirpus californicus*
Cattail	*Typa spp*
Chinese Tallow	*Sapium sebiferum*
Chocolate Weed	*Melochia corchorifolia*
Coastal Water-Hyssop	*Bacopa monnieri*
Coffeeweed	*Sesbania macrocarpa*
Common Bladderwort	*Utricularia vulgaris*
Common Salvinia	*Salvania minima*
Coontail	*Ceratophyllum demersum*
Curly-leaf Dock	*Rumex crispus*
Duckweed	*Lemna minor*
Dog Fennel	*Eupatorium capillifolium*
Dwarf Spikerush	*Eleocharis parvula*
Eurasian Watermilfoil	*Myriophyllum spicatum*
Fall Panicum	*Panicum dichotomiflorum*
False Garlic	*Nothoscordum bivalve*
Fanwort	*Cabomba caroliniana*
Flatsedges	*Cyperus spp.*
Floating Water Primrose	*Ludwigia peploides*
Four Corner Grass	*Eleocharis quadrangulata*
Frogbit	*Limnobium spongia*

Frogfruit	*Phyla nodiflora*
Gamma Grass	*Tripsacum dactyloides*
Giant Cutgrass	*Zizaniopsis miliacea*
Giant Ragweed	*Ambrosia trifida*
Grasslike Fimbry	*Fimbristylis miliacea*
Hackberry	*Celtis laevigata*
Horned Beakrush	*Rhynchospora corniculata*
Hydrilla	*Hydrilla verticillata*
Iris	*Iris virginica*
Jungle Rice	*Echinochloa colonum*
Macartney Rose	*Rosa bracteata*
Maidencane	*Panicum hemitomon*
Marsh Elder	*Iva frutescens*
Marshhay Cordgrass	*Spartina patens*
Mosquito-Fern	*Azolla caroliniana*
Muskgrass	*Chara spp*.
Parrot Feather	*Myriophyllum* aquaticum
Pennywort	*Hydrocotyle spp*
Phragmites	*Phragmites communis*
Pickerelweed	*Pontederia cordata*
Rattlebox	*Sesbania drummondii*
Red Rice	*Oryza functata*
Sago Pondweed	*Potamogeton pectinatus*
Saltmarsh Mallow	*Kosteletzkya virginica*
Saltmarsh Morning Glory	*Ipomoea sagittata*
Sawgrass	*Cladium jamaicense*
Seashore Paspalum	*Paspalum vaginatum*
Smartweed	*Polygonum spp*.
Softstem Bullrush	*Scirpus validus*
Southern Naiad	*Najas quadalupensis*
Southern Swamp Lily	*Crinum americanum*
Spadderdock	*Nuphar luteum*
Spikerushes	*Elecocharis spp.*
Sprangletop	*Leptochloa fascicularis*
Squarestem Spikerush	*Eleocharis quadrangulata*
Sumpweed	*Iva annua*
Thalia	*Thalia dealbata*
Thin-leaf Pondweed	*Potamogeton pusillus*
Three-cornered Grass	*Scirpus olneyi*
Toothache Tree	*Zanthoxylum calva-herculis*
Vasey Grass	*Paspalum urvillei*
Walter's Millet	*Echinochloa walteri*
Water Hyacinth	*Eichornia crassipes*
Water Lettuce	*Pistia stratiotes*
Water Pepper	*Polygomum hydropiperoides*
Water Shield	*Brasenia schreberi*
Wax-Myrtle	*Myrica cerifera*
White-topped Sedge	*Rhynchospora colorata*
White Water Lily	*Nymphaea odorata*
Wigeongrass	*Ruppia maritima*



Appendix E- Scoping



Appendix E - Scoping

A series of scoping meetings were held to obtain input from the general public. Meetings were held in various communities in Cameron Parish in 2002 as follows: October 1, Carlyss; October 8, Grand Lake; October 10, Cameron; October 16, Hackberry; and October 17, Johnson Bayou.

Approximately 25 people in total attended these meetings. On January 16, and February 4, 2003, public open house meetings were held in Lake Charles with a total of 33 people attending. Comment forms were placed in the Refuge Visitor Center and invitations to comment or provide input were issued at various special events. Various issues emerged from these meetings and were considered during the preparation of the plan.

News releases were sent to local media to inform the public about opportunities to comment and are shown below. Meetings scheduled for October 4, 5, and 6, 2002, were cancelled by notifying the media by telephone due to local communities evacuating during the landfall of Hurricane Lily. Meetings were rescheduled (see News Release #2). A worksheet, comment form, and brochure were also available and are shown below.

News Release # 1
9/23/02

Southwest Louisiana Refuge Complex Hosts Open House
Public Invited to Help Develop Management Plan

The U.S. Fish and Wildlife Service will hold six public open house sessions for the Southwest Louisiana Refuge Complex in early October to gather input to help prepare a new comprehensive conservation management plan (CCP). The Refuge Complex is comprised of Sabine and Cameron Prairie National Wildlife Refuges which are two of more than 500 refuges nationwide within the National Wildlife Refuge System. The System is dedicated entirely to the conservation of wildlife and their habitats.

The public is invited to the open houses to be held at various locations: **October 1, Carlyss Lions Club; October 3, Community Center, Hackberry; October 4, Community Center, Johnson Bayou; October 5, Civic Center, Lake Charles; October 8, Fireman Center, Grand Lake; and October 9, Police Jury Annex, Cameron**. Hours for all meetings with the exception of Lake Charles will be from 1:00 - 8:00 pm; Lake Charles=s meeting will be from 9:00 am - 4:00 pm. (See Table at end of article). Those attending may come at any time during the open house to view maps and other displays, consider refuge purpose and mission statements, visit one-on-one with Service representatives, and give their personal suggestions for future management of the refuge. The input received will be used to evaluate the refuge=s effectiveness toward meeting its obligations to the public and the Nation=s natural resources, and to plan for future refuge programs and operations. Comments may also be made at the two Refuge Visitor Centers, by email, fax, or through the mail. According to Project Leader Chris Pease, "we need the public's input and the best way to use it is to receive it in writing."

The Service is updating management plans for all lands in the National Wildlife Refuge System. The planning effort is part of the Fish and Wildlife Improvement Act of 1997 which requires national wildlife refuges to reassess their capabilities to protect fish, wildlife, and plant resources and their habitats while also providing compatible wildlife-dependent public uses. The Refuge Complex is in the initial stages of preparing its comprehensive conservation plan that will guide refuge activities and operations for the next 15 years. The new plan will likely include most of the current refuge programs, but unlike previous plans, there will be extensive effort to obtain ideas and concerns from the public, refuge users, neighbors, and partner agencies. Other opportunities for open house meetings for Lacassine NWR and the other two refuges will be announced at a later date.

Sabine National Wildlife Refuge in Cameron Parish was established in 1937 by Executive Order for the protection of wintering waterfowl. The Refuge protects vast areas of coastal marshland which help support significant wildlife and fisheries resources. These resources are important to SW Louisiana - both biologically and economically. Cameron Prairie National Wildlife Refuge, also located in Cameron Parish, was established to provide for nesting, migrating, and wintering birds and their critical habitat. It was the first refuge established under the North American Waterfowl Management Plan in 1988 with funding provided by the sale of Duck Stamps. The refuge=s marshes annually attract a diverse array of migratory birds and other wildlife.

After the open house meetings, a draft plan will be written and presented to the public. During the CCP process, a planning team will develop goals, objectives, and strategies to define management actions. The team will develop a reasonable range of alternatives to determine a proposed management action. All alternatives will be reviewed to assess the environmental effects of each one. During the public=s review, comments may be made regarding the Service=s preferred alternative. After considering comments, the Service will amend the plan if necessary and then will prepare and adopt a final plan.

For further information regarding the meetings, contact Natural Resource Planner Judy McClendon at Southwest Louisiana Refuges Complex, 1428 SH 27, Bell City, LA 70630. Phone: 337-598-2216, Fax: 337-598-2492, or email judy_mcclendon@fws.gov

The U.S. Fish and Wildlife Service is the principal Federal agency responsible for conserving, protecting, and enhancing fish, wildlife and plants and their habitats for the continuing benefit of the American people. The Service manages the 93-million-acre National Wildlife Refuge System comprised of more than 500 national wildlife refuges, thousands of small wetlands, and other special management areas. It also operates 66 national fish hatcheries, 64 fish and wildlife management assistance offices and 78 ecological services field stations.

U.S. Fish and Wildlife Service Public Scoping Meetings Schedule
(For information the day of meetings, call 337-526-3667)

Thursday, October 3

Hackberry Community Center
986 Main Street
Hackberry
1:00 pm to 8:00 pm

Friday, October 4

Recreation Center
Hwy 82
Johnson Bayou
1:00 pm to 8:00 pm

Saturday, October 5

Civic Center
900 Lakeshore Drive
Lake Charles
9:00 am - 4:00 pm

Tuesday, October 8

Fireman Center
957A Hwy 384
Grand Lake
1:00 pm - 8:00 pm

Thursday, October 10

Police Jury Annex
110 Smith Circle
Cameron
1:00 pm - 8:00 pm

U.S. Fish and Wildlife Service
Southwest Louisiana Refuges
Contact Information

Project Leader
Sabine NWR
3000 Holly Beach Highway
Hackberry LA 70645
Phone: 337-762-3816
Fax: 337-762-3780
email: chris_pease@fws.gov

Refuge Manager
Cameron Prairie NWR
1428 SH 27
Bell City, LA 70630
Phone: 337-598-2216
FAX: 337-598-2492
email: glenn_harris@fws.gov

Project Leader
Lacassine National Wildlife Refuge
209 Nature Road
Lake Arthur LA 70549
Phone: 337-774-5923
Fax: 337-774-9913
email: bryan_winton@fws.gov

Natural Resource Planner
Southwest Louisiana Refuges Complex
1428 SH 27
Bell City, LA 70630
Phone: 337-598-2216
Fax: 337-598-2492
email: judy_mcclendon@fws.gov

News Release #2
Electronically mailed to all media on October 7, 2002.

Due to all the Hurricane Hoopla, we would like to remind the public about their opportunities to make comments/suggestions regarding their local National Wildlife Refuges at this week's open house meetings. Thank You for your assistance.

NEWS RELEASE
SW LA REFUGE COMPLEX

Cameron Prairie NWR
1428 Hwy. 27
Bell City LA 70630
Phone: 337-598-2216
Fax: 337-598-2492

Sabine NWR
3000 Holly Beach Hwy
Hackberry LA 70645
Phone: 337-762-3816
Fax: 337-762-3780

For Immediate Release 10/07/2002
Contact: Diane Borden-Billiot, 337-762-3816

Southwest Louisiana Refuge Complex Open House Reminder
Public Invited to Help Develop Management Plan

The U.S. Fish and Wildlife Service will be holding two public open house sessions for the Southwest Louisiana Refuge Complex this week to gather input to help prepare a new comprehensive conservation management plan (CCP). The Refuge Complex is comprised of Sabine and Cameron Prairie National Wildlife Refuges which are two of more than 500 refuges nationwide within the National Wildlife Refuge System. The System is dedicated entirely to the conservation of wildlife and their habitats.

The public is invited to the open houses to be held : **October 8, Fireman Center, Grand Lake; and October 9, Police Jury Annex, Cameron**. Hours for the meetings will be from 1:00 - 8:00 pm. Those attending may come at any time during the open house to view maps and other displays, consider refuge purpose and mission statements, visit one-on-one with Service representatives, and give their personal suggestions for future management of the refuge. The input received will be used to evaluate the refuge's effectiveness toward meeting its obligations to the public and the Nation's natural resources, and to plan for future refuge programs and operations. Comments may also be made at the two Refuge Visitor Centers, by email, fax, or through the mail. According to Project Leader Chris Pease, "we need the public's input and the best way to use it is to receive it in writing."

The Service is updating management plans for all lands in the National Wildlife Refuge System. The planning effort is part of the Fish and Wildlife Improvement Act of 1997 which requires national wildlife refuges to reassess their capabilities to protect fish, wildlife, and plant resources and their habitats while also providing compatible wildlife-dependent public uses. The Refuge Complex is in the initial stages of preparing its comprehensive conservation plan that will guide refuge activities and operations for the next 15 years. The new plan will likely include most of the current refuge programs, but unlike previous plans, there will be extensive effort to obtain ideas and concerns from the public, refuge users, neighbors, and partner agencies. Open house meeting opportunities for Lacassine NWR in Lake Arthur, LA will be announced at a later date.

Sabine National Wildlife Refuge in Cameron Parish was established in 1937 by Executive Order for the protection of wintering waterfowl. The Refuge protects vast areas of coastal marshland which help support significant wildlife and fisheries resources. These resources are important to SW Louisiana - both biologically and economically. *Cameron Prairie National Wildlife Refuge*, also located in Cameron Parish, was established to provide for nesting, migrating, and wintering birds and their critical habitat. It was the first refuge established under the North American Waterfowl Management Plan in 1988 with funding provided by the sale of Duck Stamps. The refuge's marshes annually attract a diverse array of migratory birds and other wildlife.

After the open house meetings, a draft plan will be written and presented to the public. During the CCP process, a planning team will develop goals, objectives, and strategies to define management actions. The team will develop a reasonable range of alternatives to determine a proposed management action. All alternatives will be reviewed to assess the environmental effects of each one. During the public's review, comments may be made regarding the Service's preferred alternative. After considering comments, the Service will amend the plan if necessary and then will prepare and adopt a final plan.

For further information regarding the meetings, contact Natural Resource Planner Judy McClendon at Southwest Louisiana Refuges Complex, 1428 SH 27, Bell City, LA 70630. Phone: 337-598-2216, Fax: 337-598-2492, or email judy_mcclendon@fws.gov

The U.S. Fish and Wildlife Service is the principal Federal agency responsible for conserving, protecting, and enhancing fish, wildlife and plants and their habitats for the continuing benefit of the American people. The Service manages the 93-million-acre National Wildlife Refuge System comprised of more than 500 national wildlife refuges, thousands of small wetlands, and other special management areas. It also operates 66

national fish hatcheries, 64 fish and wildlife management assistance offices and 78 ecological services field stations.

News Release #3

Issued to media via e-mail on January 7, 2003

National Wildlife Refuges in southwest Louisiana managed by the U.S. Fish and Wildlife Service are participating in a Comprehensive Conservation Plan (CCP) process and invites the public to participate. The CCP is developed with partners such as state wildlife agencies, elected officials, non-governmental conservation agencies, and interested public.

Refuges in Cameron Parish undergoing the process include Sabine, Cameron Prairie, and Lacassine National Wildlife Refuges. These Refuges are three of more than 535 nationwide within the National Wildlife Refuge System which is dedicated entirely to the conservation of wildlife and their habitats.

One of the first steps in the CCP process is to solicit public input regarding management of the refuges. An open house meeting will be held on January 16, 2003, at the Best Suites Inn, 401 Lakeshore Drive, in Lake Charles to give people an opportunity to discuss or comment on management issues. The public may drop by anytime between 2:00 pm and 7:00 pm to view displays, pick up information, or talk with Refuge personnel. Formal presentations will be given at 2:30, 4:30, and 6:30 p.m. A question and answer session will follow each formal presentation.

In 1997, Congress passed the National Wildlife Refuge System Improvement Act which set the stage for ensuring that wildlife refuges continue to be managed for the benefit of both wildlife and the American people. The Act articulates a clear conservation mission for fish, wildlife, and plant conservation and also mandates CCP=s be prepared for every national wildlife refuge.

The plans will specify management direction for the refuges for the next 15 years while ensuring that each refuge=s uses are compatible with its mission and purpose for being established. The CCP process will encourage greater involvement by partners and neighbors in wildlife refuge management decision-making and public use programs. Anyone who is interested in the future of the Refuges is invited to participate.

For further information on the meeting, please call Natural Resource Planner Judy McClendon at 337-598-2216 or 337-526-3667.

Public Scoping Meetings:

Thursday, October 3

Hackberry Community Center
986 Main Street
Hackberry
1:00 pm to 8:00 pm

Tuesday, October 8

Fireman Center
957A Hwy 384
Grand Lake
1:00 pm - 8:00 pm

Friday, October 4

Recreation Center
Hwy 82
Johnson Bayou
1:00 pm to 8:00 pm

Thurs., October 10

Police Jury Annex
110 Smith Circle
Cameron
1:00 pm - 8:00 pm

Saturday, October 5

Civic Center
900 Lakeshore Drive
Lake Charles
9:00 am - 4:00 pm

For information the day of meetings, call 337-526-3667.

Sabine National Wildlife Refuge

Sabine National Wildlife Refuge, in Cameron Parish was established in 1937 for the protection of wintering waterfowl. The Refuge protects vast areas of coastal marshland which help support significant wildlife and fisheries resources. These resources are important to SW Louisiana - both biologically and economically.

Executive Order 7764, dated Dec. 6, 1937, states the official purpose of the refuge is, ". . . .as a refuge and breeding ground for migratory birds and other wildlife." A secondary purpose of the refuge is ". . . . for use as an inviolate sanctuary, or for any other management purpose, for migratory birds. 16 U.S.C. 715d - Migratory Bird Conservation Act.

Sabine is the largest Service refuge in Louisiana with 124,511 acres; 84,667 acres of grassland/herbaceous marsh and 39,844 acres of open water.

Sabine is managed with goals, objectives, and strategies designed to restore habitat, manage water levels, conduct surveys, censuses, investigations, and studies. Some tools used to accomplish goals and objectives include prescribed burning, mowing, haying, and grazing.

Public use opportunities include fishing, crabbing, shrimping, hunting, nature trails, environmental education, and wildlife observation and photography.

Cameron Prairie National Wildlife Refuge

Cameron Prairie National Wildlife Refuge is located approximately 25 miles southeast of Lake Charles, in Cameron Parish. It was established to provide for nesting, migrating, and wintering birds and their critical habitat. It was the first refuge established under the North American Waterfowl Management Plan. The Refuge was purchased on December 29, 1988 with $5.1 million dollars provided by the Migratory Bird Stamp Act (Duck Stamp Fund).

The primary purpose for establishment of this refuge was "... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" (16 U.S.C., 715d. Migratory Bird Conservation Act).

The refuge contains 9,621 acres that include fresh marsh, coastal prairie, and old rice fields (currently moist soil units). It provides excellent habitat for migratory waterfowl, shorebirds, and neotropical migrants, as well as habitat for local species such as white-tailed deer, small game, furbearers, American alligators, and other wildlife species.

Cameron Prairie National Wildlife Refuge is managed to provide natural foods for wintering waterfowl and other water birds. This is done by using moist soil management techniques to grow natural plants and by constructing levees and water control structures to provide water for wildfowl usage.

The refuge lends itself to high quality public use activities such as wildlife observation, bird watching, and photography. Additional recreational activities on the refuge include an archery white-tailed deer hunt, waterfowl youth-only hunt, rabbit hunt, snipe hunt, dove hunt, fresh water fishing, and an auto tour route.

U.S. Fish and Wildlife Service

Southwest Louisiana Refuges Complex

Comprehensive Conservation Planning

U.S. FISH & WILDLIFE SERVICE

NATIONAL WILDLIFE REFUGE SYSTEM

CELEBRATING A CENTURY of CONSERVATION

Who are we:

The Southwest Louisiana Refuges Complex is comprised of Sabine and Cameron Prairie National Wildlife Refuges, both managed by the U.S. Fish and Wildlife Service. These Refuges are two of more than 535 nationwide within the National Wildlife Refuge System which is dedicated entirely to the conservation of wildlife and their habitats.

What are we doing:

The Complex is beginning a planning process which will result in a **Comprehensive Conservation Plan** (CCP) to specify management direction for the refuges for the next 15 years

The plan must ensure that each refuge's uses are compatible with its mission and purpose for being established. It will encourage greater involvement by partners and neighbors in wildlife refuge management decision-making and public use programs.

Refuges are managed based on biology with the underlying theme that wildlife and their habitats come first. Wildlife-dependent public uses are allowed if compatible with the purpose of the Refuge. If conflict occurs, it shall be resolved so that management still protects the original purpose of the Refuge.

Refuge System Mission:
"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."

Under the CCP process we will consider how the refuges contribute to the overall Refuge System mission and still accomplish the original purpose for refuge establishment.

Why are we doing this:

In 1997, Congress passed the National Wildlife Refuge System Improvement Act which set the stage for ensuring that wildlife refuges continue to be managed for the benefit of both wildlife and the American people.

Two important components of the Act which articulates a clear conservation mission for fish, wildlife, and plant conservation are:

1) Designated priority wildlife-dependent public uses as hunting and fishing; wildlife observation and photography; and interpretation and environmental education when they are compatible with the refuge's purpose and the mission of the System

2) Mandated comprehensive conservation plans (CCP) for every national wildlife refuge which are for a 15-year period and must be completed by 2012.

How will we conduct the process:

During the CCP process, a planning team will develop goals, objectives, and strategies to define management actions. The team will develop a reasonable range of alternatives to determine a proposed management action. All alternatives will be reviewed to assess the environmental effects of each one.

One of the first steps in the process is to solicit public input regarding management of the refuges. After notifying the public about opportunities to comment, we will hold scoping meetings to receive the comments. We will discuss and scope issues with participants. Scoping is defined as a process to determine what the significant issues will be during the planning process.

Who will help us:

The CCP is developed with our partners such as state wildlife agencies, elected officials, non-governmental conservation agencies, and the general public.

After the scoping meetings, a draft plan will be written and presented to the public. During the public's review, comments may be made regarding the Service's preferred alternative. After considering comments, the Service will amend the plan if necessary and then will prepare and adopt a final plan.

Remember, we need your input and the best way to use it is to receive it in writing.

How to Get Involved:

For further information, contact the following:

Project Leader
Sabine NWR
3000 Holly Beach Highway
Hackberry LA 70645
Phone: 337-762-3816
Fax: 337-762-3780
chris_pease@fws.gov

Refuge Manager
Cameron Prairie NWR
1428 Highway 27
Bell City, LA 70630
Phone: 337-598-2216
FAX: 337-598-2492
email: glenn_harris@fws.gov

Natural Resource Planner
Southwest Louisiana Refuges Complex
1428 Highway 27
Bell City, LA 70630
Phone: 337-598-2216
Fax: 337-598-2492
email: judy_mcclendon@fws.gov

Comment Sheet
Comprehensive Conservation Planning
Cameron Prairie, Sabine, & Lacassine National Wildlife Refuges

Please use the space below to comment on the proposal, then complete the name and address form and turn it in at the Open House or mail to: Natural Resource Planner, U.S. Fish and Wildlife Service, 1428 Hwy 27, Bell City, LA 70630.

PLEASE PRINT

Dear Planner:

Regarding comprehensive conservation planning for Cameron Parish Refuges, **(indicate which refuge you are commenting on)** _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(Continue on additional pages if necessary)

Name: _____
Address: _____
City: _____ **State:** _____ **Zip:** _____

Telephone: **DATE:** **PLEASE PRINT**

Southwest Louisiana Refuge Complex
Planning Issues Worksheet

Sabine National Wildlife Refuge
Cameron Prairie National Wildlife Refuge and East Cove Unit

Activity	What would you like us to do? (Level of opportunities provided)				On which Refuge(s)?		
I. PUBLIC USE ACTIVITIES	Increase	Keep the same	Decrease	Eliminate	Sabine NWR	Cameron Prairie NWR	East Cove
Environmental Education (School Students)							
Environmental Education (School Teachers)							
Environmental Education (Facilities)							
Wildlife Interpretation (Formal Programs)							
Wildlife Interpretation (Printed Material)							
Wildlife Interpretation (Facilities)							
Wildlife Interpretation (Interpretive Signs)							
Wildlife Photography Opportunities							
Wildlife Observation Opportunities							
Fishing							
Crabbing							
Castnetting (Shrimping)							
Waterfowl Hunting (Teal)							
Waterfowl Hunting (Regular)							
Waterfowl Hunting (Youth Hunt)							
Dove Hunting							
Snipe Hunting							
Rabbit Hunting							
Archery Deer Hunting							
Vehicle Parking Lots							

	Increase	Keep the same	Decrease	Eliminate	Sabine NWR	Cameron Prairie NWR	East Cove
Launching Access							
Boating Opportunities (canoe, etc)							
Signs (Directional, Informational)							
Planting, Seeding for Facility Aesthetics							
Other _____							
Other _____							

II. LAW ENFORCEMENT ACTIVITIES	Increase	Keep the same	Decrease	Eliminate	Sabine NWR	Cameron Prairie NWR	East Cove
Visitor Protection							
Wildlife Protection							
Trespass Violations							
Littering Violations							
Other Violations							
Other _____							

III. OPERATION AND MAINTENANCE	Increase	Keep the same	Decrease	Eliminate	Sabine N WR	Cameron Prairie NWR	East Cove
Canal Maintenance							
Facilities Maintenance (Buildings, Signs)							
Trail Maintenance (mowing,)							
Water Control Structures, Pump Stations							
Boundary Posting							
Other _____							

IV. HABITAT MANAGEMENT ACTIVITIES	Increase	Keep the same	Decrease	Eliminate	Sabine NWR	Cameron Prairie NWR	East Cove
Water Management (Operation of Control Structures)							
Prescribed Burning							
Mechanical Vegetation Management (Mowing, Discing)							
Chemical Vegetation Management							
Erosion Control (Vegetative Planting)							
Habitat Restoration (Terraces, Dredge Spoil)							
Wildlife Management							
Insect and Disease Management							
Exotic and Invasive Species Eradication (nutria, tallow trees)							
Other_____							

IV. WILDLIFE SURVEYS AND MANAGEMENT	Increase	Keep the same	Decrease	Eliminate	Sabine NWR	Cameron Prairie NWR	East Cove
Waterfowl Survey and Management							
Shorebird Survey and Management							
Land Bird Survey and Management							
Amphibian Survey and Management							
Alligator Management							
Fish Survey and Management							
Estuarine Species Survey and Management							
Other _____							
Other _____							

Comments:

_____

_____

_____

_____

_____

_____

Respondent Information [Optional- this information will be subject to public disclosure if a Freedom of Information Act (FOIA) requests information about the planning process].

Name:_____

Street Address:_____

City, State, Zip Code:_____

Phone:_____ Fax:_____ E-mail:_____

Organization or Agency: _____

Title: _____

Add me to your mailing list, signed:

_____

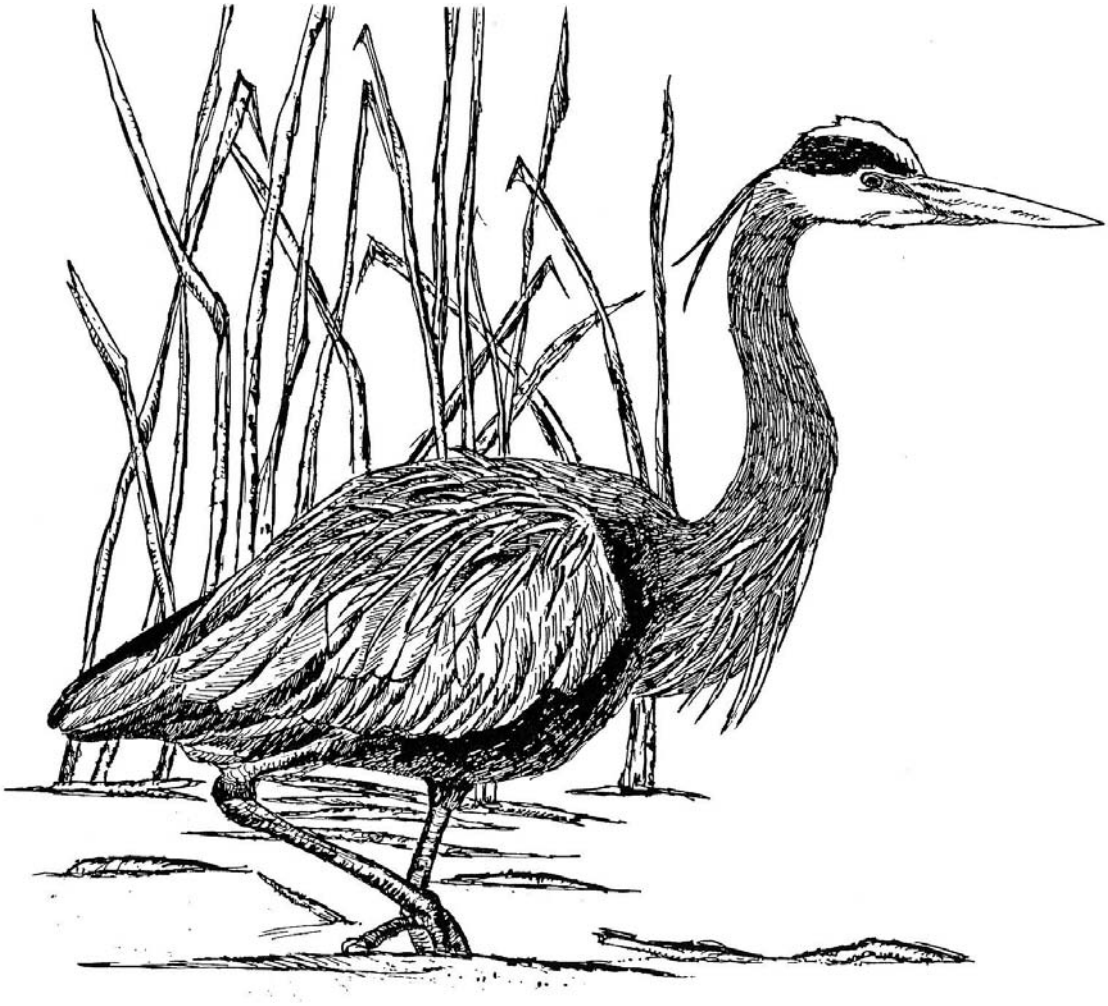
(In order to add your name to our mailing list, we must have written permission)

If you wish to send this worksheet by mail, send to :

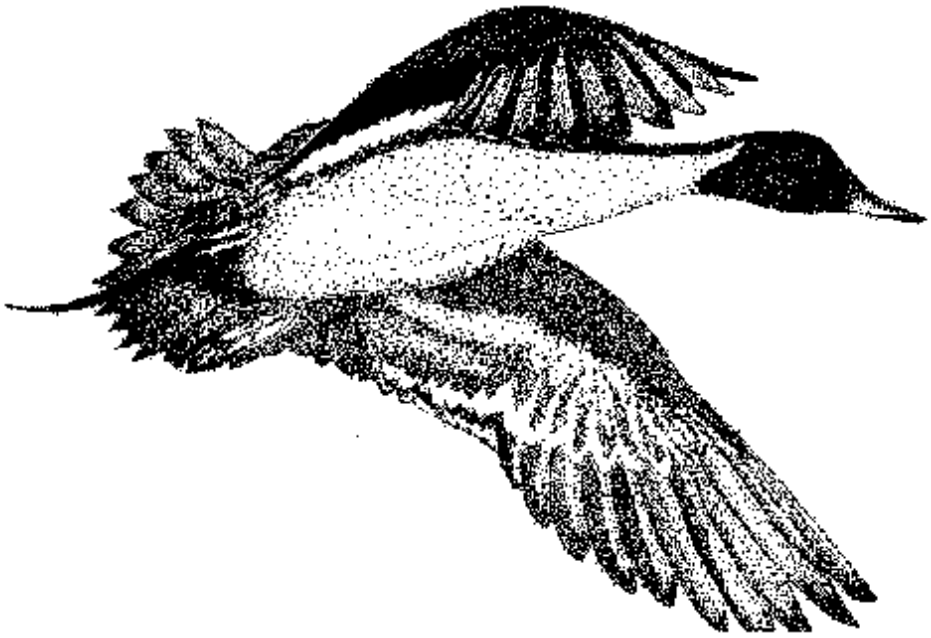
Refuge Planner
Sabine NWR
3000 Holly Beach Hwy
Hackberry LA 70645

or

Refuge Planner
Cameron Prairie
1428 Highway 27
Bell City LA 70630



Appendix F – Compatibility Determinations



Appendix F– Compatibility Determinations

Introduction

The following proposed compatibility determinations describe various uses that are outlined in the Preferred Alternative for Cameron Prairie National Wildlife Refuge and serves to determine if these uses are compatible with wildlife purposes.

Refuge Uses

The following Compatibility Determinations apply to 1) Recreational Fishing; 2) Recreational Hunting; 3) Environmental Education and Interpretation; 4) Wildlife Observation and Photography; 5) Commercial Alligator Harvest; 6) Commercially Guided Wildlife Viewing, Photography, Environmental Education and Interpretation; 7) Research and Monitoring; 8) Commercial Video and Photography; and 9) Adjacent Property Access. A previously approved compatibility determination for Beneficial Use of Dredge Material is located at the end of this section for reference.

Refuge Name

Cameron Prairie National Wildlife Refuge

Date Established

December 29, 1988

Establishing and Acquisition Authorities

Migratory Bird Conservation Act; Migratory Bird Hunting and Conservation Act;

Refuge Purpose

"*... for use as an inviolate sanctuary, or for any other management purpose, for migratory birds*" (16 U.S.C. 715d (Migratory Bird Conservation Act)).

Mission of the National Wildlife Refuge System

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."

Other Applicable Laws, Regulations, and Policies

Antiquities Act of 1906
Archaelogical Resources Protection Act of 1979
Endangered Species Act of 1973;
Fish and Wildlife Act of 1956;
Fish and Wildlife Service (Refuge) Manual;
Land and Water Conservation Fund of 1965;
Migratory Bird Conservation Act of 1929;

Migratory Bird Hunting and Conservation Stamp Act of 1934;
Migratory Bird Treaty Act of 1918
National Historic Preservation Act of 1966, as amended
National Wildlife Refuge Administratoion Act of 1966;
National Environmental Policy Act of 1969;
Native American Graves Protection and Repatriation Act of 1990
Refuge Recreation Act of 1962;
Refuge Improvement Act of 1997;
Title 50 Code of Federal Regulations Subchapter C;
Laws and Regulations of the State of Louisiana relating to hunting;
Additional refuge-specific regulations as published.

Compatibility determinations for each use listed were considered separately. Within this plan, the preceding section from “Refuge Uses: through “Other Applicable Laws” are only shown once; however, they are part of each descriptive use and become part of that compatibility determination if approved.

1) Recreational Fishing

Description of Use: Sport fishing on the Refuge is very limited. Fishing is allowed in the outfall canal (boat access only) March 15 – October 15. Fishing is allowed in the Highway 27 road ditch (a state right-of-way) all year, however, anglers are discouraged from parking on the busy highway shoulder. In support of National Fishing Day, the youth fishing ponds will be open for a youth only fishing day with special harvest restrictions.

Availability of Resources: No changes to the Refuge fishing program are required with the implementation of the preferred alternative.

Anticipated Impacts of Use: Boat usage in the outfall canal routinely dislodges floating aquatic plants and cuts plant species that creep into the water from the nearby levees. This impact is currently viewed positively because boat traffic prevents clogging of the outfall canal, a major component of the Refuge drainage system.

Fishing is not expected to indirectly, or cumulatively impact Refuge resources negatively. As a consumptive use, fishing would have some minimal and short-term direct impacts on Refuge resources.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: Fishing will only be allowed March 15 – October 15, the lowest migratory bird usage period, and only during daylight hours. In the outfall canal, fishing from a boat will be the only permissible method. This will ensure that vegetation established on the levees will not be trampled from bank fishing activities. Access to fishing in the Highway 27 roadside ditch will continue to be directed toward two parking areas to eliminate parking on the shoulder of the highway. Mode of access incidental to this use will be allowed by vehicle, bicycle or boat.

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

Justification: According to the National Wildlife Refuge System Improvement Act of 1997 fishing is a priority public use activity that should be encouraged and expanded where possible. It is through compatible public uses such as this that the public becomes aware of and provides support for national wildlife refuges.

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

_____ Categorical Exclusion without Environmental Action Statement

_____ Categorical Exclusion and Environmental Action Statement

____**X**__ Environmental Assessment and Finding of No Significant Impact

_____ Environmental Impact Statement and Record of Decision

Mandatory 10- or 15- Year Re-Evaluation Date: _____

2) Recreational Hunting

Description of Use:

The Refuge is located in an area between the coastal marshes and inland agricultural areas. It provides excellent habitat for migratory waterfowl, shorebirds, and neotropical migrants, as well as habitat for local species such as white-tailed deer, small game, furbearers, American alligators, and many other wildlife species.

The Comprehensive Conservation Plan calls for the continued hunting of deer, dove, snipe, and a youth waterfowl (ducks, geese, and gallinules) lottery hunt. All hunts fall within the framework of the State's open seasons and follow state regulations. Refuge-specific regulations are reviewed annually and incorporated into the Refuge hunting and fishing brochures. Hunters are required to possess Refuge permits while hunting on the Refuge.

Implementation of the proposed alternative as described in the Comprehensive Conservation Plan would ensure that opportunities for various types of wildlife-dependent recreation such as hunting would continue for future generations.

Waterfowl hunting for ducks, geese, and gallinules is limited to a lottery youth hunt. The lottery drawing from all available applicants occurs in mid-October each year. The Refuge provides hunting blinds on Saturdays and select Wednesdays during the state designated waterfowl season. The blinds are capable of holding 3 hunters (two youth and one adult of 21 years of age or older). All youth must possess proof of completing a state certified hunter safety course. The supervising adult is allowed to hunt on all dates except the state designated youth only day. Following the hunt each group must fill out a self-clearing harvest information form.

The white-tailed deer (*Odocoileus virginianus*) harvest is limited to an archery season only. The Refuge archery season is open annually for all dates in October. The entire Refuge is open to archery hunting with the exception of posted no hunting areas in the interior portion of the Pintail Wildlife Drive and areas around the maintenance and office areas. Bowhunters participating in the Refuge white-tailed deer archery hunt must possess a signed copy of the Refuge hunting permit and proof of completing the International Bowhunters Safety Course. Hunters may harvest deer in accordance with the state regulated season limit.

Dove hunting is currently permitted in Units 14A and 14B. Time and space zoning of this hunt will continue. The Refuge dove hunt is open during September of the first split of the state regulated season. Hunting is not allowed in the posted no hunting areas around the maintenance and office buildings. Hunters must possess a signed copy of the Refuge annual hunting permit. Following each hunt, hunters must fill complete a self-clearing harvest information form. Non-toxic shot is required for all Refuge dove hunts.

Snipe (*Gallinago gallinago*) hunting is also permitted currently in Units 14A and 14B. Time and space zoning of this hunt will continue. The Refuge snipe hunt is permitted during the remaining portion of the State-designated season following the closure of the State waterfowl season. Hunting is not allowed in the posted no hunting areas around the maintenance and office buildings. Hunters must possess a signed copy of the Refuge hunting regulations. Following the hunt, hunters must fill out a self-clearing harvest information form.

All-terrain vehicle (ATV) use is restricted to disabled hunters on designated routes of travel only. Disabled hunters using ATV's on the Refuge must possess proof of a state certified disability.

Availability of Resources: There is adequate funding to ensure and administer the use at its current level of participation. However, additional funding may be required for resource protection and administration as participation grows.

Anticipated Impacts of Use:

Some disturbance to wildlife is expected to occur do to hunting within the Refuge. This disturbance is an unavoidable consequence of any public use program. Allowing hunting to occur on the Refuge is carefully planned to limit levels of impact to wildlife and habitat. Hunter access to all hunt areas is limited to walking only, with the exception of all-terrain vehicle use by disabled hunters. Designated vehicle parking areas are used to minimize impacts such as trampling and noise disturbance caused by vehicles. The take of other wildlife species, either illegally or unintentionally, may occur with any consumptive use program, however, the Refuge's hunt brochure summarizes the important regulations related to hunting.

As described by Bookout (1994), the management of wildlife harvest is the art of combining wildlife science and management objectives for the attainment of specific refuge management goals. Harvest management strategies are based on objectives established as part of Refuge hunt plans. The objective-setting process is based on a complete analysis of biological data. Specific state-wide or nation-wide harvest objectives allow the setting of hunting regulations. Results of each hunting season need

to be thoroughly evaluated to ensure that the harvest management program remains dynamic and responsive to an evolving management environment.

Harvest management of migratory birds (ducks, doves) is 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). The influence of hunting on waterfowl and goose populations continues to be debated. Schmidt (1993) states, “In general, all studies have demonstrated a high degree of compensation of hunting mortality by other “natural” mortality factors for harvest levels experienced to date”. He also reports, “The proportion of waterfowl populations subject to hunting on refuges is very low, thus hunting is not likely to have an adverse impact on the status of any recognized waterfowl population in North America.” In support, Burnham et al (1984) found evidence for a highly compensatory mortality process for adult male mallards. But, after examination of over 37,000 goose bands, Rexstad (1992) found no evidence to support compensatory mortality.

Harvest management of upland game and furbearers is considerably different from that of both big game and migratory birds. Regulated hunting is assumed not to significantly impact these populations. Production of large, annual surpluses of young is used to justify lengthy seasons and generous bag limits with little concern for over-harvest and minimal chance of population impacts in most areas (Bookhout 1994). Some scientists suggest that user take (<50% of total mortality) of most upland game should be compensatory. Additionally, factors such as immigration from adjacent areas and density-dependent production operate in most upland game populations. Boyce et al. (1999), however, argued that because of environmental variability the true influence of harvest and predation is to reduce population size. Dusek et al. (1992) found female white-tailed deer females are affected by additive mortality when hunting is the primary factor of death. Ellison (1990) found little evidence of compensatory mortality existing in upland game birds due to lack of control of immigration and doubt about the fate of surplus birds.

No threatened or endangered species are currently on the Refuge. It is anticipated that the current levels and expected future levels of hunting or other wildlife-dependent recreations activities would not directly, indirectly, or cumulatively impact any listed, proposed, or candidate species or designated or proposed critical habitat. Data gathered from future biological surveys regarding the importance or potential importance of the Refuge to threatened or endangered species (or proposed threatened, endangered, or critical habitat), could result in changes to public use activities across time; however, these changes would have no effect on listed species. Madsen (1998), through use of an experimental design, found that geese and ducks redistributed according to the position of hunting-free areas where protected species did not.

As currently proposed, the known and anticipated levels of disturbance of allowing hunting are considered minimal and well within the tolerance level of known wildlife species and populations present in the area. All hunting activities 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. At current

and anticipated public use levels, incidental take would be very small. Implementation of an effective law enforcement program and development of site specific Refuge regulations and special conditions would minimize most incidental take problems.

Hunting is not expected to indirectly or cumulatively impact Refuge resources negatively. As a consumptive use, hunting would have some minimal and short-term direct impacts on Refuge resources.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: Waterfowl hunting would be limited to a youth lottery hunt only. All youth, up to 2 per blind, must be supervised by an adult 21 years of age or older. Hunters must hunt from designated blinds and blinds will only be located within the moist soil areas of the Refuge. The waterfowl season will follow the framework of the state regulated season but will remain closed for the state's special teal season. Permits would be required and a post hunt information card must be completed following each hunt.

The archery white-tailed deer season would be open for a period that corresponds with a closed state waterfowl season; this corresponds to all dates in October. All stands, blinds, and platforms must be removed from the Refuge on the last day of the season. Parking would only be allowed in designated areas. The interior portion of Pintail Wildlife Drive and the signed no hunting areas around the headquarters and maintenance shop would remain closed for other priority public uses. Hunters under the age of 16 must have an adult over the age of 21 to supervise hunting activities. Permits would be required and a self-clearing harvest information form must be completed following each hunt.

Snipe and dove hunting would be open only during the state regulated season that corresponds with a closed waterfowl season. Hunting would be limited to specific units. Louisiana Department of Wildlife and Fisheries bag limits would apply. Non-toxic shot would be required. Parking would be allowed in designated areas only. Hunters under the age of 17 must have an adult over the age of 21 to supervise hunting activities. Permits would be required and a self-clearing harvest information form must be completed following each hunt.

Justification: According to the National Wildlife Refuge System Improvement Act of 1997 hunting is a priority public use activity that should be encouraged and expanded where possible. It is through compatible public uses such as this that the public becomes aware of and provides support for national wildlife refuges.

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

_____ Categorical Exclusion without Environmental Action Statement

_____ Categorical Exclusion and Environmental Action Statement

___**X**___ Environmental Assessment and Finding of No Significant Impact

_____ Environmental Impact Statement and Record of Decision

Mandatory 10- or 15- Year Re-Evaluation Date: _____

Literature Cited:

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

Boyce, M.S., A.R.E. Sinclair, and G.C. White. 1999. Seasonal compensation of predation and harvesting. Oikos 87:419-426.

Burnham, K.P., G.C. White, and D.R. Anderson. 1984. Estimating the effect of hunting on annual survival rates of adult mallards. J. Wildl. Manage. 48:350-361.

Dusek, G.L., A.K. Wood, and S.T. Stewart. 1992. Spatial and temporal patters of mortality among female white-tailed deer. J. Wildl. Manage. 56:645-650.

Madsen, J. 1998. Experimental refuges for migratory waterfowl in Danish wetlands. II. Tests of hunting disturbance effects. J. Applied Ecology 35.

Schmidt. P.R. 1993. Memorandum – Information request regarding impacts of hunting on national wildlife refuges. U.S. Department of the Interior, Fish and Wildlife Service, Office of Migratory Bird Management, Washington, D.C. 7pp.

3) Environmental Education and Interpretation

Description of Use: Due to the elevated amount of group visitation that the Refuge receives each spring, reservations for group visits are required. To apply for a reservation, applications may be downloaded from the internet at http://cameronprairie.fws.gov/educational_program.html. Groups may have a form sent by mail or email by calling the Refuge Outreach Coordinator. Applications are processed on a first come first serve basis and visits will be confirmed by letter.

The Refuge has a ten minute educational video explaining the Refuge's function and its role in the coastal marsh ecosystem. Currently the Refuge is proposing the creation of several computerized presentations that will allow teachers to select from a list of topics to conduct onsite virtual tours of refuges, wildlife, and habitats.

Kiosks play a key role in Environmental Education and Interpretation at the Refuge. Additional information panels would be placed at all key public use facilities and access areas. In response to visitor's requests, the Refuge would like to create additional

informative and useful brochures highlighting the Refuge, species lists, wildlife facts, and habitats.

Staff members participate in local community events by providing displays or setting up booths at local festivals, fairs, and boat shows. Refuge displays highlight the U.S. Fish and Wildlife Service, the National Wildlife Refuge System, the Refuge, and its wildlife and habitats.

Availability of Resources: At the current participation level for this use funding is adequate. However, with implementation of the preferred alternative, use will increase and additional resources and funding will be required.

Anticipated Impacts of Use: The incidental disturbance of wildlife species, either illegally or unintentionally, may occur with any public use program. Environmental education and interpretation may result in some additional wildlife disturbance. Habitat destruction (mostly trampling) by approved or unapproved activity may also occur. Boardwalks, auto-tour routes, kiosks, and observation platforms are designed and placed to minimize disturbance potential. Frequently users of the Pintail Wildlife Drive get out of their vehicle and disturb wildlife. Effective education and law enforcement programs should minimize this disturbance factor.

Environmental education and interpretation are not expected to indirectly, or cumulatively impact Refuge resources negatively even though there may be some minimal and direct short-term disturbance or trampling.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: N/A

Justification: According to the National Wildlife Refuge System Improvement Act of 1997 environmental education and interpretation are priority public use activities that should be encouraged and expanded where possible. It is through compatible public uses such as this that the public becomes aware of and provides support for national wildlife refuges.

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

_____ Categorical Exclusion without Environmental Action Statement

_____ Categorical Exclusion and Environmental Action Statement

__X__ Environmental Assessment and Finding of No Significant Impact

_____ Environmental Impact Statement and Record of Decision

Mandatory 10- or 15- Year Re-Evaluation Date: _____

4. Wildlife Observation and Photography

Description of Use: Non-consumptive wildlife observation uses such as bird watching, hiking, and nature photography are major public uses at the Refuge. The beauty and uniqueness of the area combined with the seasonal abundance of various bird species draw over 25,000 visitors to the Refuge each year.

It is anticipated that an increase in non-consumptive wildlife-dependent uses would occur over the next few years since the Refuge is a stopping point on the Creole Nature Trail All American Road, which is promoted and advertised through the Southwest Louisiana Convention and Visitors Bureau.

Availability of Resources: The Refuge allows wildlife observation and photography on select areas. Areas include the Pintail Drive, a 3-mile auto-tour route designed to encourage use by wildlife and provide viewing opportunities for auto travelers. Observation platforms and/or boardwalks are provided at the visitor center to enhance public participation and minimize disturbance to wildlife. A spotting scope is provided on the observation platform for visitor use and a photo blind, located near the Pintail Drive, is available for use by pre-arranged reservations. Photography is encouraged during all permitted public use activities.

Given the Refuge's proximity to the Gulf of Mexico, neotropical migrants may spend considerable time using refuge resources following their trans-gulf flight. Following this increase of migratory birds, bird watchers often request additional opportunities to view avian species. They are often permitted to hike into additional accessible areas of the Refuge.
There is adequate funding to ensure compatibility and to administer the use at its current level. However, to provide safe, high quality wildlife observation and photography opportunities, additional fiscal resources would be needed as outlined in the comprehensive conservation plan to improve access, develop wildlife access points, and provide directional/interpretive signs.

Anticipated Impacts of Use: Wildlife observation and photography could result in some disturbance to wildlife, especially if visitors exit their vehicle along the Pintail Drive. Some minimal trampling of vegetation may also occur. Boardwalks, auto-tour routes, photo blinds, and observation platforms would be designed and placed to minimize disturbance potential.

Wildlife observation and photography are not expected to indirectly, or cumulatively impact Refuge resources negatively even though there may be some minimal and direct short-term disturbance or trampling. Use of the photo blind is low, regulated, and not expected to cause significant disturbance

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: Public access for wildlife viewing and photography would be allowed in designated areas only by vehicle or bicycle. An

increase in education and law enforcement patrols would minimize illegal or undesirable activity. Wildlife observation and photography would be monitored to document any negative impacts. If any negative impacts are found, corrective action would be taken to reduce or eliminate negative impacts to wildlife. Public access to many of the key observation and photography areas may be closed during extremely wet periods for road protection and visitor safety.

Newly constructed viewing areas would be designed to minimize disturbance impacts to wildlife and all Refuge resources while providing a good opportunity to view wildlife in their natural environments.

Given limited access, wildlife viewing and photography is viewed as compatible with the purpose for which the Refuge was established.

Mode of access incidental to this use will be allowed by vehicle or bicycle on roads open to the public.

Justification: According to the National Wildlife Refuge System Improvement Act of 1997 wildlife observation and photography are priority public use activities that should be encouraged and expanded where possible. It is through compatible public uses such as this that the public becomes aware of and provides support for national wildlife refuges.

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

_____ Categorical Exclusion without Environmental Action Statement

_____ Categorical Exclusion and Environmental Action Statement

___**X**___ Environmental Assessment and Finding of No Significant Impact

_____ Environmental Impact Statement and Record of Decision

Mandatory 10- or 15- Year Re-Evaluation Date: _____

5) Commercial Alligator Harvest

Description of Use: Since the re-establishment of alligator harvests in Louisiana following in 1983, the Refuge has cooperated with the Louisiana Department of Wildlife and Fisheries in the commercial harvest of alligators. The attachment, titled 'Justification for the Commercial Harvest of Alligators', describes alligator ecology and harvest history for this species in southwest Louisiana and on the refuges on the Southwest Louisiana National Wildlife Refuge Complex. The attachment also discusses Refuge objectives and goals as they relate to the management of alligators.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage alligator harvest activities at present levels.

Anticipated Impacts of Use: Commercial harvest of alligators could result in some disturbance to wildlife adjacent to the hunted areas, especially those areas associated with canals. Some minimal trampling of vegetation may also occur near harvest sites.

However, it is anticipated that this disturbance would be minimal. Hunt areas are designed and placed to minimize disturbance potential.

Alligator harvests are not expected to indirectly, or cumulatively impact Refuge resources negatively even though there may be some minimal and direct short-term disturbance or trampling.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: Commercial harvest of alligators would be allowed in designated areas only. Activities would be monitored to document any negative impacts to alligator populations and other wildlife. If negative impacts are found, corrective action would be taken to reduce or eliminate these impacts. Access to key hunt areas may be closed during adverse weather conditions for protection of infrastructure (roads, levees, etc.) and hunter safety.

To minimize impacts on Refuge lands and resources, law enforcement patrols, in conjunction with a mandatory check system for biological information, will be routinely conducted in an effort to maximize compliance with policies, rules and regulations. The following stipulations apply to special-use permits issued for commercial harvest of alligators:

- Quotas will be assigned yearly. Permittee must take all alligators harvested until his/her quota is filled, beginning with the day after Labor Day and extending continuously for a total of a 10-day period.
- The Refuge Manager has the authority to cancel this permit and/or reduce quotas based on alligator population data and Refuge management objectives. Special conditions and quotas will be issued prior to the season. Violation of any federal, state, or refuge regulation, or special condition will result in immediate cancellation of the permit and all alligators will be seized.
- Permittee will furnish all needed equipment, including licenses and tags, which must be ready prior to the season. Permittee may not use Refuge equipment.
- Permittee will be allowed to use mudboats, go-devils, and motors over 25 horsepower during the hunting season, and while scouting and baiting hooks, unless otherwise authorized. No airboats will be allowed. Any other form of transportation will require prior refuge approval. General access to harvest units will be as defined by the Refuge Manager.
- Each alligator set must be made clearly visible by marking each alligator set pole with orange surveyors' flagging 12 to 15 inches long. Make sure all sets are well flagged to ensure daily checking and removal of sets. Permittee will provide the Refuge with a map of sets when requested by Refuge officials.
- No alcohol possession while on the Refuge.
- Boats operated on the Refuge before sunrise and after sunset must be operated with running lights.
- Permittee must personally hunt the unit each morning, and arrive on the Refuge one hour before sunrise to begin harvesting alligators at official sunrise. The Permittee must check all Refuge lines before hunting in other areas. No nighttime

hunting is permitted. Permittee's assistants must have a State helper's license if they shoot. In the event of illness or injury, a designated assistant may hunt the unit for the Permittee with prior approval. If Permittee decides not to hunt, he or she must notify the Refuge Manager no later than one week before the start of the season. When this occurs, an alternate hunter will be given the opportunity to assume the permit for the remainder of permit (3 years maximum). The Permittee will be eligible for subsequent permit drawings under these circumstances.

- Permittee may take alligators by using set pole, line and baited hooks only. Wildlife is not permitted to be used as bait. Firearms (minimum caliber of 22 magnum) may only be used to kill hooked alligators. If shotguns are used, only non-toxic shot will be permitted. All weapons must be unloaded and encased while in Refuge parking areas, boat launches, or in route to and from designated harvest areas. Caution must be used when using firearms because of the presence of fishermen and other individuals on the Refuge during the season. Permittees are responsible for human safety near their sets and are encouraged to ask the Refuge Manager for guidance. No sets will be allowed in areas that jeopardize the health of other Refuge users. Sets placed near areas of public use (i.e., active boat travel ways, roadside canals, and boat launches) need to be placed in such a way so not to jeopardize human safety or alternative sites should be used.
- All hooked alligators will be killed immediately. Each alligator must be tagged immediately after being killed. No high grading will be permitted. If a hooked alligator has been chewed or partially eaten by another alligator, it will be tagged regardless. No cuts will be allowed behind the head or at the base of the tail. Under no circumstances will Permittee transport an untagged alligator.
- Each Permittee is responsible for collecting information on each alligator caught. Data sheets will be provided on which each Permittee must record the State tag number he or she placed on the alligator along with the length, tail girth, sex, the numbers from any metal tags found in the feet of each animal, location of missing scutes, and comments on the general condition of the animal (missing legs, scars, missing tails, etc.). Your completed alligator data sheets will be provided daily to the refuge where you are hunting. Each alligator will be identified by its State tag number.
- If Permittee uses all tags and has extra alligators on lines, he or she is responsible for notifying the Refuge Law Enforcement Officer or Refuge Manager. Permittees who still need alligators will be notified by the Refuge Law Enforcement Officer or Refuge Manager and <u>will</u> take other permittee's alligators as instructed. If the quota is filled on a weekend, notification can be on the next business day. Sale manifest must be provided to the Refuge office within three days.
- Permittee will remove all alligator sets and markers within 24 hours of either the close of the season or after their assigned quota is reached, whichever comes first.
- Permittee will remove all personal equipment such as boats, trailers, or other gear from the Refuge within 24 hours of the end of the season or after their assigned quota is reached, whichever comes first. Permittees are allowed to leave a maximum of two boats and/or equipment on the Refuge while harvesting, although the Refuge is not responsible for theft, damage, loss, etc.
- Meat and all other merchantable parts of the alligators will be disposed of according to State regulations.
- Permittee may sell either whole alligators or alligator hides and meat.

- When whole alligators and hides are sold, the Permittee must sell for no less than the minimum market price. Alligator hides must be sold to the highest bidder. Financial irresponsibility is justification for grounds in revoking this permit. Selling below the current market value constitutes a waste of natural resources. Permittee is responsible for all alligators taken and for paying the U.S. Fish and Wildlife Service 40% of the gross value at time of sale. When an alligator(s) and/or its hide(s) are destroyed, ruined, or determined as missing, or no payment is received from the buyer, insufficient checks are issued by the buyers, or any other similar circumstances, the Bill for Collection will be based on 40% of the expected gross sales price per foot during that particular alligator season.

If the Service does not receive payment for any hide(s) and/or alligator(s), the Permittee will be in violation of the Special Use Permit (SUP) and will be subject to civil prosecution as well as termination of the SUP.

Permittee is responsible for carrying a flexible tape measure to ensure all bonus tags are on alligators less than six feet and proper biological measurements are taken.
All unused Louisiana sale tags will be turned over to the Refuge.

Given limited access and timing restrictions, commercial harvest of alligators is viewed as compatible with the purpose for which the Refuge was established.

Justification: Following the enactment of the Refuge Reform Act of 1997, many refuge operation policies and uses have been reviewed. One such activity currently being reviewed for Southwest Louisiana National Wildlife Refuge Complex, consisting of Cameron Prairie, Lacassine and Sabine National Wildlife Refuges, is the commercial alligator harvest.

Current policies preclude commercial operations on refuges other than for biological reasons. The following report was written to assess biological reasons for continuing the current alligator harvest or identify required changes to the current alligator harvest strategy.

Ecology

Alligators are opportunistic feeders (McIlhenny 1935). McIlhenny (1935) stated that at sometime in an alligator's life it will eat every living thing coming in range of its jaws. Many authors agree that a relationship exists between alligator size and the type of food eaten (Giles and Childs 1949; Valentine et al. 1972; McNease and Joanen 1977; Wolfe et al. 1987). Studies have indicated that alligators less than 1.5 m (4.9') in length feed primarily on crustaceans, fishes, and insects (Giles and Childs 1949; Fogarty and Albury 1968; Valentine et al. 1972; McNease and Joanen 1977; Wolfe et al. 1987; Elsey et al. 1992), while larger alligators eat primarily mammals, fishes, crustaceans and birds (Valentine et al. 1972; McNease and Joanen 1977; Wolfe et al. 1987; Shoop and Ruckdeschel 1990; Borden-Billiot, unpub. data).

McNease and Joanen (1977) reported that alligator diets are mainly determined by availability and vulnerability of the prey species. If these factors are equal for prey species in an area, then selecting the largest food available should maximize feeding efficiency (Wolfe et al. 1987). Nutria *(Myocaster coypus)* and muskrats *(Ondatra zibethica)* fulfill theses criteria for much of the alligator's range. Because of the high

reproductive rate of both prey species (Perry 1982; Willner 1982), it is unlikely that alligator predation has a long-term effect on their populations (Wolfe et al. 1987). It is likely that substantial numbers of muskrats and nutria are taken in areas where they coexist with alligators (Wolfe et al. 1987).

Food habit studies that considered prey volume rated birds among the major food items for alligators (McIlhenny 1935; Valentine et al. 1972). Birds taken by alligators have been predominantly common resident water birds including: gallinules and rails (Gruiformes) (Borden-Billiot unpub. data), herons, egrets, and bitterns (Ciconiformes), and mottled ducks *(Anas fulvigula)* (Giles and Childs 1949; Valentine et al. 1972, Elsey et al. 2004). The alligator may be the single, most, efficient predator of adult mottled ducks and ducklings (Stutzenbaker 1984, Elsey et al. 2004) and is one of the most common predators of Rallidae species and their nests (Griej 1994; Reid et al. 1994). Migratory waterfowl generally do not arrive on the Complex until cooler temperatures exist. This cooler weather leads to winter dormancy and reduced feeding activity by alligators (Neill 1971, Delany 1986).

Amphibians are rarely reported as alligator foods, but reptiles, especially turtles and snakes are frequently eaten (Wolfe et al. 1987; Gibbons 1990). It has been suggested that prey items which are resistant to digestion such as mammals, birds, and crustaceans may tend to be over- represented while rapidly digested prey species such as amphibians and fish may be under- represented in food studies (Delany and Abercrombie 1986).

Alligators are cannibalistic (Giles and Childs 1949; Valentine et al. 1972; Nichols et al. 1976; Taylor 1980; Delany and Abercrombie 1986; Rootes and Chabreck 1993). The most recent evaluation of cannibalism was conducted on Lacassine NWR, where Rootes and Chabreck (1993) discovered that this behavior is an important population regulating mechanism. It was estimated that cannibalism accounted for 50.2% of total hatchling mortality and 63.7% of total mortality in alligators 11 months and older (Rootes and Chabreck 1993). Mortality due to cannibalism may be distributed proportionately among all cohorts in the 0.4-2.1 m (1.2-6.9‘) total length (TL) size classes (Rootes and Chabreck 1993). Males and females were eaten in the same proportions as they occurred in the population (Rootes and Chabreck 1993).

History of Louisiana Alligator Harvest

Numerous accounts of alligator hunting dating as far back as 1718 can be found in Joanen and McNease, 1987. McIlhenny (1935) estimated that 3 to 3 ½ million alligators were harvested in Louisiana from 1880 to1933. Sabine NWR harvested about 1,000 alligators per year from 1946 to 1951(SNWR-ANR 1946-1951). The alligator population showed signs of decline during the early 1950's. With the larger alligators becoming difficult to harvest following population declines, tanners established new markets for smaller sized skins.

Exploitation of the alligator continued in Louisiana until 1962 when the State of Louisiana prohibited the taking of alligators. Since Louisiana has made a concentrated effort to scientifically manage this valuable resource. Alligator numbers today are estimated to be near those which existed at the turn of the century (Joanen and McNease, 1987).

After 15 years of research, extensive law enforcement efforts and the enactment of effective State and Federal laws governing the taking, possession and transportation of alligators and their products, Louisiana's first scientifically managed alligator harvest was initiated in 1972 with the purpose of providing a sustainable yield of alligators in to the future. Lacassine National Wildlife Refuge's first alligator harvest since 1951 was held in 1983.

Annual harvest of the alligator is based upon population estimates derived from aerial nest censuses conducted each year. Aerial surveys of the coastal marsh zone have been conducted annually since 1970. Coastal alligator habitat is subdivided into three major subdivisions according to origin: the Chenier Plain, Sub-Delta and Active Delta Zones. Each subdivision is further divided based on vegetation and salinities. Over the years approximately 4% of the annual population estimate has been allotted for harvest.

The overall alligator population increased dramatically (10.1% annually) in the Chenier Plain (southwestern Louisiana) zone between 1970 and 1983. Alligator densities of the Chenier Plain were estimated at 1 alligator per 5.4 acres (Joanen and McNease, 1987). Privately-owned property, 90% of which was hunted, showed an increase of 11.0%, whereas refuges and wildlife management areas, where only limited hunting occurred, had an increase of 9.7% over the same fourteen-year period (Joanen and McNease, 1987).

There were 100,712 alligators harvested throughout Louisiana between 1972 and 1983. Harvest strategies are geared to harvest primarily males and immature animals of both sexes. Telemetry studies (Joanen and McNease 1970, 1972; McNease and Joanen 1974) suggest that a September hunt, restricted to daytime hunting and open water areas will result in a harvest that protects reproductive female alligators.

Refuge Alligator Harvest Goals

The goal of the Refuge alligator harvest is to maintain a viable alligator population while limiting the alligators' influence on other species and/or user groups on the Refuge. Actual alligator population goals have not been formally established at any of the refuges within the Complex. According to the Sabine NWR Master Plan (1963) and the Sabine NWR Hunt Plan (1980) the recommended population range for the Refuge was 5,000 - 7,000 alligators. When the plans were written there were an estimated 9,000 alligators on the Refuge. Current population estimates for Sabine NWR range from 22,000-39,775. Alligator populations statewide and on the refuges have increased dramatically over the past 40 years. It is apparent that alligator population goals need to be established or updated for each of the three refuges.

Available population estimates for the Chenier Plain could be used as a reference to set goals. The alligator population increased at a dramatic rate (10% per year) between 1970 -1983. LDWF estimated an average of one alligator per 5.4 acres from 1970 through 1983. The below table uses this alligator density estimate to calculate a possible population goal for each of the refuges.

Refuge	Acres	Ratio of alligators to acres	Calculated Population Goal
Cameron Prairie	**9,621**	**1:5.4**	**1,782**
Sabine, East Cove Unit	**14,927**	**1:5.4**	**2,764**
Sabine	**124,511**	**1:5.4**	**23,058**
Lacassine	**27,035**	**1:5.4**	**5,006**

The 1970 -1983 average population numbers were 60% greater than 1972 populations when the State set its first alligator harvest season. The population numbers at that time were considered sufficient to allow alligators to recover from catastrophic events.

Based on the annual estimated number of nesting females on each refuge, the Louisiana Department of Wildlife and Fisheries estimated that the 2004 alligator population for each of the refuges was:

Refuge	Number of alligators
Cameron Prairie	**12,735**
Sabine NWR, East Cove Unit	**8,440**
Sabine NWR	**86,464**
Lacassine NWR	**23,905**

These numbers are far above the calculated population goals for the refuges and with State take being limited to less then 5% of the estimated number of alligators, there appears to be little chance for overharvest and decreased opportunities for public viewing of alligators. Since the establishment of the sustainable alligator harvest program (1972), the Louisiana Department of Wildlife and Fisheries has concluded that the alligator population has generally continued to increase (LDWF, 1999). Nest count trends continue increasing with each year, which in turn may indicate a growing population.

The Louisiana Department of Wildlife and Fisheries, in cooperation with the Complex, conducts intense surveys of federal refuges as part of their regular state-wide surveys. This ecosystem wide approach has built working relations among the agencies, and accomplishes the Refuge objectives. These coordinated surveys provide the refuges the opportunity to determine if the refuge alligator population trends coincide with State population trends. If discrepancies are discovered in population trends, harvest modifications could be implemented.

Biological Implications of Alligator Harvest

If alligator harvest is reduced or removed from refuges, alligator populations may continue to increase to a point that may negatively impacted both their populations and populations of other fish and wildlife. As populations increase, growth rates decline affecting survivorship. Rootes (1989) indicated that growth rates in young alligators can greatly affect survivorship. Survivorship in sub-adult alligators has been shown to be a function of size, with survivorship increasing as size increases (Nichols *et al.*, 1976). Jacobsen and Kushlan (1989) suggest that if an alligator grows slower, it will take longer

to reach sexual maturity and increase its susceptibility to predation, disease and cannibalism. A study of growth levels in juvenile alligators at different stocking densities indicated that all alligators continued to grow during the experiment, but alligators maintained at lowest stocking density were significantly heavier and grew significantly faster than alligators at the highest stocking density (Elsey et al. 1990). These results indicate that crowding of juvenile alligators inhibits maximum growth rates. Studies of other crocodilian species have also shown this reduction in growth in overcrowding situations. In a study on growth of *C. johnstoni* in a controlled environmental chamber, Webb et al. (1983) noted that density was an important determinant of mortality and food conversion rates, with animals at the lowest density showing the highest food conversion rate.

Several studies on levels of reproduction hormones due to acute stress have also been conducted. Over population or crowding has been shown to cause stress. Elsey et al (1990) reported that elevated levels of plasma corticosterone levels in alligators maintained at high stocking densities had a direct correlation with lower nesting success. Elsey et al. (1991) indicated that females had elevated levels of hormones (plasma estradiol-ß & corticosterone) due to stress. Valentine and Elsey et al. (1986) showed lower levels of testosterone in male alligators when subjected to acute stress. Lower levels of testosterone in males would also have a negative correlation with reproduction.

Continued harvest of alligators on refuges may be compensatory to natural losses and can ensure wise use and management of a renewable natural resource. Harvest may also reduce predation impacts on native and migratory animals. By maintaining or reducing the alligator population, biological diversity could be maintained or improved by reducing predation and the public's opportunity to see a greater diversity of species may increase as a result.

Public Safety Issues

Increased alligator numbers in conjunction with increasing public use on the Complex will most-likely only increase the number of negative human/alligator encounters. This could lead to increased alligator attacks on humans. Few attacks and no deaths from alligators have been reported in Louisiana. However, Florida reported that since 1970, 177 unprovoked alligator attacks have been documented, of which 99 have been severe and 9 have been fatal (Florida Fish and Wildlife Conservation Commission, 2000). Due to these encounters Florida implemented a nuisance alligator control plan in 1978, but the frequency of attacks has remained stable. Louisiana currently does not have the human population densities of Florida, however, this could change in the future. The nuisance program in Florida has shown some benefits, but attacks continue to occur. By implementing a scientifically managed population wide alligator harvest, human/alligator encounters may be controlled. Current and future harvest efforts should be in areas most accessible to the visiting public. Alligators also attack and eat domestic livestock and pets, and create traffic hazards when crossing roads. Vehicular and boat collisions with alligators on Sabine NWR have decreased during the eight years of intensive harvest (Borden-Billiot, pers. comm.)

Social-economic importance to Southwestern Louisiana

Alligators have been harvested in Louisiana commercially since the early 1800's (Joanen and McNease, 1987). During the late 1800's through the early 1950's, alligator harvest was uncontrolled for years, and was conducted virtually year round and advocated by the general public throughout southwestern Louisiana. By the 1950's alligator harvesting had become a tradition in the local culture and heritage of southwestern Louisiana. Following the closure of the season in 1962, illegal harvest of alligators continued as the hides could be readily sold on the black market for great profits. However, with the implementation of a regulated alligator harvest program, illegal harvest has been substantially. Alligators have proven to be a valuable renewable resource.

While the alligator harvest is conducted for commercial gain, many hunters view the hunt as a recreational and social event each year. Many of the local hunters have limited access for hunting alligators and the National Wildlife Refuge lands provide an unique opportunity for the general. Dollars derived from the sale of alligator hides is secondary to the actual harvest experience and subsequent use of meat from the animal. A strictly recreational harvest could be used to harvest alligators but would be administratively and logistically difficult to conduct at current management removal rates. The State alligator harvest program was established as a commercial harvest and does not allow for recreational take of alligators.

Economic importance of the alligator in Louisiana cannot be overlooked. The annual sale of wild alligator hides harvested in Louisiana is in excess of $3 million dollars and has accounted for sales as high as $10 million plus. Cameron Parish is the largest (acreage) Parish in Louisiana and it contains vast amounts of wetland habitat for which the annual alligator harvest is a very important contributor to the local economy. The 40-percent proceeds collected from each hunter annually by the local federal refuges has also contributed to the Refuge Revenue Sharing Act fund. This fund is distributed to local counties or parishes in lieu of property taxes.

Harvest of alligators on the federal refuges is well supported in the community and viewed as very beneficial to the public. Reduction or removal of the alligator harvest on the refuges could create public animosity towards the refuges. The three refuges are also some of the only areas within Cameron Parish and southwest Louisiana in which alligator tags are allotted by public lottery rather than by landowner designation.

Conclusion

In our opinion, alligator harvest on the Southwest Louisiana National Wildlife Refuge Complex should continue at or above the State recommended tag allotment rates, unless refuge specific surveys warrant a deviation below State allotment rates. The benefits of harvesting alligators as a management tool are to: maintain and increase public safety; continuation of a viable alligator population; continuation of biological data collection and monitoring; continue to afford public viewing opportunities; reduce adverse overpopulation effects (cannibalism, reduced reproduction rates, etc.); and, reduce inter-specific predation, and foster favorable local public and governmental relations.

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

_____ Categorical Exclusion without Environmental Action Statement

_____ Categorical Exclusion and Environmental Action Statement

__X____ Environmental Assessment and Finding of No Significant Impact

_____ Environmental Impact Statement and Record of Decision

6) Commercially Guided Wildlife Viewing, Photography, Environmental Education, and Interpretation

Description of Use: Over the past several years, the Refuge has been contacted as to the possibility of Guide/Outfitter wildlife viewing opportunities. All requests have pertained to conducting van/bus tours for various sized groups around the wildlife drive for wildlife viewing opportunities. Presently there are no known guide operations utilizing the Refuge. The primary wildlife viewing opportunity on the Refuge is the Pintail Wildlife Drive. The wildlife drive is located along the Creole Nature Trail, an All American Road and Scenic Byway and is a destination for many resident and non-resident visitors. As southwest Louisiana and the Creole Nature Trail are promoted, visitor use of the Refuge is expected to increase. With the number of visitors increasing, a shift in types of recreation use and users may occur. It is anticipated that wildlife viewing on Cameron Prairie Refuge will increase as a proportion of total recreation use days.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage wildlife dependent recreational activities at present levels.

Anticipated Impacts of Use: Commercially Guided Wildlife Viewing, Photography, Environmental Education, and Interpretation could result in some disturbance to wildlife adjacent to the wildlife drive, especially if visitors exit their vehicles. It is anticipated that this disturbance to wildlife would be minimal because of van traffic but some additional disturbance may occur with larger tour buses. Vehicle size has been shown to cause some temporary displacement of birds. Often wildlife will relocate to interior sections of the wildlife drive after being disturbed. Allowing larger vehicles to accommodate more people could result in an increased public awareness of the Refuge and its wildlife and an enhanced appreciation for the National Wildlife Refuge System. Boardwalks, auto-tour routes, photo blinds, and observation platforms would be designed and placed to minimize disturbance potential.

Wildlife viewing and photography are not expected to indirectly, or cumulatively impact Refuge resources negatively even though there may be some minimal and direct short-term disturbance to wildlife or vegetation.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: Access for Commercially Guided Wildlife Viewing, Photography, Environmental Education, and Interpretation would be allowed in designated areas only. Bus riders would not be permitted to depart the bus except in specially designated areas. Activities would be monitored to document any negative impacts to wildlife, if negative impacts are found, corrective action would be taken to reduce or eliminate these impacts. Access to key observation and photography areas may be closed during adverse weather conditions for protection of infrastructure (roads, levees, etc.) and visitor safety.

The following stipulations apply to special-use permits issued for wildlife-dependant recreation (wildlife viewing, photography, environmental education and interpretation). To minimize impacts on Refuge lands and resources, law enforcement patrols will routinely be conducted in an effort to maximize compliance with policies, rules and regulations. This will ensure that activities will be monitored and assessed.

- Failure to abide by any part of this special-use permit: violation of any refuge related provision in Titles 43 or 50, Code of Federal Regulations; or any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of this permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit.
- The permittee is responsible for ensuring that all employees, party members and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- This permit may be canceled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g. public safety, unusual resource problems).
- The permittee and permittee's clients do not have exclusive use of this site(s) or lands covered by the permit.
- Prior to beginning any activities allowed by this permit, the permittees shall provide the Refuge with (1) a copy of current business license; (2) proof of comprehensive general liability insurance.
- The permittee is responsible for accurate record keeping and shall provide the Refuge Manager with a comprehensive summary of location, numbers of clients, and number of client days by January 15 each year. The permittee shall provide the Refuge Manager with this information on the form provided with the special-use permit. An annual nonrefundable administrative fee of $150 will be assessed prior to issuing this permit. Failure to submit required reports could result in the issuance of citations and revocation of the permit.
- Prior to conducting guiding operations, the permittee shall provide the refuge manager with the name and method of contact for the field party chief or supervisor.
- A valid copy of this special-use permit, signed by the Refuge Manager or designee, must be in the party leader's possession at all times while exercising the privileges of the permit.
- Endorsement of this permit signifies the permittee's understanding and concurrence with all the conditions set forth in the General Conditions found on the reverse side of the permit and the above Special Conditions.

Given limited access, commercially guided wildlife viewing, photography, environmental education, and interpretation is viewed as compatible with the purpose for which the Refuge was established.

Justification: The National Wildlife Refuge System Administration Act (as amended by the Refuge Improvement Act of 1997) identifies compatible wildlife observation, photography, environmental education, and interpretation as four of six priority public uses on national wildlife refuges. The law states that, when managed in accordance with principles of sound fish and wildlife management, administration of these uses has been and is expected to continue to be generally compatible and that priority public uses

should receive enhanced consideration over other general public uses in refuge planning and management.

Conditions imposed in the special-use permits of guides ensure that these wildlife dependent activities can occur without adverse effects to Refuge resources, or other visitors. Permitted guides facilitate public use and enjoyment of these activities while protecting Refuge resources.

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

_____ Categorical Exclusion without Environmental Action Statement

_____ Categorical Exclusion and Environmental Action Statement

___X___ Environmental Assessment and Finding of No Significant Impact

_____ Environmental Impact Statement and Record of Decision

Mandatory 10- or 15- Year Re-Evaluation Date: _____

7) Research and Monitoring

Description of Use: Research and monitoring are used to collect information for the purpose of better understanding ecosystem functions and responses to management actions to more effectively manage habitats. This activity would allow university students and professors, non-governmental and governmental researchers to conduct both short- and long-term research projects. Results of this research allow managers to assess the success of management activities and develop a “Best Management Practice, (BMP)” on a refuge specific basis. All research requests are judged on individual project merit and applicability to refuge programs.

Availability of Resources: Implementation of the preferred alternative would require more fiscal resources. Current funding levels are not adequate to monitor responses or fund research to the level required by a truly “Adaptive” management scheme. Additional biological staffing is required to gather necessary data following each management action. Research conducted by other organizations could reduce the financial burden, however funding above the current level would still be necessary for data management, analysis, interpretation, and implementation.

Anticipated Impacts of Use: There could be some negative impacts from scientific research on the Refuge. Impacts such as trampling vegetation, all-terrain vehicle use, and temporary disturbance to wildlife would occur. A small number of individual plants or animals may be collected for further study. These collections would not likely adversely affect Refuge plant and animal populations. Removal of plant and animal material from the Refuge as well as the potential to accidentally introduce exotic plants and animals must be carefully monitored and controlled. Some other impacts from research include: (1) noise disturbance from helicopter, airplane, airboat, truck, or car which may temporarily displace wildlife; (2) physical presence of people or equipment which may temporarily displace wildlife; (3) ground disturbance by stirring sediments from walking on site or the use of equipment; (4) water disturbance from equipment or walking.

Despite these impacts, the knowledge gained from carefully considered and properly exercised scientifically defensible research would provide information and justification to improve management techniques and better meet the needs of trust resource species.

Research activities on the Refuge are not expected to indirectly or cumulatively impact Refuge resources negatively even though some minimal short-term and direct impacts may occur.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: All researchers would be required to obtain and possess a Refuge Special Use Permit. Individual requests to use specialized equipment, all-terrain vehicles, etc. would be evaluated on a project by project basis and specified on each permit. Researchers would periodically be evaluated for compliance of requirements. Periodic progress reports would be required and final copies of all reports and publications would be provided to the Refuge. The Refuge would not directly supply personnel or equipment unless arrangements were made prior to issuance of the Special Use Permit. The Refuge Manager would reserve the right to delegate a staff member to accompany permittee(s) at any time. All plants or animals sampled, collected, or released would be done in a scientifically accepted manner, such as those specified by scientific societies. Examples of these societies include the Society for the Study of Amphibians and Reptiles, the American Society of Mammologists, the American Ornithological Society, the Icthyologists League, the Entomological Society of America, and the Botanical Society of America. Incidental take and inadvertent trampling are expected to be minimal and will be addressed with each permit request.

Given compliance with the restrictions set in each Special Use Permit, research conducted on the Refuge is considered to be compatible with the purpose for which the Refuge was established.

Justification: Sound research and monitoring programs provide a better understanding of species, habitats, and the environmental communities present on the Refuge. Implementation of the preferred alternative would require additional monitoring and/or research to evaluate and re-evaluate the management programs used on the Refuge. The benefits however, would greatly outweigh any short-term disturbance or loss of individual plants or animals that may occur.

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

_____ Categorical Exclusion without Environmental Action Statement

_____ Categorical Exclusion and Environmental Action Statement

__X__ Environmental Assessment and Finding of No Significant Impact

_____ Environmental Impact Statement and Record of Decision

Mandatory 10- or 15- Year Re-Evaluation Date: _____

8) Commercial Video and Photography

Description of Use: Over the past several years, the Refuge has been contacted as to the possibility of producing commercial audio-visual productions such as video and still pictures. The Refuge provides an ideal setting for filmmakers. Areas such as the Pintail Wildlife Drive and other Refuge locations are adjacent to the Creole Nature Trail, an All American Road and destination for many resident and non-resident visitors. As southwest Louisiana and the Creole Nature Trail as well as Service programs for visitors are promoted, commercial filming on the area is expected to increase.

Availability of Resources: Adequate Refuge personnel and base operational funds are available to manage this activity at the present level.

Anticipated Impacts of Use: Commercially produced video and photography could result in some disturbance to wildlife. Some minimal trampling of vegetation may also occur. However, it is anticipated that this disturbance would be minimal.

Commercially produced video and photography activities are not expected to indirectly, or cumulatively impact Refuge resources negatively even though there may be some minimal and direct short-term disturbance or trampling.

Determination (check one below):

_____ Use is Not Compatible

__X__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: Access for Commercially produced video and photography activities would be allowed in designated areas only. Activities would be monitored to document any negative impacts to wildlife, if negative impacts are found, corrective action would be taken to reduce or eliminate these impacts. Access to key observation and photography areas may be closed during adverse weather conditions for protection of infrastructure (roads, levees, etc.) and visitor safety.

Public Law Number 106-206 [114 Stat. 314; *cod*. 16 U.S.C. 460*l*-6d.], signed by the President on May 26, 2000, directed the Secretary of the Interior to require a permit and establish a reasonable fee for commercial filming activities on Federal lands administered by the Secretary. This law further stated that for still photography neither a permit nor a fee is assessed if the activities take place on lands where members of the public are generally allowed. The Secretary may require a permit and fee if photographic activities take place at locations where the general public is not allowed or where additional administrative costs are likely. The Secretary shall not permit any filming, still photography, or other related activity if the Secretary determines 1) there is a likelihood of resource damage; 2) there would be an unreasonable disruption of the public's use and enjoyment of the site; or 3) that the activity poses health or safety risks to the public.

Further guidance is found in Federal Code of Regulations, Title 43, Volume 1, revised October 1, 2004, which regulates the making of pictures, television productions, or sound tracks on certain areas under the jurisdiction of the Department of the Interior. It states that:

1) Permits are required of any party except amateur photographers or bona fide newsreel and news television photographers and soundmen. All other parties must obtain written permission from local officials having administrative responsibility for the area involved.

2)) However, the Secretary has determined that no fee will be charged for the making of such motion pictures, television productions or sound tracks on areas administered by the U.S. Fish and Wildlife Service.

3) A bond shall be furnished, or deposit made in cash or by certified check, in an amount to be set by the official in charge of the area to insure full compliance with all conditions prescribed in a permit. Such bond may be refunded to the applicant if all permit requirements are met and no costs to the Government are incurred.

4) Permission to make a motion picture, television production or sound track will be granted by the head of the Service or his/her authorized representative in his/her discretion and on acceptance by the applicant of conditions set forth in a permit. Applicants must describe the area where filming is requested and the scope of the filming or production or recording. Dependent upon weather conditions, applicants will state when filming or other production will begin and end.

Other stipulations include:

1) Utmost care will exercised to see that no natural features are injured, and after completion of the work, the area will, as required by the official in charge, either be cleaned up and restored to its prior condition or left, after clean-up, in a condition satisfactory to the official in charge.

2) Credit will be given to the Department of the Interior and the Service through the use of an appropriate title or announcement, unless there is issued by the official in charge of the area a written statement that no such courtesy credit is desired. A copy of the final product will be proved pro bono to the refuge staff.

3) Pictures will be taken of wildlife only when such wildlife will be shown in its natural state or under approved management conditions if such wildlife is confined.

4) Any special instructions received from the official in charge of the area will be complied with.

5) Any additional information relating to the privilege applied for by the applicant will be furnished upon request of the official in charge.

6) Other stipulations may be warranted depending upon the proposed location and season of the year the activity is conducted.

Further guidance on this activity is found in the Service's Refuge Manual [8 RM 16, dated March 12, 1982].

The following stipulations apply to special-use permits issued for commercially produced video and photography activities. To minimize impacts on Refuge lands and resources,

the Refuge Manager will ensure that filmmakers comply with policies, rules and regulations and will monitor and assess all activities of filmmakers.

- Failure to abide by any part of a special-use permit: violation of any refuge related provision in Titles 43 or 50, Code of Federal Regulations; or any pertinent state regulation (e.g., fish or game violation) will be considered grounds for immediate revocation of the permit and could result in denial of future permit requests for lands administered by the U.S. Fish and Wildlife Service. This provision applies to all persons working under the authority of this permit.
- The permittee is responsible for ensuring that all employees, party members and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of this permit.
- This permit may be canceled or revised at any time by the Refuge Manager for noncompliance or in case of emergency (e.g. public safety, unusual resource problems).
- The permittee and permittee's clients do not have exclusive use of this site(s) or lands covered by the permit.
- Prior to beginning any activities allowed by this permit, the permittees shall provide the Refuge with (1) a copy of current business license; (2) proof of comprehensive general liability insurance.
- Prior to conducting commercial filming activities, the permittee shall provide the Refuge Manager with the name and method of contact for the field party chief or supervisor.
- A valid copy of this special-use permit, signed by the Refuge Manager or designee, must be in the party leader's possession at all times while exercising the privileges of the permit.
- Endorsement of this permit signifies the permittee's understanding and concurrence with all the conditions set forth in the General Conditions found on the reverse side of the permit and the above Special Conditions.

Under stipulations described above, commercially produced filmmaking, production or sound track recording is viewed as compatible with the purpose for which the Refuge was established.

Justification: The National Wildlife Refuge System Administration Act (as amended by the Refuge Improvement Act of 1997) identifies compatible wildlife observation, photography, environmental education, and interpretation as four of six priority public uses on national wildlife refuges. The law states that, when managed in accordance with principles of sound fish and wildlife management, administration of these uses has been and is expected to continue to be generally compatible and that priority public uses should receive enhanced consideration over other general public uses in refuge planning and management.

Conditions imposed in the special-use permits of filmmakers ensure that these wildlife dependent activities can occur without adverse effects to Refuge resources, or other visitors.

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

_____ Categorical Exclusion without Environmental Action Statement

_____ Categorical Exclusion and Environmental Action Statement

___X___ Environmental Assessment and Finding of No Significant Impact

_____ Environmental Impact Statement and Record of Decision

Mandatory 10- or 15- Year Re-Evaluation Date: _____

9) Adjacent Property Access

Description of Use: Historically, and before the purchase of the Refuge, adjacent landowners used the road behind the current Refuge Headquarters (West Cameron Prairie Road), the road on the north border, and the Bank Fishing Road and canal to access their properties. The parcels of land they are accessing are not technically in-holdings of the Refuge but act as one because the only access is across Refuge lands. Similarly, adjacent land owners on the north border of the Refuge access their properties on a road that bisects the Refuge for about 200 meters. Restrictions would be placed on travel for that portion of the western boundary levee between West Cameron Prairie road and the intersection of the middle road. This portion of the levee provides access to one landowner whose property adjoins the Refuge near the middle road. All other access points, levees, and roads would be restricted.

Availability of Resources: Additional funding is needed to rebuild and maintain these roads. No changes are required with the implementation of the preferred alternative.

Anticipated Impacts of Use: Allowing vehicle access creates some disturbance to wildlife especially when a vehicle stops along the road or the occupants exit the vehicle. As with any vehicle traffic area, the roads would deteriorate over time especially the west boundary levee portion which is not an improved surface.

Allowing access to adjacent landowners is expected to indirectly, or cumulatively impact Refuge resources negatively but there may be some minimal and direct short-term disturbance of wildlife.

Determination (check one below):

_____ Use is Not Compatible

__**X**__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: Vehicles stopping and occupants exiting vehicles except at designated parking areas would be strongly discouraged. Signage with instructions would be placed at all gated access points. All weapons carried in vehicles must be unloaded and/or encased. Access on the western boundary

levee by hunting lessees between West Cameron Prairie road and the intersection of the middle road will be limited to all-terrain vehicles only. All others may use this portion of the levee unrestricted as part of normal farming operations.

Allowing access on these roads and levees is considered to be compatible with the purpose for which the Refuge was established.

Justification:

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

_____ Categorical Exclusion without Environmental Action Statement

_____ Categorical Exclusion and Environmental Action Statement

___**X**___ Environmental Assessment and Finding of No Significant Impact

_____ Environmental Impact Statement and Record of Decision

Mandatory 10- or 15- Year Re-Evaluation Date: _____

Approval of Compatibility Determination

The signature of 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 signature becomes part of that determination.

Refuge Manager: _____
(Signature/Date)

Complex Manager: _____
(Signature/Date)

Regional Compatibility Coordinator: _____
(Signature/Date)

Refuge Supervisor: _____
(Signature/Date)

Regional Chief, National Wildlife Refuge System, Southeast Region: _____
(Signature/Date)

Note: The compatibility determination below has already undergone public review and was approved prior to the release of the CCP. This was necessary in response to a request from the Cameron Parish Police Jury to deposit dredge material on the Refuge levees.

Beneficial Use of Dredge Material

Use: *Beneficial Use of Dredge Material*

Refuge Name: *Cameron Prairie National Wildlife Refuge, Cameron Parish, near Sweetlake, Louisiana.*

Establishing and Acquisition Authority: Migratory Bird Conservation Act, as amended [16 U.S.C. 715-715d, 715e, 715f-715r].

Refuge Purpose(s): Cameron Prairie National Wildlife Refuge was established "…for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" (U.S.C. 715d (Migratory Bird Conservation Act)).

Justification for the Refuge also included: 1) Provide additional sanctuary to wintering waterfowl that would offer additional management opportunities, particularly geese; 2) assure long-term preservation of important wintering habitat for waterfowl as the Louisiana coastline continues to move further inland: 3) provide additional sanctuary for wintering waterfowl in the leading harvest county in North America; 4) provide additional relief or another alternative resting location to the high concentrations of waterfowl found at Lacassine National Wildlife Refuge; and 5) provide a variety of quality recreational opportunities such as hunting, fishing, wildlife observation, photography, and other compatible wildlife-dependent activities.

National Wildlife Refuge System Mission: 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 with the United States for the benefit of present and future generations of Americans" (National Wildlife Refuge System Administration Act of 1966, as amended [16 U.S.C. 668dd-668ee]).

Description of Use: Use of dredge materials from adjacent navigation channels and drainage systems would be utilized on wetland impoundments for levee rehabilitation to improve management of wetlands vital in achieving the Refuge purpose. Cameron Prairie NWR has identified extensive levee rehabilitation within its draft Comprehensive Conservation Plan and Maintenance Management System projects. As defined in the Coast 2050 Plan (Louisiana Department of Natural Resources, 1988), beneficial use is any use which would protect, enhance, or provide a platform for the restoration of vegetated wetlands. The Fish and Wildlife Service further defines this definition to two forms of beneficial use. Which include the creation of marsh or wetland habitat and the rehabilitation of existing levees. The proposed activity would allow managers the opportunity to improve and/or create wetlands on National Wildlife Refuges through the use/recycling of maintenance dredge materials.

Availability of Resources: The U.S. Army Corps of Engineers (U.S. Army Corps of Engineers), Mississippi Valley Division, New Orleans District has the largest annual

channel operations and maintenance program in the U.S. Army Corps of Engineers, with an annual average of 70 million cubic yards of material dredged. At this time, approximately 14.5 million cubic yards of this material is used beneficially in the surrounding environment with funding from either the O&M program or the Continuing Authorities Program defined by the WRDA 1992 Section 204 for beneficial use of dredged material (U.S. Army Corps of Engineers, 2004). Beneficial use of Dredged Material has been identified within the Louisiana Coastal Wetlands Restoration Plan, Mermentau Basin (Louisiana Coastal Wetlands Conservation and Restoration Task Force, 1993); the Coast 2050 plan (Louisiana Department of Natural Resources, 1988); and Louisiana Coastal Area, Louisiana, Ecosystem Restoration Study (U.S. Army Corps of Engineers, 2004) as an important wetland restoration method. Within the Louisiana Coastal Area, it is recommended that Congress authorize $100,000,000 over the initial ten years of the program towards beneficial use of dredge material projects. It is expected to contribute to creation of approximately 21,000 acres of wetlands.

Beneficial use of dredge materials on Southwest Louisiana National Wildlife Refuge Complex would be allowed in conjunction with an authorized and/or permitted activity from an off-refuge site. Funding will be the responsibility of the authorized and/or permitted agency. Due to infrequency of dredging activities, no additional staff is required, however, dedication of current staff time will be required during dredging operations to monitor and ensure Special Use Permit compliance.

Anticipated Impacts of Use: Use of beneficial dredge material will improve wetlands management through levee improvement and subsequent water management. Currently, many Refuge levees are in disrepair and are difficult to maintain; use of dredge material will also reduce levee maintenance and improve overall levee integrity. Through improved wetlands management, habitat for waterfowl and other migratory birds will increase. Utilization of dredge materials will aid the Refuge in reaching its goals and/or objectives as defined in its Comprehensive Conservation Plan and accomplishing identified Maintenance Management System projects.

Beneficial Dredge Material placement activities on the Refuge are not expected to indirectly or cumulatively impact Refuge resources negatively. However, some minimal short-term and direct impacts may occur. These impacts would include displacement of wildlife, disturbance of vegetation and possible impact water quality. No long-term impacts are expected.

A “No Effect Determination” on federally listed threatened or endangered species or designated critical habitat impacts was made. No federally listed threatened or endangered species or critical habitat occurs on the Refuge as described in the Endangered Species Act of 1973 (16 U.S.C. 1532-1544, 87 Stat. 884). An assessment and subsequent determination was made that proposed use would not affect mandated under Section 106 of the National Historical Preservation Act of 1966 (16 U.S.C. 470-470b, 470c-470n). The management decision to allow this use is an action categorically excluded as defined in 516 DM 2, Appendix 1, 1.7.

Determination (check one below):

_____ Use is Not Compatible

__**X**__ Use is Compatible with the Following Stipulations

Stipulations Necessary to Ensure Compatibility: All Beneficial Use of Dredge Material operations will require requesting parties to obtain and possess a Refuge Special Use Permit. Individual requests will be evaluated on a project by project basis and specified on each permit. Beneficial placement of dredge materials must contribute to the purpose, goals, objectives and management operations of the Refuge.

Given compliance with the restrictions set in each Special Use Permit, beneficial use of dredge material conducted on the Refuge is considered to be compatible with the purpose for which the Refuge was established. At a minimum, special conditions will contain:

1. All State, Local and Federal permitting requirements will be met by permittee.
2. All applicable federal and state regulations apply.
3. A standard soil contaminants test will be conducted at no cost to the Government.
4. Initial spoil height will be elevations established by the Refuge Manager.
5. If spoil is placed on a levee, levee will be contoured and smoothed to Refuge Manager's specifications. If levee does not meet Refuge Manager's specifications, the contractor must return after spoil has dried to level with dozer or tractor (disked).
6. All vehicles, boats and equipment to be used will be in a safe and working condition. All vehicles and boats will meet or exceed federal and state requirements.

Justification: The rate of coastal land loss in Louisiana is estimated to be between 25 and 35 acres per year. This loss represents 80% of the coastal wetland loss in the entire continental United States (Louisiana Department of Natural Resources, 1988). Much of this land loss has occurred on National Wildlife Refuges. One activity that is often associated with the Louisiana Department of Natural Resources coastal zone consistency program is the beneficial use of material dredged to maintain navigation channels. Sediment represents one of the most important resources for building wetlands. Dredging activities in Louisiana, including maintenance of Federal navigation channels and permitted activities in Louisiana's coastal zone, account for the removal and re-deposition of 90 to 120 million cubic yards of sediment annually (Louisiana Department of Natural Resources, 1988). Through its legislature, Louisiana has stated its policy with respect to beneficial use of dredged material resources in R.S.49:214.32(F):

> "the Secretary (of DNR) shall insure that whenever a proposed use or activity requires that dredging or disposal of five hundred thousand cubic yards or more of any water bottom or wetland within the coastal zone, the dredged material shall be used for the beneficial purposes of wetland protection, creation, enhancement or combinations thereof…"

Beneficial use of Dredge Material will support the purpose for which the Refuge was established by improving wetlands habitat, and increasing the Refuge's value as a sanctuary and wintering habitat for migratory birds. The action supports refuge management activities as identified in the Comprehensive Conservation Plan and Maintenance Management System projects list. As dredge material will be placed on existing levees; fish, wildlife, plants and their habitats will not be adversely impacted.

Literature Citations

Louisiana Coastal Wetlands Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. 1988. Coast 2050: Toward a Sustainable Coastal Louisiana. Louisiana Department of Natural Resources. Baton Rouge, LA. 161p

U.S. Army Corps of Engineers. 2004. Louisiana Coastal Area, Louisiana – Ecosystem Restoration Study – July 2004. Draft Report

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

__X____ 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: _____

Approval of Compatibility Determination for Beneficial Use of Dredge Material

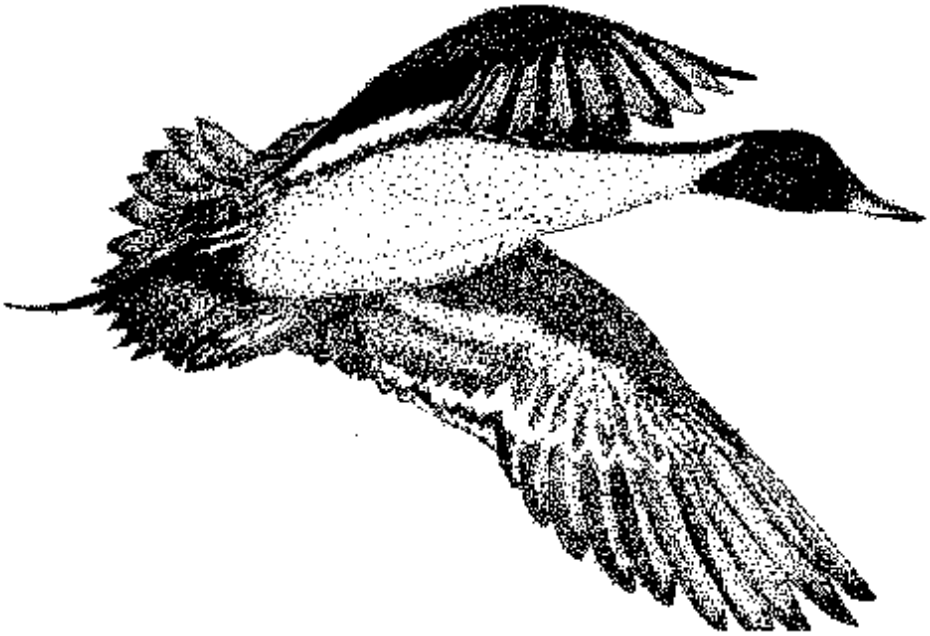
Refuge Manager: 9/15/04
(Signature/Date)

Regional Compatibility Coordinator: 21 SEP 04
(Signature/Date)

Refuge Supervisor: 9/21/04
(Signature/Date)

Regional Chief, National Wildlife Refuge System, Southeast Region: 9/21/04
(Signature/Date)

Appendix G- Refuge Operating Needs and Service Asset Maintenance Management System



Appendix G– Refuge Operating Needs and Service Asset Maintenance Management System Needs

RONS Project #	Project Name	One-time Cost	Annual Cost
04001	Construct bridge for Units 1&2	54,000.00	20,000.00
04002	Unit 3&4 renovation	713,000.00	20,000.00
04003	Operate and maintain moist soil maintenance equipment	30,000.00	15,500.00
04004	Moist soil management pumping operations	25,000.00	1,000.00
04005	Dredge canal on Bank Fishing Road	39,000.00	2,200.00
04006	Construct a U-shaped rookery in Unit 10	115,200.00	
04007	Construct pumping station in Canal 5	174,000.00	30,000.00
04008	Deputy project leader at complex headquarters	106,000.00	5,000.00
04009	Enlarge refuge complex headquarters	505,000.00	
04010	Complex office automation assistant	45,000.00	
04011	Develop partnerships	4,000.00	2,000.00
04012	Develop and implement a prescribed burn program	48,000.00	12,000.00
04013	Construct a nature trail	222,000.00	15,000.00
04014	Construct observation platform in Unit 10	22,000.00	1,000.00
04015	Improve biological monitoring – GS/11	74,000.00	62,428.00
04016	Improve biological monitoring – GS/9	61,000.00	51,597.00
04017	Improve biological monitoring – GS/9	61,000.00	51,597.00
04018	Environmental education and interpretation outreach specialist	50,000.00	42,181.00
04019	Mechanic/operator	58,000.00	64,220.00
04020	Conduct surveys	39,000.00	18,000.00
04021	Construct a boardwalk	30,000.00	
04023	Eliminate non-native species	275,000.00	25,000.00
04024	Provide interpretive and educational programs	182,000.00	
04025	Coastal Prairie inventory	6,000.00	
04026	Native coastal prairie restoration	235,000.00	10,000.00
04027	Administrative specialist	61,000.00	
03003	Full time Law Enforcement	129,000.00	
99023	Native Prairie restoration	29,000.00	12,000.00
98007	Moist soil water management/pumping operations	59,000.00	15,000.00
99002	Provide interpretive and educational programs	140,000.00	50,000.00

SAMMS Work Order #	Project Type	Cost Per Thousand	Station Priority
	Deferred Maintenance		
99101779	Repair moist soil unit levees	$164	1a
05137411	Replace hurricane window protection	$40	1b
04134722	Replace survey & accurately post boundary	$105	2
02119717	Remove power distribution lines to the old office	$26	3
02119548	Repair pump station #1 (Unit 6)	$89	5
02119984	Replace water control structure (Unit 1S)	$91	6
01114761	Replace 10 inch pump with drive unit (Unit 2C)	$40	7
01112798	Replace 24 inch pump on the wildlife drive	$26	8
04134702	Replace water management system in Unit 6.	$143	9
04133908	Replace the Unit 9 water control structure.	$272	10
98101778	Replace Pump #2	$82	11
01112853	Replace Duetz deisel engine at pumping station near office	$25	12
01112827	Replace 24 inch lo-lift pump near the office	$26	13
01113197	Replace 30 inch Lo-lift pump in Unit 1 (pump B)	$65	14
01113390	Replace 20 inch double discharge Lo-lift pump (Unit 5)	$26	15
04134684	Replace flood canals and levees with irrigation system in Unit 5.	$389	16
04133891	Repair 18,419 ln/ft of levee and 20,919 ln/ft of canal in Unit 5.	$466	17
04133897	Rehabilitate Unit 5 pumping station.	$250	18
04133857	Repair 12,991 ln/ft of levee and canal, Units 1&2.	$198	19
04134012	Replace water control structure 10036565 in Unit 2B.	$214	20
04133871	Repair and remove levees and canals in Unit 2B.	$241	21
04133792	Repair 2282 ln/ft of levee in Units 1 and 2.	$27	22
04134006	Replace water control structure 10036550 in Unit 2A.	$214	23
4134007	Replace water control structure 10036551 in Unit 2A.	$214	24
4134010	Replace water control structure 10036552 in Unit 2A.	$214	25
4134696	Replace flood canals and	$490	26

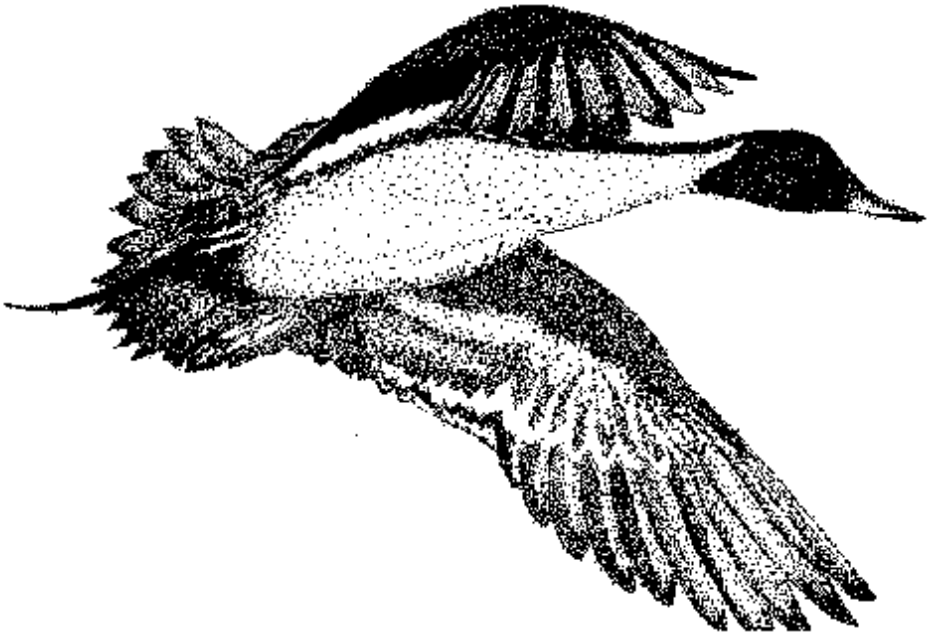
SAMMS Work Order #	Project Type	Cost Per Thousand	Station Priority
	levees in Unit 14A, Fields E, F, G, and I2/I3.		
4133987	Remove 9,907 ln/ft of canal in Unit 14B.	$119	27
4133996	Repair 15,303 ln/ft of levee and 4238 ln/ft of canal.	$116	28
4133980	Repair 9,140 ln/ft of levee in Unit 14B, Field E.	$110	29
4133994	Repair and remove levees in Unit 14B, Field F.	$166	30
4134545	Repair 4,661 ln/ft of levee in Unit 14B, Fields I1-I3.	$56	31
4133794	Repair Levee 280 (7,529 ln/ft)	$90	32
4133776	Repair Levee 275 (4,429 ln/ft) in Unit 1	$53	33
4133793	Repair levee 277 in Unit 1.	$82	34
4133865	Repair canal 192 in Unit 2A.	$77	35
4133862	Repair Levee 279 and canal 189 in Unit 2A.	$82	36
4133867	Repair 3655 ln/ft of levee and 3636 ln/ft of canal in Unit 2A.	$88	37
4133861	Repair Levee 276 and Canal 190 in Unit 2A.	$93	38
40133870	Remove 4040 ln/ft of canal in Unit 2A.	$98	39
4134003	Replace water control structure 10036548 in Unit 1.	$428	40
4134004	Replace water control structure 10036549.	$214	41
4133869	Repair 6197 ln/ft of canal and Remove 6782 ln/ft of canal.	$199	42
4133876	Repair 8,699 ln/ft of levee and 7612 ln/ft of canal in Unit 2C.	$196	43
4134681	Repair 4,082 ln/ft of levee and 11,509 ln/ft of canal in Unit 14A Field H5	$187	44
4134674	Repair 1,318 ln/ft of levee and remove 1,524 ln/ft of canal in Unit 14A.	$34	45
4133953	Repair 9253 ln/ft of levee in Unit 14A, Field A.	$111	46
4134692	Replace flood canals and levees in Unit 14A, Fields A, B, C, and D.	$253	47
4133958	Remove 5287 ln/ft of levee and 5100 ln/ft of canal in Unit 14A, Field A.	$125	48
4133959	Repair 14,411 ln/ft of levee and 935 ln/ft of canal in Unit 14A, Field B.	$209	49
4133963	Repair 9,906 ln/ft of levee in	$119	50

SAMMS Work Order #	Project Type	Cost Per Thousand	Station Priority
	Unit 14A, Field C.		
4133978	Repair 6,336 ln/ft of levee in Unit 14A, Field D.	$76	51
4134560	Repair 11,716 ln/ft of levee and 3,056 ln/ft of canal in Unit 14A, Field J.	$177	52
4134573	Repair 7,831 ln/ft of levee and 2,384 ln/ft of canal.	$123	53
4133961	Remove 2673 ln/ft of levee and repair 11,111 lf/ft of canal in Unit 14A.	$165	54
4134634	Repair 5,116 ln/ft of levee and remove 4,070 ln/ft of levee.	$110	55
4134625	Remove 15,066 ln/ft of levee and 6,934 ln/ft of canal.	$264	56
4134653	Repair 7,190 ln/ft of levee and 2,194 ln/ft of canal in Unit 14A, Field H3.	$113	57
4133883	Repair 8562 ln/ft of levee and 8426 ln/ft of canal in Unit 3.	$305	58
4134014	Replace water control structure 10036543 in Unit 3.	$642	59
4133877	Repair 2391 ln/ft of levee in Unit 3.	$29	60
4133884	Repair 4652 ln/ft of levee and 4648 ln/ft of canal in unit 3.	$112	61
4133885	Remove 7715 ln/ft of levee and 7782 ln/ft of canal in Unit 3.	$186	62
4133878	Repair 22,992 ln/ft of levee in Unit 3.	$255	63
4133886	Repair 7,966 ln/ft of levee an 15,832 ln/ft of canal in Unit 3.	$286	64
4133888	Repair 4430 ln/ft of levee and 4342 ln/ft of canal in Unit 4.	$105	65
4133887	Repair 8381 ln/ft of levee and 8274 ln/ft of canal in Unit 4.	$200	66
4133893	Replace 3 water control structures in Unit 5.	$27	67
4133902	Repair 12657 ln/ft of levee and 13074 ln/ft of canal in Unit 6.	$263	68
4133906	Repair 9325 ln/ft of levee and 5812 ln/ft of canal.	$214	69
4133944	Repair 7444 ln/ft of levee and 3713 ln/ft of canal in Unit 9.	$134	70
4133946	Repair 4838 ln/ft of levee in Unit 9.	$58	71
4133947	Remove 4908 ln/ft of levee in Unit 9.	$59	72
4133948	Repair 6980 ln/ft of levee in Unit 9.	$84	73
4133907	Replace water control structure (10036553) in Unit 7.	$214	74
4133934	Repair 13186 ln/ft of levee and	$315	75

SAMMS Work Order #	Project Type	Cost Per Thousand	Station Priority
	13077 ln/ft of canal in Unit 8.		
4133935	Repair 8139 ln/ft of levee and 7607 ln/ft of canal in Unit 8.	$189	76
4133939	Repair 4039 ln/ft of canal in Unit 8.	$49	77
4134705	Replace water control structure 10038134 in Unit 10.	$214	78
4133949	Repair 6434 ln/ft of levee and 5964 ln/ft of canal in Unit 10.	$149	79
4134529	Replace 2,000 gallon convault fuel tan*.	$95	80
4134537	Replace convault fuel tan*s.	$119	81
4134514	Replace tower and communication system.	$85	82
4134735	Replace underground irrigation system.	$250	83
4134690	Replace flood canals and levees in Unit 14A, Fields J and K.	$256	84
	Heavy Equipment		
1114347	Replace 1995 John Deere 7600 farm tractor	$146	1
1114335	Replace 1991 John Deere 4690, 200 horse power, farm tractor	$144	2
2119434	Replace 1982 International TD20E Bulldozer	$371	3
1114088	Replace 1994 hydraulic excavator (Caterpillar)	$248	4
1114079	Replace 1996 650g John Deere Bulldozer	$121	5
1114105	Replace Road grader, Caterpillar 130G	$100	6
1114068	Replace 1996 tractor truck (18 speed)	$160	7
1114310	Replace 1999 John Deere tiger mower tractor	$77	8
2119477	Replace 2001 Kubota 4WD utility tractor	$27	9
	Small Equipment		
1112978	Replace 1993 Chrysler Jeep	$32	1
97101777	Replace tractor/backhoe	$82	2
99101775	Replace All Terrain Vehicle (ATV)	$7	3
1114128	Replace 20 foot bush hog	$20	4
101781	Replace lawnmower	$13	5
4134020	Replace 1992 Power Ram 4x4.	$32	6
2119433	Replace 1998 Ford Taurus	$31	7
101780	Replace plow	$20	8
4134746	Replace worn Case tractor.	$27	9
1113202	Replace 1991 Duetz diesel	$21	10

SAMMS Work Order #	Project Type	Cost Per Thousand	Station Priority
	engine (mobile)		
4133898	Replace 1994 model 630 John Deere plow.	$20	11
4134022	Replace 1998 Ford F-250 4x4	$32	12
101782	Rehabilitate Heavy Truck	$11	13
1113475	Replace 1997 14 foot Kline Airboat	$32	14
1114296	Replace Rayne plane land leveler	$20	15
2119980	Replace 2001 Land Pride bush hog mower	$13	16
4133900	Replace 1984 Clark forklift.	$33	17
1113191	Replace 1995 12 inch, Stingray, Gator Pump	$6	18
4134742	Replace worn ford tractor.	$27	19
1113611	Replace 1985 14 foot aluminum mud boat	$19	20
2119503	Replace Gator pumps	$21	21
3124952	Replace cummings diesel power unit (Unit 6)	$16	22
1113012	Replace 2000 Ford pickup	$34	23
1114114	Replace 1996 John Deere model 855 mower	$17	24
2119974	Replace 2001 Kline Airboat	$34	25
1114355	Replace 1995 75 ton goose neck trailer	$116	26
2119432	Replace 2002 Ford F350 4x4 Diesel pick-up truck	$34	27
3124949	Replace 2002 4x4 Honda ATV	$7	28
4133910	Replace 2003 Dodge ram 2500 4x4.	$38	29
4134505	Replace Kubota 28 HP Mower.	$12	30
	Large Construction		
4133859	Repair/remove interior levees in Unit 1.	$300	1
4133860	Repair/remove interior levees in Unit 1.	$516	2
92110057	Rehabilitate Unit 8 Levee	$743	3
	Small Construction		
3124962	Rehabilitate Old office road	$47	1
99123195	Construct Boatshed	$136	2
99123197	Construct Prairie Habitat Nature Trail and Parking Area	$298	85
0101783	Rehabilitate wildlife drive and Bank Fishing road	$480	1
4133976	Rehabilitate West Cameron Prairie Road	$220	2
4133785	Rehabilitate West Cameron Prairie Road	$778	3
4136175	Rehabilitate Visitor Center parking area.	$26	4
4136181	Rehabilitate Bank Fishing road parking area.	$13	5

Appendix H- Section 7 Consultation



REGION 4
INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Southwest Louisiana National Wildlife Refuge Complex, Cameron Prairie National Wildlife Refuge, Glenn Harris, Refuge Manager

Telephone Number: 337-598-2216
E-Mail: Glenn_Harris@fws.gov
Date: 5/14/04

PROJECT NAME (Grant Title/Number): Cameron Prairie National Wildlife Refuge Comprehensive Conservation Plan and Environmental Assessment

I. Service Program:
- ___ **Ecological Services**
- ___ **Federal Aid**
  - ___ **Clean Vessel Act**
  - ___ **Coastal Wetlands**
  - ___ **Endangered Species Section 6**
  - ___ **Partners for Fish and Wildlife**
  - ___ **Sport Fish Restoration**
  - ___ **Wildlife Restoration**
- ___ **Fisheries**
- **_X_Refuges/Wildlife**

II. State/Agency: Louisiana, U.S. Fish and Wildlife Service

III. Station Name: Cameron Prairie National Wildlife Refuge

IV. Description of Proposed Action (attach additional pages as needed):
The proposed action would result in the implementation of the preferred alternative developed during the preparation of the Comprehensive Conservation Plan (CCP) for Cameron Prairie National Wildlife Refuge, a 9,621 acre refuge in Cameron Parish. Approval and subsequent implementation of the CCP will direct management actions on the Refuge for the next 15 years.

The preferred alternative identified for the CCP is to maximize the quality and quantity of habitat for wintering waterfowl by focusing on a more adaptive management approach through improved biological monitoring. This alternative supports the purpose for which the Refuge was established, "…for use as an inviolate sanctuary, or for any other management purpose, for migratory birds" [16 U.S.C. 715d (Migratory Bird Conservation Act)]. The plan identifies 4 broad goals for habitat, wildlife, people, and cultural resources, and describes specific objectives for each of the goals. Detailed strategies are also outlined. The goals and objectives were developed to support regional and national plans and initiatives and in partnership with others such as the Louisiana Department of

Wildlife and Fisheries. (See attached Comprehensive Conservation Plan and Environmental Assessment for Cameron Prairie National Wildlife Refuge)

V. Pertinent Species and Habitat: No listed species are found at this station.

A. Include species/habitat occurrence map:

B. Complete the following table: N/A

SPECIES/CRITICAL HABITAT	STATUS[1]

[1]STATUS: E=endangered, T=threatened, PE=proposed endangered, PT=proposed threatened, CH=critical habitat, PCH=proposed critical habitat, C=candidate species

VI. Location (attach map):

A. Ecoregion Number and Name: 27 Lower Mississippi River Ecosystem

B. County and State: Cameron, Louisiana

C. Section, township, and range (or latitude and longitude): S28, T12S, R7W

D. Distance (miles) and direction to nearest town: 25 miles southeast of Lake Charles, LA

E. Species/habitat occurrence: None

VII. Determination of Effects:

A. Explanation of effects of the action on species and critical habitats in item V. B (attach additional pages as needed): N/A

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT

B. Explanation of actions to be implemented to reduce adverse effects: N/A

SPECIES/ CRITICAL HABITAT	ACTIONS TO MITIGATE/MINIMIZE IMPACTS

VIII. Effect Determination and Response Requested: NE

SPECIES/ CRITICAL HABITAT	DETERMINATION[1]			RESPONSE1 REQUESTED
	NE	NA	AA	

[1]

DETERMINATION/ RESPONSE REQUESTED:

NE = no effect. This determination is appropriate when the proposed action will not directly, indirectly, or cumulatively impact, either positively or negatively, any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested is optional but a "Concurrence" is recommended for a complete Administrative Record.

NA = not likely to adversely affect. This determination is appropriate when the proposed action is not likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat or there may be beneficial effects to these resources. Response Requested is a"Concurrence".

AA = likely to adversely affect. This determination is appropriate when the proposed action is likely to adversely impact any listed, proposed, candidate species or designated/proposed critical habitat. Response Requested for listed species is "Formal Consultation". Response requested for proposed and candidate species is "Conference".

Enter the Species, the Determination, and the Response Requested.

No effect/no adverse modification. No effect. Response requested.

May Affect, but is not likely to adversely affect species/adversely modify critical habitat.

May affect, and is likely to adversely affect species/adversely modify critical habitat.

Is likely to jeopardize proposed species/adversely modify proposed critical habitat.

Is likely to jeopardize candidate species.

_____ _____
Don Voros **date**

<u>Southwest Louisiana National Wildlife Refuge Complex Manager</u>
title

IX. Reviewing Ecological Services Office Evaluation:

A. Concurrence _____ Nonconcurrence _____

B. Formal consultation required _____

C. Conference required _____

D. Informal conference required _____

E. Remarks (attach additional pages as needed):

_____ _____
signature **date**

_____
_____
title **office**