Desecheo National Wildlife Refuge

Comprehensive Conservation Plan

U.S. Department of the Interior
Fish and Wildlife Service
Southeast Region

September 2012

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COMPREHENSIVE CONSERVATION PLAN

DESECHEO NATIONAL WILDLIFE REFUGE

Mayaguez, Puerto Rico

U.S. Department of the Interior
Fish and Wildlife Service

Southeast Region
Atlanta, Georgia

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I. Background

INTRODUCTION

The U.S. Fish and Wildlife Service (Service) has prepared this Comprehensive Conservation Plan (CCP) for Desecheo National Wildlife Refuge (NWR) to guide the refuge's management actions and direction over 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.

This CCP was prepared in compliance with the National Wildlife Refuge System Improvement Act of 1997 and Part 602 (National Wildlife Refuge System Planning) of the Fish and Wildlife Service manual. This CCP also meets the requirements of the National Environmental Policy Act of 1969 (NEPA) through the inclusion of an environmental assessment (Section B of the Draft Comprehensive Conservation Plan), which described the alternatives that were considered and their potential effects on the environment.

A planning team developed a range of alternatives that best met the goals and objectives of the refuge and that could be implemented within the 15-year planning period. This CCP describes the Service's proposed plan, as well as two other alternatives that were considered. The refuge's Draft Comprehensive Conservation Plan and Environmental Assessment (Draft CCP/EA) was made available to commonwealth and federal government agencies, conservation partners, and the general public for review and comment from July 11 through August 10, 2012. Comments from all entities were considered in the development of this final CCP. The comments received from this public review and the Service's responses to them are summarized in Appendix D, Public Involvement.

PURPOSE AND NEED FOR THE PLAN

The purpose of the plan is to develop a proposed action that best achieves the purposes of the refuge; attains the vision and goals developed for the refuge; contributes to the mission of the National Wildlife Refuge System (Refuge System); addresses key problems, issues and relevant mandates; and is consistent with sound principles of fish and wildlife management.

Specifically, the plan is needed to:

- provide a clear statement of the refuge's management direction;
- provide refuge neighbors, visitors, and government officials with an understanding of the Service's management actions on and around the refuge;
- ensure that the Service's management actions, including land protection and recreation/education programs, are consistent with the mandates of the Refuge System; and
- provide a basis for development of the refuge's budget requests for operations, maintenance, and capital improvement needs.

U.S. FISH AND WILDLIFE SERVICE

The Service traces its roots to 1871 with the establishment of the Commission of Fisheries involved with research and fish culture. The once-independent commission was renamed the Bureau of Fisheries and placed under the Department of Commerce and Labor in 1903.

The Service also traces its origins to 1886 through the establishment of a Division of Economic Ornithology and Mammalogy in the Department of Agriculture. Research on the relationship of birds and animals to agriculture shifted to delineation of the range of plants and animals, so the name was changed to the Division of the Biological Survey in 1896.

The Department of Commerce's Bureau of Fisheries was combined with the Department of Agriculture's Bureau of Biological Survey on June 30, 1940, and transferred to the Department of the Interior as the Fish and Wildlife Service. The name was changed to the Bureau of Sport Fisheries and Wildlife in 1956, and finally to the Fish and Wildlife Service in 1974.

The Service, working with others, is responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people through federal programs relating to migratory birds, endangered species, interjurisdictional fish and marine mammals, and inland sport fisheries (142 DM 1.1).

As part of its mission, the Service manages more than 540 national wildlife refuges covering over 95 million acres. These areas comprise the National Wildlife Refuge System, the world's largest collection of lands set aside specifically for fish and wildlife. The majority of these lands, 77 million acres, are in Alaska. The remaining acres are spread across the other 49 states and several United States territories. In addition to refuges, the Service manages thousands of small wetlands, national fish hatcheries, 64 fishery resource offices, and 78 ecological services field stations. The Service enforces federal wildlife laws, administers the Endangered Species Act, manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitat, and helps foreign governments with their conservation efforts. It also oversees the Federal Aid program that distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state fish and wildlife agencies.

NATIONAL WILDLIFE REFUGE SYSTEM

The mission of the National Wildlife Refuge System, as defined by the National Wildlife Refuge System Improvement Act of 1997, 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 National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) established, for the first time, a clear legislative mission of wildlife conservation for the Refuge System. Actions were initiated in 1997 to comply with the direction of this new legislation, including an effort to complete comprehensive conservation plans for all refuges. These plans, which are completed with full public involvement, help guide the future management of refuges by establishing natural resources and

recreation/education programs. Consistent with the Improvement Act, approved plans will serve as guidelines for refuge management for the next 15 years. The Improvement Act states that each refuge shall be managed to:

- fulfill the mission of the Refuge System;
- fulfill the individual purposes of each refuge;
- consider the needs of wildlife first;
- fulfill the requirement of developing a comprehensive conservation plan for each unit of the Refuge System, and fully involve the public in the development of these plans;
- 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, and environmental education and interpretation, are legitimate and priority public uses; and
- retain the authority of refuge managers to determine compatible public uses.

The following describes a few examples of the Service's national network of conservation lands. Pelican Island National Wildlife Refuge, the first refuge, was established in 1903 for the protection of colonial nesting birds in Florida, such as the snowy egret and brown pelican. Western refuges were established for American bison (1906), elk (1912), prong-horned antelope (1931), and desert bighorn sheep (1936) after overhunting, competition with cattle, and natural disasters decimated the once-abundant herds. The drought conditions of the Dust Bowl during the 1930s severely depleted breeding populations of ducks and geese. Refuges established during the Great Depression focused on waterfowl production areas, such as those that protected prairie wetlands in America's heartland. The emphasis on waterfowl continues today, but also includes protection of wintering habitat in response to a dramatic loss of bottomland hardwoods. By 1973, the Service had begun to focus on establishing refuges for endangered species.

Approximately 38 million people visited national wildlife refuges in 2002, most to observe wildlife in their natural habitats. As the number of visitors grows, the local communities receive significant economic benefits. In 2001, 82 million people, 16 years and older, fished, hunted, or observed wildlife, generating $108 billion. In a study completed in 2002 on 15 refuges, visitation had grown 36 percent in 7 years. At the same time, the number of jobs generated in the surrounding communities grew to 120 per refuge, up from 87 jobs in 1995, pouring more than $2.2 million into local economies. The 15 refuges in the study were Chincoteague (Virginia); National Elk (Wyoming); Crab Orchard (Illinois); Eufaula (Alabama); Charles M. Russell (Montana); Umatilla (Oregon); Quivira (Kansas); Mattamuskeet (North Carolina); Upper Souris (North Dakota); San Francisco Bay (California); Laguna Atacosa (Texas); Horicon (Wisconsin); Las Vegas (Nevada); Tule Lake (California); and Tensas River (Louisiana), the same refuges identified for the 1995 study.

Other findings also validate the belief that communities near refuges benefit economically. Expenditures on food, lodging, and transportation grew to $6.8 million per refuge, up 31 percent from $5.2 million in 1995. For each dollar spent on the Refuge System, the surrounding communities benefited with $4.43 in recreation expenditures and $1.42 in job-related income (Caudill and Laughland 2003).

Volunteers continue to be a major contributor to the success of the Refuge System. In 2002, volunteers contributed more than 1.5 million hours on refuges nationwide, a service valued at more than $22 million.

The wildlife and habitat vision for national wildlife refuges stresses that wildlife comes first; that ecosystems, biodiversity, and wilderness are vital concepts in refuge management; that refuges must be healthy and growth must be strategic; and that the Refuge System should serve as a model for habitat management with broad participation from others.

The Improvement Act stipulates that comprehensive conservation plans should be prepared in consultation with adjoining federal, state, and private landowners, and that the Service should develop and implement a process to ensure an opportunity for active public involvement in the preparation and revision (every 15 years) of the plans.

All lands of the Refuge System will be managed in accordance with an approved comprehensive conservation plan that will guide management decisions and set forth strategies for achieving refuge unit purposes. The final CCP will be consistent with sound resource management principles, practices, and legal mandates, including Service compatibility standards and other Service policies, guidelines, and planning documents (602 FW 1.1).

LEGAL AND POLICY CONTEXT

LEGAL MANDATES, ADMINISTRATIVE AND POLICY GUIDELINES, AND OTHER SPECIAL CONSIDERATIONS

Administration of national wildlife refuges is guided by the mission and goals of the 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. A summary of the treaties and laws relevant to the administration of the Refuge System and management of Desecheo NWR is provided in Appendix C.

These treaties, laws, and administrative and policy guidelines assist the refuge manager in making decisions pertaining to soil, water, air, flora, fauna, and other natural resources; historical and cultural resources; research and recreation on refuge lands; and provide a framework for cooperation between Desecheo NWR and other partners, such as the Commonwealth of Puerto Rico's Department of Natural and Environmental Resources, the U.S. Army Corps of Engineers, the University of Puerto Rico, and others.

Lands within the Refuge System are closed to public use unless specifically and legally opened. No refuge use may be allowed unless it is determined to be compatible. A compatible use is a use that, in the sound professional judgment of the refuge manager, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge. All programs and uses must be evaluated based on the mandates set forth in the 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 as those uses benefit the conservation of fish and wildlife resources and contribute to the enjoyment of the public; and
- ensure that visitor activities are compatible with refuge purposes.

The Improvement Act further identifies six priority wildlife-dependent recreational uses. These uses are: hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation. As priority public uses of the Refuge System, they receive priority consideration over other public uses in planning and management.

BIOLOGICAL INTEGRITY, DIVERSITY, AND ENVIRONMENTAL HEALTH POLICY

The Improvement Act directs the Service to ensure that the biological integrity, diversity, and environmental health of the Refuge System are maintained for the benefit of present and future generations of Americans. The policy is an additional directive for refuge managers to follow while achieving the purpose(s) of the refuge and the mission of the Refuge System. It provides for the consideration and protection of the broad spectrum of fish, wildlife, and habitat resources found on refuges and associated ecosystems. When evaluating the appropriate management direction for refuges, refuge managers will use sound professional judgment to determine their refuges' contribution to biological integrity, diversity, and environmental health at multiple landscape scales. Sound professional judgment incorporates field experience; knowledge of refuge resources; the role of refuge within an ecosystem; applicable laws; and best available science, including consultation with others both inside and outside the Service.

NATIONAL AND INTERNATIONAL CONSERVATION PLANS AND INITIATIVES

Multiple partnerships have been developed among government and private entities to address the environmental problems affecting regions. A large amount of conservation and protection information defines the role of the refuge at the local, national, international, and ecosystem levels. Conservation initiatives include broad-scale planning and cooperation between affected parties to address declining trends of natural, physical, social, and economic environments. The conservation guidance described below, along with issues, problems, and trends, was reviewed and integrated where appropriate into this CCP.

This CCP supports, among others, the Partners in Flight Plan, North American Bird Conservation Initiative, the North American Waterfowl Management Plan, the Western Hemisphere Shorebird Reserve Network, and the National Wetlands Priority Conservation Plan.

North American Bird Conservation Initiative. Started in 1999, the North American Bird Conservation Initiative is a coalition of government agencies, private organizations, academic institutions, and private industry leaders in the United States, Canada, and Mexico working to ensure the long-term health of North America's native bird populations by fostering an integrated approach to bird conservation to benefit all birds in all habitats. The four international and national bird initiatives include the North American Waterfowl Management Plan, Partners in Flight, Waterbird Conservation for the Americas, and the U.S. Shorebird Conservation Plan. Although the Puerto Rico – U.S. Virgin Island Bird Conservation Region, BCR 69, is not officially under the framework of the North American Bird Conservation Initiative, it is recognized officially by the Service as a discrete planning region for the conservation of bird habitats and bird populations in the Caribbean Basin.

When Puerto Rico became a member of the Atlantic Coast Joint Venture, a new bird conservation relationship began, a relationship extending throughout the Caribbean Basin, the Atlantic Flyway, and others parts of North America, and which is based on the conservation needs of shared species and hemispheric bird conservation values. New partnerships are evolving between universities, nongovernmental organizations, and federal agencies to protect land and to provide better information on conservation efforts in Puerto Rico.

Partners in Flight Bird Conservation Plan. The Partners in Flight Bird Conservation Plan identifies physiographic areas that have been used to develop a scientifically based land bird conservation effort that ensures long-term maintenance of healthy populations of native land birds, primarily nongame land birds. Nongame land birds have been vastly underrepresented in conservation efforts, and many are exhibiting significant declines. This plan is voluntary and nonregulatory, and focuses on relatively common species in areas where conservation actions can be most effective, rather than the frequent local emphasis on rare and peripheral populations. The plan recognizes the Caribbean Islands as important habitat for many of the priority species that also use the physiographic areas of the eastern United States and Canada.

U.S. Shorebird Conservation Plan. The U.S. Shorebird Conservation Plan is a partnership effort throughout the United States to ensure that stable and self-sustaining populations of shorebird species are restored and protected. The plan was developed by a wide range of agencies, organizations, and shorebird experts for separate regions of the country, and identifies conservation goals, critical habitat conservation needs, key research needs, and proposed education and outreach programs to increase awareness of shorebirds and the threats they face.

Northern American Waterbird Conservation Plan. This plan provides a framework for the conservation and management of 210 species of waterbirds in 29 nations. Threats to waterbird populations include destruction of inland and coastal wetlands, introduced predators and invasive species, pollutants, mortality from fisheries and industries, disturbance, and conflicts arising from abundant species. Particularly important habitats of the southeast region include pelagic areas, marshes, forested wetlands, and barrier and sea island complexes. Fifteen species of waterbirds are federally listed, including breeding populations of wood storks, Mississippi sandhill cranes, whooping cranes, interior least terns, and Gulf coast populations of brown pelicans. A key objective of this plan is the standardization of data collection efforts to better recommend effective conservation measures.

RELATIONSHIP TO STATE AND COMMONWEALTH WILDLIFE AGENCIES

A provision of the Improvement Act, and subsequent agency policy, is that the Service shall ensure timely and effective cooperation and collaboration with other state or commonwealth fish and wildlife agencies and tribal governments during the course of acquiring and managing refuges. State and commonwealth wildlife management areas and national wildlife refuges provide the foundation for the protection of species, and contribute to the overall health and sustainment of fish and wildlife species in the Commonwealth of Puerto Rico. Within Puerto Rico, the agency responsible for management of the commonwealth's natural resources is the Department of Natural and Environmental Resources (DNER) *http://www.drna.gobierno.pr*.

The Puerto Rico DNER's mission is to protect, conserve, and administer the natural and environmental resources of Puerto Rico in a balanced manner to guarantee future generations their enjoyment and to stimulate a better quality of life. To accomplish this mission, the DNER administers a system of forest reserves, marine reserves, and wildlife refuges throughout the commonwealth.

The Puerto Rico DNER's participation and contributions throughout this planning process will provide for ongoing opportunities and open dialogue to improve the ecological sustainment of fish and wildlife in the Commonwealth of Puerto Rico. An essential part of the development of the CCP is the integration of common mission objectives, where appropriate.

II. Refuge Overview

INTRODUCTION

Desecheo NWR is an island of approximately 360 acres (146 hectares) in the Mona Passage off the west coast of Puerto Rico, approximately 13 miles (21 kilometers) west of Punta Higüero (Figure 1). Although it is a relatively small island, the terrain is mountainous and rugged. The highest point on the Island is 683 feet (208 meters) above sea level. The habitat on the island is predominately semi-deciduous dry forest with areas of grassland. Because of the porosity of the soils and the steep topography, there is no permanent fresh water on Desecheo NWR. The introduction of nonnative species such as goats, monkeys, and rats, and human uses of the island have had a substantial impact on the habitat and wildlife of Desecheo NWR. Future management will focus on the restoration, protection, and conservation of the habitat and wildlife resources, including seabirds, other migratory birds, and endemic species and plant communities.

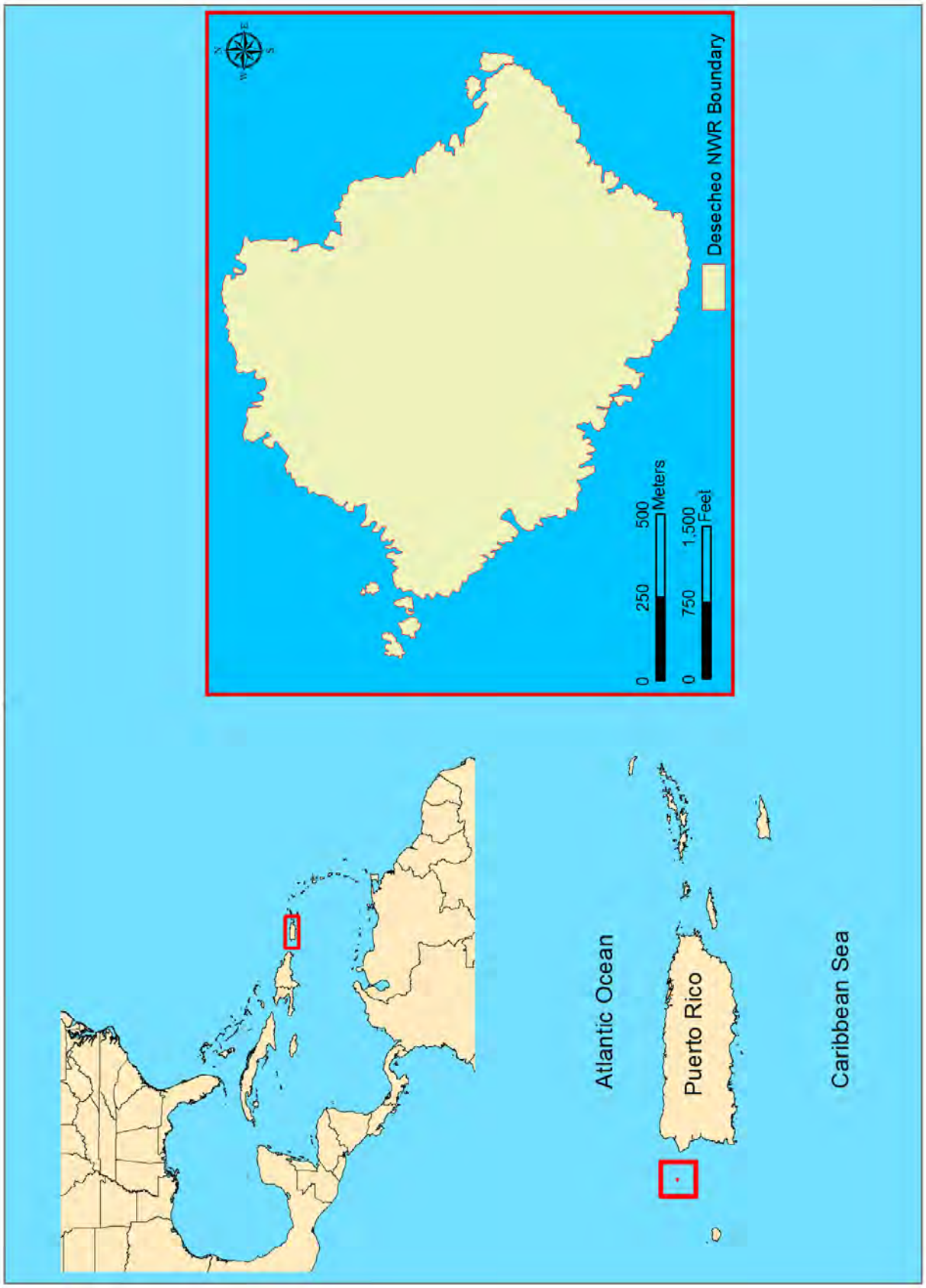
REFUGE HISTORY AND PURPOSE

No evidence of pre-Columbian settlement has been found on the island. An early description of the island, provided by Fray Iñigo Abbad y Lasierra (1788), noted that it is "uninhabited but covered by trees, has many wild goats which are used to the benefit of smugglers as are the lobsters of the sea, snails, and other seafood, which are found in abundance." Early naturalists (Gundlach 1878; Bowdish 1900, cited in Breckon 2002), who visited the island in the 19th and 20th centuries, noted the island was a major seabird rookery. The significance of the seabird nesting on the island led to its designation as a preserve and breeding ground for these birds by President Taft in 1912. Although it was given the "preserve" status at that time, Desecheo was subsequently subjected to several human uses and disturbances that adversely affected both its habitat and wildlife.

In a 1918 article, Alexander Wetmore described the island based on his visits there in 1912. He noted that there was no trace of the goats that had been previously reported; and from the dense vegetation, he judged that the goats had disappeared many years before. He also reported that fishermen established camps on the island where they would live for short periods of time and salt their catch (Wetmore 1918).

Attempts to farm portions of the island were reported in the 1920s (Struthers 1927). Although there is no documentation of the exact areas impacted or the length of time the farming was attempted, grazing of cattle in Long Valley and clearing of forests near Puerto de los Botes for cropland have been reported. During this period, a red-footed booby colony located in Long Valley was displaced about 500 feet to the east. The former cultivated area reverted to grassland that was maintained by visiting fishermen, who burned it periodically to maintain it as land crab habitat. The burning prevented the reestablishment of trees in the area (Breckon 2002).

Figure 1. Location of Desecheo NWR



In 1937, President Franklin D. Roosevelt transferred Desecheo to Puerto Rico to be managed as a forest and bird preserve. When the United States entered World War II, the island was transferred back to the United States Government for use as a bombing and gunnery range. It continued to be used as an aerial bombing and training ground until 1952. Between 1952 and 1964, Desecheo was used for survival training by the U.S. Air Force. In 1965, the island was declared as surplus property by the U.S. military. In July 1966, management jurisdiction over Desecheo was acquired by the Department of Health, Education, and Welfare, and the island became a facility for raising a colony of rhesus macaques for research purposes. In December 1976, administration of Desecheo was transferred to the Service and it received the designation of a national wildlife refuge.

The official purpose of Desecheo NWR is derived from land acquisition documents, the authorities for national wildlife refuges, and the original designation of the island as a refuge and breeding ground for native birds. The act authorizing the transfer of real property for wildlife management or other purposes identifies lands that are of particular value in carrying out the national migratory bird management program, and Culebra was determined to be appropriate for transfer to the Service under that purpose (16 U.S.C. 667b). Among other mandates, the National Wildlife Refuge System Administration Act [16 U.S.C. 668dd(a)(2)] directs the Refuge System to conserve, manage, and restore fish, wildlife, and plant resources and their habitats for the benefit of present and future generations of Americans.

SPECIAL DESIGNATIONS

In March 2000, the Puerto Rico Legislature passed Public Law 57. This law designated about 0.8-km (about 0.5-mile) of the coastal waters and marine ecosystems surrounding Desecheo Island as the Desecheo Marine Reserve. The waters surrounding Desecheo Island harbor some of the best developed and healthiest coral reefs in Puerto Rico. In order to ensure that proposed activities will not adversely affect the refuge or the marine reserve, Service representatives are coordinating with the commonwealth's Department of Natural and Environmental Resources during the development of this CCP and during the planning for future management of the marine reserve.

From May 1940 until 1964, Desecheo was used for military training activities, including aerial bombardment and survival training. As a result of these military activities, live munitions are still present , and they create a safety hazard for anyone visiting the island. The U.S. Army Corps of Engineers (Corps) is responsible for evaluating and, as necessary, cleaning up Formerly Used Defense Sites (FUDS). To determine the nature and extent of the potential hazards on Desecheo, the Corps has initiated an evaluation of the island. Because of the continuing threat from unexploded ordnance, hazardous terrain and sensitive wildlife, Desecheo NWR is currently not open for public access.

ECOSYSTEM CONTEXT

The Service has been working for several years to develop collaborative resource management partnerships with private landowners, local communities, and interest groups, as well as state and federal agencies. The purpose of these partnerships is to maintain existing fish and wildlife resources and habitats, to reverse the trend of declining wildlife populations and species diversity, to establish conservation priorities, to clarify goals, and to address the threats and problems affecting fish and wildlife resources. Coordinated efforts of the partners in these conservation initiatives help to ensure that the most important resource issues are addressed, and that duplication of efforts to achieve common goals is minimized.

REGIONAL CONSERVATION PLANS AND INITIATIVES

In approaching its mission to conserve wildlife and their habitats throughout the country, the Service found it useful to divide the entire United States into 53 distinct ecosystems, drawn primarily along watershed boundaries. Although they cannot be considered as a single watershed, the islands of the Caribbean under U.S. jurisdiction share resources and have similar threats and potential solutions to address the issues. For the purposes of developing plans and strategies for addressing resource problems, the Service included all lands and waters of the U.S. Virgin Islands, Puerto Rico, and Navassa Island (a small island west of Haiti) within Ecosystem Unit 35. Desecheo NWR lies within the Caribbean ecosystem. The plan developed for the Caribbean ecosystem addresses the Service's priority resource initiatives for protection and management of wildlife and habitat throughout its area of jurisdiction in the Caribbean. The Ecosystem Plan identified issues such as control of invasive species, protection of sensitive species and their habitats, and restoration of critical ecosystem components.

Since the completion of the Ecosystem Plan, the Service has moved toward the development of Strategic Plans to address resource issues on a nationwide basis. One component of the development of the Strategic Plans is inclusion of an "Adaptive Management" process. Adaptive Management is a structured approach where managers and scientists team together to improve resource management over time by learning from management outcomes. This entails a multi-step process:

- Considering various actions to meet management objectives;
- Predicting the outcomes of these management actions based on what is currently known;
- Implementing management actions;
- Monitoring to observe the results of those actions; and
- Using the results to update knowledge and adjust future management actions accordingly.

By repeating this cycle and increasing the body of knowledge about the system in question, managers are able to refine their management actions to better address the original objectives.

During the development of this CCP, the Service applied the principles of adaptive management to maximize the opportunity for successful accomplishment of the goals, objectives, and strategies identified in the Ecosystem Plan, the Caribbean Landscape Conservation Cooperative, Strategic Plans, and other relevant documents.

The Caribbean Landscape Conservation Cooperative (CLCC) is part of a national network of Landscape Conservation Cooperatives (LCCs). The LCCs are applied conservation science partnerships among state and federal agencies, regional organizations, tribes, nongovernmental organizations, universities, and other entities within a geographic area. They are designed to inform resource management decisions in an integrated fashion across landscapes, at a broader scale than any individual partner's responsibility. The partnership will consider landscape-scale stressors including climate change, habitat fragmentation, urban sprawl, invasive species, and water availability in order to assess the conservation status of species and habitats and provide a vision for sustainable landscapes under future scenarios. The CLCC includes the Puerto Rican archipelago and the U.S. Virgin Islands, and recognizes the connectivity of these islands with the greater Caribbean and the continental regions through shared species, habitats, and conservation opportunities and goals.

The CLCC is in the process of developing its organizational structure. The goal is to create avenues for input from all interested participants. The CLCC currently has a 10-member steering committee, with representatives from the Service, the U.S. Geological Survey (USGS), the U.S. Department of

Agriculture's (USDA's) Natural Resources Conservation Service and Forest Service, the National Oceanic and Atmospheric Administration (NOAA), the Puerto Rico DNER, and the U.S. Virgin Islands Department of Planning and Natural Resources (DPNR). Future components will include a science and technology advisory group and a stakeholder advisory group.

The State Wildlife Grants (SWG) program began in Fiscal Year 2002. Under this program, Congress provided an historic opportunity for state fish and wildlife agencies and their partners to design and implement a more comprehensive approach to the conservation of America's wildlife. A requirement of the SWG was that each state would complete a Comprehensive Wildlife Conservation Strategy (CWCS) by October 1, 2005. Development of the CWCS was intended to identify and focus management on "species in greatest need of conservation." Congress expects SWG funds to be used to manage and conserve declining species and avoid their potential listing under the Endangered Species Act.

In 2003, the Puerto Rico DNER, through its Bureau of Fisheries and Wildlife (BFW), initiated the development of the CWCS for Puerto Rico. The development of the CWCS began in 2004 and was completed in 2005.

The stated goals of the Puerto Rico CWCS are:

- To identify and address the greatest conservation needs of Puerto Rico's fish and wildlife.
- To prioritize efforts on species with the greatest conservation needs.
- To allow DNER to work independently and in partnership to conserve, enhance, and protect Puerto Rico's diverse, but not necessarily rare or at risk, fish and wildlife species and habitats.
- To improve DNER's ability to address present and future challenges and opportunities to conserve fish and wildlife species and their habitats.
- To integrate monitoring and management of hunted and nonhunted species.

The information in the CWCS was developed with the assistance of several divisions of the DNER and drew information from several sources, including the Fisheries and Wildlife Strategic Plan (DNER 1996); the Regulation to Govern the Threatened and Endangered Species of the Commonwealth of Puerto Rico (DRNA 2004); the Puerto Rico Critical Wildlife Areas (Ventosa-Febles et al. 2005a); the Puerto Rico Waterfowl Focus Areas (Ventosa-Febles et al. 2005b); the Puerto Rico Gap Project; and the Puerto Rico and Virgin Islands Bird Conservation Plan (Núñez-García and Hunter 2000).

Among other issues, the Puerto Rico CWCS identifies threats, conservation opportunities, and potential management strategies; the species of greatest conservation need and critical wildlife areas; and emphasizes the study and conservation of species classified as "data-deficient" (i.e., information is lacking to determine the species' status and management needs). The species and threats identified in this document are also of concern to the Service, and several are located on Service-managed lands including Desecheo NWR. Cooperative efforts between the DNER and the Service to address the threats to the species and their habits are critical to ensure their survival.

ECOLOGICAL THREATS AND PROBLEMS

One of the initial steps taken during the development of this CCP was the identification of threats and problems for the resources and management of Desecheo NWR. To ensure consideration of all significant issues, the planning team reviewed the Service's Ecosystem Plan, the Puerto Rico CWCS, and conducted both internal and public scoping meetings. Some of the major issues considered during the development of this plan included the control of exotic and invasive plants and animals, control of illegal activities (including smuggling of aliens and drugs and poaching), and cleanup of military ordnance. These issues and others are discussed in greater detail in Chapter III, Plan Development.

Throughout the Caribbean, the threats to wildlife include habitat loss, degradation and alteration; increasing levels of pollution; burgeoning populations of nonnative species of plants and animals; an increasing human population with concurrent uses of marine, shoreline, and terrestrial areas; and a general lack of public awareness and understanding of wildlife issues.

The incidental, accidental, or deliberate introduction of nonnative species of animals and plants to island ecosystems often leads to dramatic adverse impacts on native populations of flora and fauna, not only on Caribbean refuges, but around the world. Nonnative and invasive species, such as rats (*Rattus rattus* and *R. norvegicus*), feral domestic dogs and cats, and grazing livestock, have had significant negative effects on reptile and bird populations as well as plant communities. New introductions of plants and animals are frequently occurring. Plants that are sometimes brought in for landscaping purposes may spread rapidly across the islands and outcompete native vegetation. The most common invasive plants include acacia trees (*Acacia* spp.) and guinea grass (*Panicum maximum*).

The Service's conservation efforts in the Caribbean are focused on the identified threats (USFWS 2002), with the following issues being listed as the greatest priorities (not ranked) in the region:

- Species of Concern and Listed Species
- Migratory Birds
- Bats
- Subtropical Dry Forest Conservation/Enhancement/Restoration
- Wetland and Mangrove Restoration
- Coral Reefs
- Invertebrates
- Invasive Exotic Species
- Law Enforcement
- Fire Management
- Contaminants

The Caribbean Islands NWR Complex protects several highly endangered ecosystems, including:(1) subtropical dry forest, (2) coral reefs, and (3) seagrass beds and adjacent beaches used by nesting and foraging threatened and endangered sea turtles. The Complex also protects important habitats for migrating shorebirds, nesting seabirds, and an increasing number of sites with emergent wetlands and mangroves (USFWS 2002).

The Complex conserves wildlife and ecosystems found nowhere else in the United States. Some of the component species on Desecheo NWR include the endemic (i.e., they are found nowhere else in the world) lizards *Ameiva desechensis*, *Anolis desechensis* and *Sphaerodactylus levinsi* and a federally threatened cactus known as higo chumbo (*Harrisia portoricensis*). Many migratory birds

depend on habitat found within the Complex, including a large number of birds considered to be of conservation concern by the Service and DNER. Particularly notable are (1) endemic species, (2) species spending part of the year in the neotropics (i.e., neotropical migrants), and (3) species that have unique breeding site requirements making them extremely vulnerable to decline, such as colonially nesting seabirds, waterfowl, marshbirds, and shorebirds (USFWS 2002).

In addition to the direct threats from human activities and exotic species, sensitive wildlife and habitat are also subjected to the vagaries of tropical weather conditions and the global climate change that is being generated by the worldwide anthropogenic emissions of greenhouse gases. Changes in precipitation, cloudiness, diurnal temperature extremes, biome boundaries, ocean chemistry, hydrology, and sea level are expected to accompany the continued warming (Griffith et.al. 2009).

In order to mitigate the impacts of climate change on Desecheo NWR, the Service will include monitoring and adaptive management programs in this CCP and future planning efforts. Adaptive monitoring and management, as implemented by the U.S. Department of the Interior, explicitly recognize and attempt to reduce uncertainty (Nichols et.al.1995; Williams et. al. 2001) and provide a formal framework for conservation and management decision-making (Williams et.al. 2007). Adaptive monitoring programs will provide refuges with information on the frequency and intensity of monitoring to detect specified magnitudes of climate-driven changes in species and critical habitats that are important to refuges. Adaptive management programs will help elucidate mechanisms of climate change action on species and habitats. For example, (1) adaptive monitoring may be used to design the most efficient programs to detect the degree of association between climate-induced habitat change and wildlife populations, and (2) adaptive management may be used to estimate whether climate-induced seasonal habitat changes affect population levels in an additive or compensatory manner (Griffith et.al. 2009).

The Puerto Rico CWCS has identified numerous categories and classes of threats to wildlife and habitat throughout Puerto Rico (Table 1). Although most of the identified threats are associated with developed areas and human uses, some of these threats are real or potential issues for Desecheo NWR and the surrounding waters.

Table 1. Threat categories and classes documented in the Puerto Rico CWCS.

Threat Category	Threat Class
Habitat Conversion: Intentional conversion of natural habitat that is detrimental to wildlife use and survival by causing loss or degradation of wildlife habitat and available forage.	Housing and urban development
	Agricultural practices
	Recreational areas
	Intentional fires
	Illegal dumping areas
	Wetland filling

Threat Category	Threat Class
Transportation and Infrastructure: Development of corridors/passages that increases wildlife mortality and fragmentation of wildlife habitat.	Roads
	Piers and harbors
	Power lines, aqueducts, gas ducts
	Wind power plants
Abiotic Resources Use: Extraction or use of rocks, minerals, and water that causes direct or indirect negative impacts to wildlife habitats.	Land cover removal for construction material (e.g., sand, limestone, other rocks)
	Water use
	Drilling (wells)
Consumptive Use of Biological Resources: Harvest or use of plant and animal populations in a manner that negatively impacts wildlife distributions and fitness, or the ecosystem.	Forest and woodland management
	Grazing
	Collection
	Illegal hunting and fishing practices
Nonconsumptive Resources Use: Activities that have an incidental, but negative impact on wildlife and their habitats.	Motor-powered recreation
	Nonmotorized recreation
Pollution: Introduction and spread of unwanted matter and energy into ecosystems from point and nonpoint sources that cause increased mortality of wildlife and degradation of their habitats and available forage.	Solid waste
	Chemicals and toxins
	Eutrophicants substances
	Noise pollution
	Waste or residual materials

Threat Category	Threat Class
Invasive Species: Introduction and/or spread of unwanted exotic and native organisms into ecosystems that increases wildlife predation, competition, and reduced fitness or cause loss of wildlife habitat.	Invasive plants
	Invasive animals
	Pathogens

PHYSICAL RESOURCES

CLIMATE

Desecheo NWR is situated off the west coast of Puerto Rico at approximately 18 degrees north latitude. This location ensures tropical weather throughout the year, with average daily temperatures of 26 °C (80 °F) throughout the year. Seasonal temperature variations are very slight. Although little site-specific rainfall data are available for the refuge, the seasonal distribution of precipitation is consistent with the other tropical islands with a dry season that extends from November to May and a wet season from June through October, coinciding with the Atlantic hurricane season. Table 2 is from the Southeast Regional Climate Center station at Rincon, Puerto Rico.

Table 2: Rincon temperature and rainfall (Period of Record: 6/1/1968 to 12/31/2008).

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	85.3	85.3	85.6	86.2	87.5	88.6	89.5	89.2	89.3	88.9	87.4	85.7	87.4
Average Min. Temperature (F)	66.0	66.5	66.9	68.6	71.0	72.0	72.4	71.9	71.7	70.4	70.2	68.3	69.7
Average Total Precipitation (in.)	1.64	1.68	1.69	3.15	5.69	5.53	7.33	8.10	6.37	6.18	3.32	2.27	52.96

Source: Southeast Regional Climate Center, sercc@climate.ncsu.edu

Rainfall was estimated at 1,020 mm annually (Seiders et al. 1972) and records made on Desecheo in 1967-71 showed an average of 828 mm (range 750-1039 mm) (Morrison and Menzel 1972). Because of the steep topography and the island's relatively small size, no permanent surface water nor springs are present on the island.

GEOLOGY AND TOPOGRAPHY

Desecheo is a small island with a mean diameter of 2 km (approximately 301 acres), located in the Mona Passage between Puerto Rico and Hispaniola about 17 km off the west coast of Puerto Rico. The Great Southern Puerto Rico Fault that passes south of Rincon also passes south of Desecheo. The island is a fault-controlled outcrop of the same volcanoclastic rocks (middle Eocene) as at Punta Jiguero. The shoreline is volcanoclastic and Pleistocene marine terrace rocks. (Morelock et al. 2002)

Desecheo Island is composed of a peak of volcanic calcareous rock. The surface of the island is very jagged with sharp limestone rock edges. The slopes are steep, ranging from 20 to 35 degrees (USFWS 2010), and the few small sand beaches on the southwest side of the island are very narrow. The highest point on Desecheo is nearly 700 feet (213 m) above sea level, located on the northern ridge. Shallow caves are found along the shoreline. The island is underlain by folded and faulted volcanoclastic sandstone, mudstone, and breccia of Eocene age. Marine terrace deposits of calcite-cemented sand and gravel are intermittently exposed along the coast (Renken 2002). The majority of the island's surface features are calcareous rocks. The soils are made up of gravelly or sandy material that likely weathered from the parent materials. These soils are very permeable and have a low available water capacity.

Seiders et al. (1972) noted that there is a discontinuous bench of assumed Pleistocene marine colluvium, part of which is phosphate-cemented, at 8-12 m above sea level. Portions of this bench above Puerto Canoas and Puerto de los Botes have collapsed. There is a lower bench of more recent Holocene beach deposits associated with protected coves and beaches (Seiders et al. 1972). Figure 2 shows the island's geology, as georeferenced and digitized from the USGS publication *Geology of Isla Desecheo Puerto Rico* (Seiders et al. 1972). Figure 3 shows the topography.

HYDROLOGY AND WATER RESOURCES

The hydrology of small tropical islands differs from that of temperate, continental areas. In the West Indies, precipitation, the origin of all freshwater resources, is controlled principally by the easterly trade winds, the passage of tropical storms, and orographic effects in the islands with high relief. The geology, topography, and relative size of the islands determine the degree to which they collect and retain the rainfall that ultimately provides island water supplies (U.S.Geological Survey, Zack and Larsen 1994).

Because Desecheo is a small isolated island with a steep topography, it has no perennial streams nor standing water. Shallow basins in the coastal rock outcrops hold rainwater for short periods of time following storm events and have been reported as potential sources of limited fresh water for introduced species (rats, goats, monkeys).

AIR QUALITY

The primary federal statute governing the control of air pollution is the Clean Air Act. This Act identifies six pollutants as "criteria pollutants." These are respirable particulate matter, carbon monoxide, sulfur dioxide, nitrogen dioxide, lead, and ozone. Primary and/or secondary National Ambient Air Quality Standards (NAAQS) have been established to protect the public health and welfare and to account for the effects of air pollution on soil, water, visibility, vegetation, and other materials exposed to air pollution. The Clean Air Act requires state or local air quality control agencies to adopt State Implementation Plans. These plans prescribe measures to eliminate or reduce the severity and number of violations of NAAQS, and to achieve and/or maintain levels of the "criteria pollutants" at, or below, these standards.

Figure 2. Geology of Desecheo NWR.

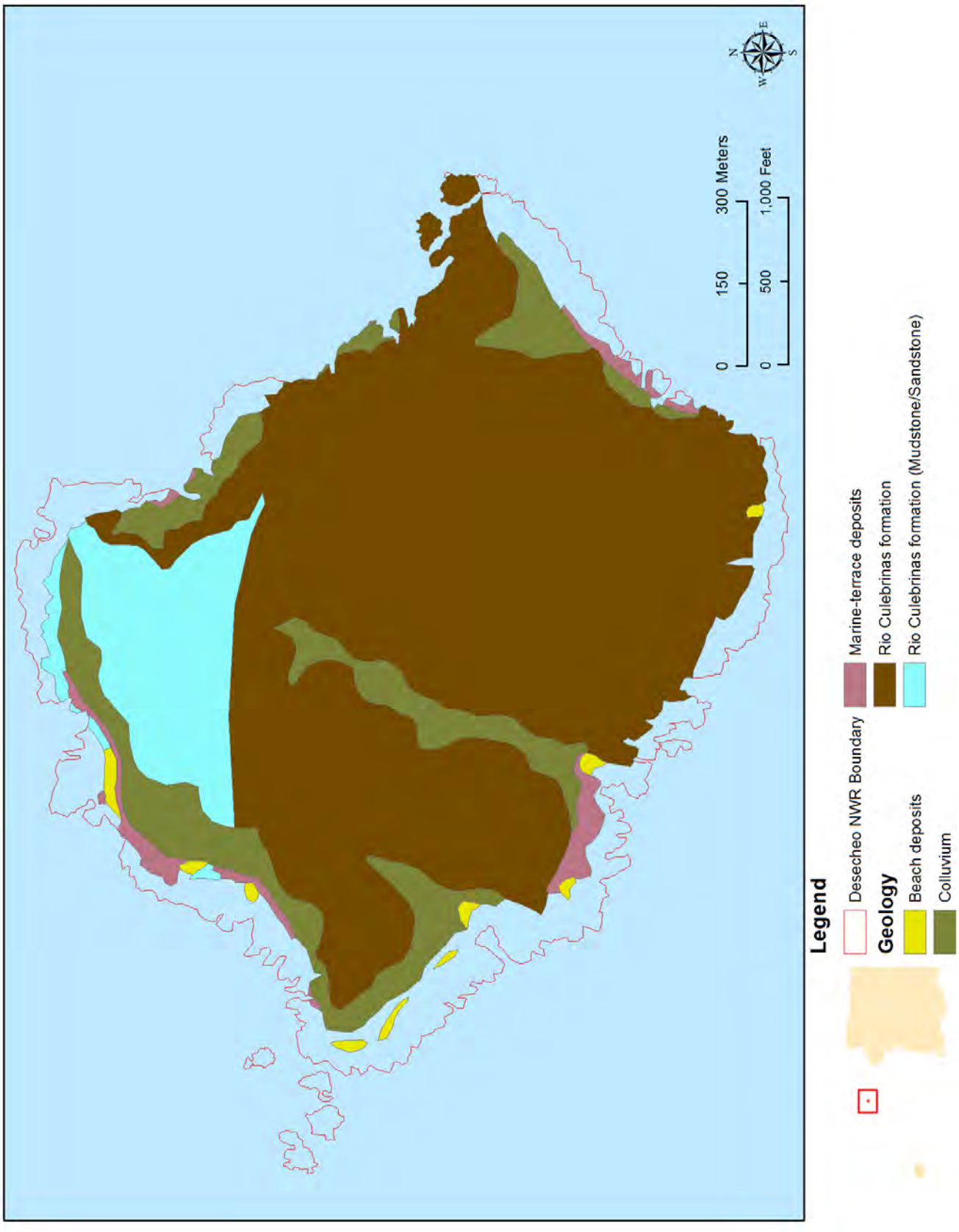
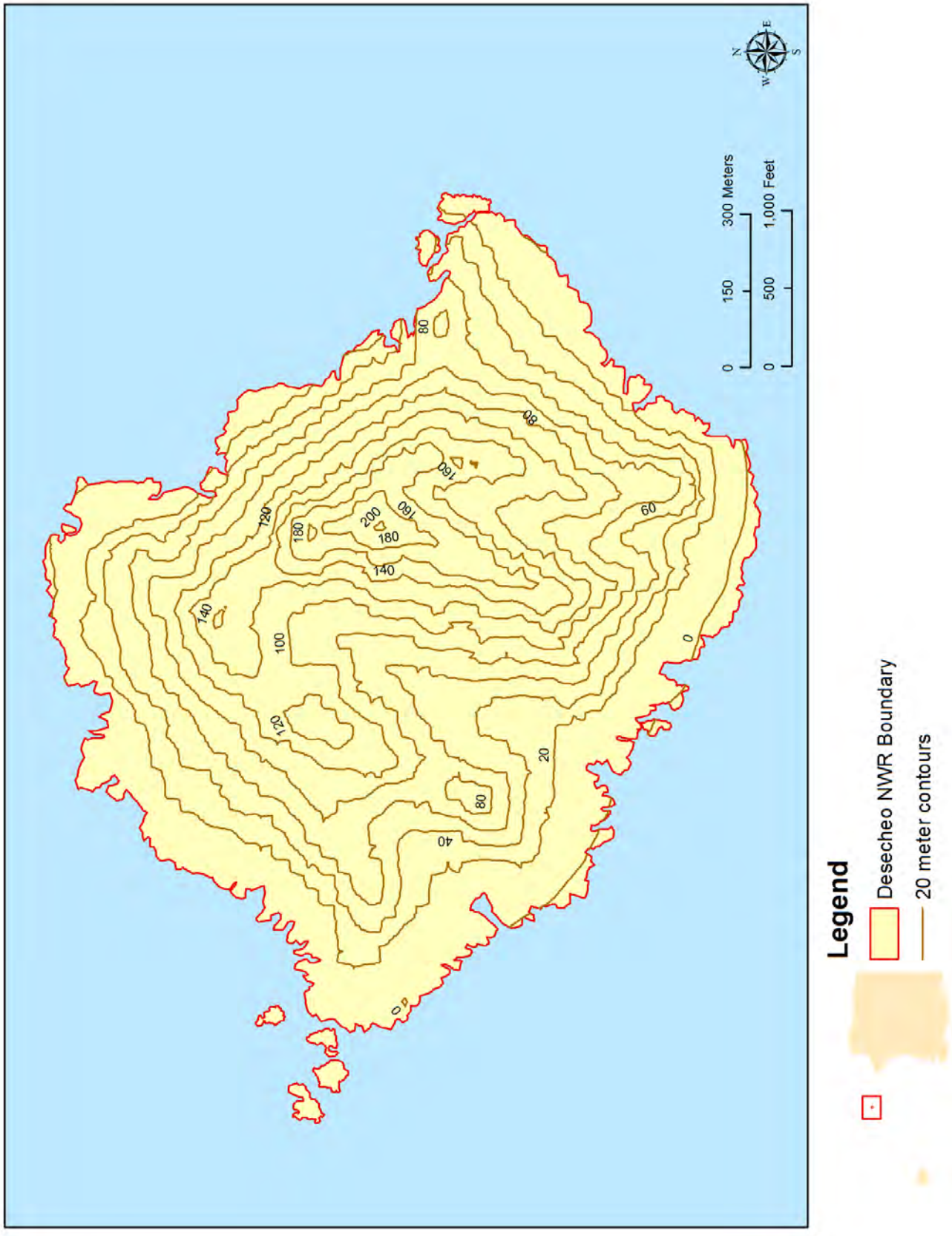


Figure 3. Topography of Desecheo NWR.



A single air quality control region covers Puerto Rico, including Desecheo. Based on ambient monitoring data collected mainly in the San Juan vicinity by the Puerto Rico Environmental Quality Board, the U.S. Environmental Protection Agency (EPA) classifies the air quality control region as in attainment or as unclassified/attainment (i.e., no data exist to determine the status for the six NAAQS criteria pollutants). Therefore, air pollutant concentrations are below these standards for all criteria pollutants (EPA 2000a).

Under the 1990 Clean Air Act amendments (42 U.S.C. 7476[c]), federal actions are required to conform to the applicable State Implementation Plans. The criteria and procedures used to demonstrate conformity are explained in 40 CFR 51 (Requirements for Preparation, Adoption, and Submittal of Implementation Plans) and 40 CFR 93 (Determining Conformity of Federal Actions to State or Federal Implementation Plans).

Currently, regulations for implementing the general conformity rule have been promulgated only for nonattainment areas. Because Puerto Rico is classified as in attainment of the National Ambient Air Quality Standards for all pollutants, the general conformity rule is not applicable. Existing air pollutant emission sources at Desecheo NWR are minor and scattered widely. Air pollutants are emitted during occasional operations of power equipment, motorized vessels, and aircraft used for access to the island and for conducting surveys.

BIOLOGICAL RESOURCES

HABITAT

Woodbury et al. (1971) reported the vegetation of the island to be a mosaic of grassy patches, shrublands, woodlands with candelabra cacti, and semideciduous forests. The grassy patches and shrublands are on exposed ridges and screes, especially on the northern and northeastern slopes, which face the prevailing winds. The woodlands generally are found on coastal slopes and upper east- and south-facing slopes. The semideciduous forest, dominated by *Bursera simaruba*, occurs in the more mesic valleys and ravines. A mixture of deciduous and evergreen trees is found in the relatively open understory. Figure 4 gives an overview of the major vegetation communities on the island. A complete listing of the plant species found on Desecheo NWR (from Breckon 2000) is provided in Appendix I.

Critical Wildlife Areas

The Puerto Rico CWCS (2005) identified areas that are considered to be critical for the wildlife of Puerto Rico (critical wildlife areas [CWAs]). It also identified species that are vulnerable to impacts on their habitat within these CWAs; species for which there is insufficient data to determine their status; and species that are endangered or critically endangered. Desecheo NWR is identified as one of the CWAs in that document. Table 3 lists the species.

Table 3. Data-deficient, vulnerable, endangered, or critically endangered species on Desecheo NWR.

Species Identified in Desecheo Critical Wildlife Area	
Common Name	**Scientific Name**
Brown pelican	*Pelecanus occidentalis*
White crowned pigeon	*Patagioenas leucocephala*
Peregrine falcon	*Falco peregrinus*
Slippery backed mabuya	*Mabuya mabouya*
Desecheo's gecko	*Sphaerodactylus levinsi*
Higo chumbo	*Harrisia portoricensis*

WILDLIFE

Desecheo is a relatively small island that is separated from the main island of Puerto Rico. Birds and reptiles comprise most of the native terrestrial component. The marine animal component is largely composed of nearshore and pelagic fish, sea turtles, marine mammals, mollusks, and crustaceans.

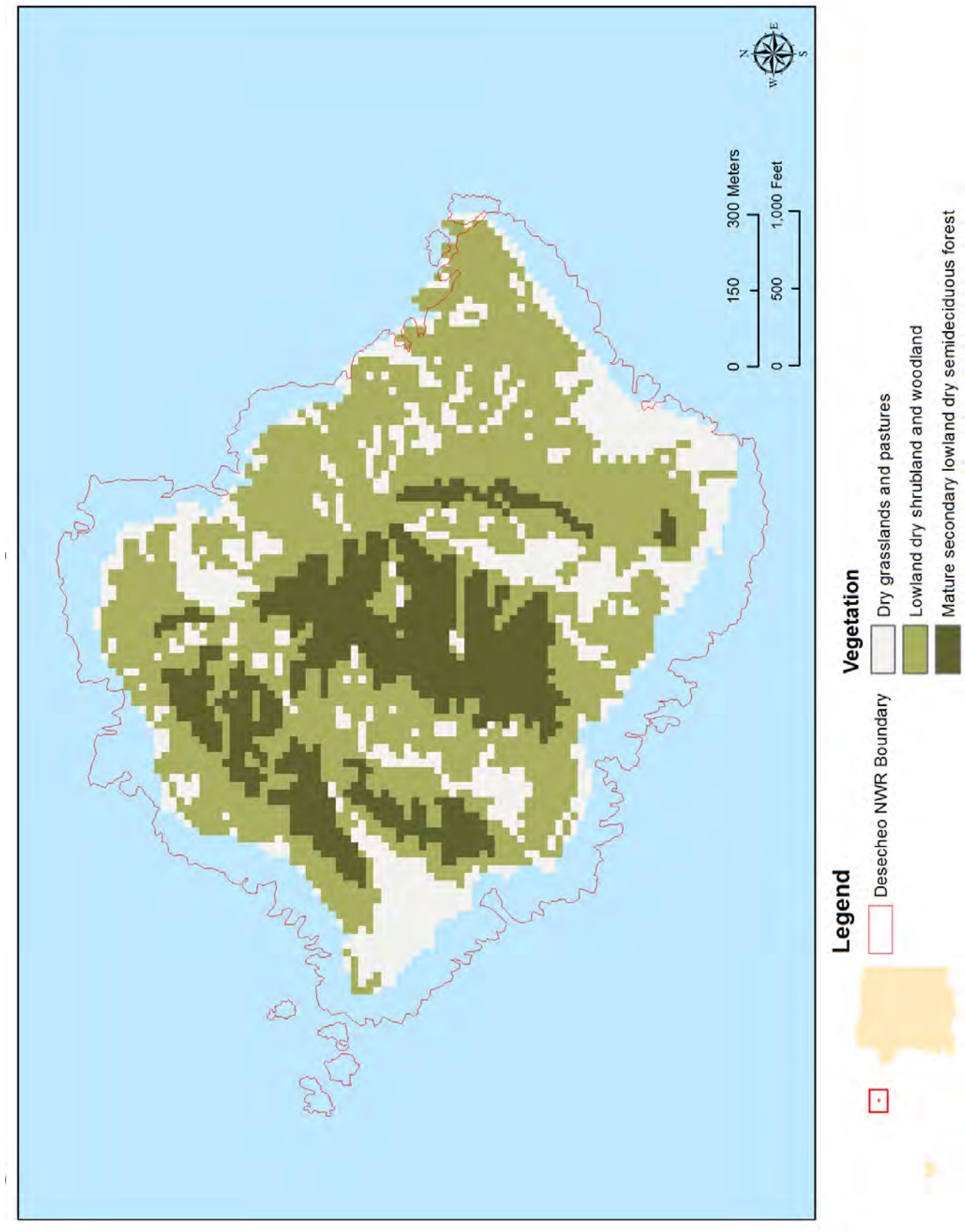
Birds

A total of 76 species of birds have been identified on Desecheo NWR. Of these, only 10 are considered to be resident (Meier 1989). Of the "resident" species, most are seabirds that feed on marine resources. Only the pearly-eyed thrasher and the cuckoo are terrestrial foragers. A complete list of the birds documented on Desecheo NWR is provided in Appendix I.

Desecheo was once an important seabird rookery. It was home to a large Brown booby colony, with over 15,000 individuals reported during the nesting season in 1927. Other seabirds historically present and/or nesting on the island include red-footed boobies (2000 birds in 1918), brown noddies (2000 in 1918), bridled terns (1500 in 1918), magnificent frigatebirds (300 in 1923), and laughing gulls (700 in 1970).

Today, very few seabirds nest on the rocky cays near Desecheo NWR, and none are known to nest on the island itself. This is likely a result of a combination of factors, including disturbance from bombing; egg poaching by rhesus macaques and humans; and destruction of habitat by feral goats. The refuge has conducted numerous projects to remove the macaques and goats, to permit the restoration of habitat and seabird nesting. Continued control of invasive species and restoration of the habitat are significant components of this CCP.

Figure 4. Vegetation of Desecheo NWR.



Land Birds

Most of the species of birds identified on Desecheo NWR are considered to be land birds. This group of birds accounts for 36 of the species documented on the refuge, so far. As noted above, however, only a small percentage of these species are permanent residents on the refuge. The land birds found on Desecheo NWR include such species as the common ground dove, Zenaida dove, scaly-napped pigeon, white-crowned pigeon, gray kingbird, yellow-billed and mangrove cuckoos, smooth-billed ani, belted kingfisher, black-whiskered vireo, American kestrel, red-tailed hawk, several species of warblers, and others. The numbers of species and individuals in this group fluctuate throughout the year due to the spring and fall migrations.

Wading Birds and Shorebirds

This category loosely groups shorebirds, egrets, and herons. With the exception of cattle egrets that may forage within the island's grassy areas and open slopes, these birds will likely be found feeding along the shoreline or resting during migratory stopovers. The numbers of wading birds on the refuge also vary throughout the year with migratory patterns. While these birds may be found on the refuge at any time of year, there is a limited amount of shallow water foraging habitat and the greatest numbers of wading and shorebirds is expected during the migration periods.

The species within this group identified on Desecheo NWR include the great blue heron, cattle egret, great egret, yellow-crowned night heron, American oystercatcher, ruddy turnstone, upland sandpiper, and spotted sandpiper.

Waterfowl

No waterfowl have been identified on Desecheo NWR.

Seabirds

Seabird nesting colonies on Desecheo NWR were the primary reason for the island's designation as a forest and bird preserve. At the time of its initial designation, the island was an important nesting site for brown boobies, red-footed boobies, brown noddies, bridled terns, and magnificent frigatebirds. As previously noted, the use of the island as a bombing range, the introduction of monkeys, goats, and rats, and human disturbance of the nest sites have nearly eliminated the former nesting colonies. During field surveys in 2009, no nesting seabirds were observed. In 2010, however, 13 pairs of nesting bridled terns and one nesting pair of brown noddies were found breeding on the coastal rocks and offshore islets (Island Conservation 2010).

Reptiles and Amphibians

The known terrestrial herpetofauna of Desecheo NWR consists of the Puerto Rican racer (*Alsophis puertoricensis*); the Desecheo ground lizard (*Ameiva exsul desechensis*); Desecheo anole (*Anolis desechensis*); Desecheo dwarf gecko (*Sphaerodactylus levinsi*); and the slippery-back skink (*Mabuya mabouya*) (Meier and Noble 1990). Of these species, the Desecheo anole, the Desecheo ground lizard, and the Desecheo dwarf gecko are endemic to the island. In addition, the snake (*Alsopnis portoricensis sp*.) is considered by some scientist to be a subspecies of the *Alsophis* found on the main island of Puerto Rico. Although definitive genetic or taxonomic studies have not been completed for the Desecheo population of the Puerto Rican racer, some believe it may be the same

species found on Mona Island; or it may be an endemic subspecies unique to Desecheo (Henderson and Powell 2009). To date, no introduced herpetofauna have been identified on Desecheo.

Mammals

With the exception of bats, there are no native mammals on Desecheo NWR. During his visit to Desecheo in 1912, Wetmore (1918) reported that "few bats were seen but under conditions that did not allow identification." Bats have been recorded on several occasions during the animal removal project that has been in progress between 2009 and 2012. Prior to the initiation of removal projects, the most common mammals on the island were rats, goats, and monkeys. Although these projects are nearly complete, monitoring to ensure confirmation of removal and detection of any reintroductions will continue during the timeframe of this CCP. Detection of additional invasive animals could result in reinitiation of a removal project.

Some marine mammals are known to occur in the nearshore and deep waters surrounding Desecheo Island. These include the sperm whale, blue whale, humpback whale, sei whale, and several species of dolphins.

LISTED SPECIES

The only federally listed threatened or endangered species documented on or adjacent to Desecheo NWR lands are the higo chumbo cactus (*Harrisia portoricensis*) and green and hawksbill sea turtles.

Higo Chumbo Cactus *(Harrisia portoricensis)*

Harnsia portoricensis is a slender, upright, columnar cactus, currently designated as threatened. It is usually unbranched and may reach up to 4.5 meters in height and 7 centimeters in diameter. It is currently known only from Mona, Monito, and Desecheo, all islands located in the Mona Passage between Puerto Rico and the Dominican Republic. Historically, the cactus was reported from the main island of Puerto Rico near Ponce.

Sea Turtles (Hawksbill and Green)

Hawksbill Sea Turtle: The hawksbill is found in tropical and subtropical regions of the Atlantic, Pacific, and Indian oceans. The species is widely distributed in the Caribbean Sea and western Atlantic Ocean. The hawksbill sea turtle has experienced global population declines of 80 percent or more during the past century, and a continued decline is projected. Most populations are declining, depleted, or remnants of larger aggregations.

This species frequents rocky areas, coral reefs, shallow coastal areas, lagoons or oceanic islands, and narrow creeks and passes. They are seldom seen in water deeper than 65 feet. Hatchlings are often found floating in masses of sea plants, and nesting may occur on almost any undisturbed deep-sand beach in the tropics. Adult females are able to climb over reefs and rocks to nest in beach vegetation.

The critical habitat for the hawksbill sea turtle is designated in 50 CFR 17.95 for areas around Culebra and Mona Islands, Puerto Rico, but not on or around Desecheo NWR.

The hawksbill sea turtle nesting habitat on Desecheo NWR is limited to a few very small pocket beaches. Although the only surveys conducted have been in conjunction with other investigations or management activities, anecdotal information from researchers working on and around the island indicates that nesting does, at least occasionally, occur on the refuge.

Green Sea Turtle: The green sea turtle is a circumglobal species in tropical and subtropical waters. In the U.S., green sea turtles are found around the U.S. Virgin Islands and Puerto Rico, and in the continental U.S. from Texas to Massachusetts. In U.S. Atlantic waters, green sea turtles nest in small numbers in the Virgin Islands and Puerto Rico.

Adult female green turtles nest on high energy oceanic beaches. The juvenile turtles are pelagic, living in the open ocean convergence zones. Once the turtles reach a carapace length of approximately 20 to 25 cm, they leave the pelagic habitat and enter benthic feeding grounds where they feed almost exclusively on sea grasses and algae.

CULTURAL RESOURCES

So far, no evidence of pre-Columbian human settlement has been found on Desecheo NWR. The most notable evidence of prior human activities is the remains of structures and munitions from the military training that occurred there from the 1940s to the 1960s.

SOCIOECONOMIC ENVIRONMENT

Desecheo NWR is separated from the west coast of Puerto Rico by the Mona Channel. Prior to it being actively managed as a national wildlife refuge and the creation of the commonwealth's marine reserve in the surrounding waters, the island was a popular fishing area, used by fishermen and scuba divers primarily from the municipalities of Aguadilla, Aguada, Rincon, Añasco, and Mayagüez. Fishing within the marine reserve is no longer permitted; however, tour boat operations focused on ecotourism, diving, and whale watching are increasingly popular in the vicinity.

POPULATION

The U.S. Census Bureau estimated the population of the five municipalities nearest to Desecheo NWR to be 253,733 in July 2009. The most recent actual count was made during the 2000 Census, when the population count was 248,276. Table 4 provides selected data from the 2000 Census with population estimates from 2009.

Table 4. 2000 Census data for Puerto Rico and municipalities near Desecheo NWR.

Geographic area	Population	Housing units	Area in square miles			Density per square mile of land area	
			Total area	Water area	Land area	Pop-ulation	Housing units
Puerto Rico	3,808,610	1,418,476	5,324.50	1,899.94	3,424.56	1,112.1	414.2
Aguada Municipio	41,959	15,156	45.55	14.62	30.93	1,359.4	504.1
Aguadilla Municipio	60,949	23,552	75.56	38.97	36.59	1,767.8	680.0
Añasco Municipio	29,261	12,755	44.90	5.63	39.27	721.8	273.0

Geographic area	Population	Housing units	Area in square miles			Density per square mile of land area	
			Total area	Water area	Land area	Pop-ulation	Housing units
Mayagüez Municipio	89,080	42,825	274.09	196.46	77.63	1,267.9	507.1
Rincón Municipio	15,200	5,998	54.41	40.12	14.28	1,034.0	478.0

Source: U.S. Census Bureau, Census 2010

POLITICAL SETTING

The Puerto Rico Constitution established a democratic form of government, divided into three branches: the legislative, executive, and judicial branches. The legislative branch consists of a bicameral Legislative Assembly with a Senate (27 members) and a House of Representatives (51 members). The constitution requires the total membership in the assembly to be expanded, if necessary, to increase minority representation whenever one party controls more than two-thirds of the seats.

A Resident Commissioner serves as Puerto Rico's sole delegate to the U.S. Congress, and holds limited powers as a member of the House of Representatives where he/she has a vote in committees but does not have a vote with the full House. The executive authority is vested in a Governor.

Desecheo NWR is considered to be within the Municipality of Mayagüez, which is one of 78 municipalities in Puerto Rico. Each municipality is administered by a mayor and a municipal assembly. All of these positions are elected. U.S. citizens, resident in Puerto Rico, age 18 and older, are eligible to vote in commonwealth and municipal elections.

The Governor nominates leaders for the Cabinet level, and other executive branch and public corporation leadership positions, under a highly centralized structure. The Secretary of State (who serves as acting Governor in the chief executive's absence) must be confirmed by a majority vote of both the House and Senate.

EMPLOYMENT

Information from the Bureau of Labor Statistics shows that, in 2002, unemployment throughout Puerto Rico was about 12 percent. By the end of 2009, this figure had risen to over 15 percent.

REFUGE ADMINISTRATION AND MANAGEMENT

LAND PROTECTION AND CONSERVATION

Although Desecheo NWR was a "preserve" in 1912, over the years its status and management have changed significantly. While difficulty of access to the island has precluded the establishment of any permanent settlement or human presence, many of the human uses have been detrimental to the habitat and wildlife populations. These activities include its use as a

military target and training range, limited attempts to develop areas for agriculture, unauthorized clearing and burning of vegetation to facilitate the production and harvest of land crabs, and the introduction of goats, rats and monkeys. Because of the remaining unexploded ordnance from the military training and the sensitivity of nesting birds to human activities, the refuge is closed to public access. The primary goals of the refuge's current management program are to restore and protect the wildlife resources and habitats. Removal of invasive species and the restoration of habitat are the major focuses of management.

VISITOR SERVICES

As noted previously, the refuge is not open to public access and use. Because the surrounding waters are designated as a marine reserve by the Commonwealth of Puerto Rico, visitation to the waters surrounding this small island refuge is expected to increase during the foreseeable future. However, during the duration of the CCP, the Service does not anticipate the completion of cleanup of unexploded ordnance nor the opening of the refuge to routine visitor activities. Future access will be limited and will be contingent on cleanup of ordnance and certification that the area is safe for use.

During the timeframe of the final CCP, visitor services and environmental education activities will take place offsite, and wildlife observation will be conducted from offshore.

PERSONNEL, OPERATIONS, AND MAINTENANCE

Administration of Desecheo NWR is accomplished by the Caribbean Islands NWR Complex. The headquarters of the complex is located in Boquerón, Puerto Rico. Refuge staff assigned to the complex headquarters conduct periodic surveys, posting of the refuge, habitat and species management activities, law enforcement patrols, and administrative oversight. Current staffing for the refuge is equivalent to two full-time equivalent (FTE) positions, distributed among the complex manager and assistant managers, and biologist, public use, law enforcement, and maintenance personnel. This plan will expand the staffing for the refuge by adding a 0.5-FTE manager and a 0.5-FTE biologist, with major duties related to the restoration and management of Desecheo NWR.

III. Plan Development

PUBLIC INVOLVEMENT AND THE PLANNING PROCESS

In accordance with Service guidelines and NEPA recommendations, public involvement was a critical factor throughout the development of this CCP. This CCP has been prepared with input and assistance from interested citizens, conservation organizations, and local, municipal, and commonwealth agencies. The participation of these stakeholders has been of great value in setting the management direction for the refuge. The Service, as a whole, and the refuge staff, in particular, are very grateful to each individual who has contributed time, expertise, and ideas to the planning process. The staff remains impressed by the interest and commitment of so many individuals for the lands and waters administered by the refuge.

The process of developing this CCP began in October 2008. The Commonwealth of Puerto Rico was notified of the initiation of the planning process on December 11, 2008. A notice of intent to prepare a comprehensive conservation plan for Desecheo NWR was published in the *Federal Register* on December 19, 2008 (73 FR 77828). The planning team responsible for the development of the CCP was formally established in January 2009. Natural resource management professionals from the Caribbean Islands NWR Complex, Culebra NWR, the Caribbean Ecological Services Field Office, and the Puerto Rico Department of Natural and Environmental Resources were invited to participate on the CCP planning team. In addition, a biological review of the Caribbean NWR Complex, which included Desecheo NWR, was completed in 2002, and some of the members of that early review team were included on the CCP planning team.

The Service's CCP planning team held a public scoping meeting on March 19, 2009, at the municipal theater/auditorium in Anasco, Puerto Rico. This meeting was announced in advance through news releases sent to local newspapers (*Primera Hora* [online] and *La Estrella*). Individual letters announcing the public scoping meeting were also sent to 17 commonwealth officials; 7 municipalities; 15 federal agency personnel; and 20 educational institutions, nongovernmental organizations, and individuals. E-mail notifications were sent to an additional 46 addressees. The public scoping meeting was attended by 16 individuals; two representing elected officials, three representing government agencies, three representing organizations, and the remainder as individuals. Twenty-six comment sheets were received by mail or e-mail, or were hand-delivered. A summary of the comments received from this public scoping is provided in Appendix D, Public Involvement.

A notice of availability of the Draft Comprehensive Conservation Plan and Environmental Assessment (Draft CCP/EA) for Desecheo NWR was published in the *Federal Register* on July 11, 2012 (77 FR 40893). The Draft CCP/EA was distributed and made available for public review and comment from July 11, 2012, through August 10, 2012. During this public review period, the refuge hosted a public forum on the Draft CCP/EA at the Legislative Assembly Meeting Hall in the Municipality of Rincon, Puerto Rico. Rincón is the town closest to Desecheo Island, and many of the agencies, organizations and individuals interested in the management of the refuge are located in that region of Puerto Rico.

This public meeting was announced in advance through mailings to the refuge's contact list and through the distribution of a news release that was published in *El Vocero* on July 25, 2012, and in *El Nuevo Dia* on August 2, 2012. The meeting was held on August 2, 2012, from 4:30 to 6:30 p.m. A presentation about the refuge and the comprehensive planning process was provided by the Project

Leader of the Caribbean Islands Refuge Complex. The presentation was followed by an open floor session that solicited questions and comments on the Draft CCP/EA from the attendees. A total of 15 individuals attended this meeting, and six provided comments and questions. A record of the comments was made by refuge personnel.

At the end of the public review period for the Draft CCP/EA, the Service received comments from a total of 18 individuals, either in person during the August 2 public meeting or in writing during the public comment period. All comments were addressed in the development of this final CCP. The comments received on the Draft CCP/EA and the Service's responses to them are summarized in Appendix D, Public Involvement.

In identifying the key issues that needed to be addressed in the final CCP, the planning team considered the recommendations of the Biological Review Team; the comments received through the public scoping meeting; the comments received on the Draft CCP/EA; and input from open planning team meetings, comment packets, and personal contacts of planning team members. In addition, the team considered opportunities for coordination with other relevant conservation plans; applicable legal mandates; the purposes of Desecheo NWR; the mission, goals, and policies of the Refuge System as a whole; and a host of evaluations and documentation required by Service procedures for refuge planning.

SUMMARY OF ISSUES, CONCERNS, AND OPPORTUNITIES

The planning team identified a number of issues, concerns, and opportunities related to fish and wildlife protection, habitat restoration, and management of threatened and endangered species. Additionally, the planning team considered state and federal mandates, as well as applicable local ordinances, regulations, and plans. The team also directed the process of obtaining public input through the above-described public scoping meeting, open planning team meetings, comment packets, and personal contacts. All public and advisory team comments were considered; however, some issues that are important to the public are beyond the scope of the Service's authority and cannot be addressed in this planning process. The team did consider all issues that were raised throughout the planning process, and has developed a CCP that attempts to balance the competing opinions regarding important issues. The team identified those issues that, in its best professional judgment, are most significant to the refuge. These issues are organized under five categories: Fish and Wildlife Population Management, Habitat Management, Resource Protection, Visitor Services, and Refuge Administration.

FISH AND WILDLIFE POPULATION MANAGEMENT

- Control of introduced species (monkeys, goats, rats, and plants)
- Monitor changes in density, distribution, and age structure of lizard species, pre- and post-eradication
- Monitor population and breeding success of seabirds pre- and post-eradication
- Monitor land bird densities and diversity pre- and post-eradication
- Monitor plant diversity, biomass, and structure pre- and post-eradication
- Restore nesting booby colonies

HABITAT MANAGEMENT

- Restoration of native forest habitat

RESOURCE PROTECTION

- Control illegal activities (smuggling of aliens, drugs, and poaching)

VISITOR SERVICES

- Open refuge to the public or at least permit limited access
- Provide for ecotourism
- Provide boat access
- Permit periodic access to ham radio operators
- Camping both recommended and opposed

REFUGE ADMINISTRATION

- Coordinate activities with the Desecheo Marine Reserve's planning efforts
- Coordinate with Corps to maximize cleanup of military ordnance
- Identify staffing needs

WILDERNESS REVIEW

Refuge planning policy requires a wilderness review as part of the comprehensive conservation planning process. The results of the wilderness review for Desecheo NWR are provided in Appendix H.

IV. Management Direction

INTRODUCTION

The Service manages fish and wildlife habitats considering the needs of all resources in decision-making. But first and foremost, fish and wildlife conservation assumes priority in refuge management. A requirement of the Improvement Act is for the Service to maintain the ecological health, diversity, and integrity of refuges. Public uses are allowed if they are appropriate and compatible with wildlife and habitat conservation. The Service has identified six priority wildlife-dependent public uses. These uses are hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.

Described below is the comprehensive conservation plan (CCP) for managing the refuge over the next 15 years. This management direction contains the goals, objectives, and strategies that will be used to achieve the refuge vision.

The following alternatives for managing the refuge were considered in the Draft CCP/EA: Alternative A, Current Management (No Action); Alternative B, Public Use; and Alternative C, Habitat and Wildlife Restoration and Limited Public Use (Preferred Alternative). The Service chose Alternative C as the preferred management action.

Implementing the preferred alternative would result in increased wildlife management programs to monitor, protect, and recover special status plants and animals and species of management interest. Within 15 years of CCP approval, the refuge would aim to provide the conditions that would allow for the reestablishment of nesting seabird colonies. With respect to terrestrial reptiles, refuge would increase the frequency of monitoring and conduct life history studies in addition to improving habitat conditions. Sea turtle management efforts and monitoring would continue as they are currently. Although scheduled surveys are not conducted on Desecheo NWR, periodic checks of potential nest areas are conducted by Service or Puerto Rico DNER personnel. The refuge would implement seasonal surveys of migratory landbirds and would pursue opportunities for propagation, reintroduction, and removal of threats to the higo chumbo cactus.

To achieve the goal for conservation, enhancement, and restoration of native plant communities, and their associated wildlife, representative of the native biological diversity that would have been found on Desecheo Island prior to the introduction of exotic species and human activities on the island, the refuge would increase the level of monitoring and efforts at removal of invasive species from the current level. Additional vegetation plots would be established and increased monitoring of the plots would be provided to measure the success of restoration efforts. During the plan period, the refuge would complete the removal all invasive animal species that negatively impact both habitat and native wildlife. The methods and impacts of removal of invasive animals have been discussed in detail in the Environmental Assessment for Restoring Wildlife Habitat on Desecheo Island (USFWS 2010).

In cooperation with partners, the Service would increase efforts to protect the refuge's plant and animal resources and staff from illegal activity. The level of law enforcement staff to conduct surveillance and enforcement activities, and equipment to improve enforcement capabilities on the refuge, would be increased.

Opportunities for environmental education and interpretation, wildlife observation, and wildlife photography to enhance management programs, public appreciation, understanding, and recognition of the importance of the Desecheo NWR would be increased. Because the presence of unexploded ordnance precludes opening of the refuge for general uses, the refuge's public programs would focus on offsite environmental education and outreach to mainland communities and schools. Desecheo NWR would also increase the level of offsite interpretation through distribution of brochures and fact sheets. Also subject to safety concerns being met, Desecheo NWR would provide limited opportunities for refuge-guided wildlife observation and wildlife photography. Nonwildlife-dependent activities would be addressed on a case-by-case basis when they are determined to be appropriate and compatible.

In accordance with this CCP, the Service would attempt to provide adequate staffing and funding to accomplish refuge goals and objectives while encouraging cooperative efforts with other agencies, nongovernmental organizations, universities, and other partners. The refuge would continue to work with cooperating agencies and partners to remove hazardous materials and increase safety on the refuge. Safety would be ensured by only permitting controlled, refuge-guided activities in cleared areas. Refuge personnel would continue to maintain existing partnerships, including those with Island Conservation, the U.S. Army Corps of Engineers, DHS, FURA, and Puerto Rico DNER.

VISION

The Desecheo National Wildlife Refuge is a small, isolated, mountainous tropical island that historically supported a significant number of seabirds and still supports a unique assortment of plant and animal species. As a result of human activities and the introduction of nonnative species, wildlife use of the island has been greatly diminished. The refuge is managed to restore, protect, and conserve fish and wildlife resources and habitats, migratory birds, endemic species, and forest communities, with a special emphasis on seabirds. It also provides opportunities for scientific research. Restoration and conservation of the refuge habitats is the Service's commitment to present and future generations.

The refuge works in partnership with others to achieve this vision.

GOALS, OBJECTIVES, AND STRATEGIES

The goals, objectives, and strategies presented are the Service's response to the issues, concerns, and needs expressed by the planning team, the refuge staff and partners, and the public and are presented in hierarchical format. Chapter V, Plan Implementation, identifies the projects associated with the various strategies.

These goals, objectives, and strategies reflect the Service's commitment to achieve the mandates of the Improvement Act, the mission of the Refuge System, and the purposes and vision of Desecheo NWR. The Service intends to accomplish these goals, objectives, and strategies within the next 15 years.

FISH AND WILDLIFE POPULATION MANAGEMENT

Goal 1: Monitor, protect, and recover special status plants and animals and species of management interest.

Background: Desecheo NWR was designated as a reserve for native seabirds. As a result of the introduction of nonnative species, human activities, and possibly naturally occurring changes in the foraging areas used by seabirds, the use of the island by these birds has greatly diminished since it was

first designated as a reserve. In addition to seabirds, several other species of management concern, including a federally threatened cactus, endemic reptiles, and migratory landbirds, are found on the island. A critical component of the overall management program for Desecheo NWR is the development of a monitoring plan to document the effectiveness of management activities on these species.

Objective 1-1: Seabirds. Within 15 years of CCP approval, the refuge would provide suitable nesting habitat and protection to encourage reestablishment of seabird nesting colonies including brown boobies, red-footed boobies, brown noddies, and others.

Discussion: To restore the appropriate conditions for reestablishment of seabird nesting colonies, habitat management activities would focus on restoration of native plant species along with increased monitoring of bird populations, habitat changes, and predators. Habitat management would include planting and maintaining native tree species used by red footed boobies, vegetation control on potential sites for brown boobies and brown noddies, and predator control, as necessary. Where suitable nesting sites are identified, decoys, recordings and other appropriate techniques may be used to attract nesting birds.

Strategies:

- Develop a wildlife inventory program to ensure that changes in seabird populations are accurately monitored.
- Control invasive species (both plant and animal) through the use of recognized management practices.
- As appropriate, when sites are certified as clear of unexploded ordnance hazards, conduct habitat management and restoration utilizing plant materials propagated at the Cabo Rojo NWR facility.

Objective 1-2: Terrestrial Reptiles. Ensure maintenance of terrestrial reptiles through the monitoring of population levels and the monitoring and control of invasive species that may affect their populations.

Discussion: These efforts would focus on endemic species: (*Ameiva exsul desechensis, Anolis desechensis* and *Sphaerodactylus levinsi.*

Strategies:

- Conduct periodic surveys for reptiles on Desecheo NWR to determine population and habitat changes.
- Increase frequency of monitoring and conduct life history studies in addition to improving habitat conditions.

Objective 1-3: Sea Turtles. In cooperation with the Puerto Rico DNER, continue to monitor and document sea turtle nesting activity and protect adults, nests, and habitat from predators, poaching, and environmental degradation.

Strategies:

- Conduct periodic surveys and maintain records of sea turtle nesting activities.
- Whenever possible, provide law enforcement coverage and assist the Puerto Rico DNER with law enforcement activities on and around Desecheo NWR.

Objective 1-4: Migratory Birds. Maintain habitat and document the presence and usage of Desecheo NWR by migratory land birds.

Strategies:

- Continue to conduct opportunistic surveys and maintain records of landbird use of the refuge.
- Implement seasonal surveys of migratory land birds.

Objective 1-5: Higo Chumbo Cactus. Maintain or expand the current population of this threatened cactus on appropriate sites on Desecheo NWR.

Strategies:

- Continue opportunistic surveys to determine population changes.
- Pursue opportunities for propagation, reintroduction, and removal of threats.

HABITAT MANAGEMENT

Goal 2: Conserve, enhance, and restore native plant communities and their associated wildlife, representative of the native biological diversity that would have been found on Desecheo Island prior to the introduction of exotic species and human activities.

Background: The habitat and wildlife use of the habitat on Desecheo NWR have been adversely affected by the introduction of goats, monkeys, rats, and its use as a military training range. Plans for removal of invasive animal species have been discussed and evaluated in an environmental assessment for restoring wildlife habitat on Desecheo Island, Puerto Rico (USFWS 2010). The staff believes that the assemblages of native wildlife could best be restored and maintained by providing the habitat diversity that was typical of the ecoregion prior to significant human intervention. The refuge would be managed to restore natural conditions and native species, with the recognition that complete restoration may not always be achieved in the short term, because soils or other environmental factors may be altered so they no longer support native species. The Service also recognizes that some of the habitat management objectives may take longer than the life of this plan (15 years) to achieve.

Objective 2-1: Native Forest Restoration. During the plan's 15-year lifespan, increase monitoring of habitat conditions, removal of invasive species, and restoration of native species.

Discussion: Current management of the Desecheo NWR forest is limited to occasional inventories and surveys conducted opportunistically. Systematic monitoring in conjunction with management to remove invasive species and replant natives is needed to document successful restoration or the need to change management practices.

Strategies:

- Increase number of vegetation plots and number of visits to plots to more closely monitor and gauge success of restoration efforts.
- Within 10 years of CCP approval, complete removal of all invasive animal species that negatively impact both habitat and native wildlife.
- During the 15-year life of the CCP, replant native species where invasives have been removed or where appropriate conditions have been restored.

Objective 2-2: Climate Change. During the 15-year life of the final CCP, monitor and address any adverse impacts arising from climate change.

Discussion: Potential impacts from increased average temperatures, sea level rise, and altered weather patterns (increased or decreased rainfall, tropical storms, and hurricanes) could occur as a result of climate change. In order to identify potential impacts and address them in a timely manner, a monitoring plan would be required.

Strategy:

- Develop and implement a plan for monitoring and mitigating the effects of climate change on the refuge.

RESOURCE PROTECTION

Goal 3: Illegal Activities. In cooperation with partners, protect the refuge's plant and animal resources and staff from illegal activity.

Background: Although Desecheo NWR is closed to public visitation because of potential hazards from unexploded ordnance, there is documented evidence of illegal activities on the island. These activities include poaching of birds and their eggs, taking of land crabs, burning of grasslands, and smuggling of drugs and humans. These activities affect the refuge's resources both directly and indirectly through removal of wildlife, destruction of habitat, adverse impacts on restoration projects, and disturbance of wildlife.

Objective 3-1: Human and Drug Trafficking. Reduce or eliminate human and drug trafficking activities on and around the refuge.

Discussion: The occurrence of human and drug trafficking on and around Desecheo NWR affects not only the natural resources of the refuge, but also creates an unsafe environment for visitors to the marine reserve surrounding the island and the staff who are conducting management and restoration projects on the refuge.

Strategies:

- Refuge staff would continue ongoing cooperation with partnering agencies to increase surveillance and enforcement that protects refuge resources, visitors to the area, and staff from illegal activities.
- The refuge would continue to monitor illegal hunting/harvesting and increase levels of law enforcement staff and equipment to improve enforcement capabilities on the refuge.
- As necessary, provide law enforcement coverage and assist Puerto Rico DNER with law enforcement activities on and around Desecheo NWR.

VISITOR SERVICES

Goal 4: Provide opportunities for environmental education and interpretation, wildlife observation, and wildlife photography to enhance management programs, public appreciation, understanding, and recognition of the importance of Desecheo NWR.

Background: Desecheo NWR is currently closed to public access because of unexploded ordnance and sensitive resources. Any access in the foreseeable future would be limited and contingent on cleanup of ordnance and certification that the area is safe for use. During the 15-year life of the CCP, visitor services and environmental education activities would take place offsite and wildlife observation would be conducted from boats. Cleanup of unexploded ordnance is not expected to be completed for several years; therefore, any activities permitted would be under the direct supervision of trained personnel and would only be conducted after the activity is determined to be safe, appropriate, and compatible with the wildlife objectives of the refuge.

Objective 4-1: Environmental Education. During the 15-year life of the CCP, environmental education, as identified in the Improvement Act, would be increased and given priority consideration over other public uses.

Discussion: Environmental education and interpretation programs are aimed at creating public awareness of the natural resources of the refuge, the relationship of those resources to the human environment, and the ways in which the effects of humans are minimized through sustainable practices. Improved environmental education and interpretation programs are expected to benefit the refuge through increased public awareness and appreciation of its resources.

Strategies:

- Continue to maintain and improve refuge website and fact sheets.
- Establish new programs and improve existing offsite environmental education and outreach to mainland communities and schools.
- The potential use of audio and visual recordings will be considered during the development of future environmental education and interpretation programs.

Objective 4-2: Interpretation. During the 15-year life of the CCP, interpretation activities would be increased consistent with the limitations due to prior uses of the refuge.

Strategies:

- Continue to maintain refuge website and fact sheets.
- Increase offsite interpretive programming through the use of brochures and fact sheets, and, subject to safety concerns being met, increase onsite interpretation through guided activities, signage, and brochures.

Objective 4-3: Wildlife Observation and Photography. During the 15-year life of the CCP, wildlife observation and wildlife photography would be encouraged and facilitated provided they can be conducted safely and without disturbance to wildlife or habitat.

Discussion: All access to Desecheo NWR is by boat and landing on the refuge is not permitted because of the hazards associated with unexploded ordnance, the potential for wildlife disturbance, and unsafe terrain. Until such time as safe access to the island could be provided, wildlife observation and wildlife photography must be conducted from the surrounding waters.

Strategies:

- Continue opportunistic wildlife observation from offshore vessels.
- Subject to safety concerns being met, provide limited opportunities for refuge-guided wildlife observation and wildlife photography.

Objective 4-4: Nonwildlife-dependent Activities.

Discussion: Public uses such as camping, picnicking, rock climbing, and radio communications are not priority uses of the Refuge System as defined by the Improvement Act. These uses are not normally permitted on national wildlife refuges, unless they are found to be both appropriate and compatible with the purposes of the refuge.

Strategy:

- Continue to respond to periodic, special requests to visit the refuge for nonwildlife- dependent uses that are appropriate and compatible.

REFUGE ADMINISTRATION

Goal 5: Provide adequate staffing and funding to accomplish refuge goals and objectives while encouraging cooperative efforts with other agencies, nongovernmental organizations, universities, and other partners.

Background: The *a*dministration of Desecheo NWR is affected by the presence of unexploded ordnance, illegal activities (smuggling of drugs and illegal aliens), the refuge's location that makes it accessible only by boat or helicopter, and rugged topography that makes conducting management activities difficult. To effectively manage the refuge's natural resources, to conduct needed research, or to permit limited public uses of the refuge would require reduction or elimination of some of these hazards. Evaluation of the potential hazards from unexploded ordnance is currently being investigated under the provisions of the Formerly Used Defense Site (FUDS) program. The potential for future activities on Desecheo NWR would be affected by the outcome of the investigations and any cleanup that occurs. In addition, the waters surrounding the refuge are designated as a marine reserve, administered by the Puerto Rico DNER. Because of these issues, coordination with the U.S. Army Corps of Engineers (FUDS program), DHS, FURA (illegal activities), and Puerto Rico (marine reserve) is an integral component of refuge administration.

Objective 5-1: Safety. Through cooperative efforts with commonwealth and federal partners, the refuge would provide an environment that is safe for wildlife, staff, and research personnel.

Discussion: Hazards from the presence of unexploded ordnance and persons engaged in illegal activities need to be removed or controlled to ensure a safe environment for employees and other authorized personnel on the refuge. This would be accomplished primarily through cooperative efforts with other agencies, as noted in the discussion above.

Strategy:

- Continue to work with cooperating agencies and partners to clean up the refuge and increase safety. Safety will be ensured by only permitting controlled, refuge-guided activities in cleared areas.

Objective 5-2: Equipment, Tools, and Supplies. Within 5 years of CCP approval, acquire the necessary equipment, tools, and supplies to effectively manage the refuge.

Discussion: Access to the refuge is currently limited by the availability of vessels capable of operating on open ocean waters during relatively calm weather. To effectively conduct management and research projects, the refuge needs to acquire a vessel capable of transporting personnel and equipment to the island for extended periods of time. Other needs include cameras and monitoring equipment, camping gear, and survey equipment.

Strategy:

- Acquire an open-water boat capable of reaching the island for extended visits. In addition, provide automated camera equipment and other necessary tools and supplies for refuge management.

Objective 5-3: Staffing. Within 5 years of CCP approval, provide staff positions necessary to administer the refuge's programs and activities.

Discussion: The current staff for Desecheo NWR consists of two full-time equivalent (FTE) positions within the Caribbean Islands NWR Complex. These are shared positions with responsibilities for Desecheo NWR and other refuges within the Complex, including Laguna Cartagena, Cabo Rojo, and Navassa. Additional personnel are needed to focus on management and biological restoration efforts on Desecheo NWR.

Strategy:

- Provide for one 0.5-FTE manager position and one 0.5-FTE biologist position.

Objective 5-4: Partnerships. Maintain existing partnerships and establish new ones as necessary to complete refuge objectives and strategies.

Discussion: At the present time, the refuge works cooperatively with the U.S. Army Corps of Engineers (for evaluation and cleanup of unexploded ordnance); DHS and FURA (for monitoring and intervention with illegal activities on the refuge); DNER (for management of the surrounding marine reserve and endangered species activities); Island Conservation (for control of invasive species); and other divisions of the Service (for wildlife management and endangered species and law enforcement activities). These activities would be maintained and, as appropriate, additional partnership efforts would be initiated when appropriate and beneficial to refuge resources and planned management programs of the refuge.

Strategies:

- Continue existing partnerships, including Island Conservation, U.S. Army Corps of Engineers, DHS, FURA, and Puerto Rico DNER.
- Seek new partnership opportunities with other agencies, nonprofit and academic organizations to address goals and objectives of this plan.

V. Plan Implementation

INTRODUCTION

Refuge lands are managed as defined under the Improvement Act. Congress has distinguished a clear legislative mission of wildlife conservation for all national wildlife refuges. National wildlife refuges, unlike other public lands, are dedicated to the conservation of the Nation's fish and wildlife resources and wildlife-dependent recreational uses. Priority projects emphasize the protection and enhancement of fish and wildlife species first and foremost, but considerable emphasis is placed on balancing the needs and demands for wildlife-dependent recreation and environmental education.

To accomplish the purpose, vision, goals, and objectives contained in this CCP for Desecheo NWR, this chapter identifies projects, funding and personnel needs, volunteers, partnerships opportunities, step-down management plans, a monitoring and adaptive management plan, and plan review and revision.

PROPOSED PROJECTS

Listed below are summaries of the proposed projects and their associated costs for fish and wildlife population management, habitat management, resource protection, visitor services, and refuge administration over the next 15 years. The proposed projects reflect the priority needs identified by the public, the planning team, and the refuge staff based upon available information. These projects were generated for the purpose of achieving the refuge's objectives and strategies. The primary linkages of these projects to those planning elements are identified in each summary.

FISH AND WILDLIFE POPULATION MANAGEMENT

Project 1. Inventorying and Monitoring

Inventorying and monitoring of plant and animal populations are critical to ensuring the biological integrity and effective management of the refuge. The information collected through a systematic inventorying and monitoring program forms the basis for developing, implementing, revising, and evaluating management actions; enables informed decisions; and guides all refuge management activities. Although periodic inventories of seabirds, reptiles, and some plants have been conducted, the methodology and frequency of these activities need to be standardized and increased.

This project would address the need for increased inventorying and monitoring of species of concern (including seabirds, endangered and threatened plants and animals, and invasive species) through the addition of biological staffing and the funding of several important surveys. As a result, Desecheo NWR would be able to adapt management practices to provide valuable long-term contributions to national and regional objectives for threatened and endangered species, seabirds, and other species of management concern.

This project would provide the necessary staff, equipment, and materials for developing and implementing the inventorying and monitoring plan; provide the information necessary for adapting management activities to accommodate changes; provide long-term data on population trends that can assist in determining regional population fluctuations; and result in the development of habitat and species use maps for all refuge lands.

Objectives and Strategies linked to this project: 1.1.a, 1.2.a-b, 1.3.a, 1.4.a-b, 1.5.a, 2.1.a, and 5.4.a-b.

Project 2. Invasive and Exotic Species Control

Invasive and exotic species on Desecheo NWR include both plants and animals that may alter habitat, and provide direct competition or prey upon native species of management concern. In the past, projects were initiated to remove goats and monkeys from the island to permit habitat restoration and improve the chances for reestablishment of nesting seabird colonies. Effective management of the native wildlife on Desecheo NWR is dependent on the successful control of goats, monkeys, rats, and invasive plants that affect these native species. Whenever exotic or invasive species are adversely affecting the reproduction, survival, or habitat of the managed species, control or elimination of the invasive species is warranted. Depending on the species involved and the magnitude of impacts, documented control measures may vary. Where an invasive plant is affecting nesting habitat, elimination may not be possible and periodic control would be most effective.

This invasive species control project would identify the priority species and areas for implementation of control measures. It would provide staff, equipment, materials, and funding for contracts to remove harmful invasive species from managed areas. A Biosecurity Management Plan has been developed in conjunction with the ongoing invasive species removals. This plan will become part of the Invasive Species Control Plan proposed for development in 2013. It will provide measures to monitor the invasive and exotic species and to minimize the possibility for their introduction or reintroduction to the island.

Details of the invasive and exotic species control project are provided in Section B for habitat restoration on Desecheo Island, Puerto Rico (USFWS 2010).

Objectives and Strategies linked to this project: 1.1.b, 2.1.b, and 5.4.a-b.

HABITAT MANAGEMENT

Project 3. Habitat Restoration and Plant Propagation

Historical human uses, introduced species, and weather events have affected the habitat of nesting seabirds and native plants on Desecheo NWR. Restoration of native plant associations is proposed for sites where the habitat has been damaged. To accomplish the needed restoration, the plant nursery facility at the Caribbean Islands NWR Headquarters in Cabo Rojo would be upgraded and maintained to provide appropriate plant materials for Desecheo NWR.

Objectives and Strategies linked to this project: 1.1.c, 1.2.b, 1.5.b, and 2.1.c.

RESOURCE PROTECTION

Project 4. Law Enforcement, Safety, Environmental Compliance, and Coordination

Although Desecheo NWR is closed to public visitation because of potential hazards from unexploded ordnance, there is documented evidence of illegal activities on the island. These activities include poaching of birds and their eggs, taking of land crabs, burning of grasslands, and smuggling of drugs and humans. These activities affect the refuge's resources both directly and indirectly through removal of wildlife, destruction of habitat, adverse impacts on restoration projects, and disturbance of

the wildlife. To ensure protection of the wildlife and habitat and compliance with the refuge's regulations and management objectives, law enforcement patrols and coordination with cooperating agencies would be increased.

Objectives and Strategies linked to this project: 3.1.a-c and 5.4.a-b.

VISITOR SERVICES

Project 5. Outreach and Education Material Production

As noted previously, Desecheo NWR is closed to public visitation because of unexploded ordnance and environmental hazards. The refuge is, however, very visible from beaches and recreational sites on the northwestern coast of the Puerto Rico main island. Because of this visibility, both visitors and residents are interested in knowing about the island, its resources, and management. This project would provide for the development and production of informational and educational material to be used for environmental education activities and to provide basic refuge information. In addition to the development of new outreach and education materials, the refuge would periodically revise and update information on the Desecheo NWR website to reflect any changes in regulations or management.

Objectives and Strategies linked to this project: 4.1.a-c, 4.2.a-b, and 5.4.a-b.

REFUGE ADMINISTRATION

Project 6. Equipment and Material Acquisition

Proposed wildlife and habitat management activities on Desecheo NWR require the refuge to have the ability to transport personnel, material, and supplies safely across the open ocean. To perform this function, the refuge would acquire an open-water boat capable of reaching the island for extended visits. Additional equipment such as automated cameras to monitor wildlife and possible illegal activities on the refuge, as well as tools and supplies for refuge management, are also included in this project.

Objectives and Strategies linked to this project: 1.1.a-c, 1.2.a-b, 1.3.a-b, 1.5.a-b, 2.1.a-c, 3.1.a-c, 4.1.c, 5.1.a, and 5.2.a.

Project 7. Staff Increase

The current staff for Desecheo NWR consists of two full-time equivalent positions (2 FTEs) within the Caribbean Islands NWR Complex. These are shared positions with responsibilities for Desecheo NWR and other refuges within the Complex, including Laguna Cartagena, Cabo Rojo, and Navassa. The expanded management activities proposed in this CCP would require additional personnel to focus on monitoring, surveying, and habitat restoration efforts, as well as coordination with cooperating agencies. To effectively conduct the proposed management, the refuge would need one additional 0.5-FTE management position and one 0.5-FTE biologist position.

Objectives and Strategies linked to this project: All.

Table 5 summarizes the proposed project costs.

FUNDING AND PERSONNEL

Table 5. Summary of projects.

PROJECT NUMBER	PROJECT TITLE	FIRST YEAR COST	RECURRING ANNUAL COST	STAFF (FTEs)
1	Inventorying and Monitoring	30,000	12,000	0.2
2	Continued Invasive and Exotic Species Control	500,000	20,000	0.2
3	Habitat Restoration and Plant Propagation	55,000	32,000	0.3
4	Law Enforcement, Safety, Environmental Compliance, and Coordination	25,000	25,000	0.2
5	Outreach and Education Material Production	28,000k	8,000	0.1
6	Management Equipment and Material Acquisition	120,000	8,000	0
7*	Staff Increase*			1 FTE

**Project 7 is a summary of additional staff required for complete implementation of the projects included in this CCP.*

PARTNERSHIP AND VOLUNTEER OPPORTUNITIES

An important element of this CCP is to establish partnerships with local volunteers, landowners, private organizations, and state and federal natural resource agencies. Since there are no private lands in the immediate vicinity of the refuge, and access to the refuge is restricted because of hazards, opportunities for partnerships with landowners and nongovernmental organizations are very limited. At regional and commonwealth levels, partnerships may be established or enhanced with organizations such as the Puerto Rico Department of Natural and Environmental Resources; Island Resources; the U.S. Army Corps of Engineers; and FURA (Commonwealth Drug Interdiction Agency). Additional partnership opportunities with nongovernment and academic organizations will be developed to further address the research and conservation goals of this plan.

STEP-DOWN MANAGEMENT PLANS

A comprehensive conservation plan is a strategic plan that guides the direction of the refuge. A step-down management plan provides specific guidance on activities, such as habitat, fire, and visitor services. These step-down management plans (Table 6) are also developed in accordance with NEPA, which requires the identification and evaluation of alternatives and public review and involvement prior to their implementation. These step-down plans would incorporate strategies and help to achieve the goals and objectives of the comprehensive conservation plan.

Table 6. Step-down management plans for Desecheo NWR.

Step-down Plan	Completion Date
Law Enforcement Plan	2012
Fire Management Plan	2016
Wildlife Inventory Plan	2013
Habitat Management Plan	2014
Invasive Species Control Plan	2013
Forest Management Plan	2015
Station Safety Plan (includes communications plan)	Annually
Sign Plan	2012

MONITORING AND ADAPTIVE MANAGEMENT

Adaptive management is a flexible approach to long-term management of biotic resources that is directed over time by the results of ongoing monitoring activities and other information. More specifically, adaptive management is a process by which projects are implemented within a framework of scientifically driven experiments to test the predictions and assumptions outlined within a plan.

To apply adaptive management, specific surveying, inventorying, and monitoring protocols would be adopted for the refuge. The habitat management strategies would be systematically evaluated to determine management effects on wildlife populations. This information would be used to refine approaches and determine how effectively the objectives are being accomplished. Evaluations would include ecosystem team and other appropriate partner participation. If monitoring and evaluation indicate undesirable effects for target and nontarget species and/or communities, then alterations to the management projects would be made. Subsequently, the comprehensive conservation plan would be revised. Specific monitoring and evaluation activities would be described in the step-down management plans.

PLAN REVIEW AND REVISION

The final CCP would be reviewed annually as the refuge's annual work plans and budgets are developed. It would also be reviewed to determine the need for revision. A revision would occur if and when conditions change or significant information becomes available, such as a change in ecological conditions or a major refuge expansion. The final CCP would be augmented by detailed step-down management plans to address the completion of specific strategies in support of the refuge's goals and objectives. Revisions to the final CCP and the step-down management plans would be subject to public review and NEPA compliance.

Appendix A. Glossary

Adaptive Management: Refers to a process in which policy decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in a management plan. Analysis of results helps managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.

Alluvial: Sediment transported and deposited in a delta or riverbed by flowing water.

Alternative: 1. A reasonable way to fix the identified problem or satisfy the stated need (40 CFR 1500.2). 2. Alternatives are different sets of objectives and strategies or means of achieving refuge purposes and goals, helping fulfill the Refuge System mission, and resolving issues (Service Manual 602 FW 1.6B).

Anadromous: Migratory fishes that spend most of their lives in the sea and migrate to fresh water to breed.

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 (Service Manual 052 FW 1. 12B). The System's focus is on indigenous species, biotic communities, and ecological processes. Also referred to as biodiversity.

Carrying Capacity: The maximum population of a species able to be supported by a habitat or area.

Categorical Exclusion: A category of actions that does 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 (40 CFR 1508.4).

CFR: Code of Federal Regulations.

Compatible Use: A proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose(s) of the national wildlife refuge [50 CFR 25.12 (a)]. A compatibility determination supports the selection of compatible uses and identifies stipulations or limits necessary to ensure compatibility.

Comprehensive Conservation Plan:	A document that describes the desired future conditions of a refuge or planning unit and provides long-range guidance and management direction to achieve the purposes of the refuge; helps fulfill the mission of the Refuge System; maintains and, where appropriate, restores the ecological integrity of each refuge and the Refuge System; helps achieve the goals of the National Wilderness Preservation System; and meets other mandates (Service Manual 602 FW 1.6 E).
Concern:	See Issue
Cover Type:	The present vegetation of an area.
Cultural Resource Inventory:	A professionally conducted study designed to locate and evaluate evidence of cultural resources present within a defined geographic area. Inventories may involve various levels, including background literature search, comprehensive field examination to identify all exposed physical manifestations of cultural resources, or sample inventory to project site distribution and density over a larger area. Evaluation of identified cultural resources to determine eligibility for the National Register follows the criteria found in 36 CFR 60.4 (Service Manual 614 FW 1.7).
Cultural Resource Overview:	A comprehensive document prepared for a field office that discusses, among other things, its prehistory and cultural history, the nature and extent of known cultural resources, previous research, management objectives, resource management conflicts or issues, and a general statement on how program objectives should be met and conflicts resolved. An overview should reference or incorporate information from a field office's background or literature search described in Section VIII of the Cultural Resource Management Handbook (Service Manual 614 FW 1.7).
Cultural Resources:	The remains of sites, structures, or objects used by people in the past.
Designated Wilderness Area:	An area designated by the U.S. Congress to be managed as part of the National Wilderness Preservation System (Draft Service Manual 610 FW 1.5).
Disturbance:	Significant alteration of habitat structure or composition. May be natural (e.g., fire) or human-caused events (e.g., aircraft overflight).
Ecosystem:	A dynamic and interrelating complex of plant and animal communities and their associated nonliving 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.

Endangered Species (Federal):	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.
Endangered Species (State):	A plant or animal species in danger of becoming extinct or extirpated in the state within the near future if factors contributing to its decline continue. Populations of these species are at critically low levels or their habitats have been degraded or depleted to a significant degree.
Environmental Assessment (EA):	A concise public 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 (40 CFR 1508.9).
Environmental Impact Statement (EIS):	A detailed written statement required by section 102(2)(C) of the National Environmental Policy Act, analyzing the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources (40 CFR 1508.11).
Estuary:	The wide lower course of a river into which the tides flow. The area where the tide meets a river current.
Finding of No Significant Impact (FONSI):	A document prepared in compliance with the National Environmental Policy Act, supported by an environmental assessment, that briefly presents why a federal action will have no significant effect on the human environment and for which an environmental impact statement, therefore, will not be prepared (40 CFR 1508.13).
FTE:	Full Time Equivalent. The combined work hours of one of more employees that is equal to the number of hours that an individual employee would work during the course of a year.
Goal:	Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units (Service Manual 620 FW 1.6J).
Habitat:	Suite of existing environmental conditions required by an organism for survival and reproduction. The place where an organism typically lives.
Habitat Restoration:	Management emphasis designed to move ecosystems to desired conditions and processes, and/or to healthy ecosystems.
Habitat Type:	See Vegetation Type.

Improvement Act:	The National Wildlife Refuge System Improvement Act of 1997.
Informed Consent:	The grudging willingness of opponents to “go along” with a course of action that they actually oppose (Bleiker).
Issue:	Any unsettled matter that requires a management decision [e.g., an initiative, opportunity, resource management problem, threat to the resources of the unit, conflict in uses, public concern, or other presence of an undesirable resource condition (Service Manual 602 FW 1.6K)].
Management Alternative:	See Alternative
Management Concern:	See Issue
Management Opportunity:	See Issue
Migration:	The seasonal movement from one area to another and back.
Mission Statement:	Succinct statement of the unit’s purpose and reason for being.
Monitoring:	The process of collecting information to track changes of selected parameters over time.
National Environmental Policy Act of 1969 (NEPA):	Requires all agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision-making (40 CFR 1500).
National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57):	Under the Refuge Improvement Act, the Fish and Wildlife Service is required to develop 15-year comprehensive conservation plans for all national wildlife refuges outside Alaska. The Act also describes the six public uses given priority status within the Refuge System (i.e., hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation).
National Wildlife Refuge System Mission:	The mission is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

National Wildlife Refuge System:	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; areas for the protection and conservation of fish and wildlife that are threatened with extinction; wildlife ranges; game ranges; wildlife management areas; or waterfowl production areas.
National Wildlife Refuge:	A designated area of land, water, or an interest in land or water within the Refuge System.
Native Species:	Species that normally live and thrive in a particular ecosystem.
Noxious Weed:	A plant species designated by federal or state law as generally possessing one or more of the following characteristics: aggressive or difficult to manage; parasitic; a carrier or host of serious insect or disease; or nonnative, new, or not common to the United States. According to the Federal Noxious Weed Act (P.L. 93-639), a noxious weed is one that causes disease or had adverse effects on man or his environment and therefore is detrimental to the agriculture and commerce of the United States and to the public health.
Objective:	A concise statement of what we want to achieve, how much we want to achieve, when and where we want to achieve it, and who is responsible for the work. Objectives derive from goals and provide the basis for determining strategies, monitoring refuge accomplishments, and evaluating the success of strategies. Making objectives attainable, time-specific, and measurable (Service Manual 602 FW 1.6N).
Plant Association:	A classification of plant communities based on the similarity in dominants of all layers of vascular species in a climax community.
Plant Community:	An assemblage of plant species unique in its composition; occurs in particular locations under particular influences; a reflection or integration of the environmental influences on the site such as soils, temperature, elevation, solar radiation, slope, aspect, and rainfall; denotes a general kind of climax plant community.
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 Fire:	The application of fire to wildland fuels to achieve identified land use objectives (Service Manual 621 FW 1.7). May occur from natural ignition or intentional ignition.

Priority Species: Fish and wildlife species that require protective measures and/or management guidelines to ensure their perpetuation. Priority species include the following: (1) State-listed and candidate species; (2) species or groups of animals susceptible to significant population declines within a specific area or statewide by virtue of their inclination to aggregate (e.g., seabird colonies); and (3) species of recreation, commercial, and/or tribal importance.

Public Involvement Plan: Broad long-term guidance for involving the public in the comprehensive conservation planning process.

Public Involvement: A process that offers impacted and interested individuals and organizations an opportunity to become informed about, and to express their opinions on Service actions and policies. In the process, these views are studied thoroughly and thoughtful consideration of public views is given in shaping decisions for refuge management.

Public: Individuals, organizations, and groups; officials of federal, state, and local government agencies; Indian tribes; and foreign nations. It may include anyone outside the core planning team. It includes those who may or may not have indicated an interest in service issues and those who do or do not realize that Service decisions may affect them.

Purposes of the Refuge: "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." For refuges that encompass congressionally designated wilderness, the purposes of the Wilderness Act are additional purposes of the refuge (Service Manual 602 FW 106 S).

Recommended Wilderness: Areas studied and found suitable for wilderness designation by both the Director of the Fish and Wildlife Service and the Secretary of the Department of the Interior, and recommended for designation by the President to Congress. These areas await only legislative action by Congress in order to become part of the Wilderness System. Such areas are also referred to as "pending in Congress" (Draft Service Manual 610 FW 1.5).

Record of Decision (ROD): A concise public record of decision prepared by the federal agency, pursuant to NEPA, that contains a statement of the decision, identification of all alternatives considered, identification of the environmentally preferable alternative, a statement as to whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted (and if not, why they were not), and a summary of monitoring and enforcement where applicable for any mitigation (40 CFR 1505.2).

Refuge Goal: See Goal

Refuge Purposes:	See Purposes of the Refuge
Songbirds: (Also Passerines)	A category of birds that is medium to small, perching landbirds. Most are territorial singers and migratory.
Step-down Management Plan:	A plan that provides specific guidance on management subjects (e.g., habitat, public use, fire, and safety) or groups of related subjects. It describes strategies and implementation schedules for meeting CCP goals and objectives (Service Manual 602 FW 1.6 U).
Strategy:	A specific action, tool, technique, or combination of actions, tools, and techniques used to meet unit objectives (Service Manual 602 FW 1.6 U).
Study Area:	The area reviewed in detail for wildlife, habitat, and public use potential. For purposes of this CCP, the study area includes the lands within the currently approved refuge boundary and potential refuge expansion areas.
Threatened Species (Federal):	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.
Threatened Species (State):	A plant or animal species likely to become endangered in the state within the near future if factors contributing to population decline or habitat degradation or loss continue.
Tiering:	The coverage of general matters in broader environmental impact statements with subsequent narrower statements of environmental analysis, incorporating by reference, the general discussions and concentrating on specific issues (40 CFR 1508.28).
U.S. Fish and Wildlife Service Mission:	The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people.
Unit Objective:	See Objective
Vegetation Type, Habitat Type, Forest Cover Type:	A land classification system based upon the concept of distinct plant associations.
Vision Statement:	A concise statement of what the planning unit should be, or what we hope to do, based primarily upon the Refuge System mission and specific refuge purposes, and other mandates. We will tie the vision statement for the refuge to the mission of the Refuge System; the purpose(s) of the refuge; the maintenance or restoration of the ecological integrity of each refuge and the Refuge System; and other mandates (Service Manual 602 FW 1.6 Z).

Wilderness Study Areas: Lands and waters identified through inventory as meeting the definition of wilderness and undergoing evaluation for recommendation for inclusion in the Wilderness System. A study area must meet the following criteria:

- Generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;
- Has outstanding opportunities for solitude or a primitive and unconfined type of recreation; and
- Has at least 5,000 contiguous roadless acres or is sufficient in size as to make practicable its preservation and use in an unimpaired condition (Draft Service Manual 610 FW 1.5).

Wilderness: See Designated Wilderness

Wildfire: A free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs on wildlands (Service Manual 621 FW 1.7).

Wildland Fire: Every wildland fire is either a wildfire or a prescribed fire (Service Manual 621 FW 1.3

ACRONYMS AND ABBREVIATIONS

BCC Birds of Conservation Concern
BRT Biological Review Team
CCP Comprehensive Conservation Plan
CFR Code of Federal Regulations
cfs cubic feet per second
DOI Department of the Interior
DU Ducks Unlimited
EA Environmental Assessment
EE environmental education
EIS Environmental Impact Statement
EPA U.S. Environmental Protection Agency
ESA Endangered Species Act
FR Federal Register
FTE full-time equivalent
FY Fiscal Year
GIS Global Information System
NEPA National Environmental Policy Act
NRHP National Register of Historic Places
NWR National Wildlife Refuge
NWRS National Wildlife Refuge System
PFT Permanent Full Time
PUNA Public Use Natural Area
RM Refuge Manual
RNA Research Natural Area
ROD Record of Decision
RONS Refuge Operating Needs System
RRP Refuge Roads Program
FWS U.S. Fish and Wildlife Service (also Service)
TFT Temporary Full Time
USC United States Code

Appendix B. References and Literature Citations

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Appendix C. Relevant Legal Mandates and Executive Orders

STATUTE	DESCRIPTION
Administrative Procedures Act (1946)	Outlines administrative procedures to be followed by federal agencies with respect to identification of information to be made public; publication of material in the Federal Register; maintenance of records; attendance and notification requirements for specific meetings and hearings; issuance of licenses; and review of agency actions.
American Antiquities Act of 1906	Provides penalties for unauthorized collection, excavation, or destruction of historic or prehistoric ruins, monuments, or objects of antiquity on lands owned or controlled by the United States. The Act authorizes the President to designate as national monuments objects or areas of historic or scientific interest on lands owned or controlled by the Unites States.
American Indian Religious Freedom Act of 1978	Protects the inherent right of Native Americans to believe, express, and exercise their traditional religions, including access to important sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites.
Americans With Disabilities Act of 1990	Intended to prevent discrimination of and make American society more accessible to people with disabilities. The Act requires reasonable accommodations to be made in employment, public services, public accommodations, and telecommunications for persons with disabilities.
Anadromous Fish Conservation Act of 1965, as amended	Authorizes the Secretaries of Interior and Commerce to enter into cooperative agreements with states and other nonfederal interests for conservation, development, and enhancement of anadromous fish and contribute up to 50 percent as the federal share of the cost of carrying out such agreements. Reclamation construction programs for water resource projects needed solely for such fish are also authorized.
Archaeological Resources Protection Act of 1979, as amended.	This Act strengthens and expands the protective provisions of the Antiquities Act of 1906 regarding archaeological resources. It also revised the permitting process for archaeological research.
Architectural Barriers Act of 1968	Requires that buildings and facilities designed, constructed, or altered with federal funds, or leased by a federal agency, must comply with standards for physical accessibility.
Bald and Golden Eagle Protection Act of 1940, as amended	Prohibits the possession, sale or transport of any bald or golden eagle, alive or dead, or part, nest, or egg except as permitted by the Secretary of the Interior for scientific or exhibition purposes, or for the religious purposes of Indians.

STATUTE	DESCRIPTION
Bankhead-Jones Farm Tenant Act of 1937	Directs the Secretary of Agriculture to develop a program of land conservation and utilization in order to correct maladjustments in land use and thus assist in such things as control of soil erosion, reforestation, conservation of natural resources and protection of fish and wildlife. Some early refuges and hatcheries were established under authority of this Act.
Cave Resources Protection Act of 1988	Established requirements for the management and protection of caves and their resources on federal lands, including allowing the land managing agencies to withhold the location of caves from the public, and requiring permits for any removal or collecting activities in caves on federal lands.
Clean Air Act of 1970	Regulates air emissions from area, stationary, and mobile sources. This Act and its amendments charge federal land managers with direct responsibility to protect the "air quality and related values" of land under their control. These values include fish, wildlife, and their habitats.
Clean Water Act of 1974, as amended	This Act and its amendments have as its objective the restoration and maintenance of the chemical, physical, and biological integrity of the Nation's waters. Section 401 of the Act requires that federally permitted activities comply with the Clean Water Act standards, state water quality laws, and any other appropriate state laws. Section 404 charges the U.S. Army Corps of Engineers with regulating discharge of dredge or fill materials into waters of the United States, including wetlands.
Coastal Barrier Resources Act of 1982 (CBRA)	Identifies undeveloped coastal barriers along the Atlantic and Gulf Coasts and included them in the John H. Chafee Coastal Barrier Resources System (CBRS). The objectives of the act are to minimize loss of human life, reduce wasteful federal expenditures, and minimize the damage to natural resources by restricting most federal expenditures that encourage development within the CBRS.
Coastal Barrier Improvement Act of 1990	Reauthorized the Coastal Barrier Resources Act (CBRA), expanded the CBRS to include undeveloped coastal barriers along the Great Lakes and in the Caribbean, and established "Otherwise Protected Areas (OPAs)." The Service is responsible for maintaining official maps, consulting with federal agencies that propose spending federal funds within the CBRS and OPAs, and making recommendations to Congress about proposed boundary revisions.
Coastal Wetlands Planning, Protection, and Restoration (1990)	Authorizes the Director of the Fish and Wildlife Service to participate in the development of a Louisiana coastal wetlands restoration program, participate in the development and oversight of a coastal wetlands conservation program, and lead in the implementation and administration of a national coastal wetlands grant program.

STATUTE	DESCRIPTION
Coastal Zone Management Act of 1972, as amended	Established a voluntary national program within the Department of Commerce to encourage coastal states to develop and implement coastal zone management plans and requires that "any federal activity within or outside of the coastal zone that affects any land or water use or natural resource of the coastal zone" shall be "consistent to the maximum extent practicable with the enforceable policies" of a state's coastal zone management plan. The law includes an Enhancement Grants Program for protecting, restoring, or enhancing existing coastal wetlands or creating new coastal wetlands. It also established the National Estuarine Research Reserve System, guidelines for estuarine research, and financial assistance for land acquisition.
Emergency Wetlands 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 requires the Secretary to establish a National Wetlands Priority Conservation Plan, required the states to include wetlands in their Comprehensive Outdoor Recreation Plans, and transfers to the Migratory Bird Conservation Fund amounts equal to import duties on arms and ammunition. It also established entrance fees at national wildlife refuges.
Endangered Species Act of 1973, as amended	Provides for the conservation of threatened and endangered species of fish, wildlife, and plants by federal action and by encouraging the establishment of state programs. It provides for the determination and listing of threatened and endangered species and the designation of critical habitats. Section 7 requires refuge managers to perform internal consultation before initiating projects that affect or may affect endangered species.
Environmental Education Act of 1990	This Act established the Office of Environmental Education within the U.S. Environmental Protection Agency to develop and administer a federal environmental education program in consultation with other federal natural resource management agencies, including the Fish and Wildlife Service.
Estuary Protection Act of 1968	Authorized the Secretary of the Interior, in cooperation with other federal agencies and the states, to study and inventory estuaries of the United States, including land and water of the Great Lakes, and to determine whether such areas should be acquired for protection. The Secretary is also required to encourage state and local governments to consider the importance of estuaries in their planning activities relative to federal natural resource grants. In approving any state grants for acquisition of estuaries, the Secretary was required to establish conditions to ensure the permanent protection of estuaries.

STATUTE	DESCRIPTION
Estuaries and Clean Waters Act of 2000	This law creates a federal interagency council that includes the Director of the Fish and Wildlife Service, the Secretary of the Army for Civil Works, the Secretary of Agriculture, the Administrator of the Environmental Protection Agency and the Administrator for the National Oceanic and Atmospheric Administration. The council is charged with developing a national estuary habitat restoration strategy and providing grants to entities to restore and protect estuary habitat to promote the strategy.
Food Security Act of 1985, as amended (Farm Bill)	The Act contains several provisions that contribute to wetland conservation. The Swampbuster provisions state that farmers who convert wetlands for the purpose of planting after enactment of the law are ineligible for most farmer program subsidies. It also established the Wetland Reserve Program to restore and protect wetlands through easements and restoration of the functions and values of wetlands on such easement areas.
Farmland Protection Policy Act of 1981, as amended	The purpose of this law is to minimize the extent to which federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. Federal programs include construction projects and the management of federal lands.
Federal Advisory Committee Act (1972), as amended	Governs the establishment of and procedures for committees that provide advice to the federal government. Advisory committees may be established only if they will serve a necessary, nonduplicative function. Committees must be strictly advisory unless otherwise specified and meetings must be open to the public.
Federal Coal Leasing Amendment Act of 1976	Provided that nothing in the Mining Act, the Mineral Leasing Act, or the Mineral Leasing Act for Acquired Lands authorized mining coal on refuges.
Federal-Aid Highways Act of 1968	Established requirements for approval of federal highways through national wildlife refuges and other designated areas to preserve the natural beauty of such areas. The Secretary of Transportation is directed to consult with the Secretary of the Interior and other federal agencies before approving any program or project requiring the use of land under their jurisdiction.
Federal Noxious Weed Act of 1990, as amended	The Secretary of Agriculture was given the authority to designate plants as noxious weeds and to cooperate with other federal, State and local agencies, farmers' associations, and private individuals in measures to control, eradicate, prevent, or retard the spread of such weeds. The Act requires each Federal land-managing agency, including the Fish and Wildlife Service, to designate an office or person to coordinate a program to control such plants on the agency's land and implement cooperative agreements with the states, including integrated management systems to control undesirable plants.

STATUTE	DESCRIPTION
Fish and Wildlife Act of 1956	Establishes a comprehensive national fish, shellfish, and wildlife resources policy with emphasis on the commercial fishing industry but also includes the inherent right of every citizen and resident to fish for pleasure, enjoyment, and betterment and to maintain and increase public opportunities for recreational use of fish and wildlife resources. Among other things, it authorizes the Secretary of the Interior to take such steps as may be required for the development, advancement, management, conservation, and protection of fish and wildlife resources including, but not limited to, research, development of existing facilities, and acquisition by purchase or exchange of land and water or interests therein.
Fish and Wildlife Conservation Act of 1980, as amended	Requires the Service to monitor nongame bird species, identify species of management concern, and implement conservation measures to preclude the need for listing under the Endangered Species Act.
Fish and Wildlife Coordination Act of 1958	Promotes equal consideration and coordination of wildlife conservation with other water resource development programs by requiring consultation with the Fish and Wildlife Service and the state fish and wildlife agencies where the "waters of a stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted…or otherwise controlled or modified" by any agency under federal permit or license.
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 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.
Fishery (Magnuson) Conservation and Management Act of 1976	Established Regional Fishery Management Councils comprised of federal and state officials, including the Fish and Wildlife Service. It provides for regulation of foreign fishing and vessel fishing permits.
Freedom of Information Act, 1966	Requires all federal agencies to make available to the public for inspection and copying administrative staff manuals and staff instructions; official, published and unpublished policy statements; final orders deciding case adjudication; and other documents. Special exemptions have been reserved for nine categories of privileged material. The Act requires the party seeking the information to pay reasonable search and duplication costs.
Geothermal Steam Act of 1970, as amended	Authorizes and governs the lease of geothermal steam and related resources on public lands. Section 15 c of the Act prohibits issuing geothermal leases on virtually all Service-administrative lands.

STATUTE	DESCRIPTION
Lacey Act of 1900, as amended	Originally designed to help states protect their native game animals and to safeguard U.S. crop production from harmful foreign species, this Act prohibits interstate and international transport and commerce of fish, wildlife or plants taken in violation of domestic or foreign laws. It regulates the introduction to America of foreign species.
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 for 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.
Marine Mammal Protection Act of 1972, as amended	The 1972 Marine Mammal Protection Act established a federal responsibility to conserve marine mammals with management vested in the Department of the Interior for sea otter, walrus, polar bear, dugong, and manatee. The Department of Commerce is responsible for cetaceans and pinnipeds, other than the walrus. With certain specified exceptions, the Act establishes a moratorium on the taking and importation of marine mammals, as well as products taken from them.
Migratory Bird Conservation Act of 1929	Established a Migratory Bird Conservation Commission to approve areas recommended by the Secretary of the Interior for acquisition with Migratory Bird Conservation Funds. The role of the commission was expanded by the North American Wetland Conservation Act to include approving wetlands acquisition, restoration, and enhancement proposals recommended by the North American Wetlands Conservation Council.
Migratory Bird Hunting and Conservation Stamp Act of 1934	Also commonly referred to as the “Duck Stamp Act,” requires waterfowl hunters 16 years of age or older to possess a valid federal hunting stamp. Receipts from the sale of the stamp are deposited into the Migratory Bird Conservation Fund for the acquisition of migratory bird refuges.
Migratory Bird Treaty Act of 1918, as amended	This Act implements various treaties and conventions between the United States and Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Except as allowed by special regulations, this Act makes it unlawful to pursue, hunt, kill, capture, possess, buy, sell, purchase, barter, export or import any migratory bird, part, nest, egg, or product.
Mineral Leasing Act for Acquired Lands (1947), as amended	Authorizes and governs mineral leasing on acquired public lands.

STATUTE	DESCRIPTION
Minerals Leasing Act of 1920, as amended	Authorizes and governs leasing of public lands for development of deposits of coal, oil, gas, and other hydrocarbons; sulphur; phosphate; potassium; and sodium. Section 185 of this title contains provisions relating to granting rights-of-way over federal lands for pipelines.
Mining Act of 1872, as amended	Authorizes and governs prospecting and mining for the so-called "hardrock" minerals (i.e., gold and silver) on public lands.
National and Community Service Act of 1990	Authorizes several programs to engage citizens of the U.S. in full- and/or part-time projects designed to combat illiteracy and poverty, provide job skills, enhance educational skills, and fulfill environmental needs. Among other things, this law establishes the American Conservation and Youth Service Corps to engage young adults in approved human and natural resource projects, which will benefit the public or are carried out on federal or Indian lands.
National Environmental Policy Act of 1969	Requires analysis, public comment, and reporting for environmental impacts of federal actions. It stipulates the factors to be considered in environmental impact statements, and requires that federal agencies employ an interdisciplinary approach in related decision-making and develop means to ensure that unqualified environmental values are given appropriate consideration, along with economic and technical considerations.
National Historic Preservation Act of 1966, as amended	It establishes a National Register of Historic Places and a program of matching grants for preservation of significant historical features. Federal agencies are directed to take into account the effects of their actions on items or sites listed or eligible for listing in the National Register.
National Trails System Act (1968), as amended	Established the National Trails System to protect the recreational, scenic, and historic values of some important trails. National recreation trails may be established by the Secretaries of Interior or Agriculture on land wholly or partly within their jurisdiction, with the consent of the involved state(s), and other land managing agencies, if any. National scenic and national historic trails may only be designated by Congress. Several national trails cross units of the National Wildlife Refuge System.
National Wildlife Refuge System Administration Act of 1966	Prior to 1966, there was no single federal law that governed the administration of the various national wildlife refuges that had been established. This 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(s) for which the refuge was established.

STATUTE	DESCRIPTION
National Wildlife Refuge System Improvement Act of 1997	This Act amends the National Wildlife Refuge System Administration Act of 1966. This Act defines the mission of the National Wildlife Refuge System, establishes the legitimacy and appropriateness of six priority wildlife-dependent public uses, establishes a formal process for determining compatible uses of Refuge System lands, identifies the Secretary of the Interior as responsible for managing and protecting the Refuge System, and requires the development of a comprehensive conservation plan for all refuges outside of Alaska.
Native American Graves Protection and Repatriation Act of 1990	Requires federal agencies and museums to inventory, determine ownership of, and repatriate certain cultural items and human remains under their control or possession. The Act also addresses the repatriation of cultural items inadvertently discovered by construction activities on lands managed by the agency.
Neotropical Migratory Bird Conservation Act of 2000	Establishes a matching grant program to fund projects that promote the conservation of neotropical migratory birds in the united States, Latin America, and the Caribbean.
North American Wetlands Conservation Act of 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 North American Wetlands Conservation Council was created to recommend projects to be funded under the Act to the Migratory Bird Conservation Commission. Available funds may be expended for up to 50 percent of the United States' share cost of wetlands conservation projects in Canada, Mexico, or the United States (or 100 percent of the cost of projects on federal lands).
Refuge Recreation Act of 1962, as amended	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.
Partnerships for Wildlife Act of 1992	Establishes a Wildlife Conservation and Appreciation Fund to receive appropriated funds and donations from the National Fish and Wildlife Foundation and other private sources to assist the state fish and game agencies in carrying out their responsibilities for conservation of nongame species. The funding formula is no more than 1/3 federal funds, at least 1/3 foundation funds, and at least 1/3 state funds.

STATUTE	DESCRIPTION
Refuge Revenue Sharing Act of 1935, as amended	Provided for payments to counties in lieu of taxes from areas administered by the Fish and Wildlife Service. Counties are required to pass payments along to other units of local government within the county, which suffer losses in tax revenues due to the establishment of Service areas.
Rehabilitation Act of 1973	Requires nondiscrimination in the employment practices of federal agencies of the executive branch and contractors. It also requires all federally assisted programs, services, and activities to be available to people with disabilities.
Rivers and Harbors Appropriations Act of 1899, as amended	Requires the authorization by the U.S. Army Corps of Engineers prior to any work in, on, over, or under a navigable water of the United States. The Fish and Wildlife Coordination Act provides authority for the Service to review and comment on the effects on fish and wildlife activities proposed to be undertaken or permitted by the Corps of Engineers. Service concerns include contaminated sediments associated with dredge or fill projects in navigable waters.
Sikes Act (1960), as amended	Provides for the cooperation by the Departments of Interior and Defense with state agencies in planning, development, and maintenance of fish and wildlife resources and outdoor recreation facilities on military reservations throughout the United States. It requires the Secretary of each military department to use trained professionals to manage the wildlife and fishery resource under his jurisdiction, and requires that federal and state fish and wildlife agencies be given priority in management of fish and wildlife activities on military reservations.
Transfer of Certain Real Property for Wildlife Conservation Purposes Act of 1948	This Act provides that upon determination by the Administrator of the General Services Administration, real property no longer needed by a federal agency can be transferred, without reimbursement, to the Secretary of the Interior if the land has particular value for migratory birds, or to a state agency for other wildlife conservation purposes.
Transportation Equity Act for the 21st Century (1998)	Established the Refuge Roads Program, requires transportation planning that includes public involvement, and provides funding for approved public use roads and trails and associated parking lots, comfort stations, and bicycle/pedestrian facilities.
Uniform Relocation and Assistance and Real Property Acquisition Policies Act (1970), as amended	Provides for uniform and equitable treatment of persons who sell their homes, businesses, or farms to the Service. The Act requires that any purchase offer be no less than the fair market value of the property.

STATUTE	DESCRIPTION
Water Resources Planning Act of 1965	Established Water Resources Council to be composed of Cabinet representatives including the Secretary of the Interior. The Council reviews river basin plans with respect to agricultural, urban, energy, industrial, recreational and fish and wildlife needs. The act also established a grant program to assist States in participating in the development of related comprehensive water and land use plans.
Wild and Scenic Rivers Act of 1968, as amended	This Act selects certain rivers of the nation possessing remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values; preserves them in a free-flowing condition; and protects their local environments.
Wilderness Act of 1964, as amended	This Act directs the Secretary of the Interior to review every roadless area of 5,000 acres or more and every roadless island regardless of size within the National Wildlife Refuge System and to recommend suitability of each such area. The Act permits certain activities within designated wilderness areas that do not alter natural processes. Wilderness values are preserved through a "minimum tool" management approach, which requires refuge managers to use the least intrusive methods, equipment, and facilities necessary for administering the areas.
Youth Conservation Corps Act of 1970	Established a permanent Youth Conservation Corps (YCC) program within the Departments of Interior and Agriculture. Within the Service, YCC participants perform many tasks on refuges, fish hatcheries, and research stations.

EXECUTIVE ORDERS	DESCRIPTIONS
EO 11593, Protection and Enhancement of the Cultural Environment (1971)	States that if the Service proposes any development activities that may affect the archaeological or historic sites, the Service will consult with Federal and State Historic Preservation Officers to comply with Section 106 of the National Historic Preservation Act of 1966, as amended.
EO 11644, Use of Off-road Vehicles on Public Land (1972)	Established policies and procedures to ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.
EO 11988, Floodplain Management (1977)	The purpose of this Executive Order is to prevent federal agencies from contributing to the "adverse impacts associated with occupancy and modification of floodplains" and the "direct or indirect support of floodplain development." In the course of fulfilling their respective authorities, federal agencies "shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains."
EO 11989 (1977), Amends Section 2 of EO 11644	Directs agencies to close areas negatively impacted by off-road vehicles.
EO 11990, Protection of Wetlands (1977)	Federal agencies are directed to provide leadership and take action to minimize the destruction, loss of degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands.
EO 12372, Intergovernmental Review of Federal Programs (1982)	Seeks to foster intergovernmental partnerships by requiring federal agencies to use the state process to determine and address concerns of state and local elected officials with proposed federal assistance and development programs.
EO 12898, Environmental Justice (1994)	Requires federal agencies to identify and address disproportionately high and adverse effects of its programs, policies, and activities on minority and low-income populations.

EXECUTIVE ORDERS	DESCRIPTIONS
EO 12906, Coordinating Geographical Data Acquisition and Access (1994), Amended by EO 13286 (2003). Amendment of EOs and other actions in connection with transfer of certain functions to Secretary of DHS.	Recommended that the executive branch develop, in cooperation with state, local, and tribal governments, and the private sector, a coordinated National Spatial Data Infrastructure to support public and private sector applications of geospatial data. Of particular importance to comprehensive conservation planning is the National Vegetation Classification System (NVCS), which is the adopted standard for vegetation mapping. Using NVCS facilitates the compilation of regional and national summaries, which in turn, can provide an ecosystem context for individual refuges.
EO 12962, Recreational Fisheries (1995)	Federal agencies are directed to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities in cooperation with states and tribes.
EO 13007, Native American Religious Practices (1996)	Provides for access to, and ceremonial use of, Indian sacred sites on federal lands used by Indian religious practitioners and direction to avoid adversely affecting the physical integrity of such sites.
EO 13061, Federal Support of Community Efforts Along American Heritage Rivers (1997)	Established the American Heritage Rivers initiative for the purpose of natural resource and environmental protection, economic revitalization, and historic and cultural preservation. The Act directs Federal agencies to preserve, protect, and restore rivers and their associated resources important to our history, culture, and natural heritage.
EO 13084, Consultation and Coordination With Indian Tribal Governments (2000)	Provides a mechanism for establishing regular and meaningful consultation and collaboration with tribal officials in the development of federal policies that have tribal implications.
EO 13112, Invasive Species (1999)	Federal agencies are directed to prevent the introduction of invasive species, detect and respond rapidly to and control populations of such species in a cost effective and environmentally sound manner, accurately monitor invasive species, provide for restoration of native species and habitat conditions, conduct research to prevent introductions and to control invasive species, and promote public education on invasive species and the means to address them. This EO replaces and rescinds EO 11987, Exotic Organisms (1977).

EXECUTIVE ORDERS	DESCRIPTIONS
EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds. (2001)	Instructs federal agencies to conserve migratory birds by several means, including the incorporation of strategies and recommendations found in Partners in Flight Bird Conservation plans, the North American Waterfowl Plan, the North American Waterbird Conservation Plan, and the United States Shorebird Conservation Plan, into agency management plans and guidance documents.

Appendix D. Public Involvement

This appendix summarizes the comments that were received during the public scoping process and during the public review of the Draft Comprehensive Conservation Plan and Environmental Assessment (Draft CCP/EA) for Desecheo National Wildlife Refuge (NWR).

SUMMARY OF PUBLIC SCOPING COMMENTS

A notice of intent to prepare a comprehensive conservation plan for Desecheo NWR was published in the *Federal Register* on December 19, 2008 (73 FR 77828). The Commonwealth of Puerto Rico was notified of the initiation of the planning process on December 11, 2008. Representatives of the Commonwealth of Puerto Rico's Department of Natural and Environmental Resources were invited to participate as a part of the CCP planning team. In addition, personnel from the Caribbean NWR Complex participated with the commonwealth during the preparation of the management plan for the Desecheo Marine Reserve, which surrounds the island refuge.

The Service held a public scoping meeting on March 19, 2009, at the municipal theater/auditorium in Anasco, Puerto Rico. This meeting was announced in advance through news releases sent to local newspapers (*Primera Hora* [online] and *La Estrella*). Individual letters announcing the public scoping meeting were also sent to 17 commonwealth officials; 7 municipalities; 15 federal agency personnel; and 20 educational institutions, nongovernmental organizations, and individuals. E-mail notifications were sent to an additional 46 addressees. The public scoping meeting was attended by 16 individuals; two representing elected officials, three representing government agencies, three representing organizations, and the remainder as individuals. Twenty-six comment sheets were received by mail, e-mail, or hand-delivered. In addition to the comments received during the scoping meeting and in correspondence, Service personnel identified the major issues that needed to be addressed during the planning process. These issues are listed below.

Internal Reviews: The Service's internal biological reviews recommended the control of introduced species (monkeys, goats, rats and plants); control and prevention of illegal activities (smuggling of aliens and drugs and poaching); cleanup of military ordnance; and restoration of habitat.

Commonwealth Reviews: Representatives of elected officials from the Commonwealth of Puerto Rico's Senate and House considered invasive species, ordnance cleanup, illegal aliens, and drug trafficking to be the priority issues that needed to be addressed. They also recommended opening the refuge to the public and the development of ecotourism projects.

Reviews from Partners: The U.S. Army Corps of Engineers' FUDS investigation of ordnance hazards is ongoing. The Corps representative recommended the identification of areas to be used for student (scientific) investigations.

Public Scoping Comments: During public scoping, interested individuals expressed concerns regarding the control or elimination of exotic species; a desire to see the refuge open to the public, or at least permit limited public access; the need to promote and encourage ecotourism; a desire for the refuge to provide public boat access; a recommendation for the refuge to coordinate its activities with the Desecheo Marine Reserve's planning efforts; a request to permit periodic access for ham radio operators; and requests to allow camping on the refuge (which was both recommended and opposed).

Summary of Public Comments on the Draft CCP/EA and Service Responses

A notice of availability of the Draft CCP/EA for Desecheo NWR for public review and comment was published in the *Federal Register* on July 11, 2012 (77FR 40893). The Draft CCP/EA was distributed for public review and comment from July 11 through August 10, 2012. During this public review period, the refuge hosted a public forum on the Draft CCP/EA at the Legislative Assembly Meeting Hall in the Municipality of Rincon, Puerto Rico. Rincón is the town closest to Desecheo Island, and many of the agencies, organizations and individuals interested in the management of the refuge are located in that region of Puerto Rico. The public meeting was announced in advance through mailings to the refuge's contact list and through the distribution of a news release that was published in *El Vocero* on July 25, 2012, and in *El Nuevo Dia* on August 2, 2012. The meeting was held on August 2, 2012, from 4:30 to 6:30 p.m. A presentation about the refuge and the comprehensive planning process was provided by the Project Leader of the Caribbean Islands Refuge Complex. The presentation was followed by an open floor session that solicited questions and comments from the attendees. A total of 15 individuals attended the meeting, and six provided comments and questions. A record of the comments was made by refuge personnel. A total of 18 individuals provided comments on the Draft CCP/EA, either in person during the August 2 public meeting or in writing during the public comment period. All comments were addressed in the development of the final CCP.

AFFILIATIONS OF RESPONDENTS

The table below identifies the names and affiliations of respondents who commented on the Draft CCP/EA, either in writing or during the public meeting.

Name of Respondent	Affiliation
Anita Barnett	Southeast Region, National Park Service
Alcides L. Morales-Pérez	President, SOPI (Sociedad Ornitológica Puertorriqueña Inc.)
Julie Kates	Refuge Associate, Federal Lands Program Defenders of Wildlife
Kirsty J. Swinnerton	Program Manager Island Conservation
Juan Lugo	PR Seismic Network (UPR)
Carlos J. Carrero-Morales	UPR Mayaguez
Frank Gaud	La Estrella Newspaper
Gary Dixon	President International DX Association, Inc
Bob Allphin	President KP1-5 Project (a DX organization)
Charles K. Epps	President , Northern California DX Foundation, Inc.
David C. Patton	American Radio Relay League
Garry H. Ritchie	Individual (radio operator)
Michael Thomas	Individual (radio operator)

Name of Respondent	Affiliation
Neil King	Individual (radio operator)
Ralph E. Fedor, MD	Individual (radio operator)
James Westfall	Individual (Rincón resident)
Rosa Bonet	Individual (Rincón resident)
Antony Smith	Individual (Rincón resident)

The number of affiliations represented in the above table can be summarized as follows: federal agencies, 1; nongovernmental organizations, 10; and general public, 7.

COMMENT MEDIA

The types of media used to deliver the comments received by the refuge and planning staffs are categorized as follows: oral (given during the public meeting), 6; and written letter or e-mail, 12.

GEOGRAPHIC ORIGINS OF RESPONDENTS

The geographic origins of the individual respondents who submitted comments are: Puerto Rico, 8; Georgia, 2; Washington DC, 1; South Carolina, 1; California, 1; Connecticut, 1; West Virginia, 1; Texas, 1; Minnesota, 1; and British Columbia, Canada, 1.

SUMMARY OF CONCERNS AND THE SERVICE'S RESPONSES

The public comments received addressed the following concerns. The Fish and Wildlife Service's responses to each concern are also summarized.

Fish and Wildlife Populations – Species of Concern

Comment: Two commenters suggested that restoration of seabird nesting on Desecheo should include "social attraction" techniques, such as the use of decoys, mirrors, and recorded sounds to encourage nesting.

Service Response: In the discussion of Objective 1-1, the use of decoys was mentioned as a method of attracting potential nesting seabirds. We have expanded this discussion to include the possible use of recordings and other attractive devices.

Comment: Because of the potential for introduction of invasive species, including the Harrisia mealy bug which could devastate the higo chumbo cactus, the use of plant materials from the Cabo Rojo facility for restoration efforts on Desecheo was questioned.

Service Response: The potential introduction of any invasive plant or animal to Desecheo is also a major concern of the Service. We also recognize that in order to restore the habitat that has been greatly modified on Desecheo, it may be necessary to reintroduce some of the native species that have been displaced and no longer have self sustaining populations. The

commenter is correct to note that strict precautions must be taken to ensure invasive species, diseases or pests are not introduced to Desecheo. Any materials that will be introduced to Desecheo will subject to inspection and quarantine as necessary to ensure our restoration efforts do not increase the problems on the island.

Comment: Two of the commenters provided information to update the listings of birds in Appendix I. The information provided included new records for Desecheo from 2009 and 2012, updating of the scientific names (based on current AOU nomenclature), and recommended Spanish names for several of the species.

Service Response: Appendix I has been updated to include the information provided by SOPI and Island Conservation. Corrections to the text of the document have been made to reflect the new information.

Comment: On page 23, remove "possible" from the comment "with the possible exception of bats."

Service Response: The text has been changed to reflect sightings of bats on several occasions between 2009 and 2012. Species of bats are still undetermined.

Comment: Update text to reflect the fact that rats, goats and monkeys are no longer common on Desecheo.

Service Response: The text of the section on mammals has been updated with the following language: "Prior to the initiation of removal projects, the most common mammals on the island were rats, goats, and monkeys. Although these projects are nearly complete, monitoring to ensure confirmation of removal and detection of any reintroductions will continue during the timeframe of this CCP. Detection of additional invasive animals could result in reinitiation of a removal project."

Habitats – Studies

Comment: Systematic surveys and banding should be implemented especially during breeding and migratory seasons.

Service Response: As noted in the project descriptions of the CCP, the Service recognizes that inventorying and monitoring of both plant and animal populations are critical to ensuring the biological integrity and effective management of the refuge. The first project listed in the plan would provide the necessary staff, equipment, and materials for developing and implementing a detailed inventorying and monitoring program. This step-down plan and its implementation will include routine surveys and banding to address this comment.

Comment: Suggestion that restoration goals embrace the potential for reestablishment of plant and animal species extirpated from the island or are threatened elsewhere in the region.

Service Response: While the Service recognizes the need to restore populations of many species, the focus of this plan is to bring back the conditions on Desecheo that will permit the reestablishment of its function as a major seabird nesting site. Although the species listed in the comment letter are of concern, we believe attempting to restore many species would limit our chances for success with our primary goals.

Comment: Add a strategy to identify the potential impact of invasive ant species to seabird recovery and implement control or eradication where possible.

Service Response: Although the document does not make specific reference to problems with ants, we believe the monitoring for success of nesting and recovery of seabird populations will enable us to identify issues and adapt our management where necessary.

Comment: Several of the comments referred to additional detailed strategies that could be developed to improve the chances for restoration of seabird nesting, endangered species recovery, control of invasive species, and monitoring of wildlife and habitat.

Service Response: In addition to the strategies provided in the CCP, the Service will be developing a series of step-down management plans that will provide additional detailed management actions to ensure the greatest probability of success. Among these additional plans are: a wildlife inventory plan, a habitat management plan, and an invasive species control plan. The comments provided during this CCP process will be considered and incorporated into the appropriate step-down plan.

Visitor Services (Public Use)

Comment: Use of visual and/or acoustic recording sensors for wildlife monitoring could also enhance environmental education and interpretation.

Service Response: Video and sound recordings have been used successfully at numerous refuges to provide an enhanced educational experience. This recommendation will be considered during the development of future interpretation and education programs. A strategy has been incorporated in Chapter IV under Objective 4.1.

Comment: Eight of the comment letters received were from ham radio organizations or individuals. These letters were very supportive of the management plan and consistently recommended further cooperative actions between the Service and the ham radio organizations.

Service Response: We appreciate the comments and support the radio operators have provided. Some of the letters referenced the following statement in Chapter III: “permit periodic access to ham radio operators.” We should note that this statement is in a list of issues identified during the public scoping process. We would like to clarify that this statement is not a formal position of the Service or a management action that is proposed in the plan. The commenters recognized that, as a nonwildlife-oriented use, ham radio operations are subject to determinations of appropriateness and compatibility. The commenters also recognized that wildlife considerations take precedence over other uses. Because Desecheo NWR is being actively managed to remove invasive species, restore wildlife use, and reduce threats from unexploded ordnance, any future nonwildlife-oriented uses must be evaluated for appropriateness and compatibility under the conditions at the time of the proposed use.

Administration – Personnel Management

Comment: Develop new partnerships with nonprofit and academic organizations to address research and conservation goals.

Service Response: Objective 5-4 is to maintain existing partnerships and establish new ones as necessary to complete refuge objectives and strategies. We have added an additional strategy to ensure consideration of new partnerships. Additional language has also been added to the discussion of partnerships in Chapter V, Plan Implementation.

Comment: Will the Puerto Rico Seismic Network continue to have access to monitoring equipment located on Desecheo?

Service Response: Yes, but because of the unexploded ordnance, any work on the island will require accompaniment by a certified FWS employee or the worker will need to take training to identify and avoid issues with unexploded ordnance.

Comment: Have any studies been conducted about the unexploded ordnance on Desecheo?

Service Response: Yes, the U.S. Army Corps of Engineers has conducted preliminary studies under their Formerly Used Defense Sites (FUDS) program. Preliminary findings are online at http://www.saj.usace.army.mil/Divisions/ProgramProjectMgt/Branches/IIS/FUDS/DOCS/Projects/Other/FactSheets/I02PR0069_DesecheoIsland.pdf .

Comment: Can radar be placed on the island and can it be used for military target practice as it was previously?

Service Response: As long as Desecheo is managed as a national wildlife refuge, any use must be determined to be both appropriate and compatible with the purposes of the refuge.

Comment: A request was made for the placement of buoys in the marine reserve around Desecheo.

Service Response: Since the Desecheo Marine Reserve is managed by the Puerto Rico DNER, installation and maintenance of any mooring buoys would be carried out by that agency.

Comment: A concern was expressed about helicopters flying around the island.

Service Response: Because of its location in the Mona Channel, Desecheo is sometimes used as a drop-off site for undocumented aliens and drugs. Some of the helicopters seen flying around the island are conducting law enforcement activities associated with these illegal activities. Very rarely, the FWS uses helicopters for management programs and access.

Comment: It was recommended that we integrate the DNER's Marine Reserve Plan with the CCP.

Service Response: The Service recognizes the need to coordinate the management of the refuge with the programs and activities of the Desecheo Marine Reserve that surrounds the island. In order to ensure coordination with the appropriate entities, we have included Objective 5.4 in Chapter IV of the CCP. This objective and the associated strategies call for maintaining existing and developing new partnerships to further the management of the refuge. The Service considers coordination with other natural resource agencies to be a very important component of all of its management programs.

Comment: **I**f an oil spill occurred from a passing ship, how would it be handled?

Service Response: There are oil spill contingency plans in place for all of Puerto Rico. The lead agency for coordinating cleanup efforts is normally the U.S. Coast Guard. The Fish and Wildlife Service, the National Marine Fisheries Service, the Commonwealth's Department of Natural and Environmental Resources, and several other agencies work with the Coast Guard to identify and prioritize cleanup activities to minimize adverse impacts to the resources.

Appendix E. Appropriate Use Determinations

Desecheo National Wildlife Refuge Appropriate Use Determinations

An appropriate use determination is the initial decision process a refuge manager follows when first considering whether or not to allow a proposed use on a refuge. The refuge manager must find that a use is appropriate before undertaking a compatibility review of the use. This process clarifies and expands on the compatibility determination process by describing when refuge managers should deny a proposed use without determining compatibility. If a proposed use is not appropriate, it will not be allowed and a compatibility determination will not be undertaken.

Except for the uses noted below, the refuge manager must decide if a new or existing use is an appropriate refuge use. If an existing use is not appropriate, the refuge manager will eliminate or modify the use as expeditiously as practicable. If a new use is not appropriate, the refuge manager will deny the use without determining compatibility. Uses that have been administratively determined to be appropriate are:

- Six wildlife-dependent recreational uses - As defined by the National Wildlife Refuge System Improvement Act of 1997, the six wildlife-dependent recreational uses (hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation) are determined to be appropriate. However, the refuge manager must still determine if these uses are compatible.

- Take of fish and wildlife under state regulations - States have regulations concerning take of wildlife that includes hunting, fishing, and trapping. The Service considers take of wildlife under such regulations appropriate. However, the refuge manager must determine if the activity is compatible before allowing it on a refuge.

Statutory Authorities for this policy:

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. This law provides the authority for establishing policies and regulations governing refuge uses, including the authority to prohibit certain harmful activities. The Act does not authorize any particular use, but rather authorizes the Secretary of the Interior to allow uses only when they are compatible and "under such regulations as he may prescribe." This law specifically identifies certain public uses that, when compatible, are legitimate and appropriate uses within the Refuge System. The law states ". . . it is the policy of the United States that . . .compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the System . . .compatible wildlife-dependent recreational uses are the priority general public uses of the System and shall receive priority consideration in refuge planning and management; and . . . when the Secretary determines that a proposed wildlife-dependent recreational use is a compatible use within a refuge, that activity should be facilitated . . . the Secretary shall . . . ensure that priority general public uses of the System receive enhanced consideration over other general public uses in planning and management within the System . . . ." The law also states "in administering the System, the Secretary is authorized to take the following actions: . . . issue regulations to carry out this Act." This policy implements the standards set in the Act by providing enhanced consideration of priority general public uses and ensuring other public uses do not interfere with our ability to provide quality, wildlife-dependent recreational uses.

Refuge Recreation Act of 1962, 16 U.S.C. 460k. The 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.

Other Statutes that Establish Refuges, including the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) (16 U.S.C. 410hh - 410hh-5, 460 mm - 460mm-4, 539-539e, and 3101 - 3233; 43 U.S.C. 1631 et seq.).

Executive Orders. The Service must comply with Executive Order 11644 when allowing use of off-highway vehicles on refuges. This order requires the Service to designate areas as open or closed to off-highway vehicles in order to protect refuge resources, promote safety, and minimize conflict among the various refuge users; monitor the effects of these uses once they are allowed; and amend or rescind any area designation as necessary based on the information gathered. Furthermore, Executive Order 11989 requires the Service to close areas to off-highway vehicles when it is determined that the use causes or will cause considerable adverse effects on the soil, vegetation, wildlife, habitat, or cultural or historic resources. Statutes, such as ANILCA, take precedence over executive orders.

Definitions:

Appropriate Use
A proposed or existing use on a refuge that meets at least one of the following four conditions.

1) The use is a wildlife-dependent recreational use as identified in the Improvement Act.
2) The use contributes to fulfilling the refuge purpose(s), the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the Improvement Act was signed into law.
3) The use involves the take of fish and wildlife under state regulations.
4) The use has been found to be appropriate as specified in Section 1.11.

Native American. American Indians in the conterminous United States and Alaska Natives (including Aleuts, Eskimos, and Indians) who are members of federally recognized tribes.

Priority General Public Use. A compatible wildlife-dependent recreational use of a refuge involving hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.

Quality. The criteria used to determine a quality recreational experience include:

- Promotes safety of participants, other visitors, and facilities.
- Promotes compliance with applicable laws and regulations and responsible behavior.
- Minimizes or eliminates conflicts with fish and wildlife population or habitat goals or objectives in a plan approved after 1997.
- Minimizes or eliminates conflicts with other compatible wildlife-dependent recreation.
- Minimizes conflicts with neighboring landowners.
- Promotes accessibility and availability to a broad spectrum of the American people.
- Promotes resource stewardship and conservation.

- Promotes public understanding and increases public appreciation of America's natural resources and the Service's role in managing and protecting these resources.
- Provides reliable/reasonable opportunities to experience wildlife.
- Uses facilities that are accessible and blend into the natural setting.
- Uses visitor satisfaction to help define and evaluate programs.

Wildlife-Dependent Recreational Use. As defined by the Improvement Act, a use of a refuge involving hunting, fishing, wildlife observation, wildlife photography, and environmental education and interpretation.

The Fish and Wildlife Service policy for appropriate uses on national wildlife refuges states that the policy does not apply to refuge management activities. These are activities that are designed to conserve fish, wildlife, and plants and their habitats and are conducted by the Refuge System or a Refuge System-authorized agent to fulfill a refuge purpose(s) or the Refuge System mission. These activities may include fish and wildlife population or habitat management such as, but not limited to: prescribed burns, water level management, invasive species control, routine scientific monitoring, law enforcement activities, and maintenance of existing refuge facilities. In addition, commonwealth DNER activities are not subject to this policy when they: (1) directly contribute to the achievement of refuge purpose(s), refuge goals, and the Refuge System mission, as determined by the refuge manager in writing; (2) are addressed in a document such as a memorandum of understanding or a comprehensive conservation plan (CCP); or (3) are approved under national policy.

As noted in the first section of this Appendix, several public uses have been administratively determined to be appropriate on national wildlife refuges, Desecheo NWR is considered to be unsafe because of unexploded ordnance and hazardous terrain. The planning team for this CCP has determined that until such time as the unexploded ordnance and other hazards are addressed, the refuge will remain closed to all general public access and activities. During the term of this plan, only those activities necessary to accomplish management goals, objectives, and strategies will be permitted on Desecheo NWR.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: Desecheo National Wildlife Refuge

Use: Research, Studies and Scientific Collection

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	X	
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	X	
(c) Is the use consistent with applicable executive orders and Department and Service policies?	X	
(d) Is the use consistent with public safety?	X	
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	X	
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	X	
(g) Is the use manageable within available budget and staff?	X	
(h) Will this be manageable in the future within existing resources?	X	
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	X	
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	X	

Where we do not have jurisdiction over the use ["no" to (a)], there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ["no" to (b), (c), or (d)] may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes _X_ No ___

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ___ Appropriate _X_

Refuge Manager: Signed Date: 8/17/2012

If found to be Not Appropriate, the refuge supervisor does not need to sign concurrence if the use is a new use.
If an existing use is found Not Appropriate outside the CCP process, the refuge supervisor must sign concurrence.
If found to be Appropriate, the refuge supervisor must sign concurrence.

Refuge Supervisor: Signed Date: 08/29/2012

A compatibility determination is required before the use may be allowed.

Appendix F. Compatibility Determinations

DESECHEO NATIONAL WILDLIFE REFUGE COMPATIBILITY DETERMINATIONS

Introduction: The Fish and Wildlife Service reviewed potential uses for compatibility during the process of developing the Comprehensive Conservation Plan for Desecheo National Wildlife Refuge.

Uses: The following use was evaluated to determine its compatibility with the mission of the National Wildlife Refuge System and the purposes of the refuge:

- Research, Studies and Scientific Collection

Refuge Name: Desecheo National Wildlife Refuge

Date Established: 1976

Establishing and Acquisition Authorities: 16 U.S.C. 667b, An Act Authorizing the Transfer of Certain Real Property for Wildlife; and 16 U.S.C. 668dd(a)(2), the National Wildlife Refuge System Administration Act.

Refuge Purpose: The above referenced establishing authorities identify the refuge purposes as "… particular value in carrying out the national migratory bird management program. 16 U.S.C. 667b (An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)

National Wildlife Refuge System Mission: The mission of the National Wildlife Refuge System, as defined by the National Wildlife Refuge System Improvement Act of 1997, 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 (34 Stat. 225)
Migratory Bird Treaty Act of 1918 (15 U.S.C. 703-711; 40 Stat. 755)
Migratory Bird Conservation Act of 1929 (16 U.S.C. 715r; 45 Stat. 1222)
Migratory Bird Hunting Stamp Act of 1934 (16 U.S.C. 718-178h; 48 Stat. 451)
Criminal Code Provisions of 1940 (18 U.S.C. 41)
Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d; 54 Stat. 250)
Refuge Trespass Act of June 25, 1948 (18 U.S.C. 41; 62 Stat. 686)
Fish and Wildlife Act of 1956 (16 U.S.C. 742a-742j; 70 Stat.1119)
Refuge Recreation Act of 1962 (16 U.S.C. 460k-460k-4; 76 Stat. 653)
Wilderness Act (16 U.S.C. 1131; 78 Stat. 890)
Land and Water Conservation Fund Act of 1965
National Historic Preservation Act of 1966, as amended (16 U.S.C. 470, et seq.; 80 Stat. 915)
National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd, 668ee; 80 Stat. 927)
National Environmental Policy Act of 1969, NEPA (42 U.S.C. 4321, et seq; 83 Stat. 852)

Use of Off-Road Vehicles on Public Lands (Executive Order 11644, as amended by Executive Order 10989)
Endangered Species Act of 1973 (16 U.S.C. 1531 et seq; 87 Stat. 884)
Refuge Revenue Sharing Act of 1935, as amended in 1978 (16 U.S.C. 715s; 92 Stat. 1319)
National Wildlife Refuge Regulations for the Most Recent Fiscal Year (50 CFR Subchapter C; 43 CFR 3101.3-3)
Emergency Wetlands Resources Act of 1986 (S.B. 740)
North American Wetlands Conservation Act of 1990
Food Security Act (Farm Bill) of 1990 as amended (HR 2100)
The Property Clause of the U.S. Constitution Article IV 3, Clause 2
The Commerce Clause of the U.S. Constitution Article 1, Section 8
The National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57, USC668dd)
Executive Order 12996, Management and General Public Use of the National Wildlife Refuge System. March 25, 1996
Title 50, Code of Federal Regulations, Parts 25-33
Archaeological Resources Protection Act of 1979
Native American Graves Protection and Repatriation Act of 1990

Description of Use: Research, Studies, and Scientific Collection

Scientific research or studies conducted by or for the refuge to aid the administration of the refuge, advance the mission of the National Wildlife Refuge System, and protect the health, biological integrity, and diversity of Desecheo NWR do not require a compatibility determination. Other research activities and scientific studies may be periodically conducted by local, state, or federal agencies; schools and universities; and nonprofit organizations when these projects are shown to benefit the management of the refuge. The assistance provided by the refuge may range from minimal to substantial, depending on the benefits to the Service. The activities include data gathering for hypothesis testing, modeling, monitoring, and surveys. This use also includes permitting the collection of animals, fish, plants, soils, and water for monitoring and research purposes. The research and collection activities will vary in scope and duration to satisfy the requirements of the research project or survey. Projects may involve everything from a limited one-time sampling or survey to the establishment of long-term study plots that are routinely visited.

During the course of these scientific investigations, all plants and animals will be captured, handled, released, collected, and curated following the best scientific practices and standards established by respected scientific societies, as well as the Service's policies and guidelines for scientific collecting and research.

Proposals for research and studies on the refuge that do not directly support the refuge or the mission of the Service will be evaluated and if deemed beneficial, a special use permit will be issued as an agreement between the researcher and the refuge. The special use permit will outline the guidelines that the researcher must follow while conducting research on the refuge.

Availability of Resources: The current and proposed refuge staff is adequate to administer permits and provide oversight for the level of request to conduct scientific studies that are currently received. Any request for additional support, such as lodging, equipment, transportation or facility use, will be

evaluated based on the potential for benefit to the refuge's management program and will be addressed in any permit that is issued.

Anticipated Impacts of the Use: Research activities, like any other human intrusion, can disturb wildlife and their habitats. For example, the presence of researchers can cause birds to flush from resting, feeding or nesting sites. Efforts to capture animals can cause disturbance, injury, or death to groups of wildlife or to individuals. Repeated sampling activities can cause compaction of soils and the trampling of vegetation. Because of the limited numbers of researchers, the temporary nature of any disturbance, and the small number of plants and/or animals involved, the impacts should not be significant.

Each proposal will be reviewed for appropriateness and consistency with the Service's policies for conducting research and this compatibility determination, prior to the issuance of a special use permit and annually thereafter for multi-year projects. There should be no significant adverse impacts from scientific research because factors such as the purpose of the project, data collection methods, number of researchers, transportation, project timing and duration, and location of study sites will determine the extent of effects on the refuge. The knowledge gained from the research activities should provide information towards improving management techniques for trust resource species.

There should not be any long-term negative impacts of approved research activities. The long-term benefits associated with species' population trends and improved management techniques should outweigh any negative impacts that may occur.

Determination (check one below):

	Use is Not Compatible
X	Use is Compatible, with the Listed Stipulations

Stipulations Necessary to Ensure Compatibility: All research conducted on the refuge must not conflict with the purposes of the refuge and the mission of the National Wildlife Refuge System. Each request for use of the refuge for research will be examined on its individual merits. All research will adhere to established refuge policy on research and policy on collecting specimens (Director's Order Number 109). To ensure that research activities are compatible, the refuge requires that a special use permit be obtained before any research activity may occur. Research proposals and/or research special use permit applications must be submitted in advance of the activity to allow for review by the refuge staff to ensure minimal impacts to the refuge's resources, staff, and programs. Each special use permit may contain conditions under which the research will be conducted. Each special use permit holder will submit annual reports to the refuge, updating the refuge on his or her research activities, progress, findings, and other information. Further, each special use permit holder will provide copies of the findings, final reports, publications, and/or other documentation at the end of each project. The refuge will deny permits for research proposals that conflict with the purposes of the refuge and the mission of the National Wildlife Refuge System. The refuge will also deny permits for research proposals that are determined to negatively impact resources or that materially interfere with or detract from the purposes of the refuge. All research activities are subject to the conditions of their permits.

The following stipulations apply to special use permits issued for scientific research. Monitoring authorized research activities by the refuge manager or biologist will ensure compliance with the permit's general and special conditions:

- 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 the permit.

- The permit may be cancelled or revised at any time by the refuge manager in case of emergency, unsatisfactory compliance, or determination of incompatibility with the purpose of the refuge.
- In accordance with the Archaeological Resources Protection Act (16 U.S.C. 470aa), the removal or disturbance of archaeological or historic artifacts is prohibited. The excavation, disturbance, collection or purchase of historical, ethnological, or archaeological specimens or artifacts is prohibited.
- All waste materials and markers must be removed from the refuge upon the permittee's departure.
- Construction of structures is prohibited unless prior approval is obtained.

Justification: Research activities provide important information that contributes to the general knowledge of the refuge and to the natural resources supported by the refuge. Even when not directly supporting management activities, research conducted on the refuge can lead to new discoveries, new facts, verified information, and increased knowledge and understanding of resource management, as well as track current trends in fish and wildlife habitat and populations to enable better management decisions. Research has the potential to further the purposes of the refuge and the mission of the National Wildlife Refuge System. Research projects will be designed to minimize impacts and disturbance.

NEPA Compliance for Refuge Use Description: *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

Public Review and Comment:
This compatibility determination was made available for public review and comment during the public review period established for the Draft Comprehensive Conservation Plan and Environmental Assessment (Draft CCP/EA) for Desecheo National Wildlife Refuge. A notice of availability of the Draft CCP/EA for public review and comment was published in the *Federal Register* on July 11, 2012 (77FR 40893). Public comments on the Draft CCP/EA were accepted from July 11, 2012 through August 10, 2012. During this public review period, the refuge hosted a public forum on the Draft CCP/EA at the Legislative Assembly Meeting Hall in the Municipality of Rincon, Puerto Rico. Rincón is the town closest to Desecheo Island, and many of the agencies, organizations and individuals interested in the management of the refuge are located in that region of Puerto Rico. The public meeting was announced in advance through mailings to the refuge's contact list and through the distribution of a news release that was published in *El Vocero* on July 25, 2012, and in *El Nuevo Dia* on August 2, 2012. The public meeting was held on August 2, 2012, from 4:30 to 6:30 p.m. A presentation about the refuge and the CCP process was provided by the Project Leader of the Caribbean Islands Refuge Complex. The presentation was followed by questions and comments from the attendees. A total of 15 individuals attended the meeting and six provided comments and questions. A record of the comments was made by refuge personnel. A total of 18 individuals provided comments on the Draft CCP/EA, either during the August 2 public meeting or in writing during the public comment period. All comments were addressed in the development of the final CCP.

Mandatory 10-year Re-evaluation Date: 9/28/2022

APPROVAL OF COMPATIBILITY DETERMINATION

The signature of approval is for the compatibility determination considered within the Comprehensive Conservation Plan for Desecheo National Wildlife Refuge. If this descriptive use is considered for compatibility outside of the comprehensive conservation plan, the approval signature is part of that determination.

Refuge Manager: Signed 8/17/2012
(Signature/Date)

Regional Compatibility Coordinator: Signed 9/17/12
(Signature/Date)

Refuge Supervisor: Signed 09/18/12
(Signature/Date)

Regional Chief, National Wildlife Refuge System, Southeast Region: Signed 9-27-12
(Signature/Date)

Appendix G. Intra-Service Section 7 Biological Evaluation

INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM

Originating Person: Susan Silander
Telephone Number: 787-851-7258
E-Mail: susan_silander@fws.gov

Date: 1/28/2011

PROJECT NAME: Desecheo National Wildlife Refuge Comprehensive Conservation Plan

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: U.S. Fish and Wildlife Service

III. Station Name: Desecheo National Wildlife Refuge

IV. Description of Proposed Action

The proposed action would result in the implementation of the Comprehensive Conservation Plan (CCP) for the Desecheo National Wildlife Refuge, composed of Desecheo Island, an island of approximately 301 acres, located in the Mona Channel 13 miles west of Rincon, Puerto Rico. Approval and subsequent implementation of the CCP will direct management actions on the Refuge for the next 15 years.

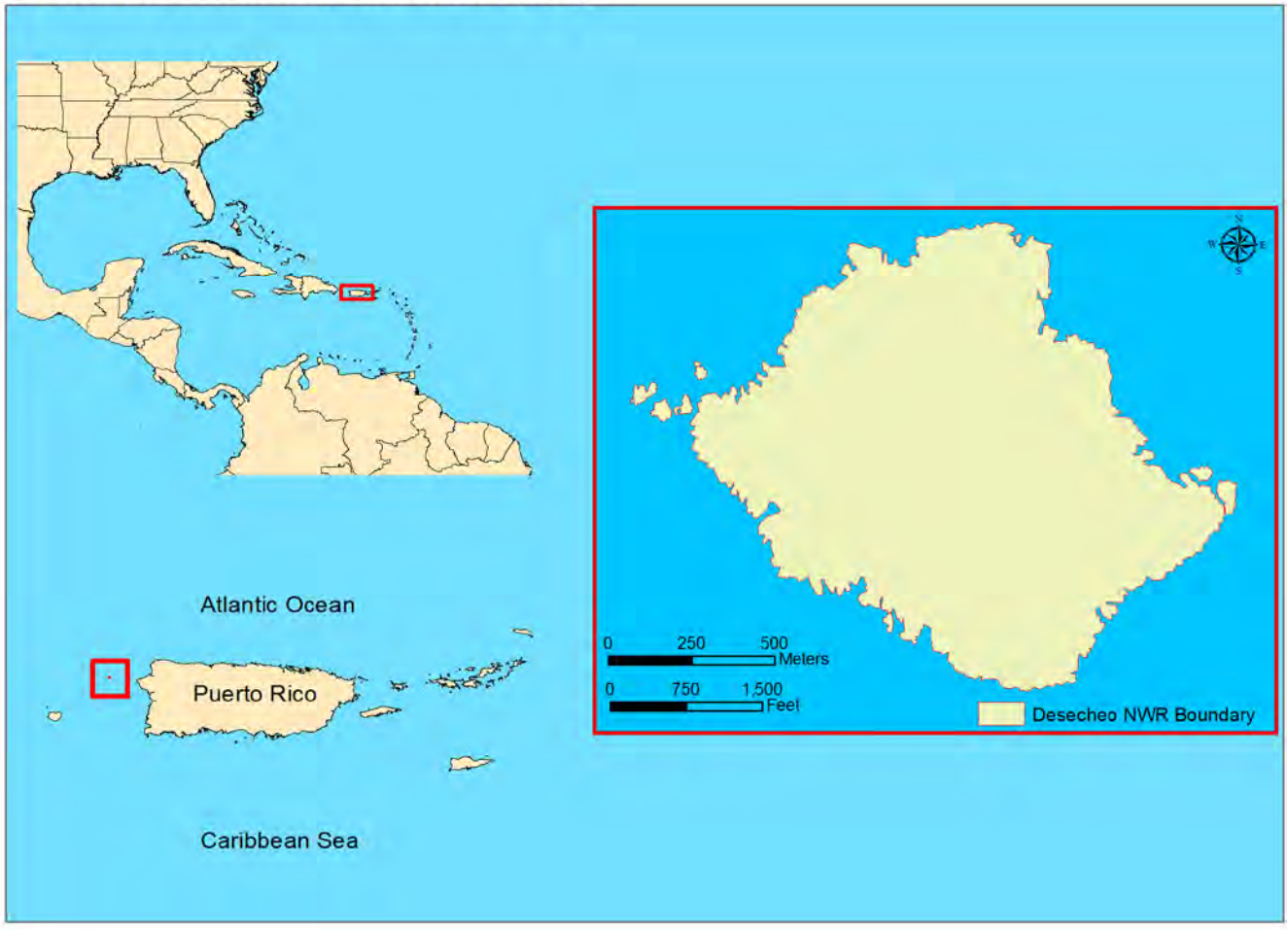
V. Pertinent Species and Habitat:

SPECIES/CRITICAL HABITAT	STATUS[1]
Higo Chumbo Cactus (*Harrisia portoricensis*)	T
Green Sea Turtle (*Chelonia mydas*)	T
Hawksbill Sea Turtle (*Eretmochelys imbricata*)	E

[1]STATUS: E=endangered, T=threatened, PE=proposed endangered, PT=proposed threatened, CH=critical habitat, PCH=proposed critical habitat, C=candidate species, S/A=Similar Appearance

VI. Location (attach map):

Location of Desecheo National Wildlife Refuge



A. Ecoregion Number and Name: Ecoregion #35 - Caribbean Ecosystem

B. County and State: Municipality of Mayagüez, Puerto Rico

C. **Section, township, and range (or latitude and longitude:** 18.37°N 67.48°W

D. Distance (miles) and direction to nearest town: N/A

E. Species/habitat occurrence:

Higo Chumbo Cactus – Habitat and species both occur.
Green sea turtle – Habitat and species both occur on or adjacent to refuge.
Hawksbill sea turtle - Habitat and species both occur on or adjacent to refuge.

VII. Determination of Effects:

A. Explanation of effects of the action on species and critical habitats in item V.

SPECIES/ CRITICAL HABITAT	IMPACTS TO SPECIES/CRITICAL HABITAT
Higo Chumbo Cactus	Planned management activities involve propagation of *Harrisia* at the Cabo Rojo Refuge with replanting at appropriate sites on Desecheo. No negative impacts foreseen
Green Sea Turtle	Periodic monitoring of potential nesting sites and habitat adjacent to Desecheo. No negative impacts foreseen
Hawksbill Sea Turtle	Periodic monitoring of potential nesting sites and habitat adjacent to Desecheo. No negative impacts foreseen

B. Explanation of actions to be implemented to reduce adverse effects:

SPECIES/ CRITICAL HABITAT	ACTIONS TO MITIGATE/MINIMIZE IMPACTS
Higo Chumbo Cactus	Plants on the refuge will be monitored and protected and, where possible, new populations in protected areas will be established to increase survival potential.
Green Sea Turtle	Monitoring, education and cooperation with partners will continue and enforcement of protection regulations will increase.
Hawksbill Sea Turtle	Monitoring, education and cooperation with partners will continue and enforcement of protection regulations will increase.

VIII. Effect Determination and Response Requested:

SPECIES/CRITICAL HABITAT	DETERMINATION[1]			REQUESTED
	NE	NA	AA	
Higo Chumbo Cactus		X		Concurrence
Green Sea Turtle		X		Concurrence
Hawksbill Sea Turtle		X		Concurrence

[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".

Signed
Signature (originating station)

12/23/2011
Date

Project Leader
Title

IX. Reviewing Ecological Services Office Evaluation:

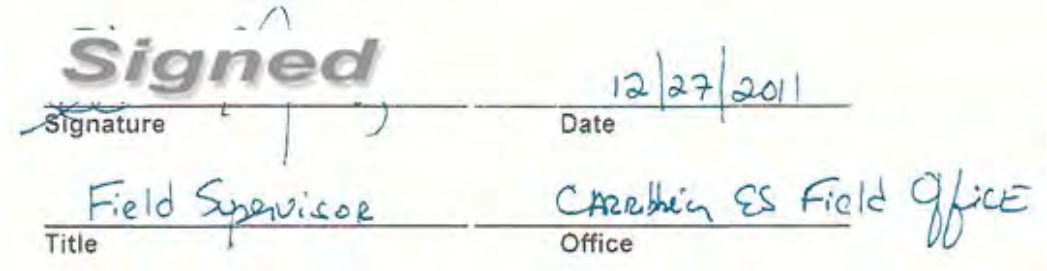
A. Concurrence _____ Nonconcurrence _____

B. Formal consultation required _____

C. Conference required _____

D. Informal conference required _____

E. Remarks (attach additional pages as needed):



Appendix H. Wilderness Review

The Wilderness Act of 1964 defines a wilderness area as an area of federal land that retains its primeval character and influence, without permanent improvements or human inhabitation, and is managed so as to preserve its natural conditions and which:

1. generally appears to have been influenced primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;

2. has outstanding opportunities for solitude or primitive and unconfined types of recreation;

3. has at least 5,000 contiguous roadless acres or is of sufficient size to make practicable its preservation and use in an unimpeded condition; or is a roadless island, regardless of size;

4. does not substantially exhibit the effects of logging, farming, grazing, or other extensive development or alteration of the landscape, or its wilderness character could be restored through appropriate management at the time of review; and

5. may contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

The lands within Desecheo NWR were reviewed for their suitability in meeting the criteria for wilderness, as defined by the Wilderness Act of 1964. No lands in the refuge were found to meet these criteria. Therefore, the suitability of refuge lands for wilderness designation is not further analyzed in this plan.

Appendix I. Refuge Biota

Birds / Aves

Family	English Name	Spanish Name	Scientific name
PROCELLARIIDAE*	Audubon's shearwater*	Pampero de Audubon*	*Puffinus lherminieri**
PHAETHONTIDAE	White-tailed tropicbird	Chirre coliblanco*	*Phaethon lepturus*
SULIDAE	Masked Booby	Boba enmascarada	*Sula dactylatra*
	Brown Booby	Boba parda	*Sula leucogaster*
	Red-footed Booby	Boba patirroja	*Sula sula*
PELECANIDAE	Brown Pelican	Pelícano pardo	*Pelecanus occidentales*
FREGATIDAE	Magnificent Frigatebird	Tijereta	*Fregata magnificens*
ARDEIDAE	Great Blue Heron	Garzón cenizo	*Ardea herodias*
	Green Heron*	Martinete	*Butorides virescens**
	Cattle Egret	Garza ganadera	*Bubulcus ibis*
	Great Egret	Garza real	*Casmerodius albus*
	Yellow-crowned Heron	Yaboa común	*Nycticorax violacea*
ACCIPITRIDAE	Northern Harrier	Gavilán de Cienaga*	*Circus cyaneus*
	Red-tailed Hawk	Guaraguao colirrojo	*Buteo jamaicensis*
	Osprey	Aguila pescadora	*Pandion haliaetus*
FALCONIDAE	Peregrine Falcon	Falcón peregrino	*Falco peregrines*
	American Kestrel	Falcón común	*Falco sparverius*
	Merlin	Falcón migratorio	*Falco columbarius*
CHARADRIIDAE	Killdeer	Playero sabanero	*Charadrius vociferus*
HAEMATOPODIDAE	American Oystercatcher	Ostrero	*Haematopus palliatus*

Family	English Name	Spanish Name	Scientific name
RECURVIROSTRIDAE	Black-necked Stilt	Viuda	*Himantopus mexicanus*
SCOLOPACIDAE	Ruddy Turnstone	Playero turco	*Arenaria interpres*
	Upland Sandpiper	Playero pradero*	*Bartramia longicauda*
	Spotted Sandpiper	Playero coleador	*Actitis macularia*
STERNIDAE	Roseate Tern*	Palometa*	*Sterna dougalii**
	Bridled Tern	Charrán monja*	*Onychoprion anaethetus*
	Sooty Tern	Charrán oscura*	*Onychoprion fuscatus**
	Royal Tern	Charrán real*	*Thalasseus maxima**
	Sandwich Tern	Charrán piquiaguda*	*Thalasseus sandvicensis**
	Brown Noddy	Cervera	*Anous stolidus*
LARIDAE	Laughing Gull	Gaviota gallega	*Leucophaeus atricilla*
COLUMBIDAE	White-crowned Pigeon	Paloma cabeciblanca	*Patagioenas leucocephala*
	Scaly-naped Pigeon	Paloma turca	*Patagioenas squamosa*
	Zenaida Dove	Tórtola cardosantera	*Zenaida aurita*
	Common Ground-Dove	Rolita	*Columbina passerina*
CUCULIDAE	Yellow-billed Cuckoo	Pájaro bobo piquiamarillo	*Coccyzus americanus*
	Mangrove Cuckoo	Pájaro bobo menor	*Coccyzus minor*
	Smooth-billed Ani	Judío	*Crotophaga ani*
CAPRIMULGIDAE*	Antillean Nighthawk*	Querequequé*	*Chordeiles gundlachii*
	Chuck-will's-widow*	Guabairo de la Carolina*	*Antrostomus carolinensis**
NYCTIBIIDAE	Common Potoo	Nictibio norteño*	*Nyctibius griseus*
APODIDAE	Alpine Swift	Vencejo real*	*Apus melba*

Family	English Name	Spanish Name	Scientific name
TROCHILIDAE	Antillean Mango	Zumbador dorado	*Anthracothorax dominicus*
ALCEDINIDAE	Belted Kingfisher	Martín pescador	*Megaceryle alcyon**
TYRANNIDAE	Gray Kingbird	Pitirre	*Tyrannus dominicensis*
HIRUNDINIDAE	Caribbean Martin	Golondrina de iglesias	*Progne dominicensis*
	Tree Swallow	Golondrina vientriblanca	*Tachycineta bicolor*
	Bank Swallow	Golondrina parda	*Riparia riparia*
	Barn Swallow	Golondrina de horquilla	*Hirundo rustica*
	Cave Swallow	Golondrina de cuevas	*Peochelidon fulva**
MIMIDAE	Northern Mockingbird	Ruiseñor	*Mimus polyglottos*
	Pearly-eyed Thrasher	Zorzal pardo	*Margarops fuscatus*
BOMBYCILLIDAE	Cedar Waxwing	Ampelis Americano*	*Bombycilla cedrorum*
VIREONIDAE	White-eyed Vireo	Vireo ojiblanco*	*Vireo griseus*
	Black-whiskered Vireo	Julián Chiví*	*Vireo altiloquus*
EMBERIZIDAE	Cape May Warbler	Reinita tigre	*Setophaga tigrina**
	Black-throated blue Warbler	Reinita azul	*Setophaga caerulescens**
	Yellow-rumped Warbler	Reinita coronada	*Setophaga coronata**
	Black-throated green Warbler*	Reinita verdosa*	*Setophaga virens**
	Northern Parula	Reinita pechidorada	*Setophaga Americana**
	Yellow-throated Warbler	Reinita gargantiamarilla	*Setophaga dominica**
	Bay-breasted Warbler	Reinita castaña	*Setophaga castanea**
	Prairie Warbler	Reinita galena	*Setophaga discolor**

Family	English Name	Spanish Name	Scientific name
	Palm Wabler	Reinita palmera	*Setophaga palmarum**
	Blackpole Warbler	Reinita rayada	*Setophaga striata**
	Ovenbird	Pizpita dorada	*Seiurus aurocapilla**
	Common Yellowthroat	Reinita pica tierra	*Geothlypis trichas*
	Hooded Warbler	Reinita de capucha	*Setophaga citrina**
	Indigo Bunting	Gorrión azul	*Passerina cyanea*
	Northern Waterthrush	Pizpita de mangle	*Parkesia noveboracensis**
	American Redstart*	Candelita*	*Stetophaga ruticilla**
	Shiny Cowbird	Tordo lustroso	*Molothrus bonariensis*
CARDINALIDAE*	Blue Grosbeak*	Picogrueso azul*	*Passerina caerulea**
PASSERIDAE	House Sparrow	Gorrión ingles	*Passer domesticus*
ESTRILDIDAE	Orange-cheeked Waxbill	Veterano mejillianaranjado	*Estrilda melpoda*
	Bronze Mannikin	Diablito	*Lonchura cucullata*

** indicates information added or changed in accordance with recommendations of SOPI and Island Conservation*

Reptiles and Amphibians/Anfibios y Reptiles

English Name	Spanish Name	Scientific Name
Desecheo anole	Lagartijo	*Anolis desechensis*
Desecheo Dwarf Gecko		*Sphaerodactylus levinsi*
Slippery-back Skink		*Mabuya mabouya*
Desecheo ground lizard	Siguana	*Ameiva exsul desechensis*

English Name	Spanish Name	Scientific Name
Puerto Rican Racer	Culebra Corredora	Alsophis portoricensis
		Borikenophis ricardi
Green Sea Turtle	Peje Blanco	*Chelonia mydas mydas*
Atlantic Hawksbill Turtle	Carey	*Eretmochelys imbricata imbricata*

Desecheo Flora
(Prepared by Dr. Gary Breckon 2012)

The following listing is an abstracted update of Breckon's checklist for Desecheo Island (Breckon 2000). In parenthesis after the species name is the period or periods for which the plants were collected (1 = 1913-1914; 2=1967-1970; 3=1994-1997). Brackets around the period indicate a cited species was accepted without a voucher specimen being located. Breckon's collecting on Desecheo was exhaustive and indicates the chance of extirpation is very high for species not collected since period 1 or 2.

Dr. Breckon has noted that a number of the new records made during period 3 are probably adventives. The populations were very small and occurred at a time when predation by goats was very severe (*i.e.*, *Nephrolepis brownii*, *Tridax procumbens*, *Terminalia catappa*, *Melochia pyramidata*, *Oeceoclades maculata*, *Eragrostis pilosa* and *Pilea microphylla*). The continued success of these species on the island is questionable.

An asterisk before the species name indicates that it is known to be an exotic to the area.

PTERIDOPHYTES

LOMARIOPSIDACEAE (includes Nephrolepidaceae)
Nephrolepis brownii (Desv.) Hovenkamp & Miyamoto (3)
Nephrolepis multiflora (Roxb.) F.M. Jarrett *ex* C.V. Morton

PTERIDACEAE
Cheilanthes microphylla (Sw.) Sw. (1,2,3)

ANGIOSPERMS

AIZOACEAE
Sesuvium portulacastrum (L.) L. (1,2,3)
Trianthema portulacastrum L. (2,3)

AMARANTHACEAE (includes Chenopodiaceae)
Achyranthes aspera* L. var. *aspera (2,3)
Centrostachys indica (L.) Standl.
**Amaranthus blitum* L. (2)
Amaranthus dubius Mart. *ex* Thell. (1)
Celosia nitida Vahl (1,2)
Iresine angustifolia Euphrasén (1,2,3)
Iresine difusa Humb. & Bonpl. *ex* Willd. (2)
Iresine celosia L.

AMARYLLIDACEAE
**Crinum zeylanicum* (L.) L. (3)
Crinum latifolium (L.) L. var. *zeylanicum* (L.) Hook. *f.*

APOCYNACEAE (includes Asclepiadaceae)
Allotoonia agglutinata (Jacq.) J.F. Morales & J.K. Williams (1,2)
Echites agglutinatus Jacq.
Prestonia agglutinata (Jacq.) Woodson
**Calotropis procera* (Aiton) W.T. Aiton* (3)
Matelea marítima (Jacq.) Woodson (1)
Ibatia maritima (Jacq.) Decne.
Metastelma decipiens Schltr. (2,3)
Cynanchum cheesmanii Woodson
Metastelma fallax Schltr.
Metastelma grisebachianm Schlrt. (2,3) Note Acevedo-Rodríguez (2005) includes this species in *M. decipiens*; Axelrod (2011) recognizes both species as distinct.
Cynanchum grisebachianum (Schlrt.) Alain
Melastelma decaisneanum Schlrt.

ASTERACEAE (Compositae)
Chromolaena odorata (L.) R.M. King & H. Rob. (1,2,3)
Eupatorium odoratum L.
Osmia odorata (L.) Sch. Bip.
Conyza bonariensis (L.) Cronquist (2)
Leptilon bonariense (L.) Small
**Conyza canadensis* (L.) Cronquist (2)
Conyza canadense (L.) Cronquist var. *pusilla* (Nutt.) Cronquist
Leptilon canadense (L.) Britton
Leptilon pusillum (Nuttall) Britton
**Cyanthillium cinereum* (L.) H. Rob. (2,3)
Vernonia cinerea (L.) Less.
Lepidaploa glabra (Willd.) H. Rob. (1,2,3)
Vernonia albicaulis Pers.
Pectis linifolia L. var. *linifolia* (1,2,3)
**Sonchus oleraceus* L. (2,3) [Not found on subsequent visits.]
**Tridax procumbens* L. (3) [Not found on subsequent visits.]
Wedelia calycina Rich. (1,2,3)
Wedelia calycina Rich. var. *parviflora* (Rich.) Alain
Wedelia lanceolata DC.
Wedelia parviflora Rich.

BIGNONIACEAE
**Crescentia cujete* L. (Excluded)
Macfadyena unguis-cati (L.) A.H. Gentry ()1,2,3
Bignonia unguis-cati L.
Batocydia unguis Mart.

BORAGINACEAE
Bourreria succulenta Jacq. (2,3) [Cited in Britton and Wilson, NY material on loan]
Bourreria revoluta Kunth
Bourreria succulenta Jacq. var. *revoluta* (Kunth) O.E. Schultz
**Cordia sebestena* L. (Excluded) [This species is only known from cultivation in PR]
Sebesten sebestena (L.) Britton
Heliotropium angiospermum Murray (1,2,3)
Heliotropium parviflorum L.
Schobera angiosperma (Murray) Britton
Rochefortia acanthophora (DC.) Griseb. (3)
Tournefortia volubilis L. (1,2,3)
Tournefortia microphylla Bertero *ex* Spreng.

BRASSICACEAE (Cruciferae)
Cakile lanceolata (Willd.) O.E. Schulz (1)

BROMELIACEAE
Tillandsia bulbosa Hook. (2)
Tillandsia recurvata (L.) L. (1,2,3)
Tillandsia utriculata L. (1,2,3)

BURSERACEAE
Bursera simaruba (L.) Sarg. (1,2,3)
Elaphrium simaruba (L.) Rose

CACTACEAE
Harrisia portoricensis Britton (1,2,3)
Mammillaria nivosa Link ([1],[2],[3]) [The first two reports are with photos.]
Neomammillaria nivosa (Link) Britton & Rose
Melocactus intortus (Mill.) Urb. ([1],[2],[3]) [Only 1 individual was found in 1994.]
Cactus intortus Mill.
Opuntia moniliformis (L.) Haw. *ex* Steud. (1,[2],3)
Consolea moniliformis (L.) Britton
Opuntia repens Bello ([2],3)
Opuntia stricta (Haw.) Haw. (1,[2],[3])
Opuntia dillenii (Ker Gawl.) Haw.
Opuntia tricantha (Willd.) Buxb. (1,[2].3)
Pilosocereus royenii (L.) Byles & G.D. Rowley ([1],[2],3)
Cephalocereus royenii (L.) Britton & Rose
Stenocereus fimbriatus (Lam.) Lourteig (1,[2],3)
Lemairocereus hystrix (Haw.) Britton & Rose
Stenocereus hystrix (Haw.) Buxb.
Stenocereus peruvianus (Mill.) R. Kiesling

CAPPARACEAE (excluding Cleomaceae)
Cynophalla amplissima (Lam.) Iltis & Cornejo (Excluded)
Capparis amplissima Lam.
Capparis portoricensis Urb.
Cynophalla flexuosa (L.) J. Presl (1,2,3)
Capparis flexuosa (L.) L.
Quadrella cynophallophora (L.) Hutch. (1,2,3)
Capparis cynophallophora L.
Quadrella indica (L.) Iltis & Cornejo (2,3)
Capparis breynia Jacq.
Capparis indica (L.) Druce
Morisonia americana L. (1,[2])

CARICACEAE
**Carica papaya* L. [Not in original checklist.]

CLEOMACEAE (formerly in Capparaceae)
**Arivela viscosa* (L.) Raf. [Not in original checklist.]
Cleome viscosa L.
Cleome icosandra L.

CLUSIACEAE (Guttiferae)
Clusia rosea Jacq. (1,2,3)

COMBRETACEAE
Conocarpus erectus L. (1,2,3)
**Terminalia catappa* L. (3)

COMMELINACEAE
Commelina erecta L. (1,2,3)
Commelina elegans Kunth
Commelina virginica L.

CONVOLVULACEAE (including Cuscutaceae)
Convolvulus nodiflorus Desr. (1,2)
Jacquemontia nodiflora (Desr.) G. Don
Cuscuta americana L. (3)
Ipomoea indica (Burm.) Merr. var. *acuminata* (Vahl) Fosberg (2,3)
Ipomoea acuminata (Vahl) Roem. & Schult.
Ipomoea cathartica Poir.
**Ipomoea nil* (L.) Roth (Excluded)
Ipomoea pes-caprae (L.) R. Br. subsp. *brasiliensis* (L.) Ooststr. (2,3)
Ipomoea triloba L. (2)
Ipomoea violacea L. (1,2,3)
Calonyction tuba (Schltdl.)
Ipomoea macrantha Roem. & Schult.
Ipomoea tuba (Schltdl.) G. Don
Jacquemontia pentanthos (Jacq.) G. Don (2)

CYPERACEAE
Cyperus ligularis L. (2)
Mariscus ligularis (L.) Kunth
Cyperus planifolius Rich. (1,2,3)
Mariscus planifolius (Rich.) Urb.
Cyperus rotundus L. (3)

ERYTHROXYLACEAE
Erythroxylum brevipes DC. (1,2,3) [Included in *Erythroxylum rotundifolium* Lunan by some authors.]

EUPHORBIACEAE (excluding Phyllanthaceae)
Adelia ricinella L. (Excluded)
Ricinella ricinella (L.) Britton
Croton betulinus Vahl (Excluded) Reported as abundant and a preferred food by the goats.
Croton discolor Willd. (3)
Euphorbia articulata Aubl. (1,2,3)
Chamaesyce articulata (Aubl.) Britton
Chamaesyce vahlii (Willd, *ex* Klotzsch & Garcke) P. Wilson
Euphorbia vahlii Willd. *ex* Klotzsch & Garcke
Euphorbia hirta L. (2)
Chamaesyce hirta (L.) Millsp.
Gymnanthes lucida Sw. (1,2,3)
Ateramnus lucidus (Sw.) Rothm.
Hippomane mancinella L. (1,2,3)
Jatropha gossypiifolia L. (1,2,3)
Adenoropium gossypiifolium (L.) Pohl

FABACEAE–CAESALPINIOIDEAE (Caesalpiniaceae)
Chamaecrista nictitans (L.) Moench subsp. *patellaria* (Collad.) H.S. Irwin & Barneby var. *glabrata* (Vogel) H.S. Irwin & Barneby (1,2)
Chamaecrista aeschinomene (DC. *ex* Collad.) Greene
Senna occidentalis (L.) Link (1,2,3)
Cassia occidentalis L.
Ditremexa occidentalis (L.) Britton & Rose

FABACEAE-FABOIDEAE (Fabaceae)
Canavalia rosea (Sw.) DC. (2)
Canavalia lineata DC.
Canavalia maritima (Aubl.) Urb.
Coursetia caribaea (Jacq.) Lavin (1,2)
Benthamantha caribaea (Jacq.) Kuntze
Cracca caribaea (Jacq.) Benth.
Galactia dubia DC. (1,2)
Galactia striata (Jacq.) Urb. (2)
Rhynchosia reticulata (Sw.) DC. (2,3)
Tephrosia cinerea (L.) Pers. (1,2,3)
Cracca cinerea (L.) Morong

FABACEAE–MIMOSOIDEAE (Mimosaceae)
Cojoba arborea (L.) Britton & Rose (*Excluded*)
    Pithecellobium arboreum (L.) Urb.
Desmanthus virgatus (L.) Willd. (1,2,3)
    Acuan insulare Britton & Rose
    Acuan virgatum (L.) Medik.
    Desmanthus depressus Humb. & Bonpl. *ex* Willd.
Pithecellobium unguis-cati (L.) Benth. (1,2,3)

LAMIACEAE (Labiatae)
Salvia serotina L. (2,3)

MALPIGHIACEAE
Stigmaphyllon emarginatum (Cav.) A. Juss. (1,2,3)
    Stigmaphyllon lingulatum (Poir.) Small
    Stigmaphyllon periplocifolium (Desf. *ex* DC.) A. Juss.

MALVACEAE (includes Bombacaceae, Sterculiaceae, Tiliaceae)
Ayenia insulicola Cristóbal (1,2,3)
    Ayenia pustulia L., misapplied
Bastardia viscosa (L.) Kunth var. *viscosa* (2,3)
Corchorus hirsutus L. ([1],2)
Malvastrum corchorifolium (Desr.) Britton *ex* Small (1,2)
Malvastrum coromandelianum (L.) Garcke (1,[2])
Melochia pyramidata L. (3)
    Moluchia pyramidata (L.) Britton
Melochia tomentosa L. (1,2,3)
    Moluchia tomentosa (L.) Britton
Pseudabutilon umbellatum (L.) Fryxell (2,3)
    Abutilon umbellatum (L.) Sweet
Sida abutifolia Mill. (1,2)
    Sida procumbens Sw.
Sida acuta Burm. *f.* (2)
    Sida carpinifolia L. *f.*
    Sida stipulata Cav., misapplied
Sida cordifolia L. (3)
Sida glabra Mill. (1,2,3)
Sidastrum multiflorum (Jacq.) Fryxell (1,2,3)
    Sida acuminata DC.
Waltheria indica L. (2)
    Waltheria americana L.
Wissadula hernandioides (L'Hér.) Garcke (1)
    Wissadula amplissima (L.) R.E. Fr., misapplied

MORACEAE
Ficus citrifolia Mill. (1,2,3)
    Ficus laevigata Vahl

MYRTACEAE
Eugenia axillaris (Sw.) Willd. (1,2,3)
Eugenia foetida Pers. (2,3)
Eugenia buxiflora (Sw.) Willd.
Eugenia rhombea (O. Berg.) Krug & Urb. (1,2,3)

NYCTAGINACEAE
Boerhavia coccinea Mill. (1,2,3)
Boerhavia diffusa L. (2)
Boerhavia paniculata L.C. Rich.
Guapira discolor (Spreng.) Little (1,2,3)
Torrubia discolor (Spreng.) Britton
Guapira fragrans (Dum. Cours.) Little (2)
Pisonia fragrans Dum. Cours.
Torrubia fragrans (Dum. Cours.) Standl.
Pisonia subcordata Sw. (**Excluded**)

OLEACEAE
Forestiera segregata (Jacq.) Krug & Urb. (2,3)

ORCHIDACEAE
**Oeceoclades maculata* (Lindl.) Lindl. (3)

PASSIFLORACEAE
Passiflora suberosa L. (1,2)
Passiflora pallida L.

PHYLLANTHACEAE (Traditionally included in the Euphorbiaceae)
Flueggea acidoton (L.) G.L. Webster (2,3)
Securinega acidoton (L.) Fawc. & Rendle
Phyllanthus amarus Schumach. (2,3)
Phyllanthus swarzii Kostel.
Savia sessiliflora (Sw.) Willd. (1,2,3)

PHYTOLACCACEAE
Petiveria alliacea L. (1,2,3)
Rivina humilis L. (1,2)

PIPERACEAE
Peperomia humilis A. Dietr. (1,2,3)
Peperomia questeliana Stehlé & Trel.

PLUMBAGINACEAE
Plumbago scandens L. (2,3)

POACEAE (Gramineae)
Andropogon leucostachyus Kunth (1)
Aristida adscensionis L. (2,3)
**Bothriochloa pertusa* (L.) Camus (2,3)
Cenchrus brownii Roem. & Schult. (2)
    Cenchrus viridis Spreng.
Cenchrus echinatus L. (2)
Cenchrus myosuroides Kunth (2)
    Cenchropsis myosuroides (Kunth) Nash
Chloris barbata Sw. (2)
    Chloris inflata Link
    Chloris paraguaiensis Steud.
Digitaria ciliaris (Retz.) Koeler (2)
Digitaria insularis (L.) Fedde (1,2,3)
    Trichachne insularis (L.) Nees
    Valota insularis (L.) Chase
**Eragrostis pilosa* (L.) P. Beauv. (3)
Heteropogon contortus (L.) Beauv. ex Roem. & Schult. (**Excluded**)
Lasiacis divaricata (L.) Hitchc. (1)
Leptochloa panicea (Retz.) Ohwi subsp. *brachiata* (Steud.) N. Snow (2)
    Leptochloa filiformis (Lam.) P. Beauv., *nom. inval.*
**Megathyrsus maximus* (Jacq.) B.K. Simon & S.W.L. Jacobs (2,3) [Nearly extirpated by 1997.]
    Panicum maximum Jacq.
    Urochloa maxima (Jacq.) R.D. Webster
**Melinis repens* (Willd.) Zizka (2,3)
    Tricholaena repens (Willd.) Hitchc.
    Tricholaena rosea Nees
Pappophorum pappiferum (Lam.) Kuntze (1,2,3)
Paspalum laxum Lam. (1,2,3)
    Paspalum glabrum Poir.
Setaria setosa (Sw.) P.Beauv. var. *setosa* (1,2,3)
    Chaetochloa raiflora (Milkan) Hitchc. & Chase
    Chaetochloa setosa (Sw.) Scribn.
    Seteria rariflora Milkan
Setaria utowanaea (Scribn.) Pilg. var. *utowanaea* (1,2)
    Panicum utowanaeum Scribn.
Sporobolus indicus (L.) R. Br. (Excluded)
    Sporobolus angustus Buckley
    Sporobolus berteroanus (Trin.) Hitchc. & Chase
Sporobolus jacquemontii Kunth (2) [This is probably the *S. indicus*, cited by Woodbury et al.]
    Sporobolus indicus (L.) R. Br., misapplied
Sporobolus virginicus (L) Kunth ([1], [2])
Uniola virgata (Poir.) Griseb. (2,3)
    Leptochloopsis virgata (Poir.) H.O.Yates
Urochloa adspersa (Trin.) R.D. Webster (2)
    Brachiaria adspersa (Trin.) Parodi
    Panicum adspersum Trin.
Urochloa fusca (Sw.) B.F. Hansen & Wunderlin (2,3)
    Brachiaria fasciculata (Sw.) Parodi
    Panicum fasciculatum Sw.

POLYGONACEAE
Coccoloba diversifolia Jacq. (2,3)
Coccoloba laurifolia Jacq.
Coccoloba uvifera (L.) L. (1,2,3)

PORTULACACEAE (Excluding Taliniaceae)
Portulaca oleracea L. (1,2,3)

RHAMNACEAE
Colubrina elliptica (Sw.) Brizicky & W.L. Stearn (1,2,3)
Colubrina reclinata (L'Hér.) Brogn.
Krugiodendron ferreum (Vahl) Urb. (1,2,3)

RUBIACEAE
Erithalis fruticosa L. (2)
Erithalis revoluta Urb.
Guettarda elliptica Sw. (1,[2],3)
Spermacoce verticillata L. (2)
Borreria verticillata (L.) G. Meyer

RUTACEAE
Amyris elemifera L. (1,2,3)

SALICACEAE (includes Flacourtiaceae)
Casearia aculeata Jacq. (Excluded)

SAPINDACEAE
Cardiospermum corindum L. (2,3)
**Melicoccus bijugatus* Jacq. (1)

SAPOTACEAE
Sideroxylon obovatum Lam. (1,2,3)
Bumelia krugii Pierre
Bumelia obovata (Lam.) A. DC.
Bumelia obovata var. *krugii* (Pierre) Cronq.

SIMAROUBACEAE
Castela erecta Turpin (**Excluded**) [Woodbury et al cite ROW 195 as for Desecheo, but no specimen has been located.]

SOLANACEAE
**Capsicum frutescens* L. (1)
Solanum bahamense L. (1,2,3)
Solanum persicifolium Dunal
Solanum racemosum Jacq.
Solanum rugosum Dunal (**Excluded**)

TALINACEAE (Traditionally in Portulacaceae.)
Talinum paniculatum (Jacq.) Gaertn. (1,2)

ULMACEAE
Celtis iguanaea (Jacq.) Sarg. (1,2,3)
Momisia iguanaea (Jacq.) Rose & Standl.
Celtis trinervia Lam. (2)

URTICACEAE
Pilea microphylla (L.) Liebm. (3)

VERBENACEAE
Citharexylum spinosum L. (1,2,3)
Citharexylum fruticosum L.
Duranta erecta L. (1,2,3)
Duranta repens L.
Lantana involucrata L. (1,2,3)

VITACEAE
Cissus verticillata (L.) Nicolson & C. E. Jarvis subsp. *verticillata* (1,2)
Cissus sicyoides L.

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Appendix J. Budget Requests

The refuge's budget requests are documented in the Refuge Operating Needs System (RONS) and Service Asset and Maintenance Management System (SAMMS) databases that include a wide variety of new and maintenance refuge projects.

The RONS and SAMMS lists are constantly updated and include priority projects. Please contact the refuge for the most current RONS and SAMMS lists. Please refer to Chapter V, Plan Implementation, for the key budget requests associated with the proposed projects and staffing. Chapter V includes the proposed projects, which are linked to the applicable objectives, and Table 5, which identifies the needed staff, first-year costs, and recurring costs for the outlined projects.

Appendix K. List of Preparers

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Appendix L. Consultation and Coordination

OVERVIEW

The comprehensive planning process for Desecheo National Wildlife Refuge involved several consultation and coordination efforts with the public, other agencies, and interested groups and individuals. The process incorporated a public scoping meeting that was held on March 19, 2009, at the municipal theater/auditorium in Anasco, Puerto Rico. The attendees at this public scoping meeting identified a variety of issues, concerns, and opportunities for future management of the refuge, which were ultimately used in preparing this comprehensive conservation plan. In addition, the refuge's Draft Comprehensive Conservation Plan and Environmental Assessment (Draft CCP/EA) was distributed for public review and comment from July 11 through August 10, 2012. During this public review period, the refuge hosted a public forum on the Draft CCP/EA on August 2, 2012, at the Legislative Assembly Meeting Hall in the Municipality of Rincon, Puerto Rico. The public scoping and Draft CCP/EA comments are summarized in Appendix D, Public Involvement.

In addition to the public comments, the planning process included the expertise, suggestions, and recommendations of a wide variety of natural resource professionals, including managers and biologists from the Service; the Commonwealth of Puerto Rico's Department of Natural and Environmental Resources; the U.S. Army Corps of Engineers; other federal, commonwealth, and local government agencies; and nongovernmental organizations. A complete description of the overall public involvement and planning process—including the issues and concerns—is provided in Chapter III, Plan Development, of the comprehensive conservation plan.

The major issues identified were as follows:

- ***Internal Reviews:*** The Service's internal biological reviews recommended the control of introduced species (monkeys, goats, rats and plants); control and prevention of illegal activities (smuggling of aliens and drugs and poaching); cleanup of military ordnance; and restoration of habitat.

- ***Commonwealth Reviews:*** Representatives of elected officials from the Commonwealth of Puerto Rico's Senate and House considered invasive species, ordnance cleanup, illegal aliens, and drug trafficking to be the priority issues that needed to be addressed. They also recommended opening the refuge to the public and the development of ecotourism projects.

- ***Tribes:*** None.

- ***Reviews from Partners:*** The U.S. Army Corps of Engineers' FUDS investigation of ordnance hazards is ongoing. The Corps representative recommended the identification of areas to be used for student (scientific) investigations.

- ***Public Scoping Comments:*** During public scoping, interested individuals expressed concerns regarding the control or elimination of exotic species; a desire to see the refuge open to the public, or at least permit limited public access; the need to promote and encourage ecotourism; a desire for the refuge to provide public boat access; a recommendation for the refuge to coordinate its activities with the Desecheo Marine Reserve's planning efforts; a request to permit periodic access for ham radio operators; and requests to allow camping on the refuge, which was both recommended and opposed.

Appendix M. Finding of No Significant Impact

Introduction

The U.S. Fish and Wildlife Service (Service) proposes to protect and manage certain fish and wildlife resources on Desecheo National Wildlife Refuge (NWR) in Puerto Rico. An environmental assessment was prepared to inform the public of the possible environmental consequences of implementing the Comprehensive Conservation Plan (CCP) for Desecheo National Wildlife Refuge. A description of the alternatives, the rationale for selecting the preferred alternative, the environmental effects of the preferred alternative, the potential adverse effects of the action, and a declaration concerning the factors determining the significance of effects, in compliance with the National Environmental Policy Act of 1969, are outlined below. The supporting information can be found in the Environmental Assessment, which was Section B of the Draft Comprehensive Conservation Plan for Desecheo National Wildlife Refuge.

Alternatives

In developing the Comprehensive Conservation Plan for Desecheo National Wildlife Refuge, the Service evaluated three alternatives: Alternative A , Current Management (No Action); Alternative B, Public Use; and Alternative C, Habitat and Wildlife Restoration and Limited Public Use (Preferred Alternative).

Each alternative is summarized below.

Alternative A: Current Management (No Action)

Under Alternative A, Desecheo NWR would continue to be managed as it at present over the 15-year life of the CCP. This alternative is required by NEPA and is the “no-action” or “status-quo” alternative in which no major management changes would be initiated by the Service. This alternative also provides a baseline to compare the current habitat, wildlife, and public use management to the two other alternatives (B and C). Alternative A would continue the refuge’s current management strategies, with little or no change in budget or funding. Management emphasis would continue to focus on maintaining and restoring the biological integrity of the habitats found on the refuge.

As with the other alternatives, the refuge would pursue five goals. The wildlife management goal is to monitor, protect, and recover special status plants and animals and species of management interest. Under Alternative A, refuge personnel would continue with periodic efforts to survey and manage for seabird restoration as well as continue periodic surveys of endemic reptiles. The refuge would also continue opportunistic surveys and protection of nesting hawksbill sea turtles and their nests and eggs; opportunistic surveys of migratory landbirds; and opportunistic surveys of the federally threatened higo chumbo cactus.

The second goal calls for the conservation, enhancement and restoration of native plant communities and their associated wildlife, representative of the native biological diversity that would have been found on Desecheo Island prior to the introduction of exotic species and human activities on the island. Under Alternative A, the refuge would continue with removal of invasive animal species and begin monitoring of vegetation plots across the island to evaluate success of forest restoration efforts. However, there would be no active monitoring of climate change.

The resource protection goal focuses on cooperation with partners to protect the refuge's plant and animal resources and staff from illegal activity. With regard to human and drug trafficking, Desecheo NWR would continue cooperation with partnering agencies to provide surveillance and enforcement that protects refuge resources from illegal activities. In order to combat poaching (illegal hunting and harvesting), the refuge would continue to monitor illegal hunting and harvesting, and as necessary, conduct enforcement activities.

Goal 4 addresses public use, and calls for providing opportunities for environmental education, interpretation, and wildlife observation and photography to enhance management programs, public appreciation, understanding, and recognition of the importance of Desecheo NWR. Alternative A would continue to provide limited environmental education and interpretation by maintaining the refuge's website and fact sheets. Opportunistic offshore wildlife observation and photography would continue to be available from the waters surrounding the refuge. In terms of nonwildlife-dependent activities, the refuge staff would continue to respond to periodic, special requests to visit the refuge for nonwildlife-dependent uses that are appropriate and compatible.

The fifth goal is to provide adequate staffing and funding to accomplish the refuge's goals and objectives while encouraging cooperative efforts with other agencies, nongovernmental organizations (NGOs), universities, and other partners. The refuge would continue to work with cooperating agencies and partners to clean up and increase safety on the refuge. For the foreseeable future, the refuge would continue to be closed to access to protect the public from unexploded ordnance and other hazards. Access to the refuge and refuge management would continue to be limited by the lack of open-water boats and other equipment. No staff would be specifically assigned to or stationed at the refuge, and it would be managed from the Complex headquarters in Boquerón, Puerto Rico, as it is now. The refuge would continue its existing partnerships, collaborating with organizations and agencies including Island Conservation, U.S. Army Corps of Engineers, DHS, FURA, and DNER.

Alternative B: Public Use

The primary focus under Alternative B would be to emphasize public use of the refuge with any additional availability of budgetary and staffing resources.

Under the wildlife management goal, the refuge will continue with the monitoring and surveys as identified in Alternative A.

Under the second goal, Alternative B would also be quite similar to Alternative A, with continued removal of invasive animal species as needed to ensure native forest restoration. The refuge would also implement efforts to avoid introduction of new invasive animal or plant species from increased public visitation. Forest monitoring actions would be the same as for Alternative A. With regard to climate change, once again there would be no active monitoring under Alternative B.

The approach to achieving the resource protection goal would be identical to that of Alternative A. In cooperation with partners, the refuge staff would aim to protect the refuge's plant and animal resources and staff from illegal activities. With regard to human and drug trafficking, Desecheo NWR would continue cooperation with partnering agencies to provide surveillance and enforcement that protects refuge resources from illegal activities. In order to combat poaching (illegal hunting and harvesting), the refuge would continue to monitor illegal hunting/harvesting and as necessary, conduct enforcement.

Goal 4 addresses public use, and calls for providing opportunities for environmental education, interpretation, and wildlife observation and photography to enhance management programs, public appreciation, understanding, and recognition of the importance of Desecheo NWR. Under this goal, the refuge would step up the level of offsite environmental education and outreach to mainland communities and schools. The refuge would also increase the level of offsite, nonpersonal interpretation by providing brochures and fact sheets, and, subject to safety concerns being met, would increase onsite, nonpersonal interpretation through the use of signage and kiosks. Also, subject to safety concerns being met, the refuge would increase opportunities for onsite wildlife observation and photography. The refuge would also allow for appropriate and compatible nonwildlife-dependent uses on the refuge by means of special use permits.

The last goal calls for providing staffing and funding to accomplish the refuge's goals and objectives while encouraging cooperative efforts with other agencies, NGOs, universities, and other partners. Under Alternative B, as portions of the refuge are cleared of unexploded ordnance and other safety issues have been addressed, these sites may be opened to the public. The refuge would acquire an open-water boat capable of reaching the island for extended visits. In addition, the refuge would provide automated camera equipment and other necessary tools and supplies for refuge management. Alternative B would add an 0.5-FTE public use staff person or park ranger. As in Alternative A, under Alternative B the Service would continue its existing partnerships and collaboration with agencies and organizations such as Island Conservation, U.S. Army Corps of Engineers, DHS, FURA, and DNER.

Alternative C: Habitat and Wildlife Restoration and Limited Public Use (Preferred Alternative)

The preferred alternative, Alternative C, is considered to be the most effective management action for meeting the purposes of the refuge by combining habitat and wildlife restoration with limited public use.

The wildlife management goal, objectives and strategies are aimed at providing the conditions that will allow for reestablishment of nesting seabird colonies during the 15-year timeframe for the CCP. In addition, the refuge would increase the frequency of monitoring, conduct life history studies, and improve habitat conditions for terrestrial reptiles. Sea turtle management efforts would be the same as those under Alternative A. The refuge would implement seasonal surveys of migratory landbirds and pursue opportunities for propagation, reintroduction, and removal of threats to the higo chumbo cactus.

To achieve conservation, enhancement and restoration of native plant communities, the refuge would increase the level of monitoring and efforts at removal of invasive species. Within 15 years of CCP approval, the refuge would complete the removal all invasive animal species that negatively impact both habitat and native wildlife. Within this alternative, the refuge staff would develop and implement a plan for monitoring and mitigating the effects of climate change on the refuge.

Resource protection would be accomplished through an increase the level of surveillance and enforcement in cooperation with partners. This alternative also provides for an increase of law enforcement staff and equipment to improve enforcement capabilities on the refuge.

Environmental education, interpretation, and wildlife-oriented public use activities would be improved through increased offsite environmental education and outreach to mainland communities and schools. Additional offsite, nonpersonal interpretation such as brochures and fact sheets will be provided, and, subject to safety concerns being met, onsite, nonpersonal interpretation such as signage and brochures will be developed. Also subject to safety concerns being met, the staff would

provide limited opportunities for refuge-guided wildlife observation and photography on the refuge. With regard to nonwildlife-dependent activities, the refuge would continue to respond to periodic special requests for nonwildlife-dependent uses that are appropriate and compatible.

Alternative C aims to provide adequate staffing and funding to accomplish refuge goals and objectives while encouraging cooperative efforts with other agencies, NGOs, universities, and other partners. The refuge would continue to work with cooperating agencies and partners to clean up and increase safety on the refuge. Safety will be ensured by only permitting controlled, refuge-guided activities in cleared areas. As in Alternative B, Alternative C would acquire an open-water boat capable of reaching the island for extended visits. In addition, it would provide automated camera equipment and other necessary tools and supplies for refuge management. With regard to staffing, the refuge would provide an 0.5-FTE manager and 0.5-FTE biologist, for a total of 3.0 FTEs. In terms of partnerships, Desecheo NWR would continue existing partnerships, including those with Island Conservation, the U.S. Army Corps of Engineers, DHS, FURA, and DNER.

Selection Rationale

The Service adopted Alternative C, the preferred alternative, as the comprehensive conservation plan for guiding the direction of the refuge for the next 15 years. The overriding concern reflected in this plan is that wildlife conservation assumes first priority in refuge management; wildlife-dependent recreational uses may be allowed if they are appropriate and compatible with wildlife conservation and safety concerns are met.

Alternative C is selected for implementation because it directs the development of programs to best achieve the refuge's purpose and goals; emphasizes the restoration and management of the refuge's resources; collects habitat and wildlife data; and ensures long-term achievement of refuge and Service objectives. At the same time, these management actions provide balanced levels of compatible public use opportunities consistent with existing laws, Service policies, and sound biological principles. It provides the best mix of program elements to achieve desired long-term conditions.

Under this alternative, all lands under the management and direction of the refuge will be protected, maintained, and enhanced to best achieve national, ecosystem, and refuge-specific goals and objectives within anticipated funding and staffing levels. In addition, the action positively addresses significant issues and concerns expressed by the public.

Environmental Effects

Implementation of the Service's management action , including habitat management, population management, land conservation, resource protection and visitor service management activities on Desecheo National Wildlife Refuge would result in environmental and social effects as outlined in the comprehensive conservation plan and environmental assessment. Effects would include increased migratory bird use and production; increased protection for threatened and endangered species; enhanced wildlife populations; and enhanced opportunities for wildlife-dependent recreation and environmental education. These effects are detailed below.

Due to measures such as intensified habitat restoration and invasive species control, seabird presence on Desecheo NWR is likely to increase and there would be a greater chance of reestablishing nesting of one or more species on the island. These measures may also result in an increase in the refuge's terrestrial reptile populations. With successful habitat restoration, the diversity and numbers of migratory landbirds may also increase. The status of the threatened higo chumbo cactus on Desecheo NWR

would probably improve because of increased efforts at propagation, reintroduction, and removal of threats. The continued removal of invasive species and increased forest monitoring would improve the probability that native forest habitat can be restored and expedite the process of restoration.

Potential Adverse Effects and Mitigation Measures

Implementation of the Desecheo CCP would have some unavoidable impacts. These impacts are generally expected to be minor and/or short-term in duration. The refuge will attempt to minimize these impacts whenever possible. The following sections describe the measures the refuge would employ to mitigate and minimize the potential impacts that would result from implementation of this plan.

Soil Disturbance Impacts on Vegetation and Water Quality

Soil disturbance, erosion, damage to vegetation from crushing and shearing, and siltation due to eventual low levels of visitation, possible trail construction and use, and dispersed movement on foot by visitors would be minor. To further reduce potential impacts, the refuge will use best management practices to minimize the erosion of soils into water bodies. The refuge staff would monitor use patterns and if necessary to protect landforms, soils, plants, and water quality from overuse, would construct one or more engineered trails designed to withstand foot traffic and require all visitors to confine themselves to trails.

Foot traffic on new and extended foot trails is expected to have a negligible impact on soil erosion. To minimize the impacts from public use, the refuge would include informational signs that request trail users to remain on the trails, in order to avoid causing potential erosion problems.

Herbicide Use

Long-term herbicide use for exotic plant control could result in a slight decrease in water quality in areas prone to exotic plant infestation. Through the proper application of herbicides, however, this is expected to have a minor impact on the environment, with the benefit of reducing or eliminating exotic plant infestations.

Wildlife Disturbance

Disturbance to wildlife is an unavoidable consequence of any public use program, regardless of the activity involved. While some activities such as wildlife observation may be less disturbing than others, all of the public use activities proposed under the proposed alternative would be planned to avoid unacceptable levels of impact.

The known and anticipated levels of disturbance from the proposed alternative are not considered to be significant. As indicated, the refuge remains closed, and during the 15-year planning horizon, if areas are opened, it would be done gradually and deliberately. In any case, the refuge would manage public use activities to reduce impacts. General wildlife observation and photography, as well as environmental education and interpretation, may result in minimal or temporary disturbance to wildlife. If the refuge determines that impacts from the eventual expected additional visitor uses are above the levels that are anticipated, those uses would be discontinued, restricted, or rerouted to other less sensitive areas.

Vegetation Disturbance

As noted above, negative impacts could result from the construction and maintenance of trails that require the clearing of nonsensitive vegetation along their length. This is expected to be a minor short-term impact. At present, no designated or formal trails are planned, but they are a possibility during the 15-year life of the CCP if the refuge is cleared of unexploded ordnance and opened to the public.

Increased visitor use may also increase the potential for the introduction of new exotic species onto the island. The refuge would minimize this impact by installing educational and informational signs that inform visitors of the problems posed by invasive species and guiding visitors to nonsensitive trails. A biosecurity plan will be prepared and implemented in order to ensure that introductions or reintroductions of invasive species do not occur.

User Group Conflicts

Even if authorized public use is allowed and begins to increase from essentially zero, unanticipated conflicts between different user groups could occur. If this should happen, the refuge would adjust its programs, as needed, to eliminate or minimize any public use issues. The refuge would use methods that have proven to be effective in reducing or eliminating public use conflicts. These methods include establishing separate use areas, different use periods, and limits on the numbers of users in order to provide safe, quality, appropriate, and compatible wildlife-dependent recreational opportunities.

Land Ownership and Site Development

All upland area portions of Desecheo Island are controlled and managed by the U.S. Fish and Wildlife Service. The waters surrounding Desecheo are managed by the Commonwealth of Puerto Rico as the Desecheo Marine Reserve. Land ownership by the Service and management of the surrounding waters by the commonwealth's Department of Natural and Environmental Resources precludes any future development by the private sector. Potential development of trails, landing of boats and mooring of boats in the waters surrounding Desecheo could lead to minor short-term negative impacts on plants, soil, and some wildlife species. Although no development projects are proposed in this CCP, any future activity will be given the appropriate National Environmental Policy Act consideration during preconstruction planning. At that time, any required mitigation activities will be incorporated into the specific project to reduce the level of impacts to the human environment and to protect fish and wildlife and their habitats.

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

Coordination

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

Congressional representative
Governor of Puerto Rico
Commonwealth of Puerto Rico, Department of Natural and Environmental Resources
Commonwealth of Puerto Rico Historic Preservation Officer
Mayors of Municipalities of Mayagüez, Aguadilla, Rincon, Aguada, Añasco, and Cabo Rojo
Federal Agencies: Army Corps of Engineers, NOAA, EPA, Department of Homeland Security, Coast Guard

Interested citizens
Conservation organizations

Findings

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

1. Both beneficial and adverse effects have been considered and this action will not have a significant effect on the human environment (Environmental Assessment, page 63).

2. The actions will not have a significant effect on public health and safety (Environmental Assessment, page 63).

3. The project will not significantly affect any unique characteristics of the geographic area such as proximity to historical or cultural resources, wild and scenic rivers, or ecologically critical areas (Environmental Assessment, page 72).

4. The effects on the quality of the human environment are not likely to be highly controversial (Environmental Assessment, page 72).

5. The actions do not involve highly uncertain, unique, or unknown environmental risks to the human environment (Environmental Assessment, page 64).

6. The actions will not establish a precedent for future actions with significant effects nor do they represent a decision in principle about a future consideration (Environmental Assessment, page 71).

7. There will be no cumulatively significant impacts on the environment. Cumulative impacts have been analyzed with consideration of other similar activities on adjacent lands, in past actions, and in foreseeable future actions (Environmental Assessment, page 71).

8. The actions will not significantly affect any site listed in, or eligible for listing in, the National Register of Historic Places, nor will they cause loss or destruction of significant scientific, cultural, or historic resources (Environmental Assessment, page 64).

9. The actions are not likely to adversely affect threatened or endangered species, or their habitats (Environmental Assessment, page 66).

10. The actions will not lead to a violation of federal, state, or local laws imposed for the protection of the environment (Environmental Assessment, page 64).

Supporting References

U.S. Fish and Wildlife Service. 2012. Draft Comprehensive Conservation Plan and Environmental Assessment for Desecheo National Wildlife Refuge, Mayagüez, Puerto Rico. U.S. Department of the Interior, Fish and Wildlife Service, Southeast Regional Office, Atlanta, Georgia.

U.S. Fish and Wildlife Service. 2010. Environmental Assessment for Restoring Wildlife Habitat on Desecheo Island, Puerto Rico. Draft Environmental Assessment, prepared by Island Conservation, 201 pp.

Document Availability

The Environmental Assessment was Section B of the Draft Comprehensive Conservation Plan for Desecheo National Wildlife Refuge and was made available in July 2012. Additional copies are available by writing: Caribbean Islands National Wildlife Refuge, P.O. Box 510, Boquerón, Puerto Rico 00622.

Signed

Cynthia K. Dohner
Regional Director, Southeast Region

SEP 28 2012

Date