Eastern Shore of Virginia and Fisherman Island
National Wildlife Refuges
5003 Hallet Circle
Cape Charles, Virginia 23310

Federal Relay Service
for the deaf and hard-of-hearing
1 800/877 8339

U.S. Fish & Wildlife Service
http://www.fws.gov

For Refuge Information
1 800/344 WILD

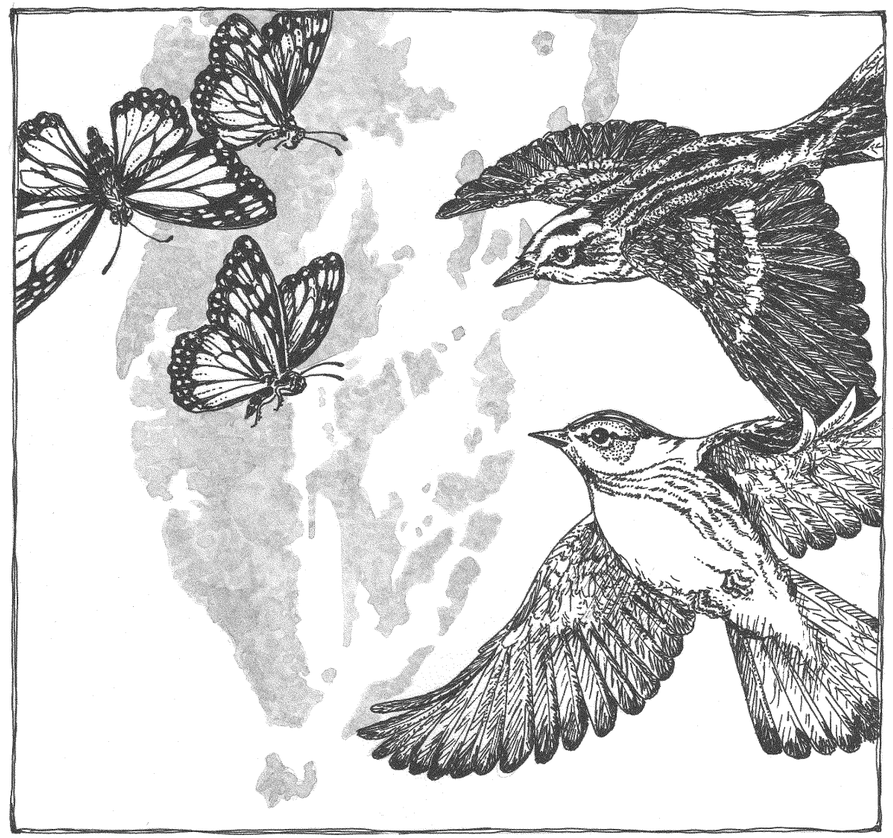
March 2003

Draft Comprehensive Conservation Plan and Environmental Assessment Executive Summary
Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges

U.S. Fish & Wildlife Service

Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges

Draft Comprehensive Conservation Plan and Environmental Assessment
Executive Summary
March 2003



Cover Photo: Drawing of Warblers and Monarch Butterflies
Margaret Barnaby

This goose, designed by J.N. "Ding" Darling, has become a symbol of the National Wildlife Refuge System.

The *U.S. Fish and Wildlife Service* is the principal federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service manages the 93-million acre National Wildlife Refuge system comprised of more than 535 national wildlife refuges and thousands of waterfowl production areas. It also operates 65 national fish hatcheries and 78 ecological services field stations. The agency enforces federal wildlife laws, manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitat such as wetlands, administers the Endangered Species Act, and helps foreign governments with their conservation efforts. It also oversees the Federal Aid Program which distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state wildlife agencies.

Comprehensive Conservation Plans provide long term guidance for management decisions and set forth goals, objectives, and strategies needed to accomplish refuge purposes and identify the Service's best estimate of future needs. These plans detail program planning levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization purposes. The plans do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisition.

U.S. Fish and Wildlife Service

Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges

Draft Comprehensive Conservation Plan and Environmental Assessment Executive Summary

Vision Statement

Lying at the tip of the Delmarva Peninsula, the Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges are part of a national system of lands managed to ensure the future of wildlife and their habitats. These refuges serve as one of the country's most valuable stopovers for migratory birds. Nestled between the Atlantic Ocean and Chesapeake Bay, the refuges include a variety of habitats such as maritime forest, shrub thickets, grasslands, beaches and tidal wetlands. These habitats provide a vital link for millions of songbirds, raptors, shorebirds and butterflies to rest and refuel before continuing the rigorous journey to their wintering grounds.

Future conservation efforts lie in the refuges' commitment to protecting and enhancing the migration corridor through preserving, acquiring and revegetating hardwood, shrub and grassland areas. Alliances with nearby landowners will increase available habitat, and research will focus on augmenting our knowledge to make biologically sound management decisions.

The thousands of people that annually visit this gateway to the eastern shore of Virginia will gain an appreciation of the refuges' unique ecological role. In partnership with the local community, the refuges will also promote the area as a regional tourist destination that contributes to the economic stability and enhances the quality of life on the eastern shore of Virginia. Visitors will leave with an understanding that this place of incredible diversity and ecological importance is part of a larger network of protected lands within the National Wildlife Refuge System, set aside specifically for wildlife.

U.S. Fish and Wildlife Service
Northeast Regional Office
300 Westgate Center Drive
Hadley, MA 01035

March 2003

Abstract

Type of Action:	Administrative - Development of a Comprehensive Conservation Plan
Location:	Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges, Northampton County, Virginia
Lead Agency:	U.S. Fish and Wildlife Service
Responsible Official:	Richard O. Bennett, Ph.D., Acting Regional Director
For Further Information:	Beth Goldstein, Planning Team Leader Northeast Regional Office 300 Westgate Center Drive Hadley, MA 01035 (413) 253-8564

We fully describe, evaluate and compare four alternative comprehensive conservation plans in the Draft Comprehensive Conservation Plan/Environmental Assessment (Draft CCP/EA) for Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges. Following is a brief overview of each alternative:

Alternative A: This alternative is our No Action alternative required by the National Environmental Policy Act (NEPA) regulations. Selection of this alternative would maintain the status quo; there would be no change to current management practices. Alternative A provides a baseline for comparing and contrasting the other three alternatives.

Alternative B: This alternative represents the Service's Proposed Action, or the alternative currently recommended for approval. Selecting this alternative would expand the Eastern Shore of Virginia Refuge's current land acquisition boundary to include an additional 6,030 acres. Alternative B would increase protection and management of endangered, threatened and other species of concern. This alternative would also increase opportunities for all wildlife-dependent recreational opportunities. Under Alternative B, the refuge would focus management efforts on protecting, restoring, and enhancing habitats for forest and shrub-dependent neotropical and temperate migratory birds.

Alternative C: Similar to Alternative B, this alternative would also expand the Eastern Shore of Virginia Refuge's current land acquisition boundary to include an additional 6,030 acres. Alternative C would also increase protection and management of endangered, threatened and other species of concern. However, the refuge would focus management efforts on protecting, restoring, and enhancing habitat for grassland and open habitat-dependent neotropical and temperate migrant birds. This alternative proposes to expand all wildlife-dependent recreational opportunities except hunting.

Alternative D: Under Alternative D, the refuge would focus management efforts on maintaining and restoring the natural dynamics of the ecosystems of the lower Delmarva Peninsula. Off-refuge land conservation efforts would focus on preservation and/or restoration of the historic vegetative regimes. There is no specified land acquisition proposal in this alternative. Alternative D would not expand hunting or fishing opportunities on the refuges, though it would expand all other wildlife-dependent recreational opportunities.

This Draft CCP/EA also includes 11 Appendices which provide additional information supporting our analysis.

Readers Guide

This executive summary includes highlights from the Draft Comprehensive Conservation Plan and Environmental Assessment (Draft CCP/EA) for Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges. We have literally lifted sections of Chapters 1, 2, 4 and 5, focusing mostly on sections that describe the planning process and the alternatives. This summary does not include Chapter 3, *Affected Environment*. A full-text copy of the document can be obtained by contacting Beth Goldstein, Team Leader, U.S. Fish and Wildlife Service, 300 Westgate Center Drive, Hadley, MA 01035 (413-253-8564). Requests can also be sent by e-mail to northeastplanning@fws.gov.

This summary includes an overview of the planning process and describes the Proposed Action (Alternative B) and compares it to three other possible management alternatives. In addition, the major benefits and consequences associated with each alternative are presented.

Once our Regional Director has selected an alternative from among those in the Draft CCP/EA, we will compile a final CCP which will be based on the best available science, sound principles of fish and wildlife management, legal mandates, and other policies, guidelines, and planning documents. The final approved CCP will provide the vision and strategic direction for the Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges. When fully implemented, the CCP will help achieve the refuges purpose, fufill the National Wildlife Refuge System Mission, maintain and/or restore the biological integrity, diversity, and environmental health of the refuges, and meet other mandates. The CCP will also guide management decisions and set forth goals, objectives, and strategies to accomplish these ends. We may also require step-down management plans to provide additional details about CCP goals, objectives, and strategies, and to describe schedules for implementation. The CCP will be based on the principles of sound fish and wildlife management, available science, legal mandates, and other policies, guidelines, and planning documents. It will, above all else, ensure wildlife comes first on the refuges.

For further information on our planning process, please refer to part 602 of the Fish and Wildlife Service Manual, National Wildlife Refuge System Planning.

Chapter 1

Pelican colony.
Mike R. Bryant

Purpose of and Need for Action

- Introduction
- Purpose of and Need for Action
- Decisions to be Made
- Planning Area
- U.S. Fish and Wildlife Service and its Mission
- National Wildlife Refuge System and its Mission
- Elements of Planning

Introduction

The purpose of Chapter 1 is to:

Describe the Planning Area;

Describe the need for a Comprehensive Conservation Plan (CCP) for the Eastern Shore of Virginia National Wildlife Refuge (Eastern Shore of Virginia Refuge) and Fisherman Island National Wildlife Refuge (Fisherman Island Refuge);

Identify the National, regional and State plans, guidelines and mandates that influenced this project;

Highlight the purposes for which the refuges were established;

Explain the planning process used for developing this CCP.

The information provided in this Chapter sets the stage for Chapters 2 through 5. Chapter 2 describes alternative strategies for meeting goals and objectives and compares them to current management strategies. Chapter 3 describes the existing physical, biological, and human environment. Chapter 4 evaluates the environmental consequences of implementing each of the proposed management alternatives. Chapter 5 discusses the consultation and coordination process that took place during the project, and provides a list of preparers.

Purpose of and Need for Action

The purpose of this document is to evaluate a reasonable range of alternative management strategies for the refuges. Each alternative was generated with the potential to be fully developed into a CCP. Our intent in this document is to clearly and accurately display the predicted social, economic, physical, and biological impacts of implementing each alternative, as required by the National Environmental Policy Act of 1969 (NEPA). From this analysis, the U.S. Fish and Wildlife Service's (Service) Regional Director will select an alternative to be fully developed into a separate, stand-alone CCP for the refuges.

The CCP is vital to the future management of the Eastern Shore of Virginia and Fisherman Island Refuges. The final CCP will provide strategic management direction over the next 10-15 years by serving to:

Provide a clear statement of the desired future conditions for habitat, wildlife, facilities, and people;

Provide neighbors, visitors, and partners with a clear understanding of the reasons for management actions on and around the refuges;

Hiker on trail.
USFWS photo

Ensure management of the refuges reflects the policies and goals of the National Wildlife Refuge System (Refuge System);

Ensure the compatibility of current and future uses of the refuges;

Provide long-term continuity and direction in management;

Provide a basis for staffing, operations, maintenance, and the development of budget requests.

The need to develop a CCP for each of the refuges is two-fold. First, the National Wildlife Refuge System Improvement Act of 1997 (Refuge Improvement Act) requires all National Wildlife Refuges to have a CCP in place by 2012 to help fulfill the mission of the Refuge System. Second, there is currently no master plan establishing priorities and ensuring consistent and integrated management for the refuges. A vision statement, goals, objectives, and management strategies are needed to effectively manage natural resources. Persistent issues related to structures on the refuges, access to and through the refuges, and habitat management must be resolved with public and partner involvement. Finally, there is a need to establish formal acquisition boundaries to delineate additional lands to be acquired. This would ensure the long-term protection of nationally significant migratory bird resources.

Decisions to be Made

Based on the analysis documented in the Draft Comprehensive Conservation Plan/Environmental Assessment (Draft CCP/EA), the Regional Director of the U.S. Fish and Wildlife Service (Service) will select a preferred alternative to be fully developed into a CCP for the refuges. Selection of the preferred alternative will be made based on an evaluation of the Service's mission, the purposes for which the refuges were established, legal mandates, and response to this Draft CCP/EA. In accordance with NEPA, the Service's Regional Director must also determine whether the selected management alternative will have a significant impact on the quality of the human environment. If there is a significant impact, additional analysis will be required in an Environmental Impact Statement (EIS). If there is no significant impact, we will issue a Finding of No Significant Impact (FONSI), and implementation of the preferred alternative can begin immediately.

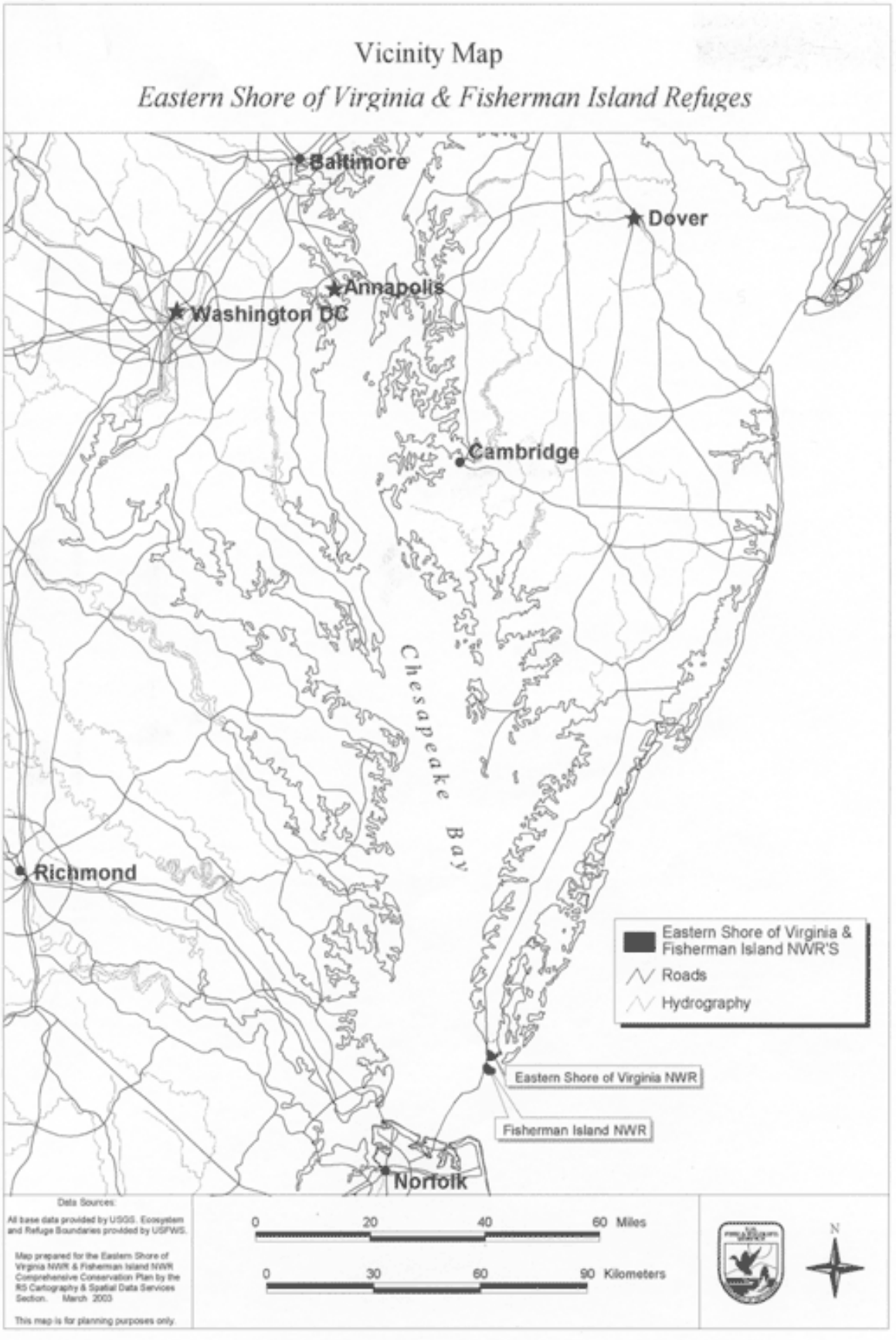
Planning Area

This Draft CCP/EA covers the Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges (refuges) (see Map 1-1).

Eastern Shore of Virginia National Wildlife Refuge

The Eastern Shore of Virginia Refuge consists of 1,120 acres. Of that total acreage, 1,019 acres are located at the southern tip of the

Map 1-1


Vicinity Map
Eastern Shore of Virginia & Fisherman Island Refuges
Baltimore
Dover
Annapolis
Washington DC
Cambridge
Chesapeake Bay
Richmond
Norfolk
Eastern Shore of Virginia & Fisherman Island NWR'S
Roads
Hydrography
Eastern Shore of Virginia NWR
Fisherman Island NWR
Data Sources:
All base data provided by USGS. Ecosystem and Refuge Boundaries provided by USFWS.
Map prepared for the Eastern Shore of Virginia NWR & Fisherman Island NWR Comprehensive Conservation Plan by the RS Cartography & Spatial Data Services Section. March 2003
This map is for planning purposes only.
0 20 40 60 Miles
0 30 60 90 Kilometers
N

1-4

Delmarva Peninsula in Northampton County, Virginia, at the mouth of the Chesapeake Bay (see Map 1-2). The remaining 108 acres are located on Skidmore Island, which lies one mile east of the mainland. The refuge was created in 1984, when 180 acres were transferred to the Service from the U.S. Air Force through the General Services Administration.

The Eastern Shore of Virginia Refuge contains a variety of habitats, such as maritime forest, myrtle and bayberry thickets, grassland, cropland, fresh and brackish ponds, tidal salt marsh and beach. The refuge and its adjoining woodlands are regarded as one of the most important migratory bird corridors along the East Coast, comparable to the better known Cape May, New Jersey. This importance stems from the fact that the Delmarva Peninsula acts as a geographic funnel for migratory birds in the fall. It is on the Eastern Shore of Virginia Refuge where millions of migratory birds rest and feed until favorable winds blow to assist them in crossing the Chesapeake Bay.

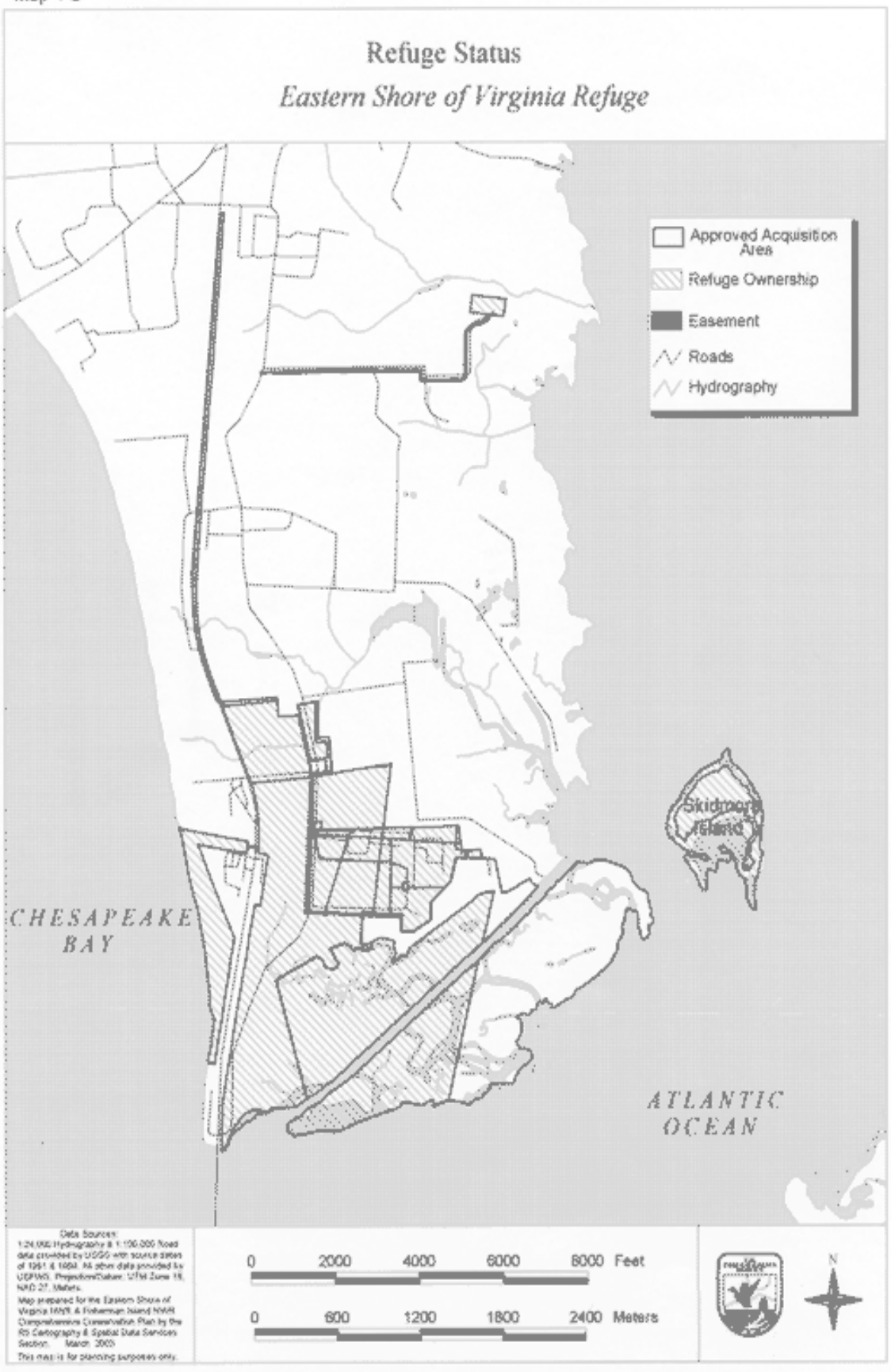
Fisherman Island National Wildlife Refuge

Fisherman Island is the southernmost barrier island. It is separated from the Eastern Shore of Virginia Refuge by approximately one-half mile of sea called Fisherman's Inlet (see Map 1-3). Accretion continues to expand the island's size, currently estimated at 1,850 acres. Fisherman Island Refuge was established in 1969, and transferred to the Department of the Interior by 1973. It was managed as an unstaffed satellite of Back Bay National Wildlife Refuge until 1984, when management was turned over to the newly established Eastern Shore of Virginia Refuge. The last 25 acres, owned by the U.S. Department of Defense, were transferred to the Department of the Interior in 2000, putting the entire island under one ownership.

Hardwood Forest.
Kurt Buhlmann

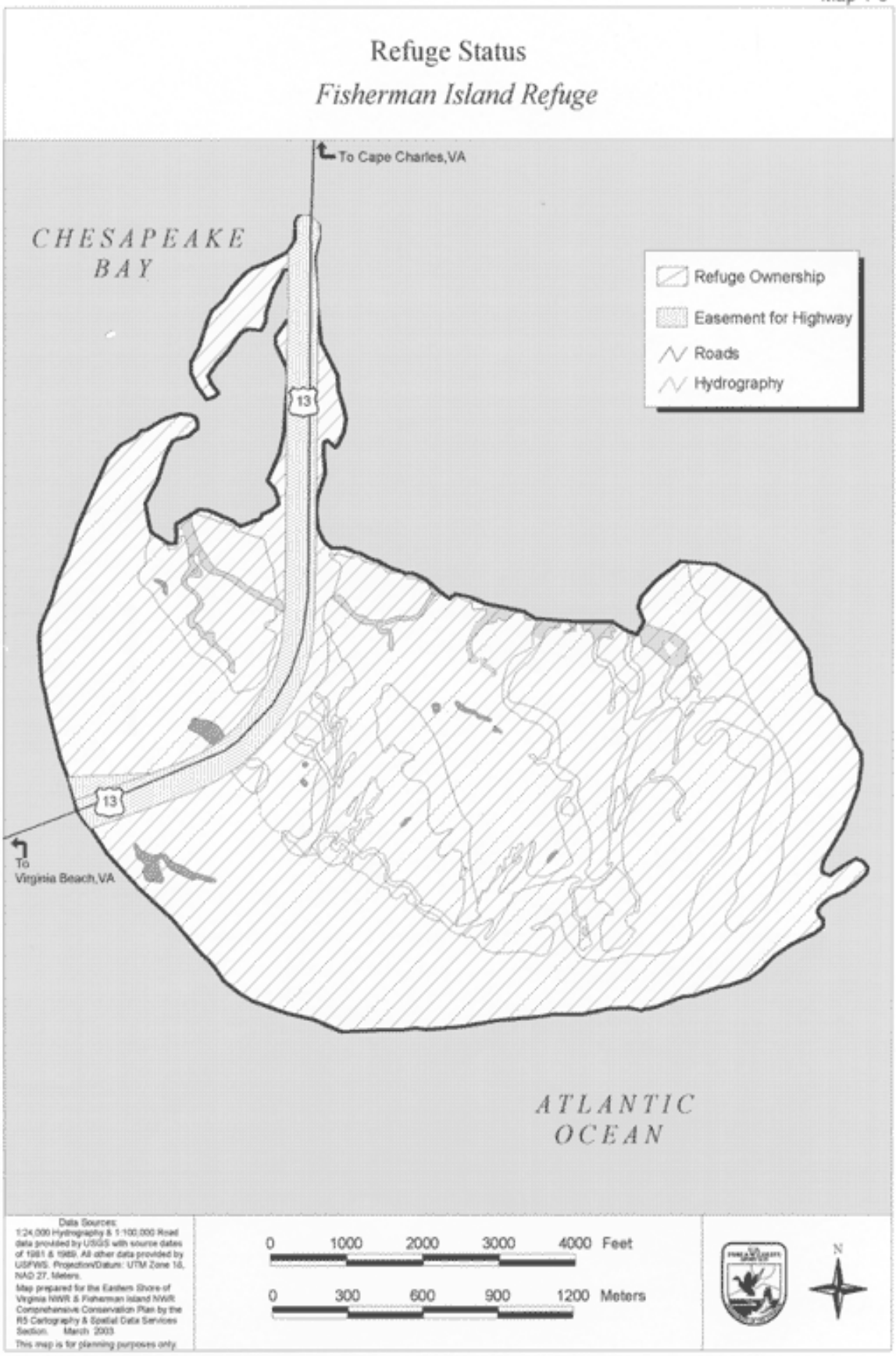
Habitat succession has formed a mosaic of vegetative communities capable of withstanding the harsh conditions present on the island. The variety of habitats combined with the geographic location of the island, the accessibility of food, protective shrub and thicket cover, and minimal human disturbance make this island an important stopover location for migratory birds. Fisherman Island, however, is not undisturbed. The Chesapeake Bay Bridge-Tunnel (Bridge-Tunnel), which links mainland Virginia to the eastern shore, cuts through the western part of the island.

Map 1-2


Refuge Status
Eastern Shore of Virginia Refuge
Approved Acquisition Area
Refuge Ownership
Easement
Roads
Hydrography
Skidmore Island
CHESAPEAKE BAY
ATLANTIC OCEAN
0 2000 4000 6000 8000 Feet
0 600 1200 1800 2400 Meters
N

1-6

Map 1-3


Refuge Status
Fisherman Island Refuge
To Cape Charles,VA
CHESAPEAKE BAY
Refuge Ownership
Easement for Highway
Roads
Hydrography
13
13
To Virginia Beach,VA
ATLANTIC OCEAN
Data Sources:
1:24,000 Hydrography & 1:100,000 Road data provided by USGS with source dates of 1981 & 1989. All other data provided by USFWS. Projection/Datum: UTM Zone 18, NAD 27, Meters.
Map prepared for the Eastern Shore of Virginia NWR & Fisherman Island NWR Comprehensive Conservation Plan by the R5 Cartography & Spatial Data Services Section. March 2003
This map is for planning purposes only.
0 1000 2000 3000 4000 Feet
0 300 600 900 1200 Meters
N

1-7

U .S. Fish and Wildlife Service and its Mission

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

- Mission, U.S. Fish and Wildlife Service

National Wildlife Refuges are managed by the Service, part of the Department of Interior. National resources entrusted to the Service for conservation and protection are: migratory birds, endangered species, interjurisdictional fish, wetlands, and certain marine mammals. The Service manages the Refuge System and National Fish Hatcheries, enforces federal wildlife laws and international treaties on importing and exporting wildlife, assists with state fish and wildlife programs, and helps other countries develop wildlife conservation programs.

The National Wildlife Refuge System and its Mission

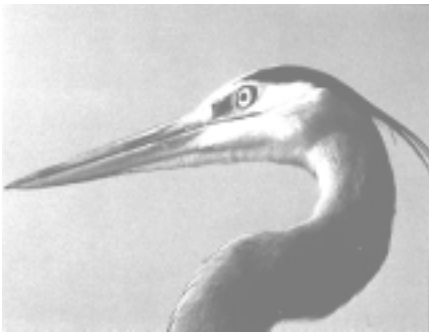
"*...to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans*."

- Refuge System Mission, Refuge Improvement Act; Public Law 105-57

The Refuge System is the world's largest collection of lands set aside specifically for the conservation of wildlife and ecosystem protection. The Refuge System began in 1903, when President Theodore Roosevelt designated three-acre Pelican Island, a pelican and heron rookery in Florida, as a bird sanctuary. Today there are more than 535 National Wildlife Refuges occurring in every state and a few U.S. Territories, totaling more than 93 million acres nationwide. Over 34 million visitors annually hunt, fish, observe and photograph wildlife, and participate in environmental education and interpretive activities on refuges.

In 1997, the National Wildlife Refuge System Improvement Act was passed. This legislation established a unifying mission for the Refuge System, a new process for determining compatible public use activities on refuges, and the requirement to prepare CCPs for each refuge. The Refuge Improvement Act states that first and foremost, the Refuge System must focus on wildlife conservation. It further states that the national mission, coupled with the purpose(s) for which each refuge was established, will provide the principal management direction for each refuge.

The Refuge Improvement Act also identifies six wildlife-dependent public uses -- hunting, fishing, wildlife observation and photography, environmental education and interpretation -- that should be facilitated on National Wildlife Refuges and shall receive priority consideration in the CCP process. The Act also declares that all existing or proposed refuge uses must be "compatible" with the purposes of the refuge and the mission of the system. The refuge manager determines if an existing or proposed refuge use is compatible by ensuring the use does not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the refuge.



Great blue heron.
USFWS photo

Elements of Planning

Vision Statement

Early on the planning team developed a vision statement to provide a guiding philosophy throughout the planning process. The vision statement describes the desired future condition of the refuge through the next 15 years and beyond. It is written in the present tense to provide a compelling sense of purpose:

Lying at the tip of the Delmarva Peninsula, the Eastern Shore of Virginia and Fisherman Island National Wildlife Refuges are part of a national system of lands managed to ensure the future of wildlife and their habitats. These refuges serve as one of the country's most valuable stopovers for migratory birds. Nestled between the Atlantic Ocean and Chesapeake Bay, the refuges include a variety of habitats such as maritime forest, shrub thickets, grasslands, beaches and tidal wetlands. These habitats provide a vital link for millions of songbirds, raptors, shorebirds and butterflies to rest and refuel before continuing the rigorous journey to their wintering grounds.

Future conservation efforts lie in the refuges' commitment to protecting and enhancing the migration corridor through preserving, acquiring and revegetating hardwood, shrub and grassland areas. Alliances with nearby landowners will increase available habitat, and research will focus on augmenting our knowledge to make biologically sound management decisions. The thousands of people who annually visit this gateway to the eastern shore of Virginia will gain an appreciation of the refuges' unique ecological role. In partnership with the local community, the refuges will also promote the area as a regional tourist destination that contributes to the economic stability and enhances the quality of life on the eastern shore of Virginia. Visitors will leave with an understanding that this place of incredible diversity and ecological importance is part of a larger network of protected lands within the National Wildlife Refuge System, set aside specifically for wildlife.

Refuge Goals

We have developed the following goals for the Eastern Shore of Virginia and Fisherman Island Refuges. These goals highlight specific elements of our vision statement which will be emphasized in future management. The goals are not in order of priority.

1. Increase the availability of forage and cover habitat for neotropical and temperate migrant birds and migrating monarch butterflies.

2. Maintain the long-term productivity, integrity, and function of the marsh, beach and interdunal communities.

3. Actively participate in the conservation of healthy hardwood, understory, and grassland habitat for neotropical and temperate migratory birds during future development throughout Northampton County.

4. Provide wildlife-dependent recreational opportunities and community outreach with an emphasis on educating the public about the critical role the Delmarva Peninsula serves for neotropical and temperate migratory birds and migrating monarch butterflies.

5. Integrate the refuge into the larger community of the eastern shore and promote awareness of the unique value of the lower Delmarva Peninsula to neotropical and temperate migratory birds and migrating monarch butterflies.

6. Enhance and restore the quality of the soils, waters, and other abiotic components of the refuge and landscape.

Key Issues and Concerns

Key Issues were first identified by refuge staff and then put out for public comment in newsletters and during public scoping meetings. The original issues were then modified based on public input. The above six goals statements, together with the following issues and the range of options on how to resolve them, formed the basis for the development and comparison of the alternatives proposed in Chapter 2. The following issues are in no order of priority:

Boat ramp: The Service purchased in December 2001 the Wise Point in-holding that provides access to deep water through an existing boat ramp. The boat ramp has historically been used by recreational and commercial watermen. The refuge must balance its responsibility to protect sensitive wildlife habitat with its role in providing opportunities for wildlife-dependent recreational uses.

Firearms range: Northampton County maintains a firearms range adjacent to the refuge for law enforcement personnel. The range was built 50 years ago and does not meet current design for contaminant standards. There are elevated levels of lead, arsenic and antimony in the range area and it is unknown if these contaminants have migrated off-site. In addition, noise generated from range use conflicts with the serenity visitors seek while visiting the refuge.

Communications tower: There is a communications tower located on the refuge with a lease that expires in 2007. There has been some interest by private industry and by Northampton County (County) to increase the use of the tower. However, the tower is located in a major migratory bird flight path and may cause a number of bird fatalities.

Salt marsh.
USFWS photo

Contaminant levels: With past military and agricultural uses in and around the refuge, there are known and suspected areas with elevated levels of contaminants.

Land acquisition: The tip of the peninsula is a major migratory bird resting/refueling site recognized by Federal and State resource agencies and the County's own Comprehensive Plan. As the eastern shore develops, the refuge and other natural areas become more critical to these long-distance travelers. The refuge is small in size. Preserving additional lands will help prevent the decline in wildlife. The planning process will identify the role land acquisition will play in our future plans.

Habitat management: Different species have different habitat needs. Due to the small size of the refuge, active management for every type of habitat and species is limited. The planning process will help us make decisions regarding which habitats, and how much, should be emphasized.

Invasive plant species: Non-native, invasive plant species have taken over valuable habitat on the Eastern Shore of Virginia and Fisherman Island Refuges. Japanese honeysuckle, kudzu, fennel, and phragmites are just a few of the invasive species that choke out native food sources for neotropical and temperate migratory birds.

Fisherman Island: Fisherman Island serves as a breeding and nursery area for numerous bird species, including the largest number of nesting royal terns and brown pelicans in Virginia. Our management goals have been aimed at protecting the sensitive natural resources by minimizing human impact to this ecosystem.

Hunting program: Current objectives are to maintain an annual deer hunt. However, modifications may be needed to increase the take of deer and to improve public safety adjacent to roads and trails.

Beach access: There is a small population of the Federal listed Northeastern beach tiger beetle on a beach located on the Chesapeake Bay side of the Eastern Shore of Virginia Refuge. This beach abuts other beach property that is privately owned and operated by the Sunset Beach Resort. The resort's beach is open for public access, and has seen an increase in use over the past five to 10 years. There is no physical barrier separating the refuge beach from the private beach, and beach-goers have not distinguished one from the other. In order to protect the population of tiger beetles, we must take some action that will discourage or prevent heavy public use on the refuge beach.

Cultural resources: Both refuges are home to many structures, including bunkers and abandoned residences, that house materials and objects. Some of the materials dating back to World War II may have historic value and can be displayed at the Visitors Center

or stored in temperature-controlled rooms. Other items can be donated to public or private organizations for display. Refuge staff need to inventory these items to decide what to keep.

Step-Down Management Plans

The Refuge Manual (Part 4 Chapter 3) lists more than 25 Step-Down Management Plans generally required on most refuges. Step-Down Plans describe specific management actions refuges will follow to achieve objectives or implement management strategies. Some require annual revision, others are revised on a 5- to 10-year schedule. Some require additional NEPA analysis, public involvement, and compatibility determinations before they can be implemented. A status list of refuge Step-Down Plans follows.

These plans are current and up-to-date:

2002 Hunt Plan
2000 Pollution Prevention Plan
1999 Contingency of Operations Plan
1995 Youth Conservation Corp Safety Plan

These plans exist, but we consider them out of date and needing revision:

1991 Wildlife Inventory Plan: A revision of this plan would be incorporated in a proposed Species Inventory and Monitoring Plan (see section below).

1993 Upland Habitat Management Plan: A revision of this plan would be included in a new Habitat Management Plan.

1994 Public Use Management Plan: This plan, to be updated by 2006, would elucidate management direction and priority for public use programs such as Visitor Center operation, environmental education, outreach events, volunteers, and partnerships.

1998 Safety Plan: This plan, to be updated by 2006, would detail the actions required, as per the Department of the Interior and U.S. Fish and Wildlife Service policy, to: 1) provide a safe environment for all employees, volunteers, and for the public when using our facilities; 2) identify and correct unsafe conditions; 3) eliminate unsafe acts; and 4) encourage accident prevention throughout the workforce.

These step-down plans need to be initiated:

Completion or update of the following step-down plans are necessary components for successful implementation for each of the alternatives described in this Comprehensive Conservation Plan. Additional management plans may be required as future Service policy dictates.

Species Inventory and Monitoring Plan (2003): This plan would provide specific guidance for the systematic accounting of temporal and spatial trends in the abundance and diversity of species. Inventories will obtain, at a minimum, information on the abundance and distribution of vascular plants, vertebrates and Federally endangered and threatened species. Monitoring efforts will target carefully chosen species in an effort to convey information about the status of the larger ecological system and the integrity of specific habitats or ecosystem processes. Rigorous and quantitative monitoring will be oriented toward management decision to ensure scientifically-based management with proper feedback for adaptive management decisions.

Invasive Species Management Plan (2005): This plan would describe the control of non-native plant and animal species such as Japanese honeysuckle, fennel, fescue grass, kudzu, autumn olive, phragmites, and other exotic species which pose a threat to refuge habitat and native species. Specific control methods and timing will be detailed for both the Eastern Shore of Virginia and Fisherman Island Refuges.

Habitat Management Plan (2004): Management strategies specific to forest, shrub, and grassland habitats would be detailed with an emphasis on forage and cover requirements for migratory avian species. Management strategies would include maintaining various successional stages of grassland and forest. This relates specifically to the objectives, goals, alternatives, purpose, and vision developed for the Eastern Shore of Virginia and Fisherman Island Refuges.

Prescribed Burn Plan (2004): This plan would describe the use of fire as a management tool to enhance forest understory regeneration and grassland habitat, to remove undesired species such as non-native invasive plants, and to reduce the fire hazard potential. Specific locations, methods, and timing will be described in accordance with U.S. Fish and Wildlife Service policy and will adhere to all Federal, State, and local guidelines and restrictions.

Predator Management Plan (2005): This plan would describe the control of identified problem predators such as gulls, fox, coyote, feral cats, raccoons, and opossum. The areas of concern are colonial seabird nesting colonies on Fisherman Island Refuge and migratory bird habitat on the Eastern Shore of Virginia Refuge. Management strategies will include both live trapping and lethal removal.

Sign Plan (2006): This plan would detail where signs are needed on the refuge and what those signs would communicate. While the refuge currently has some written guidelines for signs, there is no formal plan.

Chapter 2

Egret colony.
USFWS photo

Alternatives, Including the Service's Proposed Alternative

- Introduction
- Formulating Alternatives
- Features Common to all Alternatives
- Alternative A: Current Management
- Alternative B: Emphasis On Forest and Shrub-Dependent Neotropical and Temperate Migrants (Proposed Action)
- Alternative C: Emphasis on Grassland Temperate and Neotropical Migrants
- Alternative D: Maintaining Natural Ecosystem Dynamics, Emphasis on Maintaining and Restoring Historic Conditions
- Alternatives Considered but Eliminated From Further Consideration
- Alternatives Comparison Matrix

Introduction

This chapter describes four management alternatives for the Eastern Shore of Virginia and Fisherman Island Refuges. Each alternative addresses all aspects of refuge management, including habitat management and public use. The first section describes management actions that are common to all the alternatives and that the Service plans to implement no matter which alternative is chosen. Each alternative is then explained in a one-page narrative and is accompanied by maps to further illustrate the proposed management actions. Last is an Alternatives Comparison Matrix that compares and contrasts the alternatives by their specific management actions and strategies. The matrix is organized according to questions that address the issues described in Chapter 1.

Formulating Alternatives

Alternatives are packages of complementary management strategies and specific actions for achieving the missions of the National Wildlife Refuge System (Refuge System) and the Service, the vision and goals of the refuges, and the purposes for which the refuges were established. They propose different ways of supporting the goals and responding to key issues, management concerns, and opportunities identified during the planning process.

The alternatives were guided in large part by different approaches to habitat management. Alternative A illustrates the current management of the refuge and provides a baseline for comparing and contrasting the other alternatives. Alternative B focuses on managing habitat for neotropical migratory species, which requires more woody and shrub habitat than the other alternatives. Alternative C focuses on managing habitat for temperate migratory species, which requires more grassland habitat. Lastly, Alternative D focuses on restoring habitat to pre-settlement conditions. Public use activities associated with each of these alternatives relate to the focus on habitat management. For example, in Alternative B, we focus educational and interpretive programs on neotropical migratory species, and in Alternative C, the focus is on grassland temperate migrants.

Doe in field.
USFWS photo

Features Common to all Alternatives

Baseline Inventories

The need for baseline information on National Wildlife Refuges has become urgent as more and more species are lost to extinction (Defenders of Wildlife 1998). Without the knowledge of the status, trends, and responses to management of biological systems, refuges cannot be effectively managed for the conservation of fish, wildlife and plants. The development of systematic species and habitat monitoring are also specific recommendations from the Fulfilling the Promises document (USFWS 1999a) which lays out a vision for the National Wildlife Refuge System. Standardized Region 5 surveys call for conducting annual surveys for breeding birds, grassland birds, marsh birds, frogs and toads. In addition to the standardized Region 5 surveys, we will use peer-reviewed protocol to collect baseline and trend data on vascular plants, vertebrates, invertebrates, threatened and endangered species, and trust resources on the Eastern Shore of Virginia (including Skidmore Island) and Fisherman Island Refuges.

Protecting and Managing Cultural Resources

By law, we must consider the effects of our actions on archeological and historic resources. Under all the alternatives, we will comply with Section 106 of the National Historic Preservation Act which requires that "earth moving" projects (projects that require breaking ground) be reviewed for archeological resources prior to commencement. Compliance may require a State Historic Preservation Records survey, literature survey, or field survey.

In all alternatives, the Service will consult with the Virginia Department of Historic Resources (Virginia's State Historic Preservation Office) in evaluating the National Register eligibility of buildings on Skidmore Island. Management alternatives for the buildings will be developed after their eligibility has been determined. Options include documenting and demolishing them, moving them for reuse by another organization, or rehabilitation and adaptive reuse by the refuge or a partner. The refuge will also initiate a structural engineering review of the Winslow Bunker (Battery 12) on Eastern Shore of Virginia Refuge, and install a more effective gate system at that site.

In 2000, the refuge's museum property intern and Outdoor Recreation Planner drafted revisions to the refuge's Scope of Collection Statement. This document is intended to guide the refuge in the future acquisition and management of appropriate museum property. In all alternatives, the refuge will review and

adopt a version of this draft as its current Scope of Collection Statement. In addition, the refuge will continue to implement intern report recommendations about improving the environment of the Environmental Education Building or creating an alternative modular storage area for the collection. Other museum property actions which will be common to all alternatives are:

- Appraise the refuge's decoys and historic objects.
- Address pest infestation of the refuge's mounted specimens and decoys.
- Clean mounted zoological specimens.
- Maintain the refuge's scientifically valuable wet specimens.
- Prepare and implement housekeeping, pest management, and environmental monitoring plans.
- Catalog and label remaining uncataloged documents and historic objects.
- Inspect archaeological artifacts belonging to the refuge but located at the Virginia Department of Historic Resources.

Wilderness Review

The final refuge planning policy published May 25, 2000 requires that a wilderness review be conducted concurrently with the CCP process. However, since this CCP was in preparation prior to the finalization of the planning policy, a wilderness review has not been completed. A cursory wilderness inventory of the Eastern Shore of Virginia Refuge indicates that the 1,850 acres of Fisherman Island may qualify as a Wilderness Study Area. The island is roadless, in that no vehicles actually travel along a road on the surface of the island. Significant bridge abutments, however, occur on the northern tip of the island. Its effect on the naturalness of the area would need further analysis. To comply with refuge planning policy, a wilderness review will be scheduled by the Regional Office and incorporated by the next major revision of this Plan.

A volunteer bands a tern.
USFWS photo

Refuge Revenue Sharing Payments

Annual Refuge Revenue Sharing payments to Northampton County, Virginia will continue under each alternative. Future increases in payments will be commensurate with increases in the appraised fair market value of refuge lands, new acquisitions of land, and new Congressional appropriations.

Volunteer and Internship Opportunities

In all alternatives, the refuge will continue to offer the Workamper and Internship programs. These programs provide education to participants as well as much-needed administrative, public use, and field help to the refuge.

Research

The Service will encourage and support research and management studies on refuge lands that will improve and strengthen natural resource management decisions. The refuge manager will encourage and seek research relative to approved refuge objectives that clearly improves land management and promotes adaptive management. Priority research addresses information that will better manage the Nation's biological resources and are generally considered important to: Agencies of the Department of Interior; the U.S. Fish and Wildlife Service; the National Wildlife Refuge System; and State Fish and Game Agencies, and that address important management issues or demonstrate techniques for management of species and/or habitats.

The refuge will also consider research for other purposes which may not be directly related to refuge-specific objectives, but contribute to the broader enhancement, protection, use, preservation and management of native populations of fish, wildlife and plants, and their natural diversity within the region or flyway. These proposals must still pass the Service's compatibility policy.

The refuge will maintain a list of research needs that will be provided to prospective researchers or organizations upon request. Refuge support of research directly related to refuge objectives may take the form of funding, in-kind services such as housing or use of other facilities, direct staff assistance with the project in the form of data collection, provision of historical records, conducting of management treatments, or other assistance as appropriate.

All researchers will be required to submit a detailed research proposal following Service Policy (FWS Refuge Manual Chapter 4 Section 6). In general, the refuge must be given at least 45 days to review proposals before initiation of research. Proposals will be prioritized and approved based on need, benefit, compatibility, and funding required. Special Use Permits must also identify a schedule for annual progress reports on which decisions for continued research activities will be based. The Regional refuge biologists, other Service Divisions, and State agencies may be

asked to review and comment on proposals. All researchers will be required to obtain appropriate State and Federal permits.

Special Use Permit

Under all alternatives, we will continue to issue Special Use Permits (SUPs) for activities that are not open to the general public (i.e., research, commercial use of boat ramp site, etc.). SUPs for research will be issued according to research protocol listed above.

Communications Tower

There is a 299-foot communications tower located on the Eastern Shore of Virginia Refuge. This tower was constructed in 1957 and presently supports in-house radio communications for Verizon and refuge staff. Verizon also has a paging antenna located on this tower. The lease for this tower, which expires in 2007, was transferred to the Service with the property. Since the tower does not conform to current Service guidance on the siting of communications towers, it will be removed once the lease expires. Verizon has other communications towers in the immediate vicinity of the refuge.

Maintaining Existing Facilities

Regardless of which alternative is selected, periodic maintenance and renovation of existing facilities is a critical need to ensure safety and accessibility for refuge staff and visitors. Included as an appendix to this document is the 2001 Maintenance Management System (MMS) database list of backlogged maintenance entries for the refuge (see Appendix G). Future maintenance needs will vary among the alternatives relative to proposed new construction projects.

Personal Watercraft Use

Under all alternatives, the refuge would not allow personal watercrafts (PWCs) to launch from the Wise Point boat ramp. PWC refers to a vessel, usually less than 16 feet in length, which uses an inboard, internal combustion engine powering a water jet pump as its primary source of propulsion. PWCs include vessels commonly referred to as jet ski, waverunner, wavejammer, wetjet, sea-doo, wet bike and surf jet.

PWCs have the potential to cause disturbance to wildlife. The Wise Point area consists of extensive coastal salt marsh used as

American oystercatcher.
Paul Buckley

migration, wintering and breeding habitat for black ducks, gadwall, Canada geese, mallards and blue-winged teal. It also provides migration and wintering habitat for a diversity of other waterfowl species.

PWCs also have a significant potential to conflict with other visitors' enjoyment of refuge values. The erratic changes in engine pitch, the pulsation of sound produced by jumping wakes, and frequent changes in speed, in addition to the volume of sound, create a noise that is perceived as both irritating and an intrusion on the Refuge experience.

Monitoring and Adaptive Management

The Final CCP will cover a 15-year period. Periodic review of the CCP will be required to ensure that established goals and objectives are being met and that the plan is being implemented as scheduled. In many cases, monitoring techniques are built into the actions and strategies of the alternatives.

We would monitor public use programs by continuing to collect and compile visitation figures and activity levels. In addition, we would establish research and monitoring programs to assess the impacts of public use activities on wildlife and wildlife habitat and to identify compatible levels of public use activities. We would reduce these activities if we determine incompatible levels of public use were occurring.

Collecting baseline data on all wildlife populations and habitats would update existing records of wildlife species using the refuges, their habitat requirements, and seasonal use patterns. This data would also be used to evaluate the effects of public use and habitat management programs on wildlife populations.

We would continually monitor refuge habitat management programs for positive and negative impacts on wildlife habitat and populations, and to determine if these management activities are helping to meet refuge goals and objectives. Information resulting from monitoring would allow staff to set more specific and better management objectives, more rigorously evaluate management objectives, and ultimately, make better management decisions.

ALTERNATIVE A: CURRENT MANAGEMENT

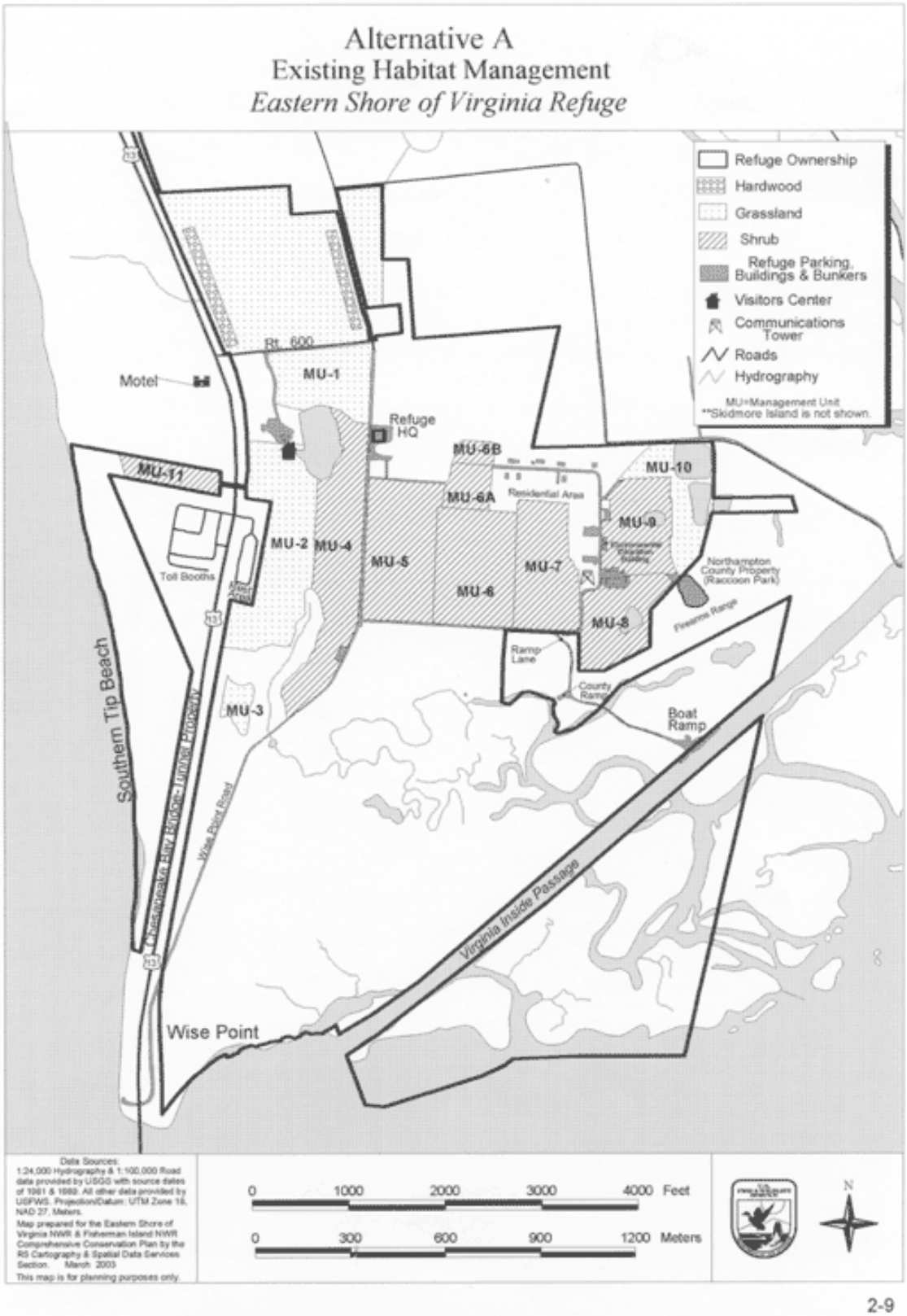
Alternative Concept

The National Environmental Policy Act (NEPA) requires analysis of the No Action Alternative, which can be defined or presented as continued current management activities or as take no action (literally, do not do anything different from current management). In this Draft CCP/EA, Alternative A fulfills the first definition; it continues our current management activities. As mentioned earlier, Alternative A provides a baseline for comparing and contrasting the other alternatives.

Management Focus: In the first 12 years since Eastern Shore of Virginia Refuge was created (1984-1996) refuge management was focused on removing military buildings and restoring wildlife habitat. In that time, maintenance staff removed over 100 structures including a water treatment plant, a bowling alley, single-family dwelling units and other miscellaneous structures. Habitat management has been focused on providing a variety of habitats for a variety of birds. These varied habitats consist of hardwood stands, shrub/scrub habitat and grassland habitat. Wildlife-dependent recreational opportunities include a 1.5-mile trail system, a deer hunt program, guided tours on Fisherman Island Refuge, and environmental education programs. The boat ramp would be managed much like it was managed under the Wise Point Corporation. No improvements to the boat ramp area would be made and a special use permit would be required for 24-hour access.

Rationale behind the management focus: The Eastern Shore of Virginia and Fisherman Island Refuges are located at the southern tip of the Delmarva Peninsula, an area that has been identified as an important migratory bird stopover location along the Atlantic coast. The refuges provide food and cover habitat for neotropical and temperate migratory species to assist in their long journeys north for the summer or south for the winter. Neotropical migrants largely depend on hardwood stands and shrub/scrub habitat, while grassland temperate migrants need more grassland habitat. By providing a diversity of habitat types, we are serving the needs of a broad range of avifauna. See Maps 2-1 and 2-2 for existing habitat management and public use areas on the Eastern Shore of Virginia Refuge. See Map 2-3 for public use areas on Fisherman Island Refuge.

Map 2-1


Alternative A
Existing Habitat Management
Eastern Shore of Virginia Refuge
Refuge Ownership
Hardwood
Grassland
Shrub
Refuge Parking, Buildings & Bunkers
Visitors Center
Communications Tower
Roads
Hydrography
MU=Management Unit
**Skidmore Island is not shown.
Rt. 600
Motel
MU-1
Refuge HQ
MU-6B
MU-10
MU-11
MU-6A
Residential Area
MU-9
MU-2
MU-4
MU-5
MU-7
MU-6
Toll Booths
Northampton County Property (Raccoon Park)
MU-8
Firearms Range
Ramp Lane
County Ramp
Boat Ramp
Southern Tip Beach
MU-3
Chesapeake Bay Bridge-Tunnel Property
Wise Point Road
Virginia Inside Passage
Wise Point
Data Sources:
1:24,000 Hydrography & 1:100,000 Road data provided by USGS with source dates of 1991 & 1989. All other data provided by USFWS. Projection/Datum: UTM Zone 18, NAD 27, Meters.
Map prepared for the Eastern Shore of Virginia NWR & Fisherman Island NWR Comprehensive Conservation Plan by the R5 Cartography & Spatial Data Services Section. March 2003
This map is for planning purposes only.
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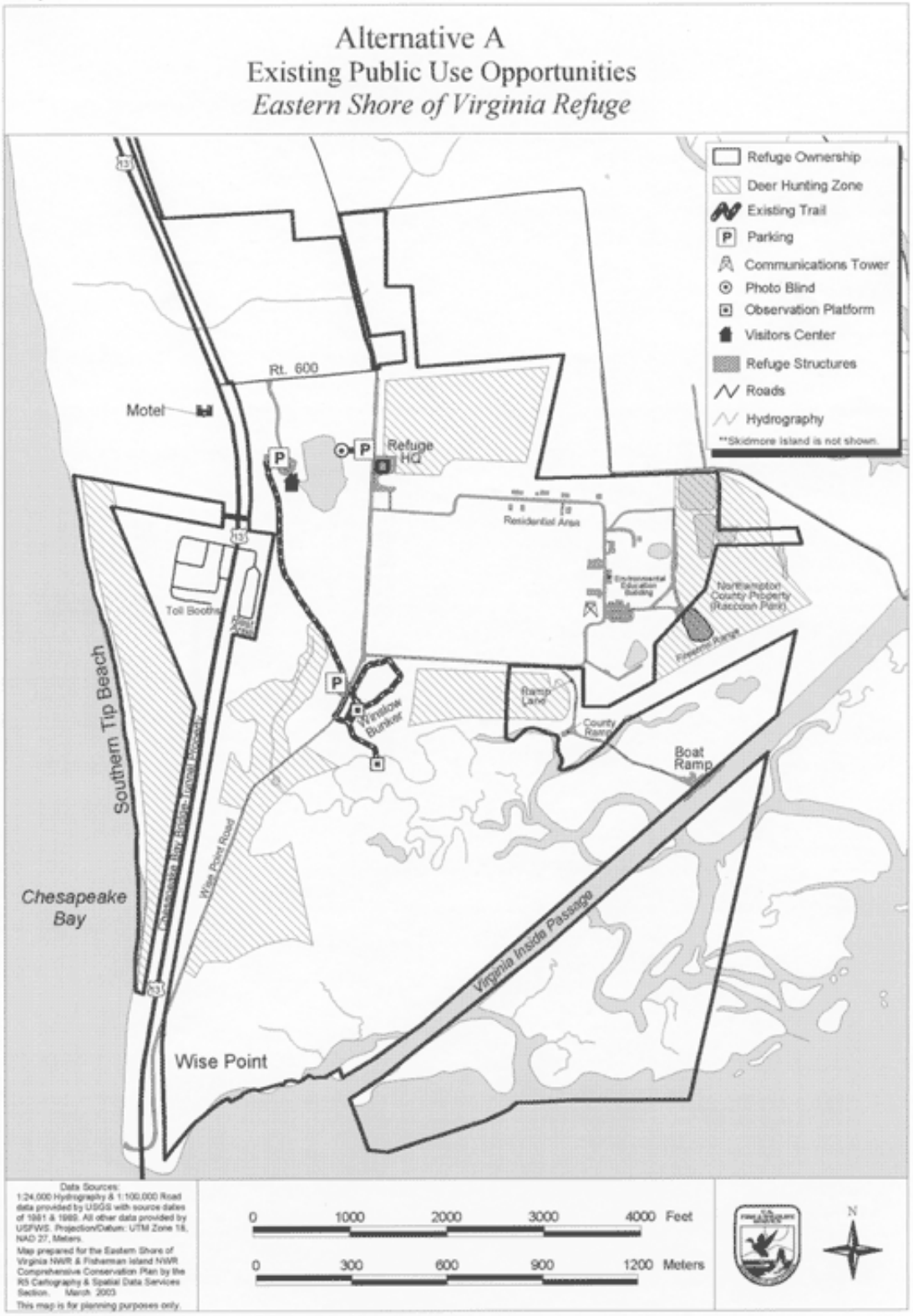
N

2-9

Map 2-2


Alternative A
Existing Public Use Opportunities
Eastern Shore of Virginia Refuge
Refuge Ownership
Deer Hunting Zone
Existing Trail
Parking
Communications Tower
Photo Blind
Observation Platform
Visitors Center
Refuge Structures
Roads
Hydrography
**Skidmore Island is not shown.
Rt. 600
Motel
Refuge HQ
Residential Area
Toll Booths
Southern Tip Beach
Chesapeake Bay
Wise Point Road
Virginia Inside Passage
Wise Point
Boat Ramp
Ramp Lane
Winslow Bunker
Northampton County Property (Raccoon Point)
Data Sources:
Map prepared for the Eastern Shore of Virginia NWR & Fisherman Island NWR Comprehensive Conservation Plan by the R5 Cartography & Spatial Data Services Section. March 2003
This map is for planning purposes only.
0 1000 2000 3000 4000 Feet
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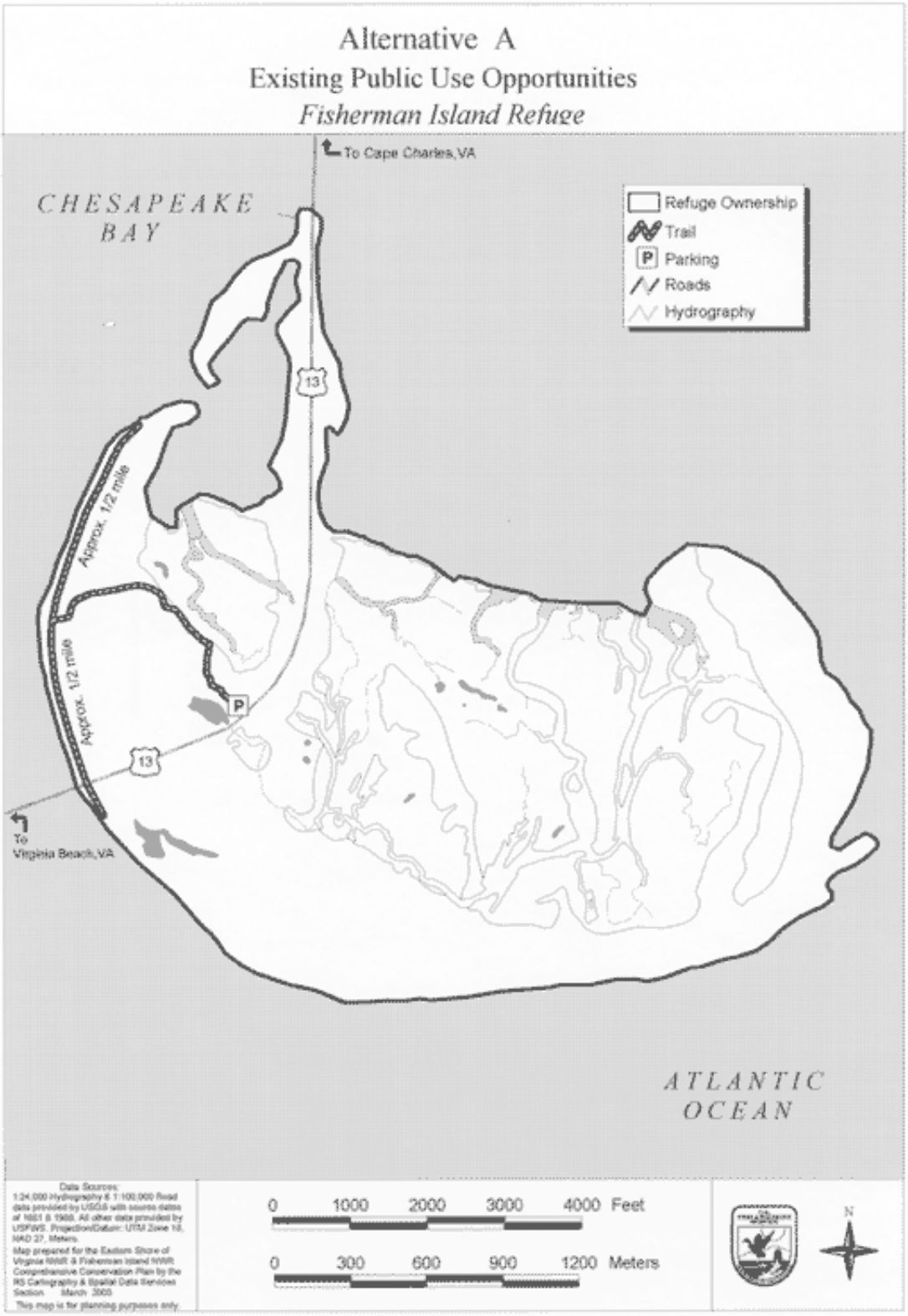
2-10

Map 2-3


Alternative A
Existing Public Use Opportunities
Fisherman Island Refuge
To Cape Charles, VA
CHESAPEAKE BAY
Refuge Ownership
Trail
Parking
Roads
Hydrography
13
Approx. 1/2 mile
Approx. 1/2 mile
P
13
To Virginia Beach, VA
ATLANTIC OCEAN
Data Sources:
1:24,000 Hydrography & 1:100,000 Road data provided by USGS with source dates of 1983 & 1988. All other data provided by USFWS. Projection/Datum: UTM Zone 18, NAD 27, Meters.
Map prepared for the Eastern Shore of Virginia NWR & Fisherman Island NWR Comprehensive Conservation Plan by the RS Cartography & Spatial Data Services Section March 2003.
This map is for planning purposes only.
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2-11

ALTERNATIVE B: EMPHASIS ON FOREST AND SHRUB-DEPENDENT NEOTROPICAL AND TEMPERATE MIGRANTS

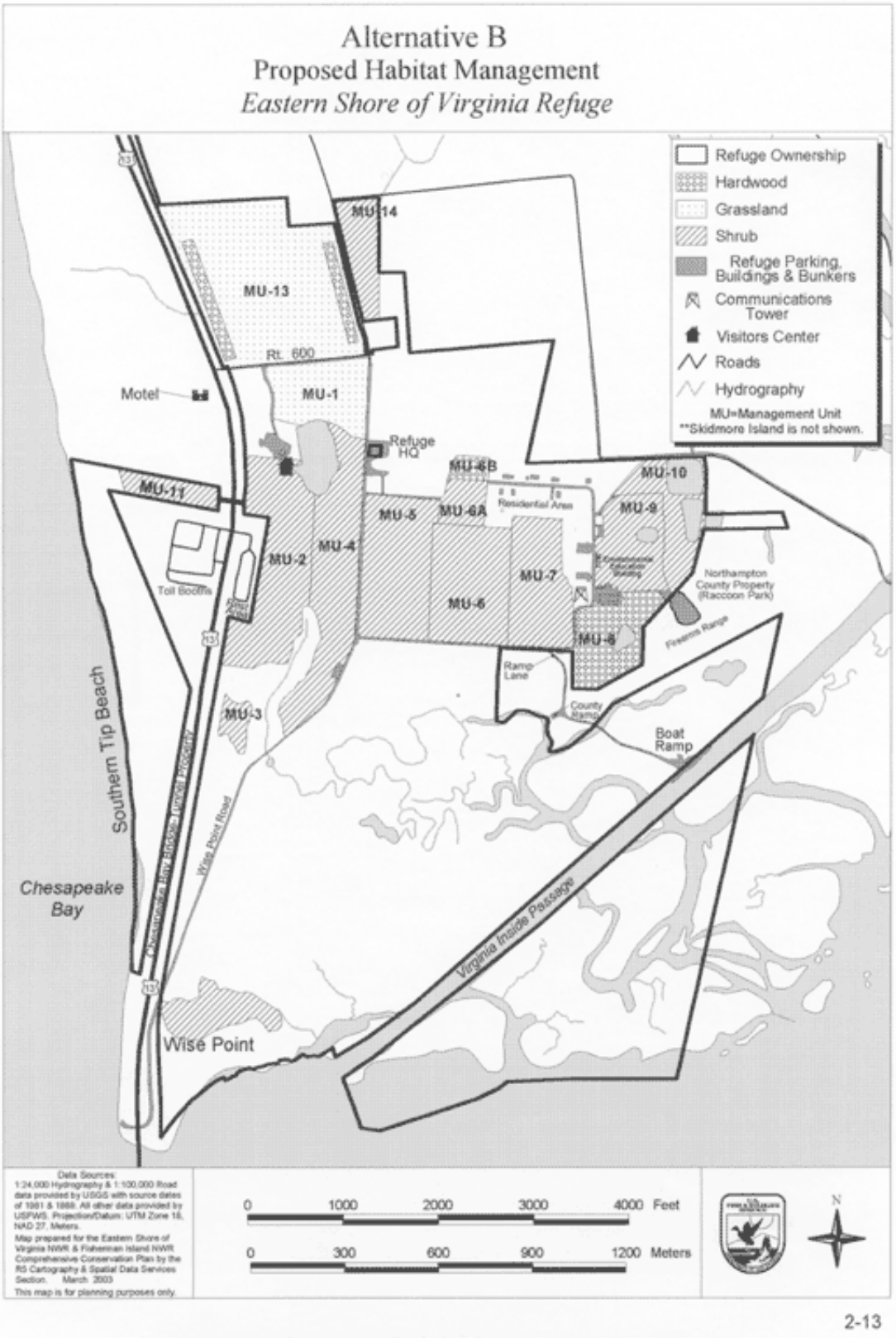
Alternative Concept

Management Focus: Under this alternative the refuge would focus its management efforts on protecting, restoring, and enhancing habitat for forest and shrub-dependent neotropical and temperate migratory birds. To further protect habitat for these species, we proposed to expand the land acquisition area on the Eastern Shore of Virginia Refuge to include an additional 6,030 acres on the Delmarva Peninsula. We would increase surveying and monitoring efforts for threatened and endangered species. We would expand deer hunting opportunities on the Eastern Shore of Virginia Refuge and open that refuge to waterfowl hunting. We would also open Fisherman Island Refuge to an archery deer management hunt. After improvements to the boat ramp area are made, we would open the ramp to commercial and recreational users, reserving several parking spaces for commercial watermen. Over time, we would phase out docking, 24-hour access and reserved parking privileges for commercial watermen. As in Alternative A, Verizon would remove the communications tower. Also in this Alternative, we would assess the need for continued use of the switching station adjacent to the tower.

Rationale behind the management focus: The lower Delmarva Peninsula is hemispherically important to migrating songbirds. The narrowing peninsula provides a geographic bottleneck for over a hundred southward migrating avian species concentrating millions of birds into this small area. Adequate cover and food along the migratory route are essential for the long-term viability of these species. Unfortunately, wildlife habitat on the peninsula is becoming fragmented with increased waterfront development and clearing of forest and shrub habitat, threatening the migration corridor. Virginia, Maryland, Delaware and New Jersey have experienced up to 60 percent declines in neotropical songbird numbers in recent history (Mabey et al., 1993). In light of these population declines and habitat losses, increased emphasis is needed to protect, restore, and enhance the lower Delmarva's critically located habitats with a focus on conserving hardwood forests and fruit-producing shrubs for these avian migrants.

See Maps 2-4 and 2-5 for proposed habitat management and public use strategies on the Eastern Shore of Virginia Refuge. See Map 2-6 for proposed public use strategies on Fisherman Island Refuge.

Map 2-4


Alternative B
Proposed Habitat Management
Eastern Shore of Virginia Refuge
Refuge Ownership
Hardwood
Grassland
Shrub
Refuge Parking, Buildings & Bunkers
Communications Tower
Visitors Center
Roads
Hydrography
MU=Management Unit
**Skidmore Island is not shown.
MU-14
MU-13
Rt. 600
Motel
MU-1
Refuge HQ
MU-6B
MU-10
MU-11
MU-5
MU-6A
Residential Area
MU-9
MU-4
MU-2
MU-7
Toll Booths
MU-6
Northampton County Property (Raccoon Park)
MU-8
Firearms Range
Ramp Lane
MU-3
County Ramp
Boat Ramp
Southern Tip Beach
Chesapeake Bay
Chesapeake Bay Bridge-Tunnel Property
Wise Point Road
Virginia Inside Passage
Wise Point
Data Sources:
1:24,000 Hydrography & 1:100,000 Road data provided by USGS with source dates of 1981 & 1988. All other data provided by USFWS. Projection/Datum: UTM Zone 18, NAD 27, Meters.
Map prepared for the Eastern Shore of Virginia NWR & Fisherman Island NWR Comprehensive Conservation Plan by the R5 Cartography & Spatial Data Services Section. March 2003
This map is for planning purposes only.
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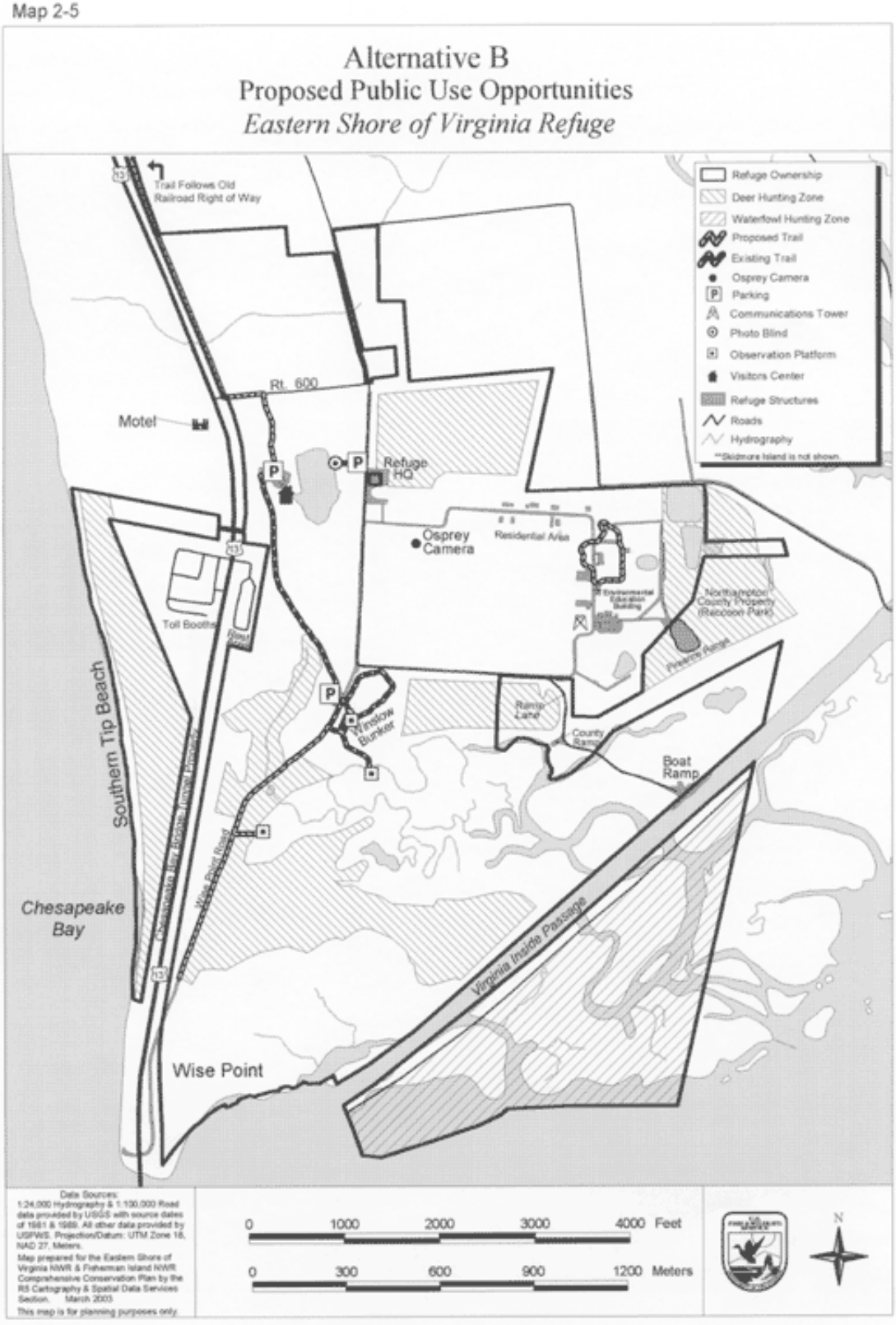
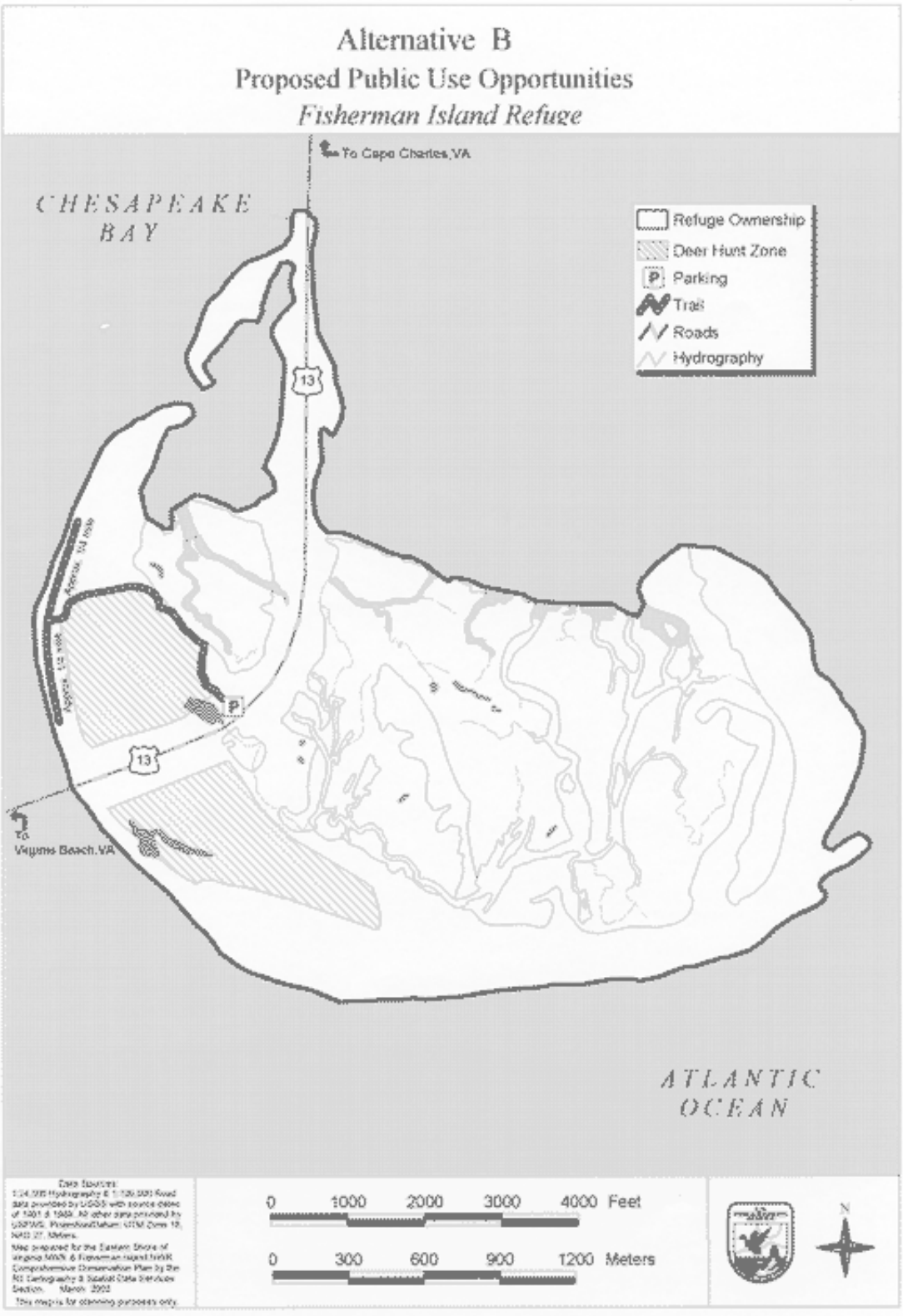
2-13

Map 2-5


Alternative B
Proposed Public Use Opportunities
Eastern Shore of Virginia Refuge
Trail Follows Old Railroad Right of Way
Rt. 600
Motel
Refuge HQ
Osprey Camera
Residential Area
Toll Booths
Southern Tip Beach
Chesapeake Bay
Wise Point
Winslow Bunker
Ramp Lane
County Ramp
Boat Ramp
Virginia Inside Passage
Refuge Ownership
Deer Hunting Zone
Waterfowl Hunting Zone
Proposed Trail
Existing Trail
Osprey Camera
Parking
Communications Tower
Photo Blind
Observation Platform
Visitors Center
Refuge Structures
Roads
Hydrography
**Skidmore Island is not shown.
0 1000 2000 3000 4000 Feet
0 300 600 900 1200 Meters
N

2-14

Map 2-6


Alternative B
Proposed Public Use Opportunities
Fisherman Island Refuge
To Cape Charles, VA
CHESAPEAKE BAY
Refuge Ownership
Deer Hunt Zone
Parking
Trail
Roads
Hydrography
13
P
13
To Virginia Beach, VA
ATLANTIC OCEAN
0 1000 2000 3000 4000 Feet
0 300 600 900 1200 Meters
N

2-15

Map 2-7


Draft Land Protection Plan
Eastern Shore of Virginia Refuge
Northampton County, Virginia
Proposed Acquisition Boundary
Northampton County, Virginia Tax Parcels
Data Sources:
Digital Tax Map data produced and provided by Northampton County, VA. All other data provided by U.S. Fish & Wildlife Service.
Projection/Datum:
UTM Zone 18, NAD83, Meters.
Map prepared by the R5 Cartography & Spatial Data Services Section.
March 2003
This map is for planning purposes only.
0 1 2 3 Miles
0 1 2 3 4 5 Kilometers
N

2-16

ALTERNATIVE C: EMPHASIS ON GRASSLAND TEMPERATE AND NEOTROPICAL MIGRANTS

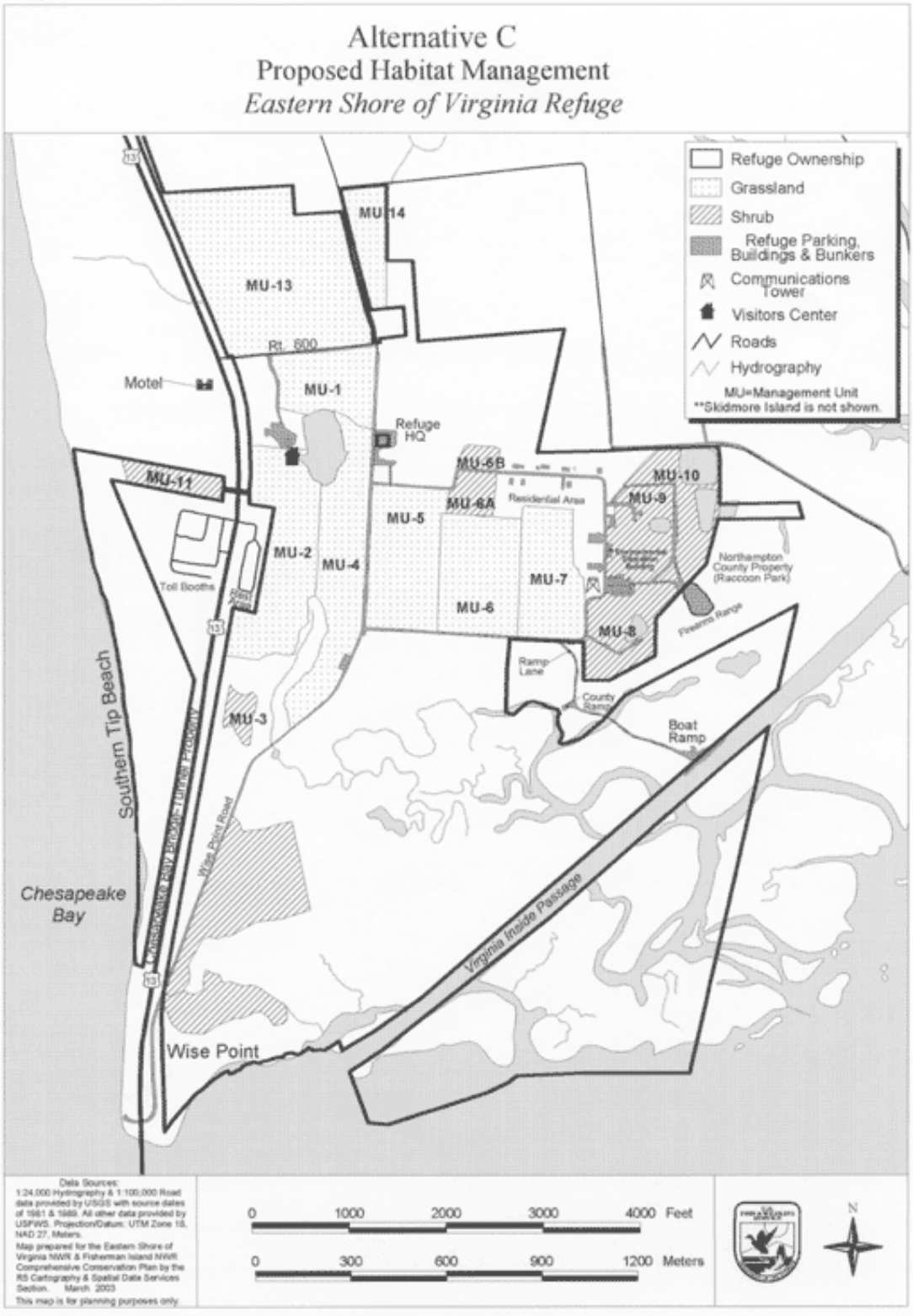
Alternative Concept

Management focus: Under this alternative the refuge would focus its management efforts on protecting, restoring, and enhancing habitat for grassland and open habitat-dependent neotropical and temperate migrant birds. As in Alternative B, we would increase monitoring and surveying for threatened and endangered species and we would expand Eastern Shore of Virginia Refuge's land acquisition area to include 6,030 additional acres. We would not open Fisherman Island Refuge to deer hunting and we would not open Eastern Shore of Virginia Refuge to waterfowl hunting, but we would open the southern tip beach to surf fishing. We would manage the boat ramp as we would in Alternative B, except we would design a smaller parking lot and reserve fewer parking spaces for commercial watermen.

Rationale behind the management focus: The North American Breeding Bird Survey suggests that grassland and open habitat species are experiencing dramatic annual population declines, especially in eastern North America (Sauer et al., 2000). These avian population declines are attributed in part to marked declines in early successional habitats, which during migration, provide rest and refueling locations to grassland and open habitat-dependent migrants during their journey either to the tropics or the southeastern United States (Hagan et al., 1992). The availability of grassland habitat within the mid-Atlantic Coastal Plain has declined dramatically throughout the 20th century due to suppression of natural disturbance and loss of agricultural land to development. Open farmlands have declined by nearly 80 percent within the mid-Atlantic region since the 1940s (U.S. Department of Commerce 1981). Additionally, the transition to more intensive farming practices has resulted in a loss of idle grassland habitat.

Each autumn large numbers of migrant landbirds are concentrated on the lower Delmarva Peninsula. The Partner's in Flight Mid-Atlantic Coastal Plain Bird Conservation Plan (USFWS 1999b) has identified 16 open habitat-dependent species of concern, of which all but one, the Bachman's sparrow, are known to migrate through the refuge. Due to its geographic location, the refuge is considered a significant stopover habitat for open habitat migrants within the mid-Atlantic region (Paxton and Watts, 2000). Thus, our conservation potential for these trust species is unique.

Map 2-8


Alternative C
Proposed Habitat Management
Eastern Shore of Virginia Refuge
Refuge Ownership
Grassland
Shrub
Refuge Parking, Buildings & Bunkers
Communications Tower
Visitors Center
Roads
Hydrography
MU=Management Unit
**Skidmore Island is not shown.
MU-14
MU-13
Rt. 600
Motel
MU-1
Refuge HQ
MU-6B
MU-10
MU-9
MU-6A
Residential Area
MU-5
MU-11
MU-2
MU-4
MU-7
MU-6
Toll Booths
Northampton County Property (Raccoon Park)
MU-8
Firearms Range
Ramp Lane
County Ramp
Boat Ramp
MU-3
Southern Tip Beach
Wise Point Road
Chesapeake Bay
Virginia Inside Passage
Wise Point
Data Sources:
1:24,000 Hydrography & 1:100,000 Road data provided by USGS with source dates of 1981 & 1989. All other data provided by USFWS. Projection/Datum: UTM Zone 18, NAD 27, Meters.
Map prepared for the Eastern Shore of Virginia NWR & Fisherman Island NWR Comprehensive Conservation Plan by the R5 Cartography & Spatial Data Services Section. March 2003
This map is for planning purposes only.
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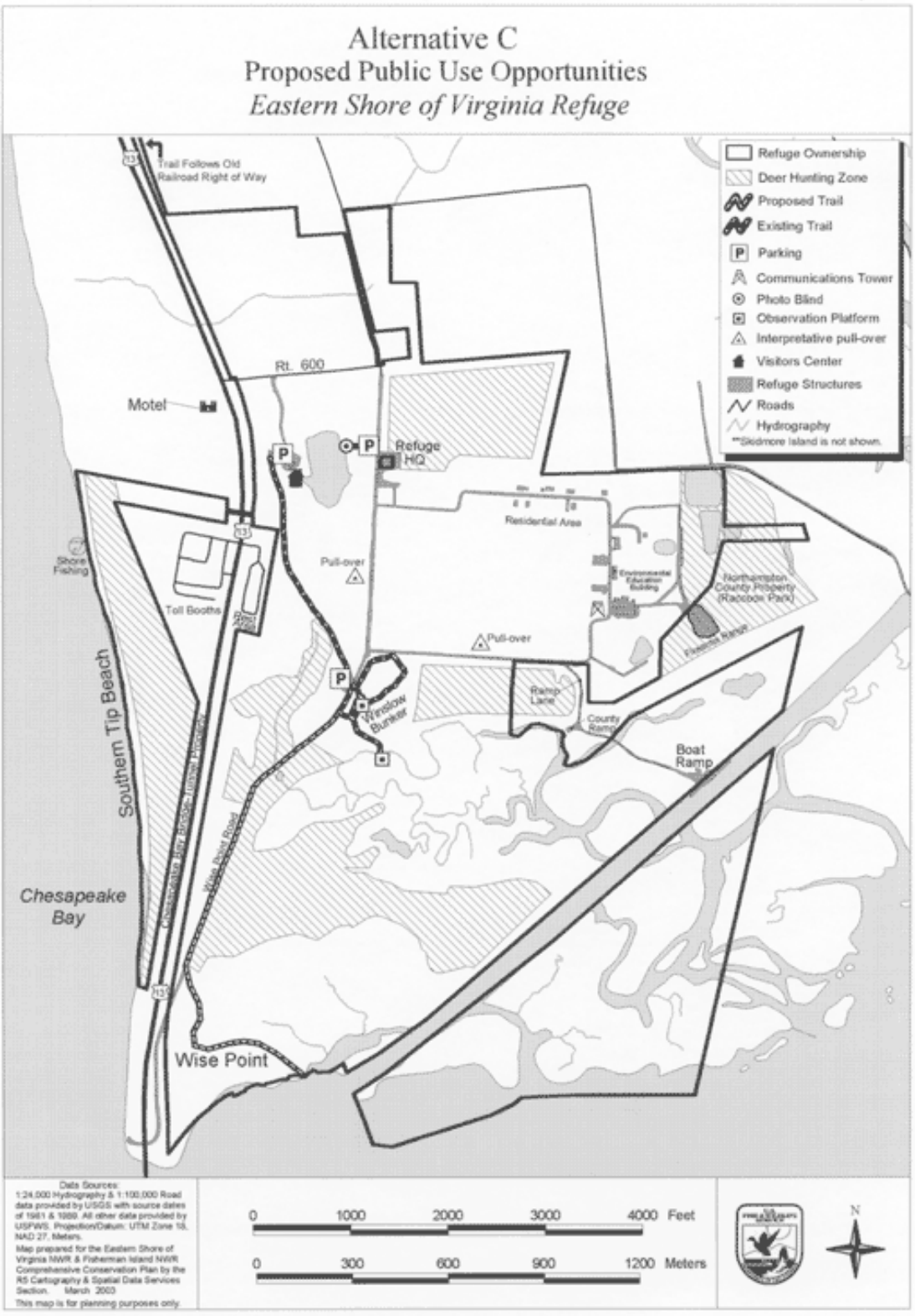
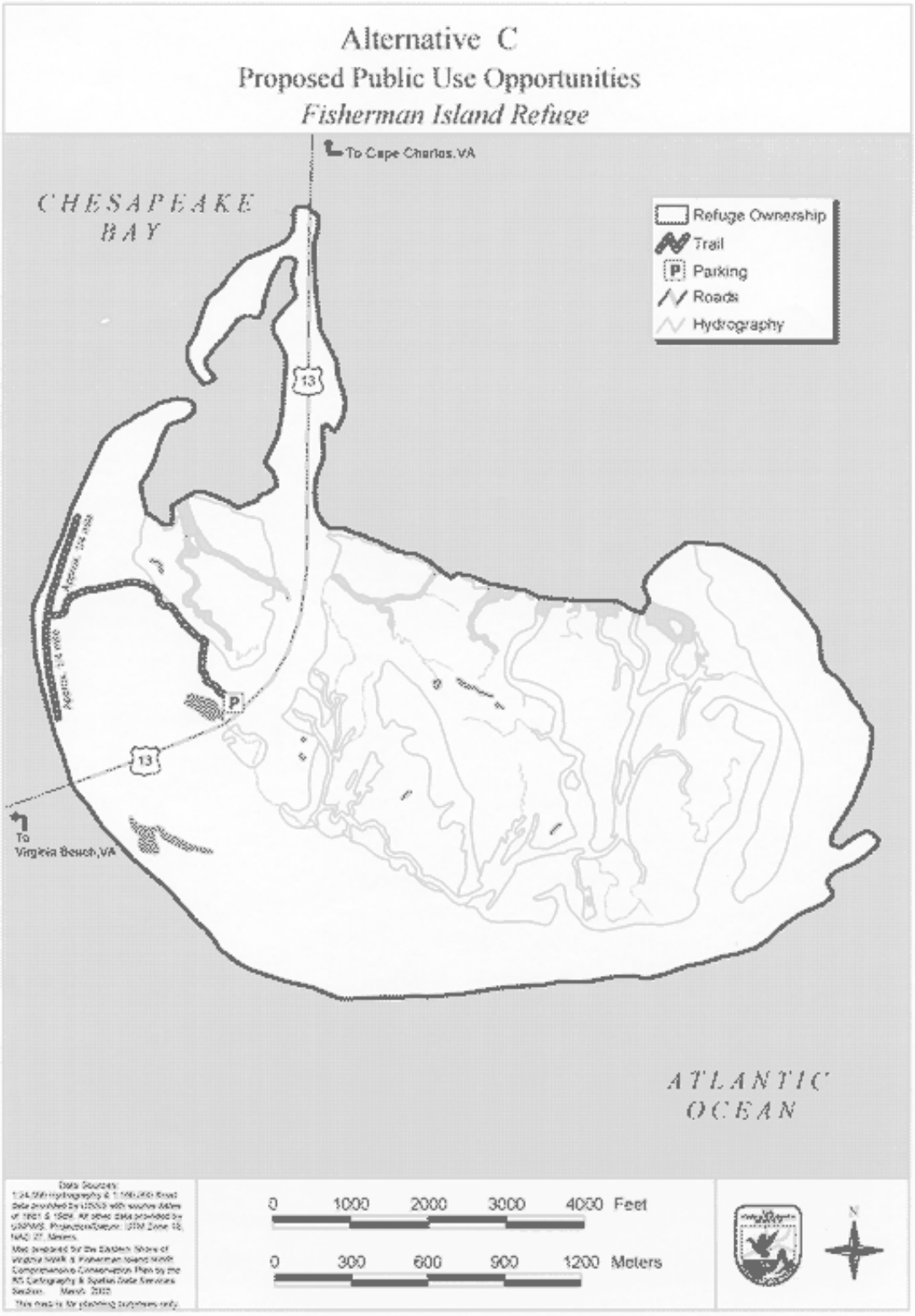
2-18

Map 2-9


Alternative C
Proposed Public Use Opportunities
Eastern Shore of Virginia Refuge
Refuge Ownership
Deer Hunting Zone
Proposed Trail
Existing Trail
Parking
Communications Tower
Photo Blind
Observation Platform
Interpretative pull-over
Visitors Center
Refuge Structures
Roads
Hydrography
**Sloidmore Island is not shown.
Trail Follows Old Railroad Right of Way
Rt. 600
Motel
Refuge HQ
Residential Area
Pull-over
Shore Fishing
Toll Booths
Environmental Education Building
Northampton County Property (Raccoon Park)
Pull-over
Ramp Lane
County Ramp
Boat Ramp
Winslow Bunker
Southern Tip Beach
Chesapeake Bay
Wise Point
Data Sources:
1:24,000 Hydrography & 1:100,000 Road data provided by USGS with source dates of 1981 & 1989. All other data provided by USFWS. Projection/Datum: UTM Zone 18, NAD 27, Meters.
Map prepared for the Eastern Shore of Virginia NWR & Fisherman Island NWR Comprehensive Conservation Plan by the R5 Cartography & Spatial Data Services Section. March 2003
This map is for planning purposes only.
0 1000 2000 3000 4000 Feet
0 300 600 900 1200 Meters
N

2-19

Map 2-10


Alternative C
Proposed Public Use Opportunities
Fisherman Island Refuge
To Cape Charles, VA
CHESAPEAKE BAY
Refuge Ownership
Trail
Parking
Roads
Hydrography
13
P
13
To Virginia Beach, VA
ATLANTIC OCEAN
0 1000 2000 3000 4000 Feet
0 300 600 900 1200 Meters
N

2-20

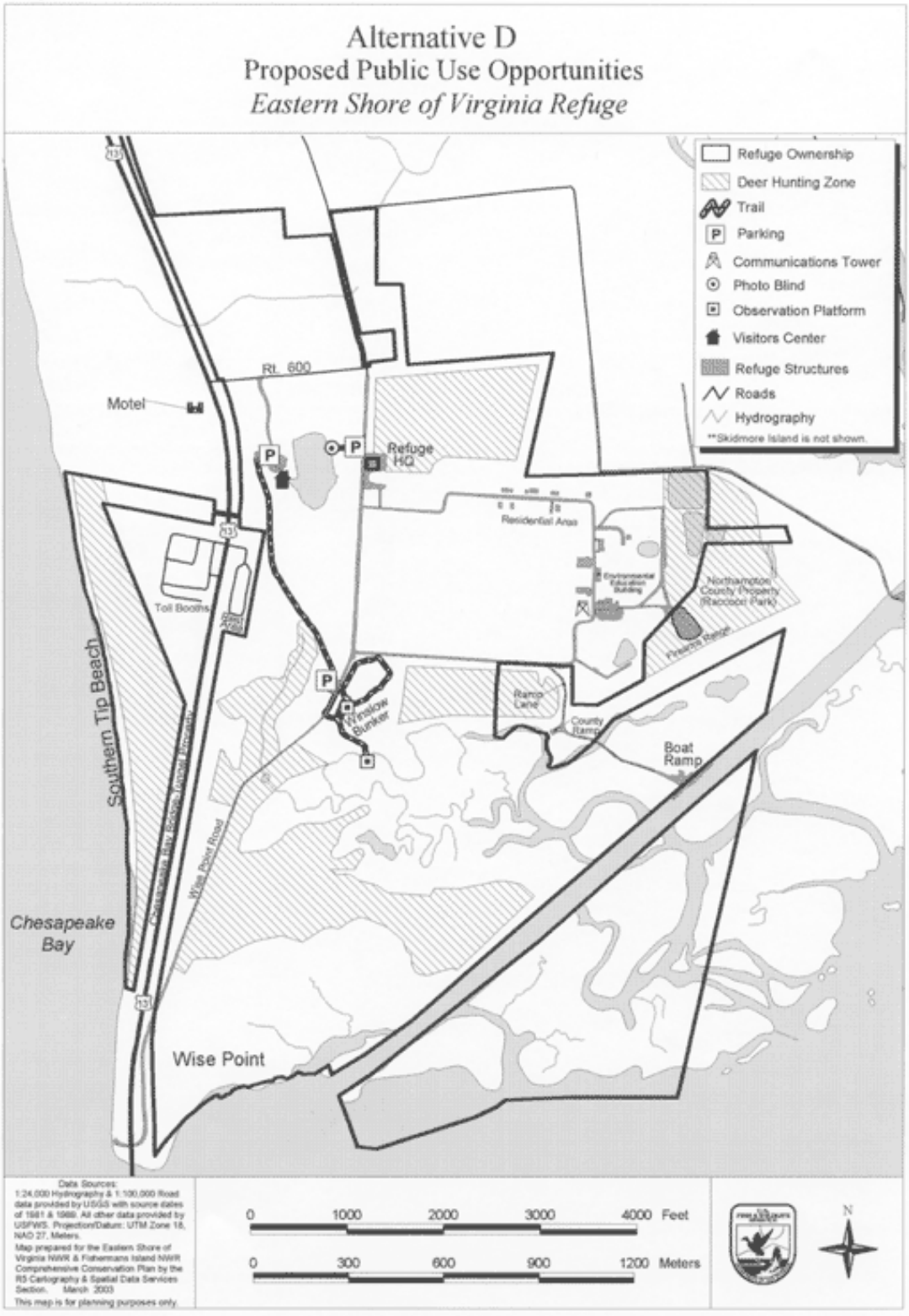
ALTERNATIVE D: MAINTAINING NATURAL ECOSYSTEM DYNAMICS: EMPHASIS ON MAINTAINING AND RESTORING HISTORIC CONDITIONS

ALTERNATIVE CONCEPT

Management Focus: Under this Alternative the refuge would focus management efforts on maintaining and restoring the natural dynamics of the ecosystems of the lower Delmarva Peninsula. Where necessary, restoration of some historic vegetative communities, primarily upland hardwoods, would occur. However, subsequent maintenance of those communities, as well as management of wetland and beach communities, would primarily allow natural succession to occur. As necessary, prescribed fire and timber clearing would be used to replicate the historic forest disturbance factors such as wildfires, hurricanes, and disease. Off-refuge land conservation efforts would focus on preservation and/or restoration of the historic vegetative regimes. Compatible wildlife-dependent recreational opportunities, as well as off-refuge outreach programs, would promote education and awareness among the local citizenry of the natural history and the importance of historic ecological communities to migratory birds. We would not expand hunting or fishing opportunities in this Alternative. We would manage the boat ramp as we would in Alternative C except the parking lot would be even smaller and we we would reserve even fewer spaces for commercial watermen. We would also remove several artificial structures on the refuge to open up wildlife habitat.

Rationale behind the management focus: The basis for this Alternative is the Service policy, *Biological Integrity, Diversity, and Environmental Health* (601 FW 3). This policy promotes protection and restoration, where appropriate, of historic landscapes, including historic vegetative communities and natural wildlife communities, where such actions are feasible and do not conflict with a refuge's purpose(s). Alternative D involves investigating historic ecosystem processes - such as fires, storms, coastal dynamics, vegetative community succession, soil and hydrological regimes - to decide which ecological communities are most appropriate for the refuge. Restoration and/or maintenance of target communities would then occur using or mimicking the historic natural processes. Rather than focus conservation energies on a guild of species (e.g., forest-dependent songbirds), this alternative emphasizes restoration of historic ecological communities and successional dynamic.

Map 2-11


Alternative D
Proposed Public Use Opportunities
Eastern Shore of Virginia Refuge
Refuge Ownership
Deer Hunting Zone
Trail
Parking
Communications Tower
Photo Blind
Observation Platform
Visitors Center
Refuge Structures
Roads
Hydrography
**Skidmore Island is not shown.
Rt. 600
Motel
Refuge HQ
Residential Area
Toll Booths
Southern Tip Beach
Northampton County Property (Raccoon Park)
Ramp Lane
County Ramp
Boat Ramp
Wise Point Road
Chesapeake Bay
Wise Point
Data Sources:
Map prepared for the Eastern Shore of Virginia NWR & Fishermans Island NWR Comprehensive Conservation Plan by the R5 Cartography & Spatial Data Services Section, March 2003
This map is for planning purposes only.
0 1000 2000 3000 4000 Feet
0 300 600 900 1200 Meters
N

2-22

Map 2-12


Alternative D
Proposed Public Use Opportunities
Fisherman Island Refuge
To Cape Charles, VA
CHESAPEAKE BAY
Refuge Ownership
Trail
Parking
Roads
Hydrography
13
P
13
To Virginia Beach, VA
ATLANTIC OCEAN
0 1000 2000 3000 4000 Feet
0 300 600 900 1200 Meters
N

Alternatives Considered but Eliminated from further Consideration

Relocating or closing the Wise Point Boat Ramp

We considered closing the Wise Point boat ramp or relocating it off refuge. Upon further discussion, however, we decided neither of these were reasonable alternatives. Closing the boat ramp would eliminate our ability to provide access to fishing and waterfowl hunting (as proposed in Alternative B) on the Eastern Shore of Virginia Refuge. These are two of the six wildlife-dependent recreational activities the Improvement Act encourages refuges to provide for the public. Closing the boat ramp would also have a significant adverse economic impact on the local community, as at least a dozen commercial watermen and their families depend on the boat ramp for their livelihood. Many other local people who use the boat ramp for recreational fishing buy equipment at local stores and eat at local restaurants. The boat ramp also contributes to cultural resources on the eastern shore of Virginia, where commercial and recreational fishing have been a way of life for generations.

Relocating the boat ramp is also not a reasonable alternative since there is no comparable relocation site available. Although there is a ramp at Kiptopeke State Park, three miles north of the refuge, that ramp is on the Chesapeake Bay and is not a safe launch site for users wanting to access the Atlantic Ocean. The next closest ramp on the ocean side is 10 miles north in Oyster. This is a long distance for users who need access to the southern tip of the peninsula. Finally, it is not the general practice of the National Wildlife Refuge System to build boat ramps off refuge. Given these circumstances, we decided relocating the boat ramp is not a reasonable alternative because it is not economically or technically feasible. Therefore, we will not consider this alternative any further.

Question 1: How would the refuge provide more forage and cover habitat for migratory species?

Alternative A, *Current Management*	**Alternative B,** *Proposed Action*	**Alternative C**	**Alternative D**
Allow natural succession on 20 acres in MU 13 and around the refuge residential area	Plant mixed hardwoods on 27 acres and allow natural succession in residential area and MUs 9, 10 11	Plant mixed hardwoods on 10 acres and allow natural sucession in residential area and MUs 6B, 9, 10, 11	Plant mixed hardwoods on 10 acres of refuge land
Continue the public deer hunt program to control deer browse on vegetation	Develop agreements with the Bridge-Tunnel Authority to manage forest on properties contiguous to refuge land	Develop agreements with the Bridge-Tunnel Authority to manage forest on properties contiguous to refuge land	Investigate historic vegetation communities (upland, coastal, etc.) and patterns and replicate them on the refuge to the extent possible
Provide fruit-bearing shrubs and promote natural succession	Develop a 15-year monitoring plan for fruit production and forest understory	Establish test plots for controlling invasive species in hardwood, upland shrub and grassland habitat	Develop agreements with the Bridge-Tunnel Authority to plant hardwoods and manage pines on properties contiguous to refuge land
Allow succession in MUs 4, 8 and 9	Establish test plots for controlling invasive species in hardwood, upland shrub and grassland habitat	Eradicate and control invasive species in MUs 6B, 11, 14, and Wise Point	Establish test plots in MUs 4 and 5 for controlling invasive species in hardwood stands
Hydroaxe to maintain early successional habitat for MUs 5,6,7	Eradicate from grassland habitat 20% of Japanese honeysuckle population annually over 5 years and 10% of fennel population annually over 10 years	Remove loblolly pine from MU 6A and on eastern side of road on Wise Point; burn cut areas to maintain shrub	Eradicate 20% of Japanese honeysuckle population and fennel population annually for 5 years
Periodically remove loblolly pines on Wise Point to maintain shrub habitat	Remove loblolly pine from the southern tip of Wise Point and from MUs 4, 5, 6, 6A, 7 and 10; burn cut areas to maintain shrub	Maintain shrub habitat by cutting fields in rotational blocks	Assess threats to beach and dune communities
Periodically remove non-native shrubs from grassland (MUs 1, 2) and in residential area	Maintain shrub habitat by cutting fields in rotational blocks	Partially remove hedgerows and autumn olive south of Route 600	Remove loblolly pine in MUs 6A and 10; initiate loblolly pine control elsewhere, where appropriate
Plant native warm season grasses and maintain by mowing	Remove hedgerows and autumn olive between MUs 1 and 13	Remove shrub/saplings and plant warm season grasses in MUs 5-7	Maximize deer removal
Mow old farm fields on a rotational basis	Maintain grasslands by mowing, burning, discing,	Conduct a test burn on MU 13; based on results, mow or burn MU s 1, 2, 4-7 and 14 to maintain in grassland	
Mow strips annually through shrub and grassland to enhance raptor and woodcock foraging areas		Maintain grasslands by mowing, burning, discing,	

Question 2: How would the refuge protect and enhance federal trust resources and other species and habitats of special concern?

Alternative A, *Current Management*	**Alternative B,** *Proposed Action*	**Alternative C**	**Alternative D**
Continue to close southern tip beach to public use to protect Northeastern beach tiger beetle habitat	In addition to Alt. A: Conduct adult tiger beetle surveys for 3-5 years in the summer; conduct larval surveys if needed	*Same as Alternative B*	*Same as Alternative B except*:
Periodically monitor for piping plover activity on Fisherman Island Refuge (FSH)	Assess trespassing on southern tip beach and install interpretive signs		Designate Fisherman and Skidmore Islands as Research Natural Areas
Periodically survey vegetation on FSH for endangered plants	Survey for piping plovers biweekly during spring and fall migration; weekly during nesting season; and bimonth in the winter		Develop a predator management plan using historical data on predators from the time of European settlement
Conduct surveys for colonial nesting birds on FSH	Survey for seabeach amaranth; if found, erect a buffer zone around plants		Map areas of existing salt marsh, beach and interdunal communities on the refuge as well as similar habitats in Northampton County
Conduct Christmas Bird Counts on FSH	Conduct weekly avian surveys on FSH from Feb. 1 to Oct. 31, and bimonthly the rest of the year		
Use aerial photos and research projects to evaluate the natural dynamics of erosion and accretion on FSH	Install closure signs on FSH		
Conduct volunteer beach cleanups on FSH and on Eastern Shore of Virginia Refuge (ESV)	Monitor colonial nesting bird colonies for predators		
Periodically spray herbicide to control phragmites	Determine and evaluate productivity for target species		
Continue to close FSH to public use during the avian nesting season (March 15-Sept. 30)	Evaluate vegetation in royal tern nesting area		
Monitor human and predator disturbance on FSH to minimize adverse effects to avian nesting and behavior	Implement a zero tolerance policy for red fox, coyote and feral cats		
	Implement gull control measures if gulls are found predating on colonial or beach nesting birds		

Question 3: How would the refuge help protect migratory bird stopover habitat on the lower Delmarva Peninsula?

Alternative A, *Current Management*	**Alternative B,** *Proposed Action*	**Alternative C**	**Alternative D**
Continue to work with willing landowners to acquire 310 acres within our approved acquisition boundary	In addition to Alt. A: Protect, through fee acquisition or easement, existing forest/shrub habitat within a proposed 6,030-acre acquisition area	*Same as Alternative B except*: Restore agricultural land within the proposed acquisition area to grass-land habitat instead of hardwood forest or shrub habitat	In addition to Alt. A: Protect, through fee acquisition or easement, existing tracts of any of the four target habitat types (mixed deciduous-pine, maritime pine, coastal shrub, beach/dune) within the proposed 6,030-acre acquisition area
Continue to participate in discussions on County planning	Acquire and restore agricultural lands within the proposed acquisition area to hardwood forest and shrub habitat		Acquire and restore agricultural lands within the proposed acquisition area to any of the four target habitat types
Continue to work with public and private partners on GIS analysis of the lower eastern shore	Work with partners to establish conservation easements on agricultural lands not protected through acquisition within and outside the proposed acquisition area		Work with partners to help identify lands for purchase or for conservation easements
Continue to coordinate private land protection projects with the Service and Natural Resources Conservation Service (NRCS)	Work with partners to help identify lands for purchase or for conservation easements		
Continue to participate in the Southern Tip Partners group to prioritize and identify lands for protection	Assist partners in obtaining grants to protect high priority lands		Assist partners in obtaining grants to protect high priority lands
	Coordinate with partners to develop a training course on conservation easements for refuge, State and County employees		Coordinate with partners to develop a training course on conservation easements for refuge, State and County employees
	Support the development of a local land trust		Support the development of a local land trust

Question 4: What types of hunting and fishing opportunities would the refuge provide?

Alternative A, *Current Management*	**Alternative B,** *Proposed Action*	**Alternative C**	**Alternative D**
Continue to provide an annual deer hunt program for archery and shotgun Continue to participate in local hunting and fishing events	Continue to provide an annual deer hunt program for archery and shotgun on ESV and work with State partners to increase the take of deer Expand the ESV deer hunt onto a portion of the former Wise Point property Work with State partners to assess the health of the deer population on FSH Open a portion of FSH to an archery management deer hunt Open a portion of the former Wise Point property to migratory bird hunting by boat only Provide additional opportunities for hunting deer, small game and waterfowl on acquired lands where compatible	*Same as Alternative B except:* Do not open FSH to an archery management deer hunt Do not open Wise Point to waterfowl hunting Open the southern tip beach on ESV to surf fishing if adult and larval tiger beetle surveys show a stable and healthy population	*Same as Alternative A*

Question 5: How would the refuge manage the boat ramp area?

Alternative A, *Current Management*	**Alternative B,** *Proposed Action*	**Alternative C**	**Alternative D**
Commercial and recreational fisherman would continue to have access to the Wise Point boat ramp under the same rules and regulations that applied when the boat ramp was owned by the Wise Point Corporation	Improve entrance road and parking lot; cap parking at 75 spaces, reserving 12 spaces for permitted commercial watermen	*Same as Alternative B except:*	*Same as Alternative B except*:
	Construct a boat ramp, commercial dock and commercial off-loading site	Design a two-lane boat ramp with a 35-space parking lot; seven parking spaces would be reserved for permitted commercial watermen	Upgrade the boat ramp area to include a one-lane ramp and a 25-space parking lot; five spaces would be reserved for permitted commercial watermen
Continue to provide Special Use Permits for recreational and commercial watermen to access the Wise Point boat ramp outside refuge hours	Minimize impact to commercial watermen by allowing access during construction as feasible		Replace docks with mooring space for up to seven commercial fishing boats
	Once improvements are made, open ramp daily to the public during normal refuge hours; charge $10 daily and $120 annually		
	Commercial watermen paying a commercial rate at the time the Service purchased the boat ramp would retain 24-hour access; charge $1,500 annually for docking boats and $600 for no docking		
	New commercial users would pay $400 annually		
	Phase out docking, 24-hour access and reserved parking through attrition		
	Contract a concessionaire to manage the site		
	Cap canoes and kayaks to wo per vehicle		
	Provide opportunities for fishing on new refuge lands where appropriate		

Question 5: What types of wildlife observation, wildilfe photography, education and interpretation opportunities would the refuge provide?

Alternative A, *Current Management*	**Alternative B,** *Proposed Action*	**Alternative C**	**Alternative D**
Continue to offer weekend guided tours of FSH from Oct.-March	In addition to Alt. A: Open a new 0.6-mile trail on ESV with an overlook	In addition to Alt. A: Open a new 1-mile trail on ESV leading to the beach	In addition to Alt. A: Focus new environmental education programs on neotropical and temperate migrant habitats, emphasizing the loss of such habitats due to development on the Eastern Shore; new programs would include lesson plans for local teachers, an additional Junior Refuge Manager Program, a "Monarch Watch" program for third-graders, an annual Spanish-taught program, an annual on-site teacher workshop, interpretive programs for summer camp groups and an Elderhostel program.
Maintain the photo blind on ESV	Establish two additional butterfly gardens on ESV and conduct weekly butterfly walks in October	Establish two additional butterfly gardens on ESV and conduct weekly butterfly walks in October	
Continue to provide an observation window in the Visitor Center	Focus new environmental education programs on neotropical and temperate migrants; new programs would include lesson plans for local teachers, an additional Junior Refuge Manager Program, a "Monarch Watch" program for third-graders, an annual Spanish-taught program, an annual on-site teacher workshop, interpretive programs for summer camp groups and an Elderhostel program	Focus new environmental education programs on grassland temperate migrants; new programs would include lesson plans for local teachers, a "Monarch Watch" program for third-graders, an annual Spanish-taught program, an annual on-site teacher workshop, interpretive programs for summer camp groups and an Elderhostel program.	
Continue to maintain two overlooks along the refuge's 1.5 miles of trails			
Continue to maintain the butterfly garden adjacent to the Visitor's Center			
Continue to provide environmental education programs on- and off-refuge for local elementary school children		Renovate the EE building	Revise and develop new interpretive materials and programs to focus on the unique ecological values of the refuge and lower Delmarva Peninsula including its historic landscapes and natural biodiversity
Continue to conduct teacher workshops	Design and construct an environmental education (EE) study area with a trail and a pavilion; renovate the EE building	Revise and develop new interpretive materials and programs to focus on grassland temperate and neotropical migrants and their habitat needs	
Continue to provide environmental education programs on- and off-refuge for local elementary school children	Revise and develop new interpretive materials and programs to focus on neotropical and temperate migrants	Open the Winslow Bunker to public tours and expand interpretive displays on the history of ESV as a former military base	
Continue to offer the Junior Refuge Manager program	Provide opportunities for wildlife observation, wildlife photography, education and interpretation on lands to be acquired, where feasible	Provide opportunities for wildlife observation, wildlife photography, education and interpretation on lands to be acquired, where feasible	
Continue to participate in the Envirothon			

Question 6: How would the refuge reach out to the local community?

Alternative A, *Current Management*	**Alternative B,** *Proposed Action*	**Alternative C**	**Alternative D**
Continue to co-sponsor and participate in local festivals and events	In addition to Alt. A: Participate in local and regional trails programs	*Same as Alternative B except:*	In addition to Alt. A: Participate in local and regional trails programs whenever possible
Continue cooperative efforts with local public and private conservation groups to promote local nature-based tourism	Work with local groups to promote responsible nature-based tourism	Exhibits and outreach activities would emphasize neotropical and grassland temperate migrants	Work with local groups to promote responsible nature-based tourism
Continue to offer outreach programs several times a year to local civic groups	Install exhibits on Bridge-Tunnel islands, increase media outreach efforts, distribute literature at State Fair, and expand special events		Install exhibits on the Bridge-Tunnel islands
Continue to serve on the Board of the Coastal Virginia Wildlife Observatory	Develop a three-mile bike trail with pull-offs and interpretive panels		Offer special events and literature to local homeowners and others on the natural history of the eastern shore and Northampton County, focusing on the unique ecological values of the area
Continue to share Refuge facilities with federal, state and local agencies for wildlife-related and law enforcement activities	Institute annual field workshop for public and private partners focusing on wildlife management issues		Offer special events and literature to local homeowners and others on how to make their property more wildlife-friendly
Maintain the refuge web site to promote interest in the refuge	Help establish a Friends group		Assess economic benefits of the migratory bird resource on the local economy
	Work with partners to expand corporate sponsorship of refuge events		Promote the refuge's contribution to the local economy
	Offer special events and literature to local homeowners and others on how to make their property more wildlife-friendly		
	Assess economic benefits of the migratory bird resource on the local economy		
	Promote the refuge's contribution to the local economy		

Question 7: How would we improve soils, waters and other abiotic components of the refuge?

Alternative A, *Current Management*	**Alternative B,** *Proposed Action*	**Alternative C**	**Alternative D**
Identify sites of possible contamination	In addition to Alt. A: For heavy metals and organochlorine pesticides, conduct sampling on potentially contaminated areas of the refuge; depending on results, conduct biotic sampling	*Same as Alternative B except*:	*Same as Alternative B except*:
Remove underground storage tanks and inspect above-ground storage tanks	While searching for an alternative firearms range site, implement modern practices for firearms range management such as controlling surface runoff and leachate from the berm and removing contaminated soils	Verizon Virginia, Inc. would not be required to move the switching station once the lease expires in 2007	Evaluate necessity of refuge fences and remove accordingly
Correctly store/dispose of hazardous materials	Maintain close communication with Bridge-Tunnel Authority officials and familiarize them with sensitive area maps and access points for deploying spill control equipment; encourage local officials to participate in a committee for spill response, control and prevention		Remove all unused roads and restore to appropriate habitat
Continue to work with partners to find an alternate, off-refuge site for the firearms range	Explore the idea of a mock spill drill in the area and provide spill response training for refuge staff		Assess ecological function of artificial freshwater ponds; fill those with minimum ecological benefit
Continue to administer and maintain the firearms range; schedule usage so as not to conflict with environmental education programs	Verizon Virginia, Inc. would remove the communications tower once the lease expires in 2007; the refuge would work with Verizon to find an alternative site for the switching station or formalize a new agreement at the existing site		Work with partners to transfer ownership or administration of the GATR site (e.g., land exchange, coordination area, surplus) for habitat of equal monetary value
Continue to collect and recycle spent brass casings			Locate and remove all concrete foundations and other building remnants on both refuges
Annually update spill prevention plans			
Verizon Virginia, Inc. would remove the communications tower once the lease expires in 2007; work with Verizon and County officials to assist in finding an alternative site			

Chapter 4

*note: Chapter 3, *Affected Environnemt*, is not included in this Executive Summary of the Draft CCP/EA.

Aerial view of Fisherman Island Refuge.
USFWS photo

Environmental Consequences

- Introduction
- Consequences Summary Matrix

Introduction

Using a summary matrix, this section paraphrases the predicted impacts of implementing the management strategies proposed under each of the four alternatives in Chapter 2. Alternative A (Current Management) serves as the baseline for comparing all the other alternatives. We have arranged the summary matrix under the following categories: Physical Resources, Biological Resources, Socio-Economic Factors, and Public Use.

We ask the reader to keep in mind the refuges constitute a small area of land. On Eastern Shore of Virginia Refuge, we own 1,120 acres; on Fisherman Island Refuge, we own 1,850 acres. Because of the small geographic scale, we may have overstated both positive and negative impacts within their larger geographic context.

In the absence of reliable, quantitative information, we use the terms "positive," "negative" and "neutral" as qualitative measures of how an action could impact resources of concern. A positive impact implies an action we predict will enhance or benefit the resources under consideration and help accomplish goals and objectives over the short (less than 15 years) or long (more than 15 years) term. A negative impact implies an action we predict will be detrimental to a resource over the short or long term, thereby failing to achieve goals and objectives. A neutral impact means either there would be no discernible effect, positive or negative, on the resource under consideration, or predicted positive and negative effects would cancel each other out.

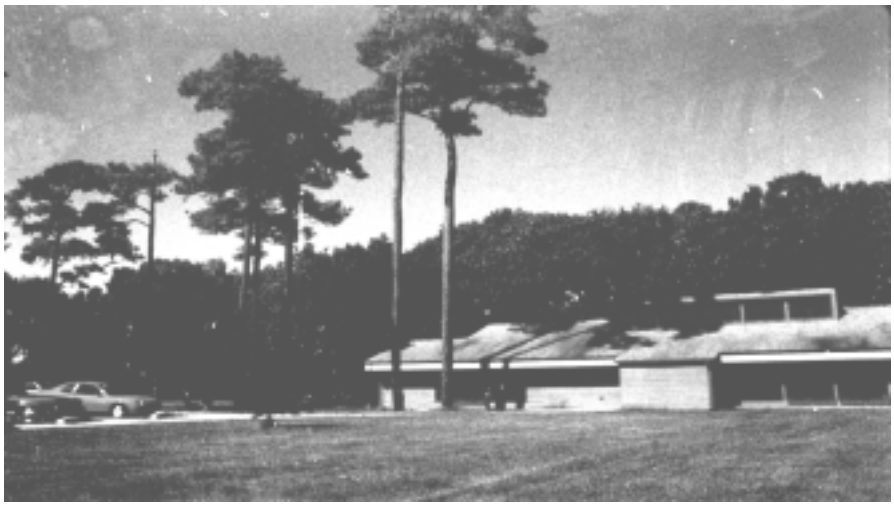
Table 4-1. A summary of environmental consequences for Eastern Shore of Virginia (ESV) and Fisherman Island (FSH) National Wildlife Refuges (NWRs).

	Alternative A, *Current Management*	**Alternative B,** *Proposed Alternative*	**Alternative C**	**Alternative D**
Staffing and Budgets	Permanent, full-time positions (PFTs): 9 Year 1 project costs: $2.4m , assuming all RONS projects are funded Recurring project costs: $666,000	PFTs: 18 Seasonal staff: 3 Year 1 project costs: $213,000 increase from Alternative A Recurring project costs: $88,000 increase from Alternative A	Same as Alternative B	Same as Alternative B
Physical Environment *Air Quality*	Positive impact by banning PWCs from launching from the Wise Point boat ramp in all alternatives	Minor and temporary negative impact from prescribed burning on up to 400 acres annually	Same as Alternative B	Same as Alternative B
Climate, Geology, Topograpy, Soils and Hydrology	Positive impact from protecting up to 310 additional acres Positive impact by banning PWCs from launching from the Wise Point boat ramp in all alternatives	Positive impact from protecting up to 6,030 additional acres Minor negative impacts to soil from construction of EE study area and discing to control invasive species Temporary water turbidity due to boat ramp area improvements	Same as Alternative B	Same as Alternative B, plus additional soil disturbance from removal of several structures
Contaminants	Neutral impact: continue to work with partners to find an alternative, off-refuge site for the firearms range	Positive impact by implementing modern practices for firearms range management (i.e., controlling surface runoff and leachate from the berm and removing contaminatied soils) while searching for an alternative site	Same as Alternative B	Same as Alternative B

	Alternative A, *Current Management*	Alternative B, *Proposed Alternative*	Alternative C	Alternative D
Biological Resources *Threatened and endangered species*	Positive impact from closing southern tip beach on ESV NWR to protect Northeastern beach tiger beetle	Increased positive impact from Alternative A by surveying tiger beetles and working to curb trespassing on southern tip beach	Potential negative impact to tiger beetles by opening southern tip beach to surf fishing	Same as Alternative B
Plants	Neutral impact: maintain vegetative diversity by providing a mix of grassland, shrub/scrub and forested habitat	Increase mast production by planting trees on 27 acres Increase vegetative diversity and improve understory habitat by controlling invasive species Negative impact on salt marsh from boat ramp area improvements and new trail construction	Increase mast production by planting trees on 10 acres Increase vegetative diversity and improve understory habitat by controlling invasive species Increased negative impact from Alternative B as new trail would extend through salt marsh and forested habitat	Negative impact on habitat diversity by allowing succession to forested habitat on most all refuge lands Increase and improve coastal shrub community
Wildlife	Neutral impact: provide a diversity of habitat types to benefit a variety of migratory, breeding and wintering species	Positive impact on early successional-dependent species but negative impact on grassland-dependent species by converting 58 acres of grassland to shrub/scrub habitat Indirect benefit to beach nesting birds by monitoring for predators	Positive impact on grassland-dependent species but negative impact on early successional-dependent species by converting 58 acres of grassland to shrub/scrub habitat Indirect benefit to beach nesting birds by monitoring for predators	Positive impact on forest-dependent species but negative impact on shrub/scrub- and grassland-dependent species by allowing succession to forested habitat on most all refuge lands Indirect benefit to beach nesting birds by monitoring for predators

	Alternative A, *Current Management*	Alternative B, *Proposed Alternative*	Alternative C	Alternative D
Socio-Economic Factors	Loss of annual property tax revenue from acquisition of up to 310 acres $5,000 annual increase in Refuge Revenue Sharing Payments	Loss of annual property tax revenue from acquisition of up to 6,030 acres $125,000 annual increase in Refuge Revenue Sharing Payments	Same as Alternative B	Same as Alternative B
Public Use *Hunting and Fishing*	Negative impact by not improving the boat ramp area, which could pose a safety hazard for commercial and recreational users due to a narrow entrance road and decrepit docks	Positive impact by expanding deer hunting on ESV NWR, opening the refuge to waterfowl hunting and improving the boat ramp area Positive impact by opening FSH NWR to deer hunting	Positive impact by expanding deer hunting on ESV NWR, opening the southern tip beach to surf fishing and improving the boat ramp area	Same as Alternative A
Wildlife observation, photograpy, environmental education and interpretation	Neutral impact: these activities would continue as they have in the past	Positive impact by constructing a 3-mile bike path and a new .6-mile trail on ESV NWR Positive impact by constructing a new environmental education center on ESV NWR with a .5-mile trail and expanding interpretive programs	Positive impact by constructing a 3-mile bike path and a new 1-mile trail on ESV NWR Positive impact by constructing a new environmental education center on ESV NWR with a .5-mile trail and expanding interpretive programs	Positive impact by expanding interpretive programs
Cultural Resources	Positive impact by evaluating structures on Skidmore Island and other structures on ESV NWR before demolition or removal	In addition to benefits in Alternative A, ground disturbing projects would be reviewed by the Regional Historic Preservation Officer for potential disturbance	In addition to benefits in Alternatives A and B, increase the visibility of cultural resources on ESV NWR by providing an interpretive program on the Winslow Bunker	Same as Alternative B

Chapter 5



Refuge Headquarters.
Charles Philip

Consultation and Coordination with Others

Members of the core planning team:

Robert Steven Adamcik
Wildlife Biologist
USFWS Washington Office

Provided input as consultant on biological elements of the plan, with emphasis on development of Alternative D.

Liz Bellantoni
National Planning Coordinator
USFWS Washington Office

Provided input regarding the formulation of goals, objectives and strategies. Also, provided guidance in interpreting the planning policy.

James Kenyon
Former Outdoor Recreation Planner
Eastern Shore of Virginia National Wildlife Refuge

Major responsibilities included developing strategies for priority public uses. Also, helped draft compatibility determinations for the various activities on the refuges.

Pamela Denmon
Wildlife Biologist
Eastern Shore of Virginia National Wildlife Refuge

Provided biological assistance for Alternatives and Environmental Consequences Chapters.

Beth Goldstein
Team Leader
USFWS, Region 5 Regional Office

Organized and facilitated meetings, coordinated all tasks related to the CCP and wrote sections of the plan.

Michael W. Mitchell
Former Assistant Refuge Manager
Eastern Shore of Virginia National Wildlife Refuge

Co-author of the CCP and primary author of Chapter 3, "Biological Resources" section.

Susan Rice
Project Leader
Eastern Shore of Virginia National Wildlife Refuge

Assisted with gathering baseline data and expert biological input to formulate alternatives.

Don Schwab
Wildlife Biologist
VA Department of Game and Inland Fisheries

Provided input on mammals, predator issues and deer management strategies for both refuges.

Phil West
Game Biologist
VA Department of Game and Inland Fisheries

Provided input on deer hunting and habitat management strategies from a State perspective.

William Zinni
Land Ascertainment Biologist
USFWS, Region 5 Regional Office

The primary author of the Land Protection Plan (LPP). Also, participated in meetings related to goals and objectives and helped write the land protection strategies and the biological section of the plan.

Other Assistance

William Archambault
Former NEPA Coordinator
USFWS, Region 5 Regional Office

Provided guidance on public use issues and NEPA compliance. Facilitated public meetings.

Nancy Biegel
Former Outdoor Recreation Planner
Eastern Shore of Virginia National Wildlife Refuge

Provided access to all photographs used in the CCP. Also, provided input on public use strategies.

Thomas Bonetti
Refuge Planner
USFWS, Region 5 Regional Office

Served as team leader for the first year-and-a-half of the planning process.

Robert Carpenter
Former Engineering Equipment Operator (retired)
Eastern Shore of Virginia National Wildlife Refuge

Provided information on maintenance needs of the refuge and on traditional land uses on the eastern shore of Virginia.

Gary Costanzo
Waterfowl Biologist
VA Department of Game and Inland Fisheries

Provided guidance for waterfowl hunting proposals on and off the refuge.

Eric Davis
Biologist
USFWS, Region 5 Virginia Field Office

Provided assistance regarding strategies for Federal listed species on or historically occurring on the refuges.

Sheila Faith
Former Outdoor Recreation Planner
Eastern Shore of Virginia National Wildlife Refuge

Provided input on public use strategies. Also, reviewed and commented on draft strategies.

Anne Hecht
Biologist, Endangered Species
USFWS, Region 5, Great Meadows National Wildlife Refuge

Assisted in providing information and guidance on background information and strategies related to piping plovers.

Shelley Hight
Archaeologist, Division of Visitor Services, Outreach and Cultural Resources
USFWS, Region 5 Regional Office

Recommended actions pertaining to cultural resources on the Refuges; wrote the cultural resources section of the plan.

Cindy Kane
Biologist, Ecological Services
USFWS, Region 5 Virginia Field Office

Recommended strategies for addressing contamination issues on the Refuge. Also, provided background information on potentially contaminated sites.

C. Barry Knisley
Department of Biology
Randolph-Macon College
Ashland, Virginia

Provided information and recommendations regarding strategies about the Federal listed Northeastern beach tiger beetle.

Hal Laskowski
Regional Zone Biologist
USFWS, Prime Hook National Wildlife Refuge

Provided guidance on general species management and research needs for the refuge.

Jerry Loomis
Electrician
Eastern Shore of Virginia National Wildlife Refuge

Provided information on the maintenance needs of the refuge.

J. Christopher Ludwig
Chief Biologist, Virginia Natural Heritage Program

Helped define the plant community of Eastern Shore of Virginia Refuge and helped formulate strategies for habitat management.

Diane Lynch
Biologist, Endangered Species
USFWS, Region 5 Regional Office

Provided information and input on strategies concerning the Northeastern beach tiger beetle.

Irene Morris
Office Assistant
Eastern Shore of Virginia National Wildlife Refuge

Assisted with various tasks to help facilitate meetings and the planning processin general.

Paul Nickerson
Regional Endangered Species Coordinator
USFWS, Region 5 Regional Office

Provided input and information on strategies concerning threatened and endangered species.

Mary Parkin
Biologist, Ecological Services
USFWS, Region 5

Assisted in providing background information and recommendations on the Federal listed Delmarva fox squirrel.

Debra Reynolds
Outdoor Recreation Planner
Silvio Conte National Fish and Wildlife Refuge

Served as assistant planner for the first year-and-a-half of the planning process.

Greg Thompson
Cartographer
USFWS, Region 5 Regional Office

Responsible for creating all maps related to the CCP and the LPP. Provided guidance on map design and detail.

Denard Spady
Editorial Board member
Citizens for a Better Eastern Shore

Provided personal accounts of the history of land use on the eastern shore of Virginia; suggested land protected strategies.

Thomas Stewart
Division Chief of Wildlife and Habitat
USFWS, Washington Office

Provided guidance on public use and biological issues related throughout the CCP process.

Karen Terwilliger
Resource Management Associates
Locustville, Virginia

Offered technical advice regarding endangered species and habitat management techniques.

Edward Vale
Student
University of Massachusetts-Amherst

Edited plan and formatted it in PageMaker. Placed pictures with text. Assisted with other tasks related to the final compilation of the plan.

Appendix A

Tern colony.
USFWS photo

Appendices

**Note: The following is a list of appendices that are included in the full plan but not in the Executive Summary.*

- Appendix A: Trust Resources and Other Species and Habitats of Special Management Concern
- Appendix B: Relevant Federal Laws
- Appendix C: Refuge Cover Type Maps
- Appendix D: Refuge Species List
- Appendix E: Cultural Resources
- Appendix F: Compatability
- Appendix G: RONS and MMS Project Lists
- Appendix H: Glossary of Terms
- Appendix I: Staffing Charts
- Appendix J: Literature Cited
- Appendix K: Draft Land Protection Plan