



Refuge shrubland

## Alternatives Considered, Including the Service-Preferred Alternative

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## Introduction

This chapter describes our process for formulating alternatives, the actions that are common to all of the alternatives, and the three alternatives we analyzed in detail. At the end of this chapter, Table 2.1 compares how each of the alternatives addresses key issues, supports major programs, and achieves Refuge goals.

## Formulating Alternatives

### Relating Goals, Objectives, and Strategies

Refuge goals and objectives define each of the management alternatives identified below. Refuge goals are intentionally broad, descriptive statements of the desired future condition of refuge resources. By design, they define the targets of our management actions in prescriptive rather than quantitative terms. They also articulate the principal elements of the refuge purposes and vision statement, and provide a foundation for developing specific management objectives and strategies.

Objectives are essentially incremental steps toward achieving a goal and further define management targets in measurable terms. They vary among the alternatives and provide the basis for developing detailed strategies that monitor refuge accomplishments and evaluate progress. “Writing Refuge Management Goals and Objectives: A Handbook” (USFWS 2004) recommends writing “SMART” objectives that are: (1) specific; (2) measurable; (3) achievable; (4) results-oriented, and (5) time-fixed.

Where possible, we incorporated the principles of Strategic Habitat Conservation in the development of our objectives and strategies. According to Strategic Habitat Conservation: A Report from the National Ecological Assessment Team (2006), “This approach focuses on the ability of the landscape to sustain species as expressed in measurable objectives. Developing a strategy to attain a biological outcome, such as a population objective, requires documented and testable assumptions to determine whether the objective is met.” Not only will this approach ensure refuges are contributing to the NWRS and FWS mission and goals in a strategic, standardized and transparent way, but also refuges can ensure that they contribute to local and regional conservation priorities and goals as well (USFWS 2008b).

A rationale accompanies each objective to explain its context and importance. We will use the objectives in the alternative selected for the final CCP to write the Refuge step-down plans, which we describe later in this chapter.

Next we identified strategies, or the actions, tools, or techniques we may use to achieve each objective. The list of strategies in each objective represents the potential suite of actions we may implement. We will evaluate most of them further as to how, when, and where we should implement them when we write our Refuge step-down plans. We will measure our successes by how well our strategies achieve our objectives and goals.

### Developing Alternatives, including the “No Action” or “Current Management” Alternative

A wide range of possible management objectives and strategies that could achieve our goals were identified by the planning team and public and partner input. Then we began the process of designing management alternatives. These are essentially packages of complementary objectives and strategies designed to meet Refuge purposes and the Refuge System mission and goals, while responding to the issues and opportunities that arose during the planning process. Objectives that seemed to fit together were grouped into “alternative themes”. For example, we considered such themes as “current management,” “enhanced wildlife management and visitor services,” and “natural processes management.” After evaluating how the objectives would interact, their compatibility with Refuge purposes, and the reality of accomplishing them within a reasonable period, these were formed into three management alternatives.

In this chapter we fully analyze three alternatives that characterize three different ways of managing the Refuge over the next 15 years. We believe they represent a reasonable range of alternative proposals for achieving the Refuge purpose, vision and goals, and addressing the issues Chapter 1 describes. Unless otherwise noted, Refuge staff would implement all actions.

Alternative A satisfies the NEPA requirement of a “no action” alternative, which we define as continuing the status quo, or current management. It describes our existing management priorities and activities, and serves as a baseline for comparing and contrasting Alternatives B and C. Current management efforts consist of limited biological, visitor services and enforcement activities as staff and funding allow. Please refer to Chapter 3, “Affected Environment,” for detailed descriptions of current Refuge resources and programs.

Please note that some of the objectives in Alternative A do not strictly follow Service guidance documents, because we are describing current management decisions and activities that were established prior to recent guidance documents. Our descriptions of those activities devolve from a variety of formal and informal management decisions and planning documents. Thus, the objectives in Alternative A are more subjective than are those in Alternatives B or C.

Alternative B emphasizes management of shrubland, coastal dune, intertidal/rocky beach, and freshwater habitats for priority bird species of conservation concern in BCR 30 and PIF Area 09 plans and the MA CWCS. In addition, this alternative would enhance our current level of species inventory and monitoring, visitor services on Martha’s Vineyard, and law enforcement and partnerships. We would evaluate further the possibility of releasing New England cottontail in the Refuge shrubland habitat. The increases in Refuge programs would be possible through the addition of permanent refuge complex staff. The continued presence of UXO throughout the island precludes our ability to provide access to the Refuge for members of the general public (see Chapter 3 for more information). One of our main visitor service priorities under this alternative is to provide other ways for the public to experience the Refuge in light of our obligation to enforce the ban on public access. The U.S. Navy would continue with their operations to remove UXO according to their schedule and objectives; however, the Service would largely assume responsibility for conducting prescribed burns to maintain shrubland habitat.

Alternative C, the Service-preferred alternative, includes an array of less active management actions that, in our professional judgment, works best toward achieving the Refuge purposes, our vision and goals (including a goal to maintain the wilderness character of Nomans Land Island), and the goals of other state and regional conservation plans. We also believe it most effectively addresses the key issues that arose during the planning process. Lastly, it is the most realistic given the relatively modest increase in staffing and funding that is anticipated over the next 15 years.

## Actions Common to All of the Alternatives

All of the alternatives share some of the following common actions or elements. These occur at varying degrees or levels as described in each alternative. Some of them are required by law or policy, or represent management decisions that have undergone NEPA analysis including public review, agency review, and approval. Others may be administrative actions that do not require public review, but which we want to highlight in this public document.

All of the following actions are current practices or policies that would continue under all alternatives:

- using an adaptive management approach, including strategic habitat conservation, where appropriate,
- controlling pest plants and animals

- monitoring and abatement of diseases affecting wildlife health,
- facilitating or conducting biological research and investigations,
- addressing climate change,
- issuing special use permits,
- protecting cultural resources,
- developing an off-site interpretation program,
- completing findings of appropriate use and compatibility determinations,
- providing Refuge staffing and administration,
- cooperating with the Navy in its UXO removal program and the prohibition of public access,
- finalizing a partnership agreement with the Wampanoag Tribe of Gay Head (Aquinnah),
- completing Refuge step-down plans, and,
- distributing Refuge revenue sharing payments.

### Adaptive Management

All of the alternatives will include flexibility in management to allow us to respond to new information, spatial and temporal changes and environmental events, whether foreseen or unforeseen, or other factors that influence management. Our goal is to be able to respond quickly to any new information or events. The need for flexible or adaptive management is very compelling today because our present information on Refuge species and habitats is incomplete, provisional, and subject to change as our knowledge base improves.

We will continually evaluate management actions, both formally and informally, through monitoring or research, to consider whether our original assumptions and predictions remain valid. In that way, management becomes a proactive process of learning what really works. On March 9, 2007, Secretary of the Interior Kempthorne issued Secretarial Order No. 3270 to provide guidance on policy and procedures for implementing adaptive management in departmental agencies. In 2007, an intradepartmental working group developed a guidebook to assist managers and practitioners: “Adaptive Management: The U.S. Department of Interior Technical Guide.” It defines adaptive management, the conditions under which we should consider it, and the process for implementing it and evaluating its effectiveness. You may view the guidebook at <http://www.doi.gov/initiatives/AdaptiveManagement/documents.html>.

Adaptive management, as it relates to refuge management, promotes flexible decision-making through an iterative learning process that responds to uncertainties, new information, monitoring results, and the natural variability in ecosystems. It is designed to facilitate more effective decisions and enhanced benefits. At the refuge level, monitoring management actions, outcomes and key resources will be very important. The refuge manager is responsible for changing management actions and strategies if they do not produce the desired conditions. Significant changes from what we present in our final CCP may warrant additional NEPA analysis and public comment.

Generally, we can increase monitoring and research that support adaptive management without additional NEPA analysis, though this is likely to be limited at Nomans Land Island NWR due to the presence of UXO. Many of our objectives identify monitoring elements. Our Inventory and Monitoring Plan will

determine future survey efforts. Implementing an adaptive management approach supports all three goals of the Refuge.

### Strategic Habitat Conservation

Strategic Habitat Conservation is a framework that utilizes adaptive management to redefine broad scale conservation from the general pursuit of conserving “more” habitat and species, to a more planned approach based on scientific data, at a landscape level, and in cooperation with partners. It starts with explicit, measurable objectives that are based on testable assumptions that can be evaluated, and is enacted through an iterative process of biological planning, conservation design, conservation delivery, assumption-driven research, and outcome-based monitoring. The goal is to set specific population objectives for species that are limited in some way by habitat (though this would be effective for other limiting factors as well), and to use targeted habitat management approaches to meet those objectives. Inherent in the process is a continual evaluation of biological outcomes and approaches, with the intent to adapt the overall conservation strategy to respond to changing circumstances and new information.

### Controlling Pest Plants and Animals

At times, native plants and animals interfere with management objectives. The Refuge Manual (7 RM 14.4A) defines a pest as “Any terrestrial or aquatic plant or animal which interferes, or threatens to interfere, at an unacceptable level, with the attainment of refuge objectives or which poses a threat to human health.” This definition also includes non-native invasive species (see below).

### Integrated Pest Management (IPM)

In controlling pests, whether non-native or native species, we use an integrated approach. The Refuge Manual (7 RM 14.4C) defines integrated pest management as “A dynamic approach to pest management which utilizes a full knowledge of a pest problem through an understanding of the ecology of the pest and ecologically related organisms and through continuous monitoring of their populations. Once an acceptable level of pest damage is determined, control programs are carefully designed using a combination of compatible techniques to limit damage to that level.”

The Refuge’s IPM program will be written and on file at the refuge complex headquarters when complete. The IPM is a step-down plan from the CCP and supplements both the CCP and HMP with documentation on how to manage invasive or pest species. Along with a more detailed discussion of IPM techniques, this documentation describes the selective use of pesticides for pest management on the Refuge, where necessary. Pesticide uses with appropriate and practical best management practices (BMPs) for habitat management would be approved for use on the Refuge where there likely would be only minor, temporary, and localized effects to species and environmental quality based upon non-exceedance of threshold values in the chemical profiles. Our control program would address the most critical problems first and can be adjusted to reflect regional Service priorities, the availability of new information, or a new resource.

### Managing Invasive Species

The establishment and spread of invasive species, particularly invasive plants, is a significant problem that reaches across all habitat types. For the purposes of this discussion, we use the definition of invasive species contained in the Service Manual (620 FW 1.4E): “Invasive species are alien species whose introduction does or is likely to cause economic or environmental harm, or harm to human health. Alien species, or non-indigenous species, are species that are not native to a particular ecosystem. We are prohibited by Executive Order, law, and policy from authorizing, funding, or carrying out actions that are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere.” This discussion focuses solely on invasive plant species.

At least 14 species of invasive plants have been identified on Nomans Land Island NWR (see Appendix B), and our management of these invasive plants would vary in degree by the alternative chosen. In Alternative

C, any treatment would be subject to Minimum Requirements Analysis (MRA) under a wilderness scenario (see Alternative C and Appendix C).



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Phragmites on Nomans Land Island NWR

The unchecked spread of invasive plants threatens the biological diversity, integrity and environmental health of all national wildlife refuge habitats. In many cases, they have a competitive advantage over native plants and form dominant cover types, reducing the availability of native plants as food and cover for wildlife. Over the past several decades, government agencies, conservation organizations, and the public have become more acutely aware of the negative effects of invasive species. Many plans, strategies, and initiatives target the more effective management of invasive species, including “The National Strategy for Management of Invasive Species for the National Wildlife Refuge System” (USFWS 2003a), “Silent Invasion—A Call to Action,” by the National Wildlife Refuge Association (2002), and “Plant Invaders of Mid-Atlantic Natural Areas,” by the Service and the National Park Service (Swearingen et al. 2002).

Guidance on managing invasive species on refuges appears in the Service Manual (620 FW 1.7G). The following actions define our general strategies on the Refuge.

1. Manage invasive species on refuges under the guidance of the National Strategy for Invasive Species Management and within the context of applicable policy.
2. Manage invasive species to improve or stabilize biotic communities to minimize unacceptable change to ecosystem structure and function and to prevent new and expanded infestations of invasive species.
3. Evaluate native habitat management activities with respect to their potential to accidentally introduce or increase the spread of invasive species and modify our habitat management operations to prevent increasing invasive species populations.
4. Conduct Refuge habitat management (including working through partners) to prevent, control, or eradicate invasive species using techniques described through an integrated pest management plan, or other similar management plan. The plans comprehensively evaluate all potential integrated management options, including defining threshold/risk levels that will initiate the implementation of proposed management actions.
5. Refuge IPM planning addresses the abilities and limitations of potential techniques including chemical, biological, mechanical, and cultural techniques. See the additional discussion on IPM below.

The following actions define our specific strategies for the Refuge.

1. Treatment of the most problematic species as funding and staffing permit in accordance with the selected alternative.
2. Develop early-detection/rapid-response readiness regarding new invasions.
3. Remove the parent sources of highly invasive species (e.g., species that are high seed producers or vigorous rhizome producers).
4. Maintain accessibility to affected areas for control and monitoring if possible.

### Monitoring and Abating Wildlife and Plant Diseases

The Service has not yet published its manual chapter on Disease Prevention and Control. In the meantime, we derive guidance on this topic from the Refuge Manual and specific directives from the Director of the Service or the Secretary of the Interior. The Refuge Manual (7 RM 17.3) lists three objectives for the prevention and control of disease.

1. Manage wildlife populations and habitats to minimize the likelihood of the contraction and contagion of disease.
2. Provide for the early detection and identification of disease mortality when it occurs.
3. Minimize the losses of wildlife from outbreaks of disease.

The Service published these objectives in 1982. Since then, in addition to diseases that cause serious mortality among wildlife, diseases transmitted through wildlife to humans have received more attention. One example is Lyme disease. In 2002, the Service published a Service Manual chapter (242 FW 5) on Lyme Disease Prevention to inform employees, volunteers, and national service workers about this disease, its prevention, and treatment.

Another serious wildlife disease that receives considerable attention worldwide is avian influenza. Of particular concern is the highly pathogenic Eurasian form (H5N1). In 2006, the Service instructed all refuges to prepare an Avian Influenza Surveillance and Contingency Plan. This plan covers all eight refuges in the Eastern Massachusetts NWR Complex, and was completed in 2007.

In addition to the diseases of wildlife, we will be attentive to the diseases and pests that affect the health of the ecosystems that Nomans Land Island NWR supports, and respond to varying degrees based upon the alternative chosen. Under all alternatives, we would continue to opportunistically monitor for, and report, seabird mortality events on Refuge beaches. In addition, we would record and report instances of seal entanglements or strandings, because these are instances that could lead to increased susceptibility to disease mortality. It is likely that other monitoring efforts would be minimal, and the occurrence of any wildlife or habitat disease element would be responded to only if they posed an immediate or serious threat to indigenous wildlife and habitat. The Service would respond at a level commensurate with staffing and funding.

These are the general strategies for preventing or controlling disease.

1. Continue to conduct disease surveillance in conjunction with other fieldwork.
2. Cooperate with state agencies, particularly the Massachusetts Department of Fish and Game by providing access for sampling and following protocols in the event of an outbreak.

3. Inform volunteers and others who work in the field about the dangers of Lyme disease and measures to avoid contracting it.
4. Monitor habitats for indicators of the increased occurrence of pests or disease. For example, anecdotally note changes in flowering or fruiting phenology that do not appear to be linked to global climate change, and be vigilant for signs of physical damage, decay, weakening, sudden death, particularly of major host species, and changes in wildlife use of habitats, such as the absence of breeding birds that used to appear regularly.
5. Follow the protocols in national, state, and refuge disease prevention and control plans.

### Biological and Ecological Research and Investigations

The Refuge Manual and the Service Manual both contain guidance on conducting and facilitating biological and ecological research and investigations on refuges. In 1982, the Service published three objectives in the Refuge Manual for supporting research on units of the Refuge System (4 RM 6.2):

1. to promote new information and improve the basis for, and quality of, refuge and other Service management decisions;
2. to expand the body of scientific knowledge about fish and wildlife, their habitats, the use of these resources, appropriate resource management, and the environment in general; and,
3. to provide the opportunity for students and others to learn the principles of field research.

In 2006, the Service Manual provided supplemental guidance on the appropriateness of research on refuges: “We actively encourage cooperative natural and cultural research activities that address our management needs. We also encourage research related to the management of priority general public uses. Such research activities are generally appropriate. However, we must review all research activities to decide if they are appropriate or not as defined in section 1.11. Research that directly benefits refuge management has priority over other research” (603 FW 1.10D(4)).

All research conducted on the Refuge must be determined in writing to be both appropriate and compatible, unless we determine it to be an administrative activity. Because Nomans Land Island is closed to public access, no research will take place for any of the priority public uses. Research projects also must contribute to a need identified by the Refuge or the Service. We anticipate opportunities to conduct research on the Refuge to arise under any of the alternatives we propose in this draft CCP. However, because of the restrictions posed by the continued presence of UXO, we expect research will be extremely limited on the Refuge. In addition, researchers will be considered agents of the Service, and must conform to safety guidelines and protocols. If we consider research to be absolutely necessary to address resource management concerns, we will follow the guidance in the manuals, and will employ the following general strategies to determine the appropriateness and compatibility of future research proposals.

In general, we will employ the following strategies:

1. Seek qualified researchers and funding to help answer Refuge-specific management questions.
2. Participate in appropriate multi-refuge studies conducted in partnership with the USGS or other entity.
3. Coordinate with partners to initiate or conduct research on priority issues identified at local and regional scales.

All researchers will be required to submit detailed research proposals following the guidelines established by Service policy and Refuge staff. Special use permits will also identify the schedules for progress reports, the criteria for determining when a project should cease, and the requirements for publication or other

interim and final reports. All publications will acknowledge the Service and the role of Service staff as key partners in funding and/or operations.

## Climate Change

Climate change is an issue of increasing public concern because of its potential effects on land, water, and biological resources. The issue was pushed to the forefront in 2007 when the Intergovernmental Panel on Climate Change (IPCC), representing the world's leading climate scientists, concluded that it is "unequivocal" that the Earth's climate is warming, and that it is "very likely" (a greater than 90 percent certainty) that the heat-trapping emissions from the burning of fossil fuels and other human activities have caused "most of the observed increase in globally averaged temperatures since the midtwentieth century" (IPCC 2007). The Northeast is already experiencing rising temperatures, with potentially dramatic warming expected later this century under some model predictions. According to the Northeast Climate Impacts Assessment (NECIA) team, "continued warming, and more extensive climate-related changes to come could dramatically alter the region's economy, landscape, character, and quality of life" (Frumhoff et al. 2007).

Other predicted climate-related changes, beyond warming temperatures, include changing patterns of precipitation, significant acceleration of sea level rise, changes in season lengths, decreasing range of nighttime versus daytime temperatures, declining snowpack, and increasing frequency and intensity of severe weather events (Inkley et al. 2004). Since wildlife species are closely adapted to their environments, they must respond to climate variations, and the subsequent changes in habitat conditions, or they will not survive. Unfortunately, the challenge for wildlife is all the more complicated by increases in other environmental stressors such as pollution, land use developments, ozone depletion, exotic species, and disease. Wildlife researchers and professionals, sportsmen, and other wildlife enthusiasts are encouraging positive and preemptive action by land managers. Some recommendations for action include: reducing or eliminating those environmental stressors to the extent possible; managing lands to reduce risk of catastrophic events; managing for self-sustaining populations; and, looking for opportunities to ensure widespread habitat availability (Inkley et al. 2004).

The Service is becoming more aware and knowledgeable about the impacts of climate change on national wildlife refuges. A draft Climate Change Strategic Plan and a Five-Year Action Plan have been drafted to provide specific direction to the Service's climate change response initiatives (see Chapter 1). Nomans Land Island could be a prime location for long term and remote research and monitoring. To date, a SLAMM (Sea Level Affecting Marshes Model; Clough and Larson 2009) analysis has been conducted to predict Refuge shoreline changes over the next century under four different sea level rise scenarios (see Chapter 3 and Appendix I). At the Refuge, we recognize the need for an increase in biological monitoring and inventories, two actions that are critically important for land managers to undertake in order to effectively respond to the uncertainty of future climate change effects. The alternatives would differ, however, in the extent to which these monitoring efforts take place, as well as the ability to monitor shoreline and other impacts associated with climate change. This would primarily be based on the availability of staff and funds. Under all alternatives, it will be important to coordinate with the state's climate change strategies as they are further refined. The establishment of the North Atlantic Landscape Conservation Cooperative (LCC; see Chapter 3) will also facilitate the exchange of information and coordination among agencies in the region to implement climate change strategies.

## Special Use Permits

All of the alternatives would require the Refuge manager to evaluate activities that require a special use permit for their appropriateness and compatibility on a case-by-case basis. Because the Refuge is administratively closed to the public, the number of special use permits that will be issued will be extremely limited.

We will only approve permit requests that provide a direct benefit to the Refuge, or for research that will strengthen our decisions on managing natural resources on the Refuge. The Refuge manager also may

consider requests that do not relate directly to Refuge objectives, but to the protection or enhancement of native species and biological diversity in the region and support the goals of recognized ecoregional conservation teams, such as the ACJV.

### Protecting Cultural Resources

As a federal land management agency, we are responsible for protecting all cultural resources; specifically, archaeological sites and historic structures eligible for listing or listed on the National Register of Historic Places.

Under all the alternatives, we will evaluate the potential for impact on archaeological and historical resources as required for management actions, or the absence thereof, that would potentially lead to disturbance of those sites. We would develop and implement protocols for coordination, emergency response, and proper handling and disposition of such resources in coordination with local, state and federal partners and policies. These protocols will be incorporated into the Refuge's Law Enforcement Management and Cultural Resources Management step-down plans. We will consult with the Massachusetts State Historical Preservation Office (MA SHPO) and the Tribal Historic Preservation Officers (THPO) for the Wampanoag Tribe of Gay Head (Aquinnah) and the Mashpee Wampanoag Tribe. These activities will ensure that we comply with section 106 of the National Historic Preservation Act, regardless of the alternative. Compliance may require a State Historic Preservation Records survey, literature survey, or field survey. In addition, under Alternative C, any cultural activities requiring site disturbance would be evaluated through a MRA to comply with wilderness policy guidelines. In all cases, any ground disturbance activities would require UXO Tech Support, and would therefore require coordination with the Navy.

### Off-Site Interpretation

The National Wildlife Refuge System Improvement Act of 1997 designated six priority public uses on national wildlife refuges: hunting, fishing, wildlife observation, photography, environmental education, and interpretation. Nomans Land Island NWR, however, presents a unique situation because of the ban on public access. Due to the presence of UXO throughout the island, we are obligated to maintain this requirement for public health and safety (see section on Unexploded Ordnance below). Therefore, none of the six priority public uses are offered on the Refuge under any alternative.

Interpretation, including outreach on Martha's Vineyard, will be offered to varying degrees under all alternatives, dependent upon the availability of staff and resources.

The following criteria are provided to ensure quality wildlife-dependent recreation on national wildlife refuges by the General Guidelines for Wildlife-Dependent Recreation, Fish and Wildlife Service Manual, 605 FW 1:

1. promotes safety of participants, other visitors, and facilities;
2. promotes compliance with applicable laws and regulations and responsible behavior;
3. minimizes or eliminates conflict with fish and wildlife population or habitat goals or objectives in an approved plan;
4. minimizes or eliminates conflicts with other compatible wildlife-dependent recreation;
5. minimizes conflicts with neighboring landowners;
6. promotes accessibility and availability to a broad spectrum of the American people;
7. promotes resource stewardship and conservation;

8. promotes public understanding and increases public appreciation of America's natural resources and our role in managing and conserving these resources;
9. provides reliable/reasonable opportunities to experience wildlife;
10. uses facilities that are accessible to people and blend into the natural setting; and,
11. uses visitor satisfaction to help to define and evaluate programs.

To the extent possible, we will strive to follow all guidelines applicable to off-site environmental education and interpretation. The other four priority uses are sufficiently provided for on Martha's Vineyard, to some degree, by partners. Both Martha's Vineyard and Nomans Land Island NWR have similarities in wildlife and habitat, and also provide access to freshwater and marine environments. Therefore access restrictions on the Refuge do not locally eliminate those opportunities, and equivalent experiences can be had on Martha's Vineyard for the priority public uses.

In recent years, the Service has recognized the importance of connecting children with nature. Scholars and health care professionals are suggesting a link between a disconnection with the natural world and some physical and mental maladies in our nation's youth (Louv 2005). We intend to promote the concept of connecting children and families with nature in all of our compatible recreational and educational programming and will work with local partners to provide environmental education and interpretation programs.

### Appropriateness and Compatibility Determinations

Chapter 1 describes the requirements for determinations of appropriateness and compatibility for refuge uses. As previously discussed, we will continue to maintain and enforce the ban on public access on the Refuge for public safety reasons. Given these circumstances, there are no activities allowed on the Refuge except as allowed by the Refuge manager and in compliance with agreements set forth with the U.S. Navy. Therefore, activities typically addressed by findings of appropriateness and compatibility determinations do not apply to Nomans Land Island NWR.

### Refuge Staffing and Administration

Our proposals in this document do not constitute a commitment for staffing increases or funding for operations or maintenance. Congress determines our annual budgets, which our Washington headquarters and regional offices distribute to field stations. Chapter 3 presents our levels of staffing, operating and maintenance funds for the Refuge. The activities shared among the alternatives we describe below pertain to staffing, administration, and operations: some are new; others are ongoing. Implementing them supports all our Refuge goals.

### Permanent Staffing and Operational Budgets

In all the alternatives, our objective is to sustain levels of annual funding and staffing that allow us to achieve Refuge purposes, as interpreted by the goals, objectives, and strategies in this CCP. Often, many highly visible projects are conducted through special project funds that typically have a one- to two-year duration. Although those funds are very important, their flexibility is limited, because we cannot use them for any other priority project that may arise. Additionally, we cannot anticipate when or if we will receive these funds.

In response to declines in operational funding nationwide, we developed the "Strategic Workforce Plan for the National Wildlife Refuge System in Region 5" (Phase 2; January 16, 2007) to support a new base budget approach. Its goal is a maximum of 75 percent of a refuge station budget to cover salaries and fixed costs, while the remaining 25 percent or more will be operating and maintenance funds. Our strategy is to improve the capability of each refuge manager to do the project work of the highest priority, and not to have

the refuge budget tied up in inflexible, fixed costs. Unfortunately, in a level or declining budget environment, that also may have implications for the level of permanent staffing.

In 2008, the Service approved a national staffing model which identifies the number of staff needed at each refuge or refuge complex throughout the country. The model indicated that the Eastern Massachusetts NWR Complex should have 39.5 permanent positions. As previously indicated, there are currently 16 permanent employees in the refuge complex. In all of the alternatives, and within the guidelines of the new base budget approach, we would seek to fill positions which we believe are necessary to accomplish our highest priority projects, though it is unlikely that all 39.5 positions would be filled under any alternative. Under all alternatives, we will update our organizational chart, as it does not accurately reflect current staffing. The staffing requests in Alternative B would provide depth in our biological, visitor services and law enforcement programs. Appendix E identifies the staffing requests in each alternative.

#### Facilities Construction and Maintenance

Under all proposed alternatives, we will continue to install and maintain Refuge and regulatory signs on the Refuge, and maintain the existing access pathways on the island, including the water control structure on the wetland near Rainbow Pond, and the two moorings. Under Alternative C, however, these activities would be subject to evaluation through a MRA and modified if necessary to comply with wilderness guidelines. We will continue to build relationships with the Tribe and our partners to display and distribute Refuge informational material.

#### Refuge Operating Hours

Again, due to the presence of UXO on Nomans Land Island, we are obligated to maintain and enforce the ban on public access on the Refuge (see the Unexploded Ordnance section below). Warning signs will continue to be posted around the island, pending approval of a MRA under Alternative C, and trespassers in violation of this policy will be held accountable by Service law enforcement personnel. The U.S. Coast Guard patrols and enforces the water restriction area around Nomans Land Island NWR.



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Two of the eight Refuge warning signs

#### Cooperating with the Navy in its UXO Removal Program and the Prohibition of Public Access

In 1998, all of Nomans Land Island became part of the Refuge System when the Service was granted management responsibility from the U.S. Navy. Prior to that time, the island was first leased and then sold to the Navy for both live and practice bombing. Live bombing occurred from 1943 to 1952, and practice bombing continued until 1996 when all range operations ended to prepare for the transfer to the Service.

Because of the safety and liability issues associated with 54 years of bombing, conditions were included in the transfer document (see Appendix G) for both the Navy and the Service to uphold in order to make the transfer feasible. The document states that the Navy will continue the “investigations, studies and remedial action” necessary for the environmental cleanup of the unexploded ordnance on the island, and states that they will continue to take responsibility for that unexploded ordnance so long as the Service “shall administratively close the island to all public access, conduct periodic surveillance and install and maintain appropriate and adequate warning devices” (Conditions, Covenants, and Reservations of Transfer, attached to June 26, 1998 letter to Secretary of the Interior Bruce Babbitt from Assistant Secretary of the Navy Robert Pirie, Jr.).

The island is not cleared of UXO to levels that would permit access under safety regulations to the general public. In addition, natural processes such as frost heave and erosion will continue to expose subsurface UXO over time. Volunteers or researchers acting as agents of the Service to accomplish objectives set forth in this CCP are permitted on the island provided they are accompanied by Service personnel. Only certain portions of the island are cleared for use by Service staff. Service staff, volunteers and researchers undergo a safety briefing prior to visiting the island. Given safety and liability concerns, we are obligated to maintain and enforce the ban on public access under all alternatives, and we will continue to post regulatory signs and conduct patrols. Though it is not in our jurisdiction, the waters surrounding the island are also restricted to public use because of the danger of unexploded ordnance; this closure is monitored and enforced by the U.S. Coast Guard.

At present, the Service and Navy have been operating under the terms of the transfer agreement, and the Navy’s draft Operations and Management Plan which closely follows the transfer agreement. This has met the needs and requirements of each agency to date by requiring coordination of management activities that have positively benefited the Refuge. The Navy’s draft Operations and Management Plan outlines responsibilities for the Services as follows: maintenance of warning signs, periodic surveillance of the island, documentation of this surveillance, and reporting any UXO debris discovered during site visits. The Navy’s responsibilities as outlined in their draft Operations and Maintenance Plan are: ongoing site visits for inspection and possible remediation and surface clearances, response to reports of any UXO debris discovered on the island, and the provision of a UXO safety handout to the Service.

#### Future Navy Involvement

The Navy retains responsibility for contaminants and Munitions and Explosives of Concern (MEC) that remain on Nomans Land Island as a result of past military operations. The Navy’s current management of residual MEC is based on the Service’s designation of Nomans Land Island as an unstaffed wildlife refuge. Any change to this designation that would result in increased exposure to MEC would require additional cleanup at the Service’s expense.

As noted elsewhere in this document, the Navy has been working with the Service and the Massachusetts Department of Environmental Protection (MA DEP) on the cleanup of the site since the mid-1990’s. Contaminant remediation has taken place and extensive clearance operations were conducted in 1998. In addition there have been two limited follow-up MEC surface clearances, in 2003 and 2008, to address MEC that was exposed by erosion.

Because risk to public safety remains due to pervasive UXO throughout the island, the Navy, in compliance with CERCLA, will conduct ongoing five year reviews of the site so long as human use of the site is restricted. The nature and extent of these five year reviews on Nomans Land Island by the Navy are subject to the alternative chosen in the Navy’s Phase III/Feasibility Study Report.

A draft Phase III/Feasibility Study (FS) Report has been prepared for the Navy which identifies and evaluates appropriate Remedial Action Alternatives (RAAs) to address the risk to safety for Nomans Land Island. Risks to the environment, human health, and public welfare have been previously addressed and closure attained. The feasibility of alternatives for remedial actions is evaluated according to criteria set

forth in CERCLA and the 2004 Naval Facilities Engineering Command - Guidance for Optimizing Remedy Evaluation, Selection, and Design, and is consistent with the guidance and regulations from the Massachusetts Contingency Plan. The public will be provided an opportunity to comment on the Phase III/Feasibility Study Report in 2010. Once that report is finalized, the Navy will prepare a Proposed Plan to indicate the preferred remedy.

We do not anticipate any conflicts with our proposed management of the Refuge, including wilderness, as a result of these final Navy plans. If the Navy's future actions should result in an invalidation of any of the actions of this CCP, we would then revisit the CCP process and amend our CCP accordingly at that time.

#### Partnership Agreement with the Wampanoag Tribe of Gay Head (Aquinnah)

This CCP recognizes and takes into account the government-to-government relationship of the Service and the Wampanoag Tribe of Gay Head (Aquinnah) (Tribe). The Service also recognizes the Tribe as an important local repository of cultural knowledge and as an integral part of the history of Nomans Land Island. Since 1999, the Service and Tribe have worked together, through discussions and meetings, to facilitate this government-to-government relationship and to carry out the federal trust responsibility we have towards the Tribe. While the terms of a formal partnership agreement are still being discussed, the Service and Tribe remain committed to the partnership. Representatives of the Tribe are on the core planning team for this CCP, and work with the Service's Native American liaison on fish and wildlife grant opportunities.

Under all alternatives, we will continue our efforts to facilitate communication with the Tribe in general, and to address issues and concerns regarding cultural resource protocols, and all other aspects of our developing relationship. Discussions to date have focused on access for ceremonial purposes at sites and times to be determined, the repatriation of Native American remains, cultural and natural resource protection, public outreach, and training and educational opportunities for members of the Wampanoag Tribe. The U.S. Navy also has a government-to-government relationship with the Tribe, and will need to be included in our discussions. Our goal is to create and finalize a mutually reciprocal partnership agreement that takes into account the inherent limitations and safety concerns presented by the presence of UXO on the island while honoring our federal trust responsibilities to the Wampanoag Tribe.

#### Developing Refuge Step-down Plans

Service planning policy identifies 25 step-down plans that may be applicable on any given refuge. Three have been completed for the refuge complex as a whole, which includes Nomans Land Island NWR. We have identified six additional plans below as the most relevant to this planning process for the Refuge, and we have prioritized their completion. Several are ongoing as part of the refuge complex planning, but others will be completed depending upon the alternative chosen and its associated level of funding and staffing to complete them. This draft CCP presents sections of the Refuge HMP that require public review; we will incorporate them into the final version of the HMP within three years of approval of the final CCP.

We will also develop an AHWP and IMP as the highest priority step-down plans, regardless of the alternative selected for implementation. We describe them in more detail below. To keep them relevant we will modify and update them as we obtain new information. The completion of these plans supports all Refuge goals. All of the alternatives schedule the completion of these step-down management plans, according to the staffing and budgeting restrictions specific to each alternative.

All of the alternatives incorporate by reference the following completed plans that apply to the entire Eastern Massachusetts NWR Complex:

- Fire Management Plan—completed in 2003
- Avian Influenza Surveillance and Contingency Plan—completed in 2007

- Hurricane Action Plan—completed in 2009

All of the alternatives schedule the completion of these step-down management plans for the Refuge after completion of the CCP. An updated Fire Management Plan is scheduled to be completed in 2010. Please see Appendix F for general fire program direction.

- Annual Habitat Work Plan, annually
- Safety Management Plan, which includes UXO Inspection Logs, within 1 year of CCP approval
- Habitat Management Plan, within 3 years following CCP approval
- Inventory and Monitoring Plan, within 5 years of CCP approval
- Law Enforcement Management Plan, within 5 years of CCP approval
- Cultural Resources Management Plan, within 5 years of CCP approval

#### Habitat Management Plan

The HMP will incorporate the selected alternative's habitat objectives developed herein, and will identify "what, which, how, and when" actions and strategies we would implement over the 15-year period to achieve those objectives. Specifically, the HMP will define management areas and treatment units, identify the type or method of treatment, establish the timing for management actions, and define how we will measure success over the next 15 years. In this CCP, the goals, objectives, and list of strategies in each objective identify how we intend to manage habitats on the Refuge and will represent the varying levels of habitat management under each alternative. We base both the CCP and HMP on current resource information, published research, and our own field experiences. We will update our methods, timing, and techniques as new, credible information becomes available. To facilitate our management, we will regularly maintain our GIS (Geographic Information System) database, documenting any major changes in vegetation or shoreline at least every five years, as staffing and funding allow. As appropriate, we will incorporate the actions common to all alternatives into the HMP.

#### Annual Habitat Work Plan and Inventory and Monitoring Plan

The AHWP and IMP for the Refuge are also priorities for completion upon CCP approval. Regardless of the alternative chosen, those plans also are vital for implementing habitat management actions and measuring our success in meeting the objectives, though the levels will vary according to the alternative chosen. Each year, we will generate an AHWP that will outline specific management activities for that year. The IMP will outline the methodology to assess whether our original assumptions and proposed management actions support our habitat and species objectives. The IMP may also be used to monitor the potential effects of global climate change on refuge habitats and wildlife populations. We will prioritize our inventory and monitoring needs in the IMP. The results of inventories and monitoring will provide us with more information on the status of our natural resources and allow us to make more informed management decisions.

#### Distributing Refuge Revenue Sharing Payments

As described in Chapter 3, we have provided funding in the form of shared revenues to the Town of Chilmark for Nomans Land Island since the Refuge was established. Those annual payments are calculated by formula determined by, and with funds appropriated by, Congress. All of the alternatives will continue those payments in accordance with the law, commensurate with changes in the appraised market value of refuge lands, or new appropriation levels dictated by Congress.

## Additional NEPA Analysis

For all major federal actions, NEPA requires the site-specific analysis and disclosure of their impacts, either in an EA or EIS. Generally, those include the administrative actions listed in Chapter 4. Most of the actions proposed in the three alternatives and fully analyzed in this draft are described in enough detail to comply with NEPA, and would not require additional environmental analysis. Although this list is not all-inclusive, the following projects fall into that category:

- development of the HMP;
- development of the IMP;
- the proposed construction of a new interpretive trail proposed at the Aquinnah Cultural Center;
- control of invasive plants;
- implementing a predator or pest management program; and,
- enhancing our off-site priority public use programs.

## Alternatives or Actions Considered but Eliminated from Further Study

1. More intensive mechanical management of Refuge habitats.

Much more intensive mechanical management of Refuge habitats, including mowing of land to establish or maintain grassland habitat, was considered to be logistically challenging to get equipment to the island, and impractical given the presence of UXO distributed throughout the island. Removal of all UXO is not practical or feasible, and therefore precludes intensive mechanical habitat management.

2. Allowing some of the six priority uses on Refuge.

While we recognize the ecological and cultural importance of the island to the local communities on Martha's Vineyard as well as a number of interest groups, opening up the island to the general public, even for small parties, for any of the six priority uses is not a viable option. Our guiding document with the U.S. Navy, the transfer agreement, stipulates that the Refuge must remain administratively closed. With this restriction, and due to the safety concerns, we do not and will not provide any public access. The Navy's responsibility is to remove the surface UXO only to the extent necessary for an unmanned, unstaffed national wildlife refuge, which were the original terms of the agreement. Any public uses are in violation of that agreement, are not provided for in the level of UXO clearance, and are prohibitive in terms of safety, liability, feasibility and cost.

3. Managing Refuge upland habitats to revert back to forest.

Like many other coastal Massachusetts islands, Nomans Land Island was originally forested. In the 1800's, much of the island was cleared of these forests in favor of farming and raising sheep. Since then, human uses on the island have been too intensive to allow forests to become re-established. One alternative we considered was to allow natural succession back to forest in the upland habitat. This was considered unlikely, however, because wind and salt spray can delay succession for long periods of time, and there is no guarantee that adequate seed sources persist for forests to re-establish on the island. In addition, forest management operations would possibly require machinery over time that would be logistically difficult to address and could conflict with safety concerns over UXO. Moreover, as early successional habitat continues to decline in the Northeast, many regional bird conservation plans advocate managing shrubland where possible to benefit breeding and migrating birds.

## Alternative A. Current Management

This alternative describes current Refuge programs on the 628-acre island for habitat management, wildlife inventories and monitoring, administrative infrastructure and staffing, and visitor services. This alternative describes a “snapshot in time” of current management actions.

### Habitat Management

Our present habitat management program, while generally passive, uses the strategy of adaptive management to adjust invasive species treatment and species monitoring protocols as new information becomes available. Due to the dynamic nature of coastal island habitat, it is vulnerable to dramatic seasonal and annual changes. See Chapter 3 for a description of the types of Refuge habitat.

Under current management, we would continue to passively manage Refuge habitats and to treat invasive species along established maintenance paths when possible. The location of the Refuge, and current staffing and funding levels restrict our ability to maintain a consistent presence, or to actively oversee and implement management actions. Rather, the only active habitat management or alterations would be as a result of any continuing Navy operations on the island and some degree of invasive species management.

As a coastal island, Nomans Land Island is susceptible to the effects of global climate change, particularly increases in sea level. For this reason, like many other refuges along the Atlantic seaboard, we completed a SLAMM analysis in 2009 that predicts potential impacts to the Refuge over the next century under different sea level rise scenarios. Because those are long-term scenarios, management actions are not warranted immediately and would likely be better addressed in future CCPs. We would, however, continue to be cognizant of the indicators of climate change (e.g., sea level rise) on the Refuge. In addition, the Refuge would continue to work to reduce non-climate environmental stressors, including treatment of invasive species, opportunistically monitoring for disease and mortality, and reducing pollution by using hybrid vehicles for transportation from Sudbury for Refuge visits.



Erin Victory/TCI

Regeneration after a prescribed burn on the Refuge

### Inventories and Monitoring

Under current management, the Service conducts basic surveys and monitoring of Refuge wildlife. This includes breeding bird surveys (BBSs), marshbird callback surveys, and inventories of nesting shorebird and colonial waterbird species. We would continue all of these efforts under this alternative, and continue to conduct occasional migratory raptor banding with partners, and record seal use of the beach and seabird mortality events when possible. In addition, if the Navy performs prescribed burns in the future as part of

its ongoing UXO removal commitment, we would continue to monitor the vegetation response to determine the effectiveness of these burns. As with all of our activities, the degree to which we can conduct monitoring and inventories depends on the availability of funding and staff, and the contributions of partners and volunteers.

### Visitor Services

Current visitor services programs are restricted to a virtual tour on the Refuge website, which allows remote opportunities for interpretation and wildlife observation. The distance of the Refuge from Sudbury and current levels of staffing and funding limits our capabilities to provide environmental education and interpretation programs on Martha's Vineyard. None of the six priority wildlife-dependent uses are allowed on the Refuge, as we are obligated to maintain and enforce the ban on public access for safety reasons. Under this alternative, we would maintain this level of visitor services.

### Refuge Administration

In this alternative, Refuge staffing would remain at current levels at the Eastern Massachusetts NWR Complex headquarters in Sudbury, Massachusetts. Given the government-to-government relationship we have with the Tribe and our federal trust responsibility towards them, we would continue to develop our relationship with them and endeavor to create a mutually agreeable partnership agreement between the Service and the Tribe. We would also continue to enforce the ban on public access to the Refuge, and would continue to install, maintain and enforce regulatory signs posted around the Refuge.

In the discussion that follows, we describe in detail the goals, objectives, and strategies that we would implement under Alternative A.

Goal 1. Perpetuate the biological integrity and diversity of coastal island habitats to support native wildlife and plant communities, including species of conservation concern.

#### Objective 1.1. Native Maritime Shrubland Habitat (Breeding Wildlife)

Over the next 15 years, continue to minimally manage approximately 400 acres of maritime shrubland habitat that supports nesting focal species of conservation concern, including eastern towhee (*Pipilo erythrophthalmus*) and gray catbird (*Dumetella carolinensis*).

#### Rationale

Shrub habitat comprises various shrub species or a diverse mix of young trees that provides an abundance of insect food for breeding birds that need to consume large amounts of protein for reproduction and feeding young. The structural density in this habitat provides cover from predators and shelter from harsh weather. This habitat on the Refuge is one of the primary reasons the island is a regional landbird focus area in BCR 30 (Steinkamp 2008). This designation highlights an area's importance and relative conservation value across the landscape due to its biological features and habitat characteristics preferred by priority birds (Steinkamp 2008).

Despite the importance of maintaining shrubland habitat in the region and to support breeding birds of conservation concern, current levels of staffing and funding preclude active management of this habitat type. This is especially true given the travel distance and transportation logistics in getting to the island. Under Alternative A, we would continue to take a passive approach to habitat management, and allow natural processes or UXO clearance operations by the U.S. Navy (see Chapter 3) to direct habitat condition. Because shrubland is already established, it is likely that little effort is needed to maintain it beyond prescribed burns every decade or so depending on the specific site conditions (Tefft 2006). Occasional burns would only be conducted by the Navy if they deemed it necessary, and over the long term these burns would likely keep the Refuge's upland habitat in an early successional or shrubland condition. However, should

the Navy decide that burns are not required, the Service may not be able to maintain this land in shrubland habitat for focal early successional landbirds of conservation concern.

There are no target densities for breeding birds under this alternative. Upon its inception, breeding bird surveys were conducted annually on the Refuge for the first five years, and would continue to be conducted every three years to collect baseline data for species of conservation concern including the eastern towhee and gray catbird.

### Strategies

Continue to:

- Allow natural processes to influence Refuge shrub habitat, except for potential prescribed burns conducted by the Navy as part of their operations and maintenance plan.
- Provide oversight and coordination with Navy contaminant and UXO cleanup and strive towards actions that benefit shrubland birds.
- Control invasive species and map new infestations, when feasible.
- Maintain the two existing access loop paths.
- Work through existing partnerships to meet objectives.

### Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- To measure relative abundance for gray catbirds and eastern towhees, conduct annual breeding bird surveys for the first five years and then once every three years thereafter throughout the life of the CCP.
- To evaluate quality of shrubland habitat as a result of prescribed burning for breeding landbirds, conduct vegetation surveys for species composition and community structure annually for the first two to three years post-burn, and every five years thereafter.
- To maintain desired quality and characteristics of shrublands, annually conduct scouting for new invasive plant species or infestations, and monitor effectiveness of control techniques.
- Complete habitat map within three years.

### Objective 1.2. Native Maritime Shrubland Habitat (Migrating Wildlife)

Over the next 15 years, continue to minimally manage approximately 400 acres of maritime shrubland habitat that supports migrating landbirds, including raptors (e.g., state endangered peregrine falcon (*Falco peregrinus*)).

### Rationale

In addition to its value to breeding birds, shrub habitat is important because many other birds rely on it at various times during the year. Many shrub species bear fruit in the fall, which helps boost the fat reserves for migrating or over-wintering birds. As part of the Atlantic Flyway, Nomans Land Island NWR provides an important stop-over site for many migrating bird species, including raptors. In particular, for state-

listed peregrine falcons, the Refuge is the most important stopover site in Massachusetts (T. French, personal communication; see Chapter 3).

Currently, we partner with the Massachusetts Audubon Society to band raptors as the opportunity arises, but we use no standardized monitoring protocol for raptors or other migrating landbirds. Under Alternative A, we would continue this level of species monitoring as staffing, funding and transportation logistics restrict our abilities to be more proactive. We would also continue to take a passive approach to habitat management, allowing natural processes or UXO clearance operations by the U.S. Navy to direct habitat condition, with the exception of controlling invasive species when possible.

### Strategies

Continue to:

- Allow natural processes to influence Refuge shrub habitat, except for potential prescribed burns conducted by the Navy as a part of their operations and maintenance plan.
- Provide oversight and coordination with Navy contaminant and UXO cleanup and strive towards actions that benefit migrating shrubland birds.
- Maintain the two existing access loop paths.
- Control invasive species and map new infestations, when feasible.
- Work through existing partnerships to meet objectives.

### Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- To evaluate quality of shrubland habitat as a result of prescribed burning for migrating landbirds, conduct vegetation surveys for species composition and community structure annually for the first two to three years post-burn, and every five years thereafter.
- To maintain desired quality and characteristics of shrubland habitat, annually conduct scouting for new invasive plant species or infestations and monitor effectiveness of control techniques.
- Collaborate with partners band migrating raptors for baseline tracking as opportunity allows.
- Complete habitat map within three years.

### Objective 1.3. Vegetated Dune Habitat

Over the next 15 years, continue to minimally manage approximately 15 acres of vegetated dune habitat consisting of American beach grass (*Amophilla* species) and other herbaceous vegetation which provides suitable nesting habitat for shorebirds (including American oystercatchers (*Haematopus palliatus*), piping plovers (*Charadrius melodus*) and terns (primarily common (*Sterna hirundo*) and roseate terns (*Sterna dougallii*)).

### Rationale

Coastal beach and dune habitat continues to be some of the most threatened habitats in the U.S. They are naturally unstable, dynamic ecosystems that are subject to erosion and accretion processes due to wind and wave action (MA DFG 2006). Many species rely upon these variable processes to provide continual habitat

and food resources. These primarily include nesting and migrating bird species, mammals such as seals and voles, and a host of invertebrates.



Erin Victory/TCI

Vegetated dune habitat

In the past, this habitat on Nomans Land Island supported breeding colonies of arctic (*Sterna paradisaea*), common and roseate terns. All three of these species are listed in the BCR 30 and PIF Area 09 plans as priority species of conservation concern, are state listed, and the roseate tern is federal listed as endangered. Today only common terns continue to use Nomans Land Island NWR to breed, and in very low numbers. In 2009, there was only one breeding pair of common terns documented on the Refuge. The initial decline in use by tern species coincided with increasing numbers of several species of breeding gulls on Nomans Land Island. It is well documented that gulls are nest predators of tern and other coastal bird species, and also compete with terns and other species for nesting habitat (O'Connell and Beck 2003, Donehower et al. 2007). In recent years, gull numbers along the coast have been decreasing, and we are unsure if the number of nesting gulls in the limited sandy dune habitats has increased, decreased, or stayed stable on the Refuge. A permit for removal of nesting gulls was secured for use in 2009, but no control actions took place.

American oystercatchers are a species of high conservation concern, and breed on the Refuge in low numbers. They are only found along the North American Atlantic coast, and according to the U.S. Shorebird Conservation Plan (Brown et al. 2001), the population estimate for the species is approximately 7,500. In 2009, there were three breeding pairs on the Refuge. We would continue to monitor American oystercatcher and other breeding shorebirds annually under this alternative, and to measure productivity when possible. Though piping plovers have not been documented on the Refuge since 1980, annual visits incorporate visual assessment of potential piping plover habitat, and when found, subsequent monitoring for breeding individuals.

Service biologists visit the Refuge a few times per year. Given the transportation logistics, staff must try to address all habitat, species monitoring and management needs throughout the island in a one- to three-day time period. While productivity is measured for American oystercatcher when possible, tern nest success and productivity are not monitored, and any surveys or management beyond tern inventories are inconsistent and opportunistic. Invasive species in this habitat are removed as the opportunity arises. Without additional staff and resources, we would continue this level of management under this alternative.

## Strategies

Continue to:

- Conduct limited and specific predator control actions annually, as needed and as permits are approved.
- Control invasive species and map new infestations, when feasible.
- Work through existing partnerships to meet objectives.

## Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- To determine number of nesting pairs of common and roseate terns, conduct annual inventories during the breeding season throughout the life of the CCP.
- To determine number of nesting pairs and estimate productivity of American oystercatchers, conduct annual surveys during the breeding season and opportunistically record reproductive success throughout the life of the CCP.
- To determine presence of piping plover, annually assess dune habitat for piping plover nesting suitability, and if found, monitor for nesting pairs.
- To maintain desired quality and characteristics of vegetated dune habitat, annually conduct scouting for new invasive plant species or infestations and monitor effectiveness of control techniques.
- Complete habitat map within three years.

## Objective 1.4. Marine Intertidal Beach and Rocky Shore

Over the next 15 years, continue to passively oversee approximately 100 acres of marine intertidal beach and rocky shore habitat to benefit nesting waterbirds (double-crested cormorants (*Phalacrocorax auritus*)), migrating shorebirds and, marine mammals (seals).

### Rationale

The beaches of Nomans Land Island NWR are regionally important because of the island's land protection status. Throughout the Atlantic coast, quality beach habitat is imperiled due to increases in human uses and development (see the rationale for Alternative A, Objective 1.3). Because Nomans Land Island has been closed to the public for approximately the last 56 years and there are no records of mammalian mesopredators (e.g., raccoons, skunks, foxes) on the island, gulls are the only known species that adversely impact beach nesting species of priority conservation concern on the island.

A SLAMM analysis was conducted for the Refuge in early 2009. With the SLAMM analysis, we now have projected estimates of sea level increases by years 2025, 2050 and 2100 under four sea level rise scenarios, and how those scenarios might impact the Refuge. Because those are long-term scenarios, management actions are not warranted immediately and would likely be better addressed in future CCPs. We would, however, continue to be cognizant of the indicators of climate change (e.g., sea level rise) on the Refuge, and work to reduce non-climate environmental stressors.

The intertidal beach and rocky shores of the Refuge provide important nesting, resting and forage habitat for many priority species of conservation concern. Gray (Halichoerus gryphus) and harbor (Phoca

vitulina) seals use the beaches during the fall and winter, and are protected under the Marine Mammal Protection Act. Migrating shorebirds also use Refuge beaches as a stopover site for resting and feeding. During the breeding season, double-crested cormorants nest along the Refuge shoreline. American oystercatchers, typically associated with vegetated dune habitat, can also be found nesting in the cobble along the Refuge shoreline. Though we address American oystercatcher in Objective 1.3, monitoring activities would be the same for any breeding pairs found in this rocky shore habitat.

Currently, we conduct inventories of nesting double-crested cormorants when possible (generally every other year or every third year), but do not collect any information on productivity given our current limitations in staffing and our limited time frame when we visit the Refuge. We obtain additional shoreline data including recording seal use of the beach and documenting evidence of seabird mortality when possible. Under Alternative A, we would continue this level of monitoring.

### Strategies

Continue to:

- Coordinate with partners to respond to emergency bird mortality and marine mammal stranding events.
- Work through existing partnerships to meet objectives.

### Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- Conduct census of nesting double-crested cormorants every three years throughout the life of the CCP.
- Document seal presence on the Refuge shoreline annually, and report entanglements to the New England Aquarium stranding staff.
- To maintain desired quality and characteristics of intertidal beaches and rocky shores, annually conduct scouting for new invasive plant species or infestations and monitor effectiveness of control techniques.
- Continue to walk the periphery of the island annually and report any seabird mortality events in coordination with SEANet as weather, funding and time permits.
- Complete habitat map within three years.

### Objective 1.5. Scrub Shrub and Emergent Wetlands, Bogs, and Open Water

Over the next 15 years, continue to minimally manage approximately 100-150 acres of freshwater wetland communities to support breeding marshbirds (including but not limited to Virginia rail (*Rallus limicola*)) and native plant and animal communities.

#### Rationale

A number of different wetland types exist on the Refuge. They range from ponds to permanently flooded marshes to seasonally flooded marshes. These habitats support a small black-crowned night-heron (*Nycticorax nycticorax*) rookery, and waterfowl such as American black ducks, mallards (*Anas platyrhynchos*), and American green-winged teal (*Anas crecca*). Mammals including muskrat (*Ondatra zibethicus*), reptiles such as spotted turtles (*Clemmys guttata*), waterbirds including Virginia rails, and

passerines including song sparrows (*Melospiza melodia*) and red-winged blackbirds (*Agelaius phoeniceus*) use these Refuge wetlands as well. Other species that may use these habitats on the Refuge are northern pintail (*Anas acuta*), blue-winged teal (*Anas discors*), northern shoveler (*Anas clypeata*), glossy ibis (*Plegadis falcinellus*), and least bittern (*Ixobrychus exilis*). What remains unknown, however, is the fish and invertebrate composition of these waters, as there has been very little UXO clearance in any of the island's ponds or wetlands. Because of this, access for more comprehensive surveys is limited around these wetlands. Many of the species listed above have been identified as species of conservation concern, or have warranted concern due to regional population declines.



Under Alternative A, we would continue to conduct marshbird callback surveys to obtain trend information for species such as Virginia rail and least bittern. Treatment of invasive Phragmites (common reed; *Phragmites australis*) and purple loosestrife (*Lythrum salicaria*) would continue as needed, and surveys for rare plants would occur as opportunity and staff availability arise. All other species would be documented as encountered, and no other habitat management would be conducted.

### Strategies

Continue to:

- Control purple loosestrife and Phragmites through biological, chemical, and/or mechanical means as needed, and as time and funding permits, and map new infestations.
- Work through existing partnerships to meet objectives.

### Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- Continue to conduct callback surveys when possible for secretive nesting marshbirds to monitor overall diversity, evaluate habitat use patterns, and obtain trend information.
- Work with partners to conduct wetland plant surveys to identify rare wetland plant species when possible, and record observations of other wetland species, particularly rare wetland invertebrates.

- Continue monitoring invasive plants, particularly Phragmites and purple loosestrife, to prevent unacceptable levels of loss of habitat quality. If the patch sizes of Phragmites attain a solid stand (regardless of size) that reasonably can be sprayed or, it threatens a rare community, initiate appropriate control measures to decrease Phragmites to a tolerable level. We may leave untreated any patches that are static or inaccessible by any currently available means until we determine a feasible solution or efficacious method.
- Complete habitat map within three years.

Goal 2. Promote awareness and stewardship of our coastal natural resources by working with our partners to provide off-site interpretation, education and outreach opportunities.

### Objective 2.1. Environmental Education and Interpretation

Over the next 15 years, continue to maintain the current level of interpretation.

#### Rationale

As we have described, the presence of UXO throughout the Refuge and the terms of the original transfer agreement with the U.S. Navy present a unique case where we cannot allow any of the six priority uses on the Refuge itself, including environmental education and interpretation. Any Refuge environmental education or interpretation programs would take place off-site on Martha's Vineyard. Currently, the distance from refuge complex headquarters in Sudbury and staffing and funding levels preclude our ability to provide more than an interpretive website which includes a virtual tour of Nomans Land Island.

#### Strategies

Continue to:

- Interpret the Refuge through the virtual tour on the Refuge website.

#### Monitoring Elements

- Maintain Refuge website and virtual tour.

### Objective 2.2. Community Partnerships and Outreach

Over the next 15 years, maintain existing partnerships with the Tribe, and regional and local organizations and agencies to ensure that citizens of and visitors to Martha's Vineyard are aware of the biological resources that exist on Nomans Land Island, the Service presence there, and the connection of Nomans Land Island NWR to the Refuge System.

#### Rationale

It is of utmost importance for us to reach out and collaborate with the Tribe and our other conservation partners in the region, including the Town of Chilmark, Massachusetts Audubon Society, TTOR and others. Through them, we are able to facilitate communication regarding Refuge management, local conservation issues, and potential cooperative opportunities. It is particularly important to cultivate an awareness and appreciation in local communities of the Refuge's unique contribution to the Refuge System mission. In addition, these partnerships are important to our biological program as well, and we would continue to strengthen and develop collaborative initiatives with them to accomplish our objectives under this alternative. In addition, we would continue to issue press releases for large-scale management activities that take place on the Refuge to keep the Martha's Vineyard community informed. The amount of future outreach would remain minimal under this alternative, however, with only the basic amount of outreach conducted.

## Strategies

Continue to:

- Explore the possibility of a partnership agreement with the Wampanoag Tribe of Gay Head (Aquinnah) to determine outreach and other opportunities for partnership.
- Issue press releases for large-scale management activities on the Refuge.

## Monitoring Elements

- Number of partnership projects planned or accomplished.
- Number of press releases issued

Goal 3. Recognize the archaeological and cultural importance of the island.

### Objective 3.1. Archaeological and Cultural Resources

Over the next 15 years, follow Service protocol to prevent the loss of, and document, the archaeological and cultural resources on Nomans Land Island when possible. Continue to develop a partnership agreement with the Wampanoag Tribe of Gay Head (Aquinnah) that would incorporate limited access for cultural and ceremonial use of the Refuge.

#### Rationale

Despite the rich human history of Nomans Land Island and the number of archaeological sites that exist, both documented and undocumented, we would be unable to pursue active archaeological investigation under this alternative. Current levels of staffing and funding preclude our ability to proactively identify and protect archaeological sites, or to bring in UXO-certified archaeologists to conduct any site inventories. Under this alternative, we would continue to ensure activities on the Refuge are in compliance with the National Historic Preservation Act, to document cultural and/or archaeological items as encountered, and to notify the appropriate agencies should any be found. In addition, we would continue to work with the Wampanoag Tribe of Gay Head (Aquinnah) to complete a mutually beneficial partnership agreement, including cultural and ceremonial use of the Refuge by the Tribe.

## Strategies

Continue to:

- Coordinate with the Navy to ensure compliance with the National Historic Preservation Act as necessary.
- Record cultural and archaeological items and/or sites as encountered annually, or as necessary, and contact the appropriate agencies and organizations.
- Collaborate with the Wampanoag Tribe of Gay Head (Aquinnah) to develop a mutually beneficial partnership agreement incorporating cultural and ceremonial use of the Refuge by the Tribe.

## Monitoring Elements

- Number of archaeological sites protected.

### Objective 3.2. Burial Site Protection

Continue to maintain the Luce cemetery by removing vegetation when possible, and continue to explore opportunities to work with volunteers from interested groups in Chilmark over the next 15 years.

Continue to pursue the possible repatriation of Wampanoag tribal remains on the Refuge and coordinate with the Tribe regarding existing burial sites, if found, through the development of a partnership agreement between the Tribe and the Service.



Stephanie Koch/USFWS

Luce Cemetery

#### Rationale

Federal laws require the Service to identify and preserve its important historic structures, archaeological sites, and artifacts. The Luce cemetery and other potential burial sites are protected under the historic preservation laws listed in Chapter 1. NEPA mandates our consideration of cultural resources in planning federal actions. The Improvement Act requires the comprehensive conservation plan for each refuge to identify its archaeological and cultural values.

Under Alternative A, Service staff would continue to maintain the Luce cemetery by removing vegetation as time and opportunity allows, or with the help of volunteers. We would also continue to explore a partnership with the Chilmark Historical Commission to take leadership in maintaining the cemetery through volunteers that would visit the island in concert with Service staff, and only after appropriate safety training.

It is also likely that there are remains of ancestral Tribal members on the Refuge. While no known sites exist, any remains would be protected if discovered in the conduct of Refuge operations in compliance NAGPRA and other federal mandates. We would continue to work with the Tribe towards a partnership agreement, including repatriation and the protection of potential future discoveries of burial sites on the Refuge. Any ground disturbance activities would require UXO Tech Support, and would therefore need to be coordinated with the Navy.

#### Strategies

Continue to:

- Maintain the Luce cemetery by Service staff as opportunity allows, and continue to explore a partnership with the Chilmark Historical Commission for volunteers to conduct site visits with Service staff to remove vegetation at the cemetery when possible.

- Meet with representatives of the Wampanoag Tribe of Gay Head (Aquinnah) to continue to develop a mutually beneficial partnership agreement incorporating repatriation of Wampanoag Tribal remains, and the protection of potential Tribal burial sites on the Refuge.

#### Monitoring Elements

- Number of volunteer work hours.
- Number of remains protected.

### Objective 3.3 Cultural Interpretation

Over the next 15 years, continue to coordinate with the Tribe and our partners to interpret the cultural and archaeological resources of the island as staff availability and resources allow.

#### Rationale

As described in Chapter 3, Nomans Land Island has a culturally rich and interesting human history, yet cultural interpretation by the Service is minimal for the Refuge due to lack of sufficient staff time and resources. The web virtual tour currently consists of a segment on the stone walls and the remnant of a structure known as the wine cellar still visible on the island. Under Alternative A, this level of cultural interpretation would not change.

#### Strategies

Continue to:

- Interpret the Refuge's cultural history through the virtual tour on the Refuge website.

#### Monitoring Elements

- Number of accessioned museum property collections.
- Number of partnership projects planned or accomplished.

## Alternative B. Enhanced Wildlife Management and Visitor Services

This alternative describes an expansion of current management in all areas over the next 15 years both on and off Nomans Land Island NWR, as funding and staff levels permit. The guiding philosophy under this alternative is to more actively manage the different habitats of the Refuge to meet the needs of focal species of conservation concern. It also expands the visitor services programs to emphasize environmental education, interpretation and outreach to promote community involvement and knowledge of the island's natural resources and the role of the Refuge in the Refuge System. We would also seek to enhance our current, and to create new, partnerships with local conservation organizations and civic groups. Under Alternative B, we would continue our adaptive management approach of modifying actions based on new information, especially with shifting coastal habitat dynamics, and with a constant effort to collect more and better data upon which to make management decisions. See Chapter 3 for a description of the types of Refuge habitat.

#### Habitat Management and Protection

Under this alternative, we would incorporate the principles of adaptive management, and specifically Strategic Habitat Conservation where possible, as habitat management is the primary tool in attaining population objectives under this framework. In shrubland habitat, we would delineate at least two habitat patches, and use prescribed burning on a rotational basis so that each patch would burn every 7 to 12 years or as necessary to maintain the desired habitat condition. Fire breaks would be employed when and where

possible to define these patches prior to conducting a burn. Biological, chemical and/or mechanical means to remove invasive plant species throughout the island would also be employed. To assess vegetative condition over time, particularly to evaluate post-fire effects, an updated, accurate cover type map and detailed vegetation surveys are needed to provide a baseline, and would be one of our priorities under this alternative. Predator control measures would be employed as necessary to support nesting focal species of conservation concern.

We would work closely with the U.S. Navy to coordinate all management actions. We would also endeavor to work with them to provide additional trails or means of access throughout the island, as the additional survey and monitoring efforts detailed in this alternative are hampered by the current lack of approved trails.

Habitat management would also include the protection of known cultural and archaeological sites on the island, particularly in dune areas where erosion is a concern. We would also work with volunteers and partners to maintain the island cemetery by removing vegetation annually or as needed.

### Inventories and Monitoring

The Service would continue inventory and monitoring efforts to provide key information on the trust resources as long as we have the necessary staff and resources to accomplish them, and as weather permits. These include breeding bird surveys, secretive marshbird callback surveys, and inventories of breeding terns, American oystercatchers and double-crested cormorants. Productivity of nesting waterbirds would be measured when possible. In shrubland habitat, the primary focus would be on nesting gray catbirds and eastern towhees as they are both species of regional conservation concern and can be used to indicate habitat quality. Leach's storm petrels (*Oceanodroma leucorhoa*) would eventually be included in monitoring efforts as well. We would also work with partners to monitor migrating birds, including raptors, and would seek to adopt a standardized protocol for a rapid assessment of annual migration trends. Given the gaps in knowledge we have about many of the other taxonomic groups on the Refuge, we would evaluate ways to incorporate invertebrate (particularly pollinators), and rare plant surveys on site visits. We would target any alterations or additions to these on-going surveys toward helping us understand better the implications of our management actions and ways to improve our efficiency and effectiveness.

In addition, Refuge staff would evaluate the feasibility of introducing New England cottontail (*Sylvilagus transitionalis*) on the Refuge.

Passive monitoring would include recording observations of seals using Refuge beaches and evidence of seabird mortality along Refuge shores.

As in Alternative A, we would continue to be cognizant of the indicators of climate change, and would continue to work towards reducing non-climate environmental stressors. Under Alternative B, the Refuge would initiate shoreline monitoring via aerial photos. We would also endeavor to address the state's climate change priorities once they are refined, and would work within the North Atlantic LCC to promote research, education, and collaboration.

### Visitor Services

Under Alternative B, we would expand existing opportunities for the visitor services programs appropriate for Nomans Land Island NWR (see Map 2-1).

Given the unique history of Nomans Land Island and its resources, we recognize that it is an important ecological, cultural, and archaeological resource. Due to persistent hazards associated with the UXO, we are obligated to enforce the ban on public access. Therefore, our main priority under this alternative would be to provide alternative ways for people to experience the Refuge and to promote knowledge of its resources and understanding of its role in the Refuge System. To accomplish this, we would redesign the virtual web tour by evaluating the possibility to utilize professional photographers and videographers to capture the

diverse wildlife and habitats on the island, and management and monitoring activities. We would also evaluate the potential to broadcast live during staff site visits on local access television, radio, or web feed at the Aquinnah Cultural Center (ACC). We would explore the opportunity to partner with the Tribe to create a virtual tour based on the biological and cultural resources of importance to them, particularly from Nomans Land Island.

Other ways for people to learn about the Refuge would be explored on Martha's Vineyard as well. We would seek partnerships to help us achieve new and expanded environmental education and interpretation programs. To this end, we would propose to partner with the ACC to create a kiosk and an interpretive trail with informational signs and a spotting scope from which to view Nomans Land Island. We would work with local schools and libraries to provide curriculum-based programs and features such as a coastal resources trunk for school children.

The Service would collaborate with partners to sponsor and participate in additional outreach opportunities for visitors and residents of Martha's Vineyard. We would participate in at least one community event per year, and increase awareness of the Refuge by submitting regular press releases, and through messaging via signage and materials (such as brochures, rack cards, etc.).

### Refuge Administration

This alternative proposes additional staff that would provide support for the expansion of the biological, visitor services and law enforcement programs. We would base any increases in staffing on available, permanent sources of funding, and would consider them in the context of regional and Refuge priorities.

Given the government-to-government relationship we have with the Tribe and our federal trust responsibility towards them, one of our priorities would be to continue to develop our relationship with them and endeavor to create a mutually agreeable partnership agreement between the Service and the Tribe. Signs posted on the Refuge itself would also need to be maintained; otherwise no other facilities or infrastructure other than the maintenance paths, moorings, and storage containers exist in association with Nomans Land Island NWR.

Transportation to the Refuge for Refuge staff is primarily supplied by private contractor and occasionally our partners on Martha's Vineyard, and under this alternative we would explore options to keep a Service-owned boat locally, or to see what other options are available to supplement that need.

The section that follows describes in detail the goals, objectives, and strategies that we would implement in Alternative B.



Goal 1. Perpetuate the biological integrity and diversity of coastal island habitats to support native wildlife and plant communities, including species of conservation concern.

#### Objective 1.1. Native Maritime Shrubland Habitat (Breeding Wildlife)

Annually manage approximately 400 acres of maritime shrubland habitat for breeding gray catbirds, eastern towhees, and other species of high conservation concern, including Leach's storm petrel and rare plants. Evaluate the feasibility of introducing New England cottontail within five years, and if determined to be feasible, then begin species introduction within three years of determination.

For gray catbirds, provide dense native deciduous shrubs and vine tangles in shrub-sapling successional stage at least 2.5 meters (approximately 8.2 feet) tall, and providing complex horizontal structure to within 0.5 meters (or approximately 1.5 feet) of the ground surface. Abundant species should include (but are not limited to) those in genera *Cornus*, *Prunus*, *Rubus*, and *Vitis*. Minimum territory size of at least one acre is required, but nest density increases linearly with shrub density, so larger contiguous habitat blocks are preferable. Achieve approximately 1.0 pair of breeding gray catbirds every 4.0 acres (based on breeding territory size and average breeding density observed in the best shrubland habitat in past years on the Refuge).

For eastern towhees, provide dense native deciduous shrubs and vine tangles in mid to late secondary successional stage at least 2.0 meters (approximately 6.5 feet) tall, and provide well-developed litter layer and preferably dense low cover extending to the leaf litter. Abundant species should include (but are not limited to) those in genera *Vitis* and *Smilax*. Minimum territory size can be as large as 5.0 acres, but in high density nesting areas in Massachusetts, as many as 1.5 pairs per acre have been documented. Achieve approximately 1.0 pair of breeding eastern towhees per 3.0 acres (based on breeding territory size and average breeding density observed in the best shrubland habitat in past years on the Refuge).

The percentage of maritime shrubland that meet these specific vegetative characteristics will differ annually, depending on the time lapsed since the last prescribed burn. Given the slow rate of succession on the island which is heavily influenced by persistent winds, we expect a total of at least 70 percent of the upland habitat to fall into one of these two habitat categories.

For New England cottontail, if released, provide dense native shrubs and vine tangles with understory habitat density of 20,000 woody stems per acre which are at least 20 inches tall and less than 3.0 inch diameter. Minimum patch size is 25 acres (but larger is better) and should be in close proximity to other large patches.

#### Rationale

Though there is some question as to how much of the pre-European settlement landscape was early successional habitat, there does seem to be agreement that coastal southern New England was much more prone and likely to be susceptible to disturbance, by both natural and anthropogenic processes (Cronon 1983, Covell 2006, Motzkin and Foster 2002). The paleoecological record for coastal islands including Nantucket, Martha's Vineyard, Block Island and Long Island indicate that grasslands were uncommon in these areas in the absence of natural disturbances capable of creating and maintaining them (Motzkin and Foster 2002). Unfortunately the paleoecological record is not as clear in distinguishing between shrublands, early forests and mature forests given similarities in species composition across habitat types, and in typing fossil pollen to species. However, there is indication that shrublands were more common in coastal New England, relative to the rest of New England, prior to European settlement based on a combination of paleoecological data and ethno-historical information (Motzkin and Foster 2002).

Nevertheless, it is widely agreed that during the era of farm abandonment in the late 1800's to 1900's, there was a preponderance of shrubland habitat as farm fields went fallow, which caused a boost in shrubland-dependent bird populations in the region. Since then, much of the landscape has reverted back to forests,

and the suppression of natural events such as fire, floods, and beaver activity has minimized disturbances, resulting in a decreasing amount of early successional habitat in the Northeast. Many populations of bird species dependent upon this habitat are declining with them. Out of 40 shrubland-dependent bird species, 22 are experiencing population declines (Tefft 2006).

Shrub habitat comprises various shrub species or a diverse mix of young trees that provide an abundance of insect food for breeding birds that need to consume large amounts of protein for reproduction and feeding young. The structural density in this habitat provides cover from predators and shelter from harsh weather. This habitat on the Refuge is one of the primary reasons the island is a regional landbird focus area in BCR 30 (Steinkamp 2008). This designation highlights an area's importance and relative conservation value across the landscape due to its biological features and habitat characteristics preferred by priority birds.

From BBS data collected on the island since 2001, over 25 species of landbirds have been documented using Refuge habitat. These include song sparrows, common yellowthroats (*Geothlypis trichas*), and savannah sparrows (*Passerculus sandwichensis*). Northern harriers (*Circus cyaneus*; state threatened) are likely nesting on the island as well. Two others, eastern towhees and gray catbirds, use shrub habitat to breed and are both priority species included in regional conservation plans (BCR 30, PIF Area 09).

Species are listed in regional conservation plans if population trends indicate decreasing numbers regionwide, and/or if a large percentage of their total population occurs in the region. The eastern towhee is a species of priority conservation concern due to regional declines, and is a species of greatest conservation need (SGCN) in Massachusetts. BBS data since the mid 1960's show population declines for the eastern towhee throughout southern New England (-7.1 percent per year, BBS data from 1966-1999; Dettmers and Rosenberg 2000).

The gray catbird, on the other hand, has an increasing population trend of 1.1 percent per year (BBS data from 1990-1998), and is included as a priority species of conservation concern because 6.0 percent of its total population occurs in southern New England (Dettmers and Rosenberg 2000). This is an indication that this region provides an important contribution to the total population of that species and warrants placing it on regional conservation lists, despite its recent population trends.

Overall conservation goals in BCR 30 are to maintain the gray catbird population at the estimated 799,157, and to increase the eastern towhee population estimate by 50 percent, or from approximately 310,000 to 465,000. This would be at a density of 0.4 breeding individuals per acre for the eastern towhee (Steinkamp 2008). According to PIF Area 09 plan, the estimated population for eastern towhees is 85,000 based on BBS data. The overall population objective for the entire PIF Area 09 plan is to maintain a sustainable population size between 85,000 and 100,000 (Dettmers and Rosenberg 2000). Differences in the population estimates for these two conservation plans are due in large part to the differences in land area included in each ecoregion. Both plans use BBS survey data and provide rough approximations of population size. In Massachusetts, the state level population objective recommended by PIF is to increase the population from 93,000 to 130,000 individuals (Rosenberg 2004).

BBS data on Nomans Land Island from 2001 to 2007 collected by Refuge biologists resulted in an average of 1.3 eastern towhees and 0.76 gray catbirds per survey point. Current survey points are spaced at approximately 250 to 450 meters (or 820 to 1476 feet). Under the assumption that most birds are detected at a 75 meter (246 foot) radius, this means that one survey point covers 4.3 acres. Extrapolating point density to the density of birds per acre suggests 1.0 pair of eastern towhees per 3.3 acres and 1.0 pair of gray catbirds per 5.5 acres during this time frame. Though the territory size for each species on the Refuge is not known, we would target a slightly higher density of at least 1.0 pair of eastern towhees per 3.0 acres and 1.0 pair of gray catbirds per 4.5 acres. For the eastern towhee, this target density would come close to that recommended by BCR 30.

It is recommended that 250,000 acres of shrubland habitat be maintained in southern New England to meet the total conservation objectives for many of the shrubland-dependent bird species in PIF Area 09 (Dettmers and Rosenberg 2000). Because of reduced exposure, patch-size requirements for shrub species are much smaller than the minimum size requirements for area-sensitive grassland species. Patches less than 25 acres provide suitable habitat. Minimum patch sizes vary according to habitat quality (vegetation density), landscape and surrounding vegetation (Tefft 2006). According to regional conservation plans, there are more high priority species dependent upon shrubland habitat than grassland habitat (Steinkamp 2008). For these and the historical reasons listed above, we would target the maintenance of shrubland over grasslands on the Refuge.

By actively managing at least 400 acres of shrub habitat on Nomans Land Island under Alternative B, we would be providing protected habitat for many of these species. We would maintain shrub habitat on at least two habitat patches by implementing prescribed burns on a rotational basis so that each patch is burned every 7 to 12 years, or as habitat conditions warrant to benefit breeding birds of conservation priority. Burns would occur during the dormant season (fall/spring) to minimize impacts to both breeding birds and invertebrates on the Refuge. Both the eastern towhee and gray catbird are common breeders in the upland shrub habitat on Nomans Land Island and through monitoring their breeding densities over time they would also act as one indicator of habitat quality.



Dr. Thomas G. Barnes/USFWS

Gray catbird

Refuge upland habitats also supported breeding Leach's storm petrels as recently as 2002, (S. Koch personal communication). The Leach's storm petrel (state endangered) is at the southernmost extent of its range and very rare in Massachusetts. As such, they are listed as SGCN in the Massachusetts CWCS (MA DFG 2006). There are only two known offshore breeding sites in the state: Penikese Island and Nomans Land Island (MA DFG 2006). Management actions under this alternative would take the possible presence of this species into consideration and would seek to minimize any adverse impacts. Furthermore, when possible we would incorporate habitat improvements, such as vegetation clearing, to improve their breeding habitat on the Refuge.

Under this alternative, we would also explore the option of releasing New England cottontail, a candidate species under consideration for federal listing under the ESA due to population declines, on the Refuge. This species is particularly suited to shrubland habitats and is geographically restricted to the northeast. New England cottontails were known to historically occur on Nantucket and Martha's Vineyard, but with the introduction of eastern cottontails in the late-1800s and early 1900s, along with other factors, are now considered extirpated from the island. It is possible there was a historic, native population of New England cottontails on the Refuge, given the prevalence of this species on neighboring coastal islands and the historical connectivity between them and Cape Cod. Archaeological evidence from Native American

middens may substantiate this, but New England cottontails were likely extirpated once sheep were introduced to the island (A. Tur, personal communication).

Current populations of New England cottontails on Cape Cod are genetically distinct from other known populations and as such should be managed as a distinct unit. These populations exist in an area with tremendous anthropogenic influences, competition from non-native eastern cottontails, mammalian predation, and loss of habitat from succession. Releasing New England cottontails to Nomans Land Island NWR would provide habitat that is free from these disturbances. While densities of New England cottontails in coastal scrub communities have not been assessed, densities of one to two cottontails per acre (target densities for the Region are 1.5 cottontail per acre) is a reasonable estimate (A. Tur, personal communication). Given this, the island could support a mid-winter population of 600 rabbits, which would meet one the conservation goals for New England cottontails (Tur undated).

In the last several years, efforts throughout New England have been made to locate remnant New England cottontail populations, and to fill in knowledge gaps about their home ranges, habitat requirements, genetic diversity and population dynamics. Despite these efforts, there is still much that remains unknown about the ecology of the species that would help us better determine the suitability of Nomans Land Island NWR as a host site. This includes confirming the likelihood of their past presence on Nomans Land Island, evaluating similar introductions on coastal islands, evaluating the genetic viability of a population on the Refuge, the feasibility of New England cottontail management on the Refuge, and assessing the impact of such an introduction on other rare or sensitive species located on the Refuge. Prior to any introduction on the Refuge, these and other information gaps need to be filled in order to determine the feasibility of such an introduction. Coordination has already begun with state and federal experts to make the New England cottontail a regional priority, and Nomans Land Island NWR has been identified as a site with high potential for the reasons previously listed. Because this is a time-sensitive issue given the rate of habitat loss, a determination would need to be made as soon as possible, but not before all available information has been compiled to ensure a well-informed decision. The Service would make every effort under this alternative to compile the needed information to make a determination within five years, and if releasing New England cottontail on the Refuge is determined to be feasible, then we would release New England cottontails on the Refuge within three years following the determination.

The addition of a part-time Refuge biologist would enable greater emphasis to be placed on investigating and managing Refuge biota for targeted species of conservation concern, including rare plants, and would make many of these projects possible. It is also important to note that, although our objective statements focus on birds of priority conservation concern identified in regional and state plans, we are also striving through our management to “keep common birds common.”

## Strategies

Continue to:

- Implement a biologically-based prescribed fire regime every 7 to 12 years, or as habitat conditions warrant, during the dormant season to maintain native shrub communities to benefit nesting gray catbirds and eastern towhees, and possibly New England cottontails. Through the use of fire breaks when and where possible, delineate at least two habitat patches and burn on a rotational basis so that each patch is burned every 7 to 12 years.

Within five years of CCP approval:

- Explore the possibility of introducing New England cottontail on the Refuge, taking into account biological and ecological considerations as well as overall feasibility, in one to five years through researching the following factors:
  - Compile information on similar introductions

- Research/verify Nomans Land Island biogeography
  - Obtain detailed information about vegetative structure on the Refuge
  - Identify the specific habitat requirements for New England cottontail
  - Evaluate the genetic viability of an isolated New England cottontail population on the island
  - Identify Refuge management prescriptions and feasibility required to maintain a New England cottontail population
  - Evaluate impacts of New England cottontail introduction on other rare or sensitive Refuge species
- Initiate a concerted effort to control non-native invasive species through chemical, biological, and mechanical means island-wide within one to five years.
  - Work with the U.S. Navy to identify areas where additional trails can be established to support monitoring and management actions.

#### Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- Measure relative abundance of gray catbirds and eastern towhees, by conducting annual surveys during the breeding season for the first three to five years and then once every three years thereafter throughout the life of the CCP. To survey upland breeding habitat more thoroughly and thereby improve abundance estimates, increase breeding bird survey routes on the Refuge in one to two years by establishing new upland access routes in collaboration with the Navy if possible.
- Determine total shrubland acres providing habitat for gray catbird and eastern towhee through vegetation monitoring, and complete an updated habitat map for the Refuge within three years.
- Conduct inventories for rare plants every 5 to 10 years as time and weather conditions allow to document presence, and evaluate habitat management needs for rare plants when found.
- Conduct surveys for Leach's storm petrels to determine presence and relative abundance, evaluate habitat use, and identify potential areas for habitat protection or enhancement projects every 5 to 10 years.
- To evaluate the effectiveness of prescribed burning on shrubland habitats conduct post-burn surveys (within one month of burn) to document the area burned and relative intensity of the burn. Measure species composition, vertical and horizontal structure, and berry production to evaluate if burning is producing desired habitat results in years one, three, and seven after a burn.
- To maintain desired quality and characteristics of shrublands, annually conduct scouting for invasive plant species. We will afford zero tolerance to species that are highly invasive and stand-replacing. Occurrences or stands of more stable patches of invasive plants may be tolerated in the short term as long as their cumulative coverage is no more than 10 percent, and fundamental objectives are not compromised. Mechanical, chemical or biological control measures will be

implemented as needed and when feasible, and control techniques will be monitored for effectiveness.

- If introduced, annually monitor Refuge population status of New England cottontail through some combination of live-trapping and/or pellet surveys. Vegetation monitoring to evaluate habitat suitability for this species would likely include stem counts, percent cover, and possibly species composition. Potential impacts on sensitive Refuge resources identified as a result of the introduction assessment would also be monitored and documented.

### Objective 1.2. Native Maritime Shrubland Habitat (Migrating Wildlife)

Annually manage approximately 400 acres of maritimeshrubland stop-over habitat for migrating landbirds, raptors (such as state endangered peregrine falcons), and butterflies (including monarchs (*Danaus plexippus*)).

#### Rationale

Much of why shrublands are so important in southern New England is described in Alternative B, Objective 1.1. In addition to its value to breeding birds, shrubland habitat is important because many other birds rely on it at various times during the year. Our responsibility for providing quality shrubland bird habitat is not limited to the breeding season. Many shrub species bear fruit in the fall, which helps boost the fat reserves for migrating or over-wintering birds. The Refuge acquisition boundary lies in an important migratory bird pathway along the Atlantic flyway. The Refuge provides an important stop-over site for many migrating bird species, including raptors. In particular, for peregrine falcons, state listed as endangered, the Refuge is the most important stopover site in Massachusetts (T. French, personal communication; see Chapter 3). Other raptor species that have been documented during migration include bald eagle (*Haliaeetus leucocephalus*), Cooper's hawk (*Accipiter cooperii*), northern harrier, sharp-shinned hawk (*Accipiter striatus*), American kestrel (*Falco sparverius*) and merlin (*Falco columbarius*).

We would continue to work with the Massachusetts Audubon Society to monitor and band raptors when possible under this alternative. Furthermore, we would seek a standardized migration monitoring protocol to begin to monitor trends of raptors and other landbirds utilizing Refuge upland habitats.



Erin Victory/TCI

Chokeberry

Coastal states have the primary responsibility for most of the native shrubland habitat in the region (Dettmers 2003, Litvaitis 2003). Shrub-dominated communities persist the longest at high elevations and in areas exposed to marine salt spray (Latham 2003). The loss and degradation of naturally maintained shrublands has been extensive throughout the region. Although fragmented by roads and development, coastal Massachusetts, including Nomans Land Island supports persistent maritime shrublands.

Shrubland-associated birds consistently rank near the top of lists of species showing population declines. Vegetation structure, microhabitat conditions, and landscape context are the most important habitat features for these birds, rather than specific plant species (Dettmers 2003).

The Refuge's maritime shrubland is important to migrating landbirds. The use of an area as a migratory stopover depends, in part, on its quality (e.g., presence of fruiting shrubs) and its location in relation to ecological barriers (such as large bodies of water). Coastal habitats support large concentrations of

migrating songbirds, particularly young of the year.

Many landbirds shift from a largely insectivorous diet during the breeding season to a diet high in fruits during migration, hence the importance of Nomans Land Island NWR's maritime shrub with its high concentration of fruit-bearing species. This diet shift is particularly well documented in thrushes, vireos, warblers, mockingbirds and their relatives (Parrish 2000). Parrish (2000) captured red-eyed vireos (*Vireo olivaceus*), a highly frugivorous migrant, over ten times more frequently in coastal maritime scrub than in old orchard habitat on Block Island. Observations of migratory landbirds feeding on fruits show that these birds can spend less time and encounter more "prey" while foraging on fruit, an important implication for a bird's energy budget (Parrish 2000).

Under this alternative, we would also emphasize monitoring pollinators using the Refuge, particularly monarchs during migration, as many of these species are of conservation concern due to losses in the habitat and nectar corridors that facilitate migration. Pollinators play a crucial role in flowering plant reproduction. A recent study of the status of pollinators in North America by the National Academy of Sciences (NAS) found that populations of some native pollinators are declining, which may in part result from habitat loss, degradation, fragmentation, nontarget effects of pesticides, competition from invasive species, and introduced diseases (NAS 2007). Flower-visiting Lepidoptera, many of which are actual or potential pollinators, currently dominate the list of endangered species: 17 species of butterfly and 3 species of moth constitute more than half of all insect species listed as endangered (<http://ecos.fws.gov/servlet/TESSWebpage>). Eastern population trends of monarch butterflies over the last 10 years for breeding, migration, and wintering phases, while highly variable, reported relative abundance values below average from 2002 to 2006 (North American Monarch Conservation Plan [NAMCP 2008]). However, large fluctuations in yearly populations of monarch butterflies make it difficult to detect long-term trends for short time intervals, indicating a continued need for annual survey data (NAMCP 2008).

### Strategies

Continue to:

- Implement a biologically-based prescribed fire regime every 7 to 12 years, or as habitat conditions warrant, during the dormant season to maintain native shrub communities to benefit migrating landbirds, pollinator species, and migrating raptors. Through the use of fire breaks when and where possible, delineate at least two habitat patches and burn on a rotational basis so that each patch is burned every 7 to 12 years.

Within five years of CCP approval:

- Initiate a concerted effort to control non-native invasive species through chemical, biological, and mechanical means island-wide within one to five years.
- Work with the U.S. Navy to identify areas where additional trails can be established to support monitoring and management actions.

### Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- To evaluate benefits for migrating landbirds and raptors, conduct surveys during peak migration to measure relative abundance and diversity every two to three years throughout the life of the CCP.
- To evaluate benefits for pollinator species, conduct surveys every 5 to 10 years to determine species presence and abundance, diversity, phenology and host plant preferences.

- To evaluate the effectiveness of prescribed burning on shrubland habitats conduct post-burn surveys (within one month of burn) to document the area burned and relative intensity of the burn. Measure species composition, vertical and horizontal structure, and berry production to evaluate if burning is producing desired habitat results every one to five years.
- Complete updated habitat map for the Refuge within three years.
- Conduct inventories for rare plants every 5 to 10 years as time and weather conditions allow to document presence, and evaluate habitat management needs for rare plants when found.
- To maintain desired quality and characteristics of shrubland habitat, periodically conduct scouting for non-native plant species. We will afford zero tolerance to species that are highly invasive and stand-replacing. Occurrences of non-native plant species may be tolerated as long as their cumulative coverage is no more than 10 percent and fundamental objectives are not compromised.

### Objective 1.3. Vegetated Dune Habitat

Annually manage approximately 15 acres of vegetated dune habitat to benefit rare plants and beach-nesting birds, including piping plovers, terns and American oystercatcher. Provide a mix of open sandy habitat and herbaceous vegetation including (but not limited to) American beach grass (*Amophilla* species), beach pea (*Lathyrus japonicus*), and goldenrod (*Solidago* species) to provide habitat for nesting terns (including common and roseate terns). Ratio of open sandy areas to vegetated areas will vary throughout the 15 acres but will provide a mix of 30 percent open (preferred by roseate terns) to 70 percent open (preferred by common terns). In years when piping plovers nest, maintain an average productivity of 1.5 chicks per pair according to state and federal guidelines. In years when terns nest, maintain an average productivity of 1.0 chick per nest. Minimize the presence of nesting great black-backed and herring gulls on at least 5.0 acres of the best suitable nesting habitat for terns. This management will also benefit nesting American oystercatchers, for which there is a target productivity of 0.35 chicks per pair (the minimum necessary for maintaining the population).

#### Rationale

Coastal beach and dune habitat continues to be some of the most threatened habitats in the U.S. They are naturally unstable, dynamic ecosystems that are subject to erosion and accretion processes due to wind and wave action (MA DFG 2006). Many species rely upon these variable processes to provide continual habitat and food resources. These primarily include nesting and migrating bird species, mammals such as seals and voles, and a host of invertebrates. The interruption of these natural processes, through development or beach stabilization efforts, and increases in recreational use can reduce available habitat for species of conservation concern (USFWS 1996).

According to the Coastal Barriers Task Force (1992), factors including population growth in coastal areas, and increases in affluence, leisure time, motorized vehicles, accessibility and recreational diversity have lead to a greater intensity in human use, development and modification of coastal resources since World War II. These uses are the greatest threats to coastal habitats because of the subsequent alterations that result (MA DFG 2006). Though these threats do not apply directly to Nomans Land Island, they do highlight the need to conserve what intact dune and beach habitats exist along the Atlantic coast. Therefore, the Service has the opportunity and responsibility to protect and maintain these important coastal dynamics to maintain coastal dunes and shoreline processes that provide habitat for declining wildlife species.

The Service has the responsibility for protecting migratory birds under international migratory bird treaties with Mexico and Canada. Providing habitats for declining coastal beach and dune-dependent species on this Refuge will counter habitat loss elsewhere along the Atlantic coastal plain region. We also consider the needs of birds of conservation concern on a sub-regional or statewide scale, such as colonial waterbirds and shorebirds, as identified in the MA CWCS and BCR 30 Plan, and for which the Refuge appears to be able to contribute towards conservation goals.

Birds that are dependent upon coastal beach and island habitats (i.e., terns and plovers) are some of the fastest declining bird groups because of habitat loss and degradation of these key waterfront areas. Hence, several national bird conservation organizations and federal and state agencies advocate management to benefit beach nesting birds in such plans as the PIF Area 09 Plan, the BCR 30 plan, and the MA CWCS. In fact, in these plans, coastal habitats contain the most species ranked as highest or high priority species of conservation concern in the region (Steinkamp 2008). Arctic, common, and roseate terns are listed in these plans as priority species of conservation concern, are state listed, and roseate terns are federal listed as endangered. Tern populations, once considered to be vast along the coasts of northeastern United States and eastern Canada, are now crowded onto a few nesting places (Kress and Hall 2004).

Nomans Land Island has historically supported breeding colonies of arctic, common and roseate terns. Their breeding populations on the Refuge reached peak levels in the early 1970's, at 35 (arctic tern), 1200 (common tern) and 400 (roseate tern) pairs respectively, but began to dramatically decline by the mid to late 1970's.



Phyllis Cooper/USFWS

Common tern with fish

Today, of these three species, only the common tern continues to use Nomans Land Island NWR to breed, and with recent counts of 2 to 20 nests (2005 to 2008, see Chapter 3), they are in far lower numbers than in previous years. In 2001, statewide population estimates were 1,697 for roseate tern, 14,378 for common tern and 3,420 for least tern (MA DFG 2006). The decline in use by tern species on the Refuge has coincided with the appearance of breeding gulls on the island, and these gull numbers have grown over time. It is well documented that gulls are nest predators of tern and other coastal bird species, and also compete with terns and other species for nesting habitat (O'Connell and Beck 2003, Donehower et al. 2007).

Kress and Hall (2004) found that islands not meeting some or all of the following criteria are usually unsuitable for terns: 1) islands tend to be gull free; 2) have no (or few) predators; 3) are near an abundant supply of available food; and, 4) have suitable nesting habitat (vegetation and substrate) for one or more species of nesting terns. The appearance of nesting gulls (herring, great black-backed, and laughing) often makes an island or a portion of an island unsuitable for terns. The large gulls nest earlier, displacing terns from potentially high quality nesting sites to alternative sites. The threat of predation or presence of predators (i.e., gulls) on an island may also prevent terns from occupying that site (Kress and Hall 2004).

In recent years, gull numbers along the coast have been decreasing, and we are unsure if the number of nesting gulls in the limited sandy dune habitats has increased, decreased, or stayed stable on the Refuge. Over the last decade, less frequent fires than in the 1980's have allowed Refuge upland habitats to transition

into a shrubby vegetative complex, and this may be causing more gulls to seek suitable nesting habitat along Refuge beaches.

During the 2008 tern breeding season on Monomoy National Wildlife Refuge, located off the coast of Chatham, Massachusetts, common tern and least tern colonies on South Monomoy Island were subject to disturbance and depredation from predators including gulls (Iaquinto et al. 2008). Predator control measures were implemented throughout the breeding season to improve hatching and fledging success of tern clutches. On Nomans Land Island NWR, the presence of gulls was likely a contributing factor to the decline in tern abundance. A permit for removal of nesting gulls was secured for use in 2009, but no control actions took place.

According to MANEM (2007), population objectives for roseate tern include increasing the total Mid-Atlantic/New England/Maritimes population to 6,200 to 7,600 breeders, and recommend 1.2 chicks per year per pair for sustainability. Population goals for the common tern are to increase the overall population, though a target number is not specified, and a sustainable productivity of 0.8 to 0.9 chicks per year per pair is suggested. For the least tern, it is recommended that the population be restored, or increased, to 13,600 to 16,600 breeders, and a productivity of 0.6 fledglings per year per breeding adult.

Other shorebirds periodically use the island's beach habitat for nesting. Over the last several decades, there have been occasional confirmed or suspected nesting occurrences by piping plover, spotted sandpiper (*Actitis macularius*) and killdeer (*Charadrius vociferous*) on Refuge beaches. The piping plover, federal listed as threatened, was last documented in 1980 on the Refuge. The U.S. Shorebird Conservation Plan (Brown et al. 2001) estimates the Atlantic population of piping plover to be at approximately 2,600, with a tentative population objective of 4,000. The regional estimate for PIF Area 09 is 2,300 (Dettmers and Rosenberg 2000).

Historically, the American oystercatcher was believed to have been extirpated from Massachusetts but began recolonizing the state in the 1960's. It is listed in the U.S. Shorebird Conservation Plan, is SGCN in Massachusetts and is a species of highest priority conservation concern in both PIF Area 09 and BCR 30. The U.S. Shorebird Conservation Plan (Brown et al. 2001) estimates the total range-wide population for American oystercatcher to be approximately 7,500, making it very vulnerable to external factors. While more data is needed to better determine American oystercatcher population trends, regional preliminary population estimates are around 2,649 (Steinkamp 2008). In 2004, there were 189 pairs recorded at 58 sites in Massachusetts, with the largest numbers on Nantucket, Martha's Vineyard, Monomoy National Wildlife Refuge, and Boston Harbor Island (MA DFG 2006). No population objective was provided for this species.

Clearly the Refuge beach and dune ecosystem provides vital habitat for regional and local species of conservation concern amidst a declining trend in this habitat availability throughout the Atlantic Coast. As such, it affords us the opportunity to work with other partners in the region through the North Atlantic LCC (see Chapter 3) to coordinate efforts and share science to most effectively manage coastal habitats for these species.

The increase in staffing under this alternative for biological programs would expand our monitoring and management capabilities in this habitat. We would monitor nest success and productivity of tern colonies, and emphasize roseate tern recovery plan protocols where possible. A priority management objective would be to maintain beach and dune habitat availability for beach nesting birds by preventing succession. Different methods of vegetation removal identified in the Tern Management Handbook (Kress and Hall 2004) include: mowing (where practical), hand pulling vegetation, herbicide treatments, prescribed burning, use of landscape fabrics, burying vegetation under sandy soil, and grazing. We would also work with our partners to monitor rare plants and to treat invasive species where possible.

## Strategies

Continue to:

- Annually select the optimal five acres for nesting terns, and evaluate predator control actions when warranted.
- Control invasive species through most effective means as necessary, be it chemical, biological, and/or mechanical and map new infestations on an annual basis.
- Work with partners to accomplish objectives.

## Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- To determine number of nesting pairs of common and roseate terns, conduct annual surveys during the breeding season throughout the life of the CCP. Estimate productivity for any breeding roseate terns, but only measure productivity for common terns if numbers exceed 50 pairs. If after five years less than 50 common tern pairs are found to use the Refuge for nesting, evaluate the appropriateness of actively attracting nesting terns and implement actions to rebuild the tern colony, or abandon efforts.
- To evaluate quality of vegetated dunes for nesting terns, conduct periodic vegetation surveys for vegetation cover, height, species composition, and vegetation to bare ground ratio. If tern numbers or productivity falls, and estimates of the vegetation measurements are suggestive as being the cause, then this would be a trigger point for evaluating the management regime of the vegetated dunes.
- To determine number of nesting pairs and estimate productivity of American oystercatchers, conduct annual surveys during the breeding season and monitor reproductive success throughout the life of the CCP, and band American oystercatcher chicks when possible. Continue to census and monitor American oystercatchers that nest along the cobble shoreline.
- To determine presence of piping plover, annually monitor dunes for suitable piping plover nesting sites and if found, monitor for nesting pairs.
- To maintain suitable nesting habitat for terns, annually monitor for nesting gulls located near the identified optimal five acre tern nesting area on staff visits during May and June and remove gull nests as needed.
- Complete updated Refuge habitat map within three years.
- To maintain desired quality and characteristics of vegetated dune habitat, annually conduct scouting for invasive species. We will afford zero tolerance to highly invasive or stand-replacing species. Occurrences or stands of more stable patches of invasive plants may be tolerated in the short term as long as their cumulative coverage is no more than five percent of the vegetation dune habitat type, and fundamental objectives are not compromised. Control techniques will be monitored for effectiveness.

#### Objective 1.4. Marine Intertidal Beach and Rocky Shore

Annually minimally manage approximately 100 acres of marine intertidal beach and rocky shore habitat to benefit nesting waterbirds (double-crested cormorants), migrating shorebirds (e.g., semipalmated sandpiper, short-billed dowitcher and lesser yellowlegs), and marine mammals (seals).

##### Rationale

See Objective 1.3 for information about the importance of beach and dune habitat for wildlife species.

The intertidal beach and rocky shores of Nomans Land Island NWR provide important nesting and foraging habitat for many priority species of conservation concern, and are regionally important because of the island's land protection status. Throughout the Atlantic coast, quality beach habitat is imperiled due to increases in human uses and development (see the rationale for Alternative B, Objective 1.3). Even those coastal areas that are protected from human disturbance still pose a threat to nesting birds due to the increases in predators that are associated with increased human disturbance. For example, nest predators that occur regionally but that are not native to BCR 30 include red fox (*Vulpes vulpes*), coyote (*Canis latrans*), Norway rat (*Rattus norvegicus*) and Virginia opossum (*Didelphis virginiana*). Other predators that have experienced rapid population increases include Northern raccoon (*Procyon lotor*), gulls (*Larus* species), and crows (*Corvus* species) (Steinkamp 2008). Because Nomans Land Island has been closed to the public for the last sixty or so years and there are no records of mammalian mesopredators on the island, gulls are the only known taxa that adversely impact beach nesting species of priority conservation concern on the island. This is a unique occurrence in an area as heavily populated as southern New England, and highlights the responsibility of the Service to protect and maintain sensitive coastal habitat.

As a part of the Atlantic Flyway, Nomans Land Island NWR serves as an important stop-over site for many migrating birds (Clark and Niles 2000). Species including semipalmated sandpipers rely heavily upon coastal habitats throughout the northern Atlantic as they travel between winter habitat in South America and breeding habitat in the arctic (Steinkamp 2008). The wrack line hosts a number of invertebrates that are food resources for shorebirds. During the breeding season, species including double-crested cormorants nest along these beach strands. American oystercatcher, though typically associated with vegetated dune nesting habitat, are also found nesting along the cobble shoreline. Monitoring and management for oystercatchers would follow that described in Objective 1.3.

Since 1989, double-crested cormorants have nested on the Refuge. Using the highest estimates from available data, counts from 2001 through 2006 show an average of 571 double-crested cormorant nests per year on the Refuge (see Chapter 3). Once extirpated from the region, double-crested cormorants returned to Massachusetts to breed around 1937 (Wires and Cuthbert 2006) and despite some setbacks (population declines due to the effects of dichlorodiphenyltrichloroethane, or DDT), they have been slowly increasing in numbers since. Cormorants are opportunistic piscivores that feed on a diversity of prey, tending towards those species that are most abundant and most easily captured (Trapp et al. 1997). Concomitant with this increase in double-crested cormorant numbers throughout their range over the last several decades is an increasing concern over the perceived impact this species has on aquaculture and fisheries.

In 2003, the Service, in cooperation with the U.S. Department of Agriculture (USDA), released an EIS for double-crested cormorant management on aquaculture facilities and public lands and waters in certain states that allow for the take of this species under particular circumstances, and by permit (USFWS 2003b). This EIS, however, was considered largely for the Great Lakes and other freshwater systems. Based on available literature, Trapp et al. (1997) concluded that relative to other biotic and abiotic factors, double-crested cormorants have a minor overall impact on sport fisheries, with some localized exceptions. To determine the predatory impact a cormorant population exerts on a fishery, fish mortality from cormorant predation must be compared with total annual fish mortality and other sources of mortality, including angling or commercial fishing (VanDeValk et al. 2002). This requires estimating cormorant diet composition and population size, fish population size and mortality, and sport/commercial catch. Without this information cormorant impacts on fisheries cannot be fully addressed (Diana et al. 2006). Consensus by

professionals in the Northeast is that currently not enough evidence exists to verify the concerns regarding losses to fisheries due to cormorant depredation in this region. In addition, cormorants are not impacting Refuge resources, and therefore the Refuge would not initiate research.

MANEM (2007) population goals for double-crested cormorants are to maintain the population at 155,767 to 190,381 breeders, and achieve a productivity of 2.6 young per nest per year for sustainability. In recognition of the perceived conflicts this species has with other species, MANEM also recommends that monitoring be initiated to assess the nature of these conflicts on a case-by-case basis in order to determine specific management needs. We would continue to inventory nesting double-crested cormorants every three years.



Stephanie Koch/USFWS

Double-crested cormorant nesting colony

The intertidal beaches and rocky shores of the Refuge provide habitat for other species throughout the year as well. Harbor and gray seals are frequently found on the Refuge beaches in the fall and winter, and a leatherback turtle (*Dermochelys coriacea*) scapula was found on the gravel spit in 1989. The shoreline also provides us with important information about species we normally don't have the occasion to monitor or see. The remains of dolphins and seabirds have been found on several occasions along the shoreline, and particularly with seabirds, give us an indication of mortality events that may be widespread. Under Alternative B, Refuge staff would take a more active role in monitoring beached birds, and seal use of the beach. We would report sightings when possible to SEANet, a regional program to systematically monitor beached birds and track spatial and temporal trends.

Midwinter waterfowl surveys indicate large numbers of focal waterfowl species using the waters around Martha's Vineyard that include American black ducks, Atlantic brant (*Branta bernicla*), Canada goose (*Branta canadensis*), scoter species (*Melanitta* species), bufflehead (*Bucephala albeola*), long-tailed duck (*Clangula hyemalis*), common eider (*Somateria mollissima*), scaup species (*Aythya* species), mallard, and merganser (*Mergus* and *Lophodytes*) species. Though this is off the Refuge and outside of USFWS jurisdiction, many can be seen in near-shore waters, and some may use Refuge beaches.

Based on the results of SLAMM analysis, we know that this habitat is subject to loss under sea level rise scenarios over the next century. Given that these are long-term scenarios, immediate action is not warranted; therefore within the context of this CCP over the next fifteen years, we would continue to reduce non-climate environmental stressors as described in Alternative A. In addition, under Alternative B, we would monitor and evaluate shoreline conditions relative to climate change and sea level rise using aerial photos, cooperate with the state on their climate change priorities once refined, and utilize the North Atlantic LCC to facilitate climate change research, education, and collaboration. Under this alternative, we

would also coordinate with the Tribe and other partners to treat for invasive species, to establish a shipwreck notification protocol, and to monitor migrating shorebird species.

### Strategies

Continue to:

- Coordinate with partners to respond to emergency bird mortality and marine mammal stranding events.

Within five years of CCP approval:

- Work with partners to control invasive species (e.g., sea cucumbers, algae) within one to five years.

### Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- Conduct surveys of double-crested cormorant nesting colony to determine number of nesting pairs every three years throughout the life of the CCP.
- Conduct migratory shorebird surveys (and submit to International Shorebird Survey (ISS)) when possible to monitor overall diversity and relative seasonal abundance. Monitor the intertidal zone and shoreline erosion rate through aerial photos of critical habitats for nesting and migrating shorebirds to evaluate the potential for abatement. Review SLAMM analysis and monitor for any changes in Refuge shoreline as a result of sea level rise or other factors associated with climate change.
- To maintain desired quality and characteristics of intertidal beaches and rocky shores, conduct scouting for invasive species within one to five years of CCP completion. We will afford zero tolerance to highly invasive or stand-replacing species. Occurrences or stands of more stable patches of invasive plants may be tolerated in the short term as long as their cumulative coverage is no more than five percent of the intertidal beach/rocky shore habitat type, and fundamental objectives are not compromised. Control techniques will be monitored for effectiveness.
- Annually monitor for seabird die-off events in coordination with SEANet as opportunity allows, and record seal use of the Refuge shoreline and report entanglements to the New England Aquarium.
- Complete updated Refuge habitat map within three years.

### Objective 1.5. Scrub Shrub and Emergent Wetlands, Bogs, and Open Water

Annually manage approximately 100 to 150 acres of freshwater wetland communities to support breeding marshbirds (including Virginia rail), native plant communities, and to benefit rare wetland plants including *Arethusa bulbosa*. Maintain robust emergent vegetation including cattails (*Typha*) and bulrush (*Scirpus*) (Conway 1995).

### Rationale

Despite regulations and other protective measures, wetlands continue to be lost each year throughout the U.S. Though this rate has slowed over the last several decades, it is estimated that the current rate of loss is between 70,000 to 110,000 acres per year. Massachusetts, with twelve percent of its land area in wetlands, was one of the first states to adopt laws to protect wetlands in the 1960's (<http://www.fws.gov/northeast/wetlands/pages/primer.htm>).

Threats to wetlands in general include filling and dredging, impounding, nutrient inputs from roads, fields or septic systems, and invasive species (MA DFG 2006). Yet, their utility as intact ecosystems far outweighs any perceived value of alteration. They act as buffers to flood waters by storing the excess water and slowly releasing it over the floodplain; they filter out sediments and chemicals for downstream waters, and they slow the effects of shoreline erosion (U.S. Environmental Protection Agency (USEPA) 1995). Their value to wildlife is inestimable. Over a third of the threatened and endangered species in the U.S. rely solely on wetland habitat and nearly all 190 species of amphibians are dependent upon these habitats (USEPA 1995, <http://www.fws.gov/northeast/wetlands/pages/primer.htm>). Eighty percent of America's breeding population and more than 50 percent of its 800 species of protected migratory birds rely on wetlands (Mitsch and Gosselink 1993, citing Wharton, et al. 1982). Species from many taxonomic groups use wetlands for cover, food, drinking water and for breeding, migrating and winter habitat.

Refuge wetlands include ponds, permanently flooded marshes and seasonally flooded marshes. They support a small black-crowned night-heron and, historically, a snowy egret (*Egretta thula*) rookery, both SGCN in Massachusetts, as well as American black duck, a focal species of highest priority conservation concern in regional plans including BCR 30 and PIF Area 09. Though no comprehensive surveys have been done of these wetland habitats beyond secretive marshbird surveys, they do support muskrat, which are experiencing unexplained regional population declines (CT DEP 2008, VT FWD 2006), and spotted turtle.

Based upon these secretive marshbird surveys, Virginia rails are common breeders on the Refuge. Though they generally inhabit and nest in water depths of < 30 cm (though nest sites can range from 0 to 71 cm; Conway 1995), preliminary observations on the Refuge indicate that they use upland habitat which is not typical for the species. This may be explained by the absence of mammalian predators on the island, however, further research is required to determine the ecology of the species on the Refuge. Though MANEM (2007) does not provide a target population goal for Virginia rail, it does recommend continuing to monitor the species, achieving a productivity of 4.4 chicks per brood per two years, and a density of 25 pairs per hectare (about 2.0 acres) for sustainability. Due to the limited access around the wetlands on the Refuge, there is insufficient data at present to determine current abundance for this species. We would endeavor to work with the Navy to provide additional access for more complete survey coverage, if possible.

Refuge wetlands are the least well-known habitat type on the Refuge. Very little, if any, UXO clearance has been conducted in any of the ponds, precluding any attempt to inventory fish and invertebrate species. In addition, access restrictions around the island due to the presence of UXO limit our abilities to traverse wetland areas. In Alternative B, we would discuss options with the Navy to provide additional access around the island so we would be better able to inventory and manage Refuge biota associated with wetlands. We would continue to treat wetland invasive species and would work with our partners to monitor rare wetland plants.

## Strategies

Continue to:

- Control purple loosestrife at the brackish pond and reinitiate control of Phragmites and other invasive aquatic plant species on an annual basis, as well as map new infestations.

## Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- Continue to conduct callback surveys for secretive nesting marshbirds to monitor relative abundance and evaluate habitat use patterns. If possible, collaborate with the Navy to establish additional access through upland and wetland habitat. If new access routes are established, create

new marshbird survey routes within one to three years and survey annually for the first three to five years on the new routes, and once every three to five years thereafter to monitor abundance.

- Conduct wetland plant surveys to identify rare species within one to five years of CCP completion.
- Complete updated Refuge habitat map within three years.
- Monitor and treat invasive plants, particularly Phragmites and purple loosestrife, to prevent unacceptable levels of loss of habitat quality. If the patch sizes of Phragmites attain a solid stand (regardless of size) that reasonably can be sprayed, or it threatens a rare community, initiate appropriate control measures to decrease Phragmites to a tolerable level. We may leave untreated any patches that are static or inaccessible by any currently available means until we determine a feasible solution or efficacious method. Control techniques will be monitored for effectiveness.

Goal 2. Promote awareness and stewardship of our coastal natural resources by working with our partners to provide off-site interpretation, education and outreach opportunities.

### Objective 2.1. Environmental Education and Interpretation

Over the next 15 years develop and implement quality environmental education and interpretation programs and activities with the Tribe and our partners to further communicate our knowledge and understanding of Nomans Land Island coastal ecosystems and the federal trust resources that depend upon them. In the next five years, work with the Tribe on creating a display for their interactive kiosk, and with the Aquinnah Cultural Center on an interpretive trail and spotting scope to view Nomans Land Island NWR.

#### Rationale

Environmental education is a curriculum-based process designed to develop a citizenry that has the awareness, concern, knowledge, attitudes, skills, motivations, and commitment to work toward solutions of current environmental problems and the prevention of new ones. The National Association of Interpreters defines “interpretation” as a communication process that forges emotional and intellectual connections between the interests of the audience and the inherent meanings in the resource. Both are included in the six wildlife-dependent public use priorities within the Refuge System, according to the Refuge Improvement Act of 1997.

Per the General Guidelines for Wildlife-Dependent Recreation, Fish and Wildlife Service Manual, 605FW 1, we will provide a quality off-site wildlife-dependent recreation program to the extent possible, given staffing and funding limitations and the ban on public access on the Refuge. The characteristics of a quality program are listed in this chapter in the “Actions Common to All Alternatives” section.

As we have described, the presence of UXO throughout the Refuge and the terms of the original transfer agreement with the U.S. Navy present a unique case where we cannot allow any of the six priority uses on the Refuge itself, including environmental education and interpretation. Any environmental education or interpretation programs for Nomans Land Island NWR would take place off-site on Martha’s Vineyard.

The addition of visitor services staff under this alternative would allow us to provide off-site environmental education and interpretation programs by alternative methods for the public to experience Nomans Land Island. We would coordinate with the Aquinnah Cultural Center to establish a Refuge kiosk, walking trail with informational signs and a spotting scope at their facility to enable people to see and learn about Nomans Land Island NWR. We would also work with the Tribe to explore opportunities for interpretive displays that highlight the importance of coastal resources to them, and to develop educational programs that focus on the importance of Refuge resources.

We would work with our other conservation partners, Massachusetts Audubon Society, TTOR, the Tribe, and the Town of Chilmark to create opportunities for interpretive and environmental education programs and displays. We would also prioritize communicating with and educating people about the management actions we pursue, why, when, how long it will take and be explicit about the potential impacts. At a minimum, this information would be available on the Refuge website.

### Strategies

Continue to:

- Review and update the website annually. Evaluate possible updates for the virtual tour that include:
  - The use of professional photographers/videographers to capture bird use of the island, Service monitoring activities, and “before and after” invasive plant treatments and prescribed burns.
  - Filming a visit to Nomans with Wampanoag Tribe members interpreting natural and cultural resources significant to them.
  - Developing an audio or video broadcast from the Refuge during fall migration, while breeding bird surveys are being conducted, and/or at sunset in late summer or fall, provided it is feasible. This could be broadcast to the Aquinnah Cultural Center, kiosk, and/or other locations in Chilmark, including local access television.

Within five years of CCP approval:

- Create a general brochure and rack card for the Refuge within two years to be distributed at appropriate sites on Martha’s Vineyard.
- Partner with the Aquinnah Cultural Center and Tribe to develop a kiosk display and an interpretive trail with panels and a spotting scope, and create brochures and materials to be distributed at the Center and kiosk within five years.

Within 10 years of CCP approval:

- Develop an environmental education trunk and other materials for local classrooms and investigate opportunities with Teach-the-teacher and local libraries within seven years.
- Coordinate with partners including Wampanoag Tribe of Gay Head (Aquinnah) and Massachusetts Audubon Society to develop environmental education capabilities within seven years.

### Monitoring Elements

- Foot trail/pedestrian visits to interpretive trail at ACC.
- Number of students and teachers participating in off-site programs.
- Number of environmental education management actions implemented.
- Number of participants included in off-site talks/programs led by NWRS staff or volunteers.
- Number of brochures printed and distributed annually.
- Amount of information updated on the Refuge website.

## Objective 2.2. Community Partnerships and Outreach

Establish and encourage reciprocal partnerships with Tribal, regional, and local organizations and agencies to ensure that citizens of and visitors to Martha's Vineyard are aware of the biological, cultural and historic resources that exist on Nomans Land Island, the Service presence there, and the connection of Nomans Land Island NWR to the Refuge System.

### Rationale

Given our current limitations in staff and funding, it is of utmost importance for us to reach out and collaborate with the Tribe and our other conservation partners in the region, including the Town of Chilmark, Massachusetts Audubon Society, TTOR and others. It is through these partners that we would strive to develop an effective outreach program targeted at local communities and residents who may be unaware that a national wildlife refuge is nearby. In addition, these partnerships are important to our biological program, and we would continue to strengthen and develop collaborative initiatives with them to accomplish our objectives.

It is important that local residents understand, appreciate, and support the Refuge System mission and the Refuge's unique contribution to that mission. To accomplish this, we would regularly update the Refuge website and submit press releases that detail management actions and upcoming initiatives on the Refuge. We would also participate in at least one community event each year and make available an electronic Refuge newsletter.



Erin Victory/TCI

USFWS and MA DFG meet on the Refuge

### Strategies

Within five years of CCP approval:

- Post opportunities on the Refuge website for volunteers to become involved with visitor services programs when possible, within three years.
- Notify public of large-scale management activities, their purposes, and possible impacts by submitting notices and/or press releases in a timely fashion, updating the Refuge website, and posting relevant plans online, within three years.
- Develop an electronic newsletter for the refuge complex which includes Nomans Land Island NWR updates and by contacting interested parties on our Refuge mailing list within three years.

- Participate in at least one local special event annually that interprets the importance of Nomans Land Island NWR and its natural resources within five years.

#### Monitoring Elements

- Number of participants at special events hosted off-site.
- Number of special events hosted off-site.
- Number of partnership projects planned.
- Maintain and update website.
- Number of press interviews conducted and articles appearing in print or web media about the Refuge.

Goal 3. Recognize the archaeological and cultural importance of the island.

#### Objective 3.1. Archaeological and Cultural Resources

Improve knowledge of the prehistoric and historic archaeology sites on the Refuge by initiating a cultural resources overview and identifying at least one new project over the next 15 years.

Develop a partnership agreement with the Wampanoag Tribe of Gay Head (Aquinnah) that would incorporate limited access for cultural and ceremonial use of the Refuge.

#### Rationale

Archaeological evidence from Nomans Land Island indicates that it was occupied during the Late Archaic-Early Woodland Periods (5,000 to 2,700 years before present (YBP); Jacobson 2000). A collection at the Andover Peabody Museum holds a number of projectile points representative of these time periods, and unambiguously demonstrates the presence of a community on the island, undoubtedly the ancestors of the Wampanoag Tribe of Gay Head (Aquinnah). In addition to this site, there are several other known archaeological sites on the Refuge. The Massachusetts Historical Commission (MHC; also SHPO) has five prehistoric sites on record, and one historical ruin. The Service has included the Luce cemetery in its site inventory.

The National Historic Preservation Act requires the Service to identify and preserve its important historic structures, archaeological sites, and artifacts. Several other laws include protection for sites and artifacts. Some of these are: Archaeological Resources Protection Act; Archaeological and Historic Preservation Act; Historic Sites, Buildings and Antiquities Act; Native American Grave Protection and Repatriation Act (see Chapter 1 for a more complete list and summaries). In addition, NEPA mandates our consideration of cultural resources in planning federal actions. The Improvement Act requires the comprehensive conservation plan for each refuge to identify its archaeological and cultural values.

Under this alternative, we would incorporate those actions described under Alternative A. In addition, we would initiate an effort to be proactive in preserving archaeological sites and artifacts by initiating a cultural resource overview and by working with the Tribe and our partners to establish a protocol to be implemented whenever they are found. If feasible, we would also attempt to protect known archaeological sites from erosion until further inventory and excavation can be undertaken. We would take into account the effects of sea level rise as a result of climate change on these sites and evaluate possible methods to protect them if possible. We would continue our efforts to develop a mutually beneficial partnership agreement with the Tribe that would incorporate limited access to the Refuge for cultural and ceremonial purposes.

## Strategies

Within five years of CCP approval:

- Add known archaeological sites and historic structures to Service site inventory within five years.
- Within five years, develop a protocol to identify and protect archaeological artifacts.
- Initiate a concerted effort to find things already collected by people from Nomans Land Island within the next five years.
- Prepare a cultural resource overview within the next 15 years for Nomans Land Island to synthesize all the information and add palaeoenvironmental reconstruction. Use aerial photos to relate old maps and descriptions to current situation.
- Evaluate the need to implement dune restoration projects to prevent erosion and protect archaeological sites within the next five years.
- Collaborate with the Wampanoag Tribe of Gay Head (Aquinnah) to develop a mutually beneficial partnership agreement incorporating cultural and ceremonial use of the Refuge by the Tribe.

## Monitoring Elements

- Number of archaeological sites.
- Number of partnership projects planned.
- Completed cultural resources overview.

## Objective 3.2. Burial Site Protection

Coordinate with the Tribe and Chilmark Historical Commission volunteers to maintain, manage and protect, on at least a bi-annual basis, the Luce cemetery on the Refuge by removing vegetation in conjunction with Service staff site visits over the next 15 years.

Continue to pursue the possible repatriation of Wampanoag remains on the Refuge and coordinate with the Tribe regarding existing burial sites, if found, through the development of a partnership agreement between the Tribe and the Service.

## Rationale

The Luce cemetery is located on the eastern side of the island and has one visible headstone dated from the 1800's. It is believed to contain the remains of Eben, Thomas and Celia Luce, and perhaps bodies of those cast ashore during storms, and other residents of the Nomans Land Island communities (Wood 1978). See Alternative A for additional information on the cemetery. Additionally, it is likely that ancestral members of the Wampanoag Tribe of Gay Head (Aquinnah) are buried on the Refuge, although no burial sites are presently known.

Again, federal laws require the Service to identify and preserve its important historic structures, archaeological sites, and artifacts. The Luce cemetery and any other burial sites on the Refuge are protected under the historic preservation laws listed under Alternative A, Objective 3.1 (see also Chapter 1). NEPA mandates our consideration of cultural resources in planning federal actions. The Improvement Act requires the comprehensive conservation plan for each refuge to identify its archaeological and cultural values. In addition, the Luce cemetery and any other burial sites on the Refuge are important and relevant to communities and organizations on Martha's Vineyard, as historically residents of Nomans Land Island and Martha's Vineyard were interconnected.

Under Alternative B, we would have greater capacity to coordinate with the Chilmark Historical Commission to conduct research on the Luce cemetery and the residents it contains as well as bi-annual maintenance by vegetation removal with the addition of visitor services staff. All cemetery maintenance volunteers would be permitted access only in concert with Service staff and would be required to undergo safety training prior to accessing the Refuge. In addition, we would continue to discuss repatriation of Tribal remains to the Refuge with the Wampanoag Tribe of Gay Head (Aquinnah), and protection of existing Tribal burial sites. While no known sites exist, any remains would be protected if discovered in the conduct of Refuge operations in compliance NAGPRA and other federal mandates. We would continue to work with the Tribe towards a partnership agreement, including repatriation and the protection of potential future discoveries of burial sites on the Refuge. The proposed protocol enumerating steps to take when archaeological items are found, as described in Objective 3.1, would also be applied under this objective in the case that burial sites are located. This would ensure the protection of these sites. In all cases, any ground disturbance activities would require UXO Tech Support, and would therefore need to be coordinated with the Navy.

### Strategies

Continue to:

- Meet with representatives of the Wampanoag Tribe of Gay Head (Aquinnah) to continue to develop a mutually beneficial partnership agreement incorporating repatriation of Wampanoag Tribal remains, and the protection of potential Tribal burial sites on the Refuge.

Within five years of CCP approval:

- Work with partners to evaluate the threat of erosion to the cemetery, and determine the best course of action to protect it within the next one to three years.
- Allow the Chilmark Historical Commission to maintain the part of the cemetery within the enclosed wall within five years.
- Encourage the Chilmark Historical Commission to conduct research in primary documents to learn more about residents buried in the cemetery and incorporate the results in a narrative report within five years.

Within 10 years of CCP approval:

- If safety-approved by the Navy, work with partners such as the Chilmark Historical Commission to conduct non-invasive remote sensing survey (Ground Penetrating Radar, magnetometer, or soil resistivity) of Luce Cemetery, to determine whether there are unmarked graves in or outside the stone wall of the cemetery within 5 to 10 years.

### Monitoring Elements

- Number of burials protected.
- Number of investigations completed.
- Volunteer maintenance of Luce cemetery.

### Objective 3.3. Cultural Interpretation

Within 10 years of CCP approval, work with the Tribe, the Chilmark Historical Commission and other partners to provide at least two activities, displays or materials that interprets the cultural and archaeological resources of the island.

## Rationale

Nomans Land Island has a culturally rich history, as described in Chapter 3. Prior to European settlement, Nomans Land Island was used by the ancestors of the Wampanoag Tribe of Gay Head (Aquinnah), at least as early as the Late Archaic-Early Woodland Periods (5,000 to 2,700 YBP; Jacobson 2000). Not much is known about the history of Nomans Land Island between the Early Woodland Period and 1602, the year Bartholomew Gosnold “discovered” the island for Europeans. The island had a number of different ownerships by Wampanoags and Europeans until finally being annexed to the Town of Chilmark in 1714.

European Americans farmed and lived on the island prior to its use as a bombing range by the U.S. Navy. The island was inhabited until 1939 when the last people left and it was leased to the Navy shortly thereafter. Today, what remains of the human history on the island are pre-Contact archaeological sites, the Luce cemetery, stone walls, and cellar holes and other structural remnants from the nineteenth and early twentieth century farms, and of course remnants of military structures and UXO. Given the human history of the island, and its cultural ties to Martha’s Vineyard communities and the Tribe, the historical and cultural value of Nomans Land Island remains high.



Erin Victory/TCI

Old stone cellar remains

The tangible remains of the island’s pre-Contact and European-American history provide a wealth of resources the Service can use to interpret the island’s cultural history. In addition, this history has had various impacts on the Refuge’s habitats over time and can help us understand the plants and wildlife that use it today. Refuge vegetation and wildlife are a product of its history, and within this context people can have an understanding and appreciation for how humans impact ecosystems. With the addition of a part time visitor services staff member under Alternative B, we would have greater capability to make this one of the Refuge priorities, and would have more resources to work with our partners to interpret these landscape and cultural resource changes through time.

## Strategies

Within 10 years of CCP approval:

- Develop educational materials in concert with partners for distribution and displays (including for ferries, kiosks, and museum, etc.) within 5 to 10 years.

- Coordinate with partners to interpret and, when appropriate, display Nomans Land Island artifacts within 5 to 10 years.
- Use the Service's cultural resource overview, the Wampanoag Tribe's oral history, document research and information in the Chilmark Historical Commission's archives to create a web page about the history of Nomans Land Island within 5 to 10 years.
- Work with the Wampanoag Tribe and the Chilmark Historical Commission to conduct an oral history project to collect information about Noman's Land Island within 5 to 10 years. Pursue support, including Visitor Service challenge cost share grant (with the Tribe as a partner).
- Include information about the island's significance to the Wampanoag Tribe, presented by Tribe members, the Luce cemetery, and other historical information about the island in the enhanced virtual tour on the web site within 5 to 10 years.
- Pursue a cultural resource overview with paleoenvironmental reconstruction of the island within 5 to 10 years.
- Allow the Chilmark Historical Commission to document stone walls, cellar holes, and other evidence of human habitat for cultural history within five to ten years. We would first consult with the Navy to determine the feasibility of this and ensure this took place within approved safety zones. Once complete, we would add this information to the virtual tour on the Refuge website.

#### Monitoring Elements

- Number of partnership projects planned.
- Number of historic buildings and/or structures.
- Number of accessioned museum property collections.
- Number of cultural resource management actions implemented.
- Completion of cultural resource overview.

### Alternative C. Natural Processes Emphasis, Focal Species Management, and Wilderness Designation (Service-Preferred Alternative)

Alternative C is the alternative our planning team proposes to recommend to our Regional Director for implementation. It includes an array of management actions that, in our professional judgment, work best towards achieving the Refuge's purposes, the vision and goals, and would make an important contribution to conserving federal trust resources of concern in coastal southern New England. This alternative provides the most appropriate level and type of management for Service staff managing the eight refuges in the complex, given the relatively modest increase in staff and funding that is anticipated over the next 15 years. Therefore, we believe this is the most reasonable, feasible, and practicable alternative and is achievable within the 15-year timeframe.

The emphasis in this alternative would be on managing priority habitats for priority focal species as necessary; otherwise natural processes would be the primary mechanism at work on Refuge habitats. Shrubland and vegetated dune habitat in particular would be prioritized for management activities that would maintain or increase suitability for migrating landbirds and breeding shorebirds and waterbirds. In addition, we would analyze the possibility of introducing New England cottontail to the Refuge's shrubland habitat, as in Alternative B. Under this alternative, Nomans Land Island NWR would remain closed to

public access and off-site visitor services would be expanded compared to current levels, but would be much reduced from levels described under Alternative B.

Under this alternative, Nomans Land Island WSA would be recommended suitable for designation and inclusion in the NWPS. Since Congress has reserved the authority to make final decisions on wilderness designation, the wilderness recommendation is a preliminary administrative determination that would receive further review and possible modification by the Director, the Secretary of Interior, or the President.

The analysis of environmental consequences is based on the assumption that Congress would accept the recommendation and designate Nomans Land Island NWR as wilderness. The boundary of the Nomans Land Island Wilderness would coincide with the Refuge boundary, the normal low water mark. The information and analyses in the EA/draft CCP would be used to fulfill the additional steps required to recommend a WSA for wilderness designation. These steps include compiling a wilderness study report and a legislative EIS to accompany the wilderness recommendation.

We would continue our adaptive management approach of modifying actions based on new information with a concerted effort to collect data upon which to make management decisions. See Chapter 3 for a description of the types of Refuge habitat.

#### Habitat Management and Protection

Under this alternative, shrubland habitat management would be limited to maintaining quality maritime shrubland for migrating landbirds as needed, relying primarily on natural processes of wind and salt spray to delay succession. Adaptive management, including Strategic Habitat Conservation, would be applied to determine if and when prescription burns would be warranted based on periodic vegetation monitoring, and provided that prescribed fire is found acceptable through a MRA under a wilderness scenario. Any prescribed burns would be coordinated with the Navy's ongoing UXO cleanup and oversight. The analysis for the potential introduction and possible restoration of New England cottontail would be conducted, including via wilderness stewardship policy (610 FW 2.17). If the decision is made to release New England cottontail on the Refuge, shrubland management actions would likely be modified to meet guidelines for that species, but would not deviate from the methods approved through MRA.

Management of other habitat types on the Refuge would largely entail invasive species treatment and/or removal as needed and possible improvements to vegetated dune habitats to benefit breeding shorebirds and waterbirds when warranted so long as the methods employed are approved through MRA.

#### Inventories and Monitoring

The primary focus of this alternative in shrubland habitat would be vegetation monitoring to ensure habitat conditions are optimal for migrating landbirds and raptors. Invasive species monitoring would also be conducted throughout the Refuge when possible. Inventories for nesting terns, American oystercatchers and double-crested cormorants would continue under this alternative, though productivity would not be monitored for double-crested cormorants or small numbers of nesting terns. Migrating shorebird species would be noted as well. All other inventories, surveys and monitoring activities, including BBS and secretive marshbird callback surveys, would no longer occur. Biologists would continue to monitor for wildlife diseases in conjunction with other activities when possible. If New England cottontail were released on the Refuge, additional monitoring efforts would likely be enacted to determine the success of introduction as well as the vitality of the population and habitat quality.

As in Alternative A, we would continue to be cognizant of the indicators of climate change, and would continue to work towards reducing non-climate environmental stressors. Under Alternative C, the Refuge would initiate shoreline monitoring via aerial photos. We would also endeavor to address the state's climate change priorities once they are refined, and would work within the North Atlantic LCC to promote research, education, and collaboration.

## Wilderness Management

We will manage the Nomans Land Island Wilderness according to the provisions of the Wilderness Act and Service Wilderness Stewardship Policy (610 FW 1-3). The wilderness area would be managed to accomplish Refuge purposes and the Refuge System mission, while also preserving wilderness character and natural values for future generations. Refuge management strategies and techniques would be chosen to comply with wilderness stewardship principles and prevent degradation of wilderness character.

Uses that are “generally prohibited” in wilderness (use of motorized vehicles, motorized equipment, and mechanical transport) would be allowed within the Nomans Land Island Wilderness for emergency purposes and when necessary to meet minimum requirements for the administration of the area as wilderness and to accomplish Refuge purposes. The island would continue to be accessible by motorboat.

All Refuge management activities and Refuge uses that require “generally prohibited uses” would be evaluated through a MRA, a decision-making process to determine if the activities are necessary and to identify measures to mitigate impacts to wilderness character. We also use the MRA to identify the minimum impact methods and tools to accomplish necessary activities safely and with a minimal amount of impairment to wilderness character.

All Refuge step-down management plans would incorporate guidance to ensure that the strategies, actions, tools, and techniques outlined in the step-down plans are consistent with wilderness management. A stand-alone Wilderness Stewardship Plan would be prepared or combined with the HMP.

## Visitor Services

Under this alternative, offsite visitor services would increase slightly from current management, but would be less than that proposed under Alternative B. Interpretive programs and materials would incorporate information on the wilderness values of Nomans Land Island. We would propose to partner with the Aquinnah Cultural Center to establish an interpretive trail with informational signs and a spotting scope at their location on Martha’s Vineyard (see Map 2-1), and associated brochures about the Refuge. We would also propose to partner with the Tribe to develop a display for their proposed kiosk at the Gay Head cliffs.

## Refuge Administration

Under this alternative, no new staff would be hired at the refuge complex specifically to work on the actions and strategies identified in this plan for Nomans Land Island NWR. Any additional work on the Refuge would be conducted by current and new staff that we believe will occur over time as the national staffing model is deployed. Some wildlife monitoring and habitat management would occur, some invasive species management would occur, coordination with the Navy on contaminants and UXO issues would continue, an off-site interpretive trail would be developed, existing access paths and the regulatory signs on the island would be maintained, and we would continue to patrol the island for trespassing. The methods these actions employ would need to be approved for use through MRA to comply with wilderness stewardship policy. We would also maintain communication and partnerships with the Town of Chilmark and the Tribe. We would continue to work on a partnership agreement with the Wampanoag Tribe of Gay Head (Aquinnah) for access to the Refuge for ceremonial purposes and for the other purposes listed in the section of the chapter entitled “Actions Common to All Alternatives”.

Transportation to Nomans Land Island for Refuge staff is primarily supplied by private contractor and occasionally our partners on Martha’s Vineyard, and under this alternative we would explore options to keep a Service-owned boat locally, or to see what other options are available to supplement that need.

The section that follows describes in detail the goals, objectives, and strategies that we would implement in Alternative C.

Goal 1. Perpetuate the biological integrity and diversity of coastal island habitats to support native wildlife and plant communities, including species of conservation concern.

### Objective 1.1. Native Maritime Shrubland Habitat

Annually provide approximately 400 acres of maritime shrubland stop-over habitat with no more than 10 percent invasive species tolerated, for migrating landbirds, raptors (such as peregrine falcons), butterflies (including monarchs) and other species of high conservation concern.

Shrubland species composition should be composed of no more than 10 percent non-native species and dominated by native fruit-bearing species, including (but not limited to) species from the genera Amelancier, Viburnum, Sambucus, Prunus, Cornus and Vitis, northern bayberry, pokeweed, and other species with persistent fruit (catbrier and Sumac species) which will benefit fruit-eating neotropical migrant landbirds. Shrub species composition should provide abundant berries from late August through the end of October and provide a combination of fat, carbohydrate and protein sources.

Evaluate the feasibility of introducing New England cottontail on the Refuge within five years, and if determined to be feasible, introduce the species within three years of determination. If released, provide dense native shrubs and vine tangles with understory habitat density of 20,000 woody stems per acre which are at least 20 inches tall and less than 3 inches in diameter. Minimum patch size is 25 acres (but larger is better) and should be in close proximity to other large patches.

#### Rationale

Much of why native maritime shrublands are important in southern New England is described in Alternative B, Objective 1.1, and its value to migratory landbirds is described in Alternative B, Objective 1.2.

Nomans Land Island NWR has considerable value to migrating landbirds across many taxonomic groups due to its location along the Atlantic Flyway, array of habitat types, and its abundant fruit-bearing shrubland species. It is anticipated that management of shrublands for migrating landbirds will continue to provide habitat for breeding landbirds, like gray catbirds and eastern towhees, and other species of high conservation concern dependant on maritime shrublands. This would likely include invasive species treatment, though this would be subject to MRA. Vegetation monitoring every five years will provide information on horizontal and vertical structure, stem density, and berry production to evaluate habitat quality for migrating landbird species.



Erin Victory/TCI

Arrowwood is a common Refuge shrub

Prescribed fire would still be utilized to achieve habitat objectives in this alternative if approved through MRA; however, instead of burning on a set periodic schedule, we would burn only as habitat conditions warrant based on vegetation monitoring. Wind and salt spray can considerably delay succession in maritime habitats, and it is not known how long quality Refuge shrubland habitat will persist without fire management and still provide a benefit to species of concern. A similar shrubland site (containing many of the same shrub species) in Aquinnah on Martha's Vineyard has not been burned in approximately 50 years (T. Simmons, personal communication), though this may be conditional on factors of which we are unaware. It is possible that Nomans Land Island could be burned with a frequency similar to that in Alternative B, however, there is the potential for much greater variation in burn frequency; ultimately, this determination would be based on habitat metrics.

Under this alternative, we would continue to work with Massachusetts Audubon Society to monitor and band raptors when possible. We would also seek a rapid assessment protocol to track trends for raptors and other landbirds utilizing Refuge upland habitats during migration.

As in Alternative B, we would consider releasing New England cottontail on the Refuge (see Alternative B, Objective 1.1). The Service would make every effort under this alternative to compile the needed information to make a determination within five years. Part of this determination would be to attempt to validate the historical presence of this species on the island, in compliance with wilderness stewardship policy (610 FW 2.17). If releasing New England cottontail on the Refuge is determined to be feasible, then we would release New England cottontails on the Refuge within three years of determination.

#### Strategies

Continue to:

- Coordinate with the U.S. Navy annually to promote communication and to exchange information on their operations and management planning for the Refuge.
- Implement a biologically-based fire regime as habitat conditions warrant during the dormant season to maintain native shrub communities for migrating landbirds and New England cottontails if released on the Refuge.

Within five years of CCP approval:

- Explore the possibility of introducing New England cottontail on the Refuge, taking into account biological and ecological considerations as well as overall feasibility, in one to five years through researching the following factors:
  - Compile information on similar introductions
  - Research/verify Nomans Land Island biogeography
  - Identify the specific habitat requirements for New England cottontail
  - Obtain detailed information about vegetative structure on the Refuge
  - Evaluate the genetic viability of a limited, isolated New England cottontail population on the island
  - Identify Refuge management prescriptions and feasibility required to maintain a New England cottontail population

- Evaluate impacts of New England cottontail introduction on other rare or sensitive Refuge species
- Initiate a concerted effort to map and control invasive species through chemical, biological, and mechanical means island-wide within one to five years.
- Work with the U.S. Navy to identify areas where additional trails can be established to support monitoring and management actions.
- Provide oversight and coordination with Navy contaminant and UXO cleanup and strive towards actions that benefit shrubland birds.

### Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- To evaluate benefits for migrating landbirds and raptors, conduct surveys during peak migration to measure relative abundance and diversity every two to three years throughout the life of the CCP and band raptors as time and funding permits.
- To evaluate benefits for pollinator species, conduct surveys every 5 to 10 years to determine species presence and abundance, diversity, phenology and host plant preferences.
- To evaluate habitat quality for Refuge focal species (migrating landbirds and possibly New England cottontail), measure stem density, berry production, shrubland species composition and vertical and horizontal structure, every five years.
- To evaluate the effectiveness of prescribed burning on shrubland habitats conduct post-burn surveys (within one month of burn) to document the area burned and relative intensity of the burn. Measure species composition, vertical and horizontal structure, and berry production to evaluate if burning is producing desired habitat results every one to five years.
- To maintain desired quality and characteristics of shrublands for migrating landbirds and raptors, annually conduct scouting for invasive plant species. Occurrences or stands of more stable patches of invasive plants may be tolerated in the short term as long as their cumulative coverage is no more than 10 percent, and fundamental objectives are not compromised.
- If introduced, annually monitor status of New England cottontail through some combination of live-trapping, track surveys, and/or pellet surveys. Vegetation monitoring to evaluate habitat suitability for this species would likely include stem counts, percent cover, and possibly species composition. Potential impacts on sensitive Refuge resources identified as a result of the introduction assessment would also be monitored and documented.
- Complete an updated habitat map for the Refuge within three years.

### Objective 1.2. Vegetated Dune Habitat

Annually conduct minimal management in approximately 15 acres of vegetated dune habitat consisting of American beach grass (*Amophilla* species) and other herbaceous vegetation to benefit rare plants and provide suitable nesting habitat for shorebirds (including American oystercatchers and piping plovers) and terns (including common and roseate terns).

## Rationale

The importance of this Refuge habitat for shorebird and colonial waterbird species of concern is discussed in Alternative B, Objective 1.3.

Under Alternative C, our general philosophy would be to let natural processes shape Refuge habitat, and we would conduct only baseline monitoring activities. This includes annually monitoring invasive species, and monitoring for rare plants and changes to the Refuge shoreline associated with sea level rise as opportunity allows over the next 15 years. Some level of invasive species would be tolerated unless or until they posed a direct threat to dune habitat quality. If that is found to be the case, then invasive species management would be subject to MRA.

Baseline monitoring for nesting terns, American oystercatchers, and any other nesting shorebirds, would continue under this alternative. Roseate terns are often found associated with large common tern colonies, which affords them added protection from predators. Therefore, should a common tern colony exceeding 50 pairs become established on the Refuge, we would evaluate the need to conduct predator control measures to ensure the persistence of the tern colony. Despite a reduction in management activities to allow natural processes to shape Refuge habitat, we would make every effort to be in compliance with federal guidelines should any federal-listed species (e.g., roseate tern, piping plover) become established on the Refuge. As in Alternative B, we would endeavor to partner with the North Atlantic LCC in coordinating regional shorebird conservation efforts, and in applying the latest science to Refuge shorebird management.

## Strategies

Continue to:

- Evaluate the need for predator control strategies if common tern colony exceeds 50 pairs.
- When feasible, control invasive species and map new infestations.

## Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- To determine presence and numbers of breeding roseate terns and common terns, conduct annual surveys during the breeding season throughout the life of the CCP.
- To determine habitat quality for priority species, visually inspect herbaceous upland vegetation every three to five years.
- To determine the number of nesting pairs of American oystercatchers, conduct annual surveys and monitor productivity incidental to other activities in both vegetated dune and cobble shoreline habitat.
- To determine presence of piping plover, annually monitor dunes for suitable piping plover nesting sites and if found, monitor for nesting pairs.
- To maintain desired quality and characteristics of vegetated dune habitat, annually conduct scouting for invasive species. Occurrences or stands of more stable patches of invasive plants may be tolerated in the short term as long as their cumulative coverage is no more than 10 percent of the vegetation dune habitat type. Control techniques will be monitored for effectiveness.
- Complete updated habitat map for the Refuge within three years.

### Objective 1.3. Marine Intertidal Beach and Rocky Shore

Annually passively oversee 100 acres of marine intertidal beach and rocky shore habitat to benefit nesting waterbirds (double-crested cormorants), migrating shorebirds (e.g., semipalmated sandpiper, short-billed dowitcher and lesser yellowlegs), and marine mammals (seals).

#### Rationale

See Alternative B, Objective 1.4 for a discussion of the importance of this habitat to regional species of concern. Under Alternative C, we would continue to contribute to landscape scale monitoring efforts (e.g, ISS) by conducting baseline monitoring activities. In the event that there is a higher conservation need for shorebird management on the Refuge, the Service will consider allocating additional staff time and funding and reevaluate its monitoring program and incorporate habitat management techniques as appropriate and as approved through MRA.

Based on the results of SLAMM analysis, we know that this habitat is subject to loss under sea level rise scenarios over the next century. Given that these are long-term scenarios, immediate action is not warranted; therefore within the context of this CCP over the next fifteen years, we would continue to reduce non-climate environmental stressors as described in Alternative A. In addition, under Alternative C, we would monitor and evaluate shoreline conditions relative to climate change and sea level rise using aerial photos, cooperate with the state on their climate change priorities once refined, and utilize the North Atlantic LCC to facilitate climate change research, education, and collaboration.

#### Strategies

Continue to:

- Coordinate with partners to respond to emergency bird mortality and marine mammal stranding events.

#### Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- Conduct surveys of double-crested cormorant nesting colony to determine number of nesting pairs every three to five years throughout the life of the CCP.
- Conduct annual migratory shorebird surveys in conjunction with other tasks (as time and funding allows) for ISS reporting.
- Record observations of seal occurrences on the Refuge annually and coordinate with the New England Aquarium to respond to seal entanglements, and report seabird die-off events to SEANet.
- Monitor the intertidal zone and shoreline erosion rate through aerial photos of critical habitats for nesting and migrating shorebirds. Monitor for shoreline changes resulting from rising sea level or other factors associated with climate change.
- To maintain desired quality and characteristics of intertidal beaches and rocky shores, conduct scouting for invasive species within one to five years of CCP completion. Occurrences or stands of more stable patches of invasive plants may be tolerated in the short term as long as their cumulative coverage is no more than 10 percent of the intertidal beach/rocky shore habitat type. Control techniques will be monitored for effectiveness.
- Complete updated habitat map for the Refuge within three years.

#### Objective 1.4. Scrub Shrub and Emergent Wetlands, Bogs, and Open Water

Annually minimally manage approximately 100 to 150 acres of freshwater wetland communities to support breeding marshbirds (including but not limited to Virginia rail) and native plant and animal communities.

##### Rationale

Same as Alternative A, Objective 1.5, though under this alternative habitat management actions would be subject to MRA.

##### Strategies

Continue to:

- Control purple loosestrife and Phragmites through biological, chemical, and/or mechanical means as needed, and as time and funding permits and map new infestations.
- Work through existing partnerships to meet objectives.

##### Monitoring Elements

Conduct appropriate monitoring and survey programs as funding and staffing permits to measure our success in achieving our objectives. The results may trigger adjustments to management strategies or refinement of our objectives. Examples of monitoring or surveys that we may implement include:

- Continue monitoring invasive plants, particularly Phragmites and purple loosestrife, to prevent unacceptable levels of loss of habitat quality. If the patch sizes of Phragmites attain a solid stand (regardless of size) that reasonably can be sprayed or, it threatens a rare community, initiate appropriate control measures to decrease Phragmites to a tolerable level. We may leave untreated any patches that are static or inaccessible by any currently available means until we determine a feasible solution or efficacious method. Control techniques will be monitored for effectiveness.
- Complete updated habitat map for the Refuge within three years.

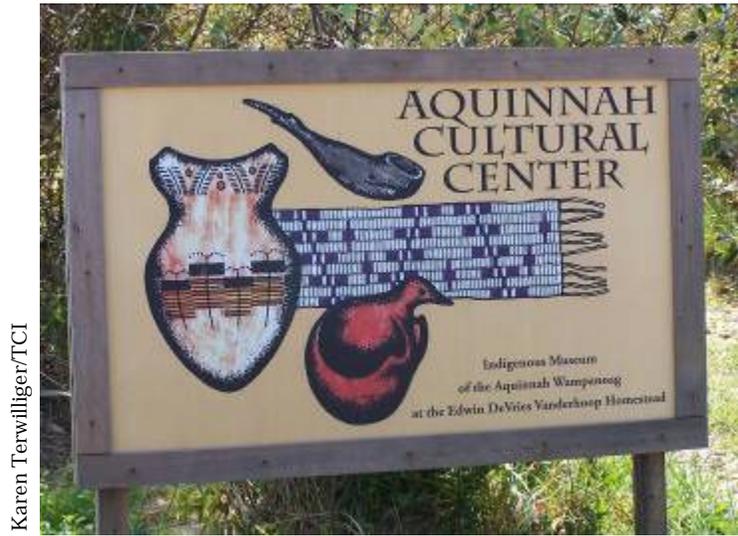
Goal 2. Promote awareness and stewardship of our coastal natural resources by working with our partners to provide off-site interpretation, education and outreach opportunities.

#### Objective 2.1. Environmental Education and Interpretation

Over the next 15 years update existing interpretive materials, develop Refuge brochures and pursue a partnership to develop an interpretive trail and associated viewing area at the Aquinnah Cultural Center.

##### Rationale

The lack of additional staffing limits our ability to increase our environmental education and interpretation capabilities from what they are under current management. The additional programming and interpretive features described under Alternative B would not apply under this alternative as staff site visits and the level of monitoring and management activities on the Refuge would be much reduced. However, we recognize that the existing level provided is insufficient, therefore we would endeavor to address this by updating existing information, developing a Refuge brochure, and with the permission of the Aquinnah Cultural Center, we would coordinate with them to develop an interpretive trail with informational panels and a spotting scope. In addition, we would endeavor to add a display to the Tribe's interactive kiosk proposed for the Gay Head Cliffs.



ACC entrance sign, Aquinnah, MA

### Strategies

Within five years of CCP approval:

- Update existing materials and create Refuge brochure.
- Maintain virtual tour on website.
- Collaborate with ACC and Town of Aquinnah to install interpretive trail and panels on Land Bank property and at ACC Historical Museum.

Within 10 years of CCP approval:

- Collaborate with Wampanoag Tribe to place materials at kiosk and install virtual tour on e-kiosk at Gay Head.
- Coordinate with Town of Chilmark and Marthas Vineyard Cultural Council to provide and distribute Refuge information throughout the town and Island-wide.

### Monitoring Elements

- Number of partner projects planned.
- Maintain and update website.

### Objective 2.2. Community Partnerships and Outreach

Establish and encourage reciprocal partnerships with Tribal, regional, and local organizations and agencies to ensure that citizens of and visitors to Martha's Vineyard are aware of the biological resources that exist on Nomans Land Island, the Service presence there, and the connection of Nomans Land Island NWR to the Refuge System.

## Rationale

How much we value and rely on our partners is described under Alternative B, and under Alternative C we would emphasize collaboration with the Tribe and our other partners on Martha's Vineyard to reach a broader audience for raising awareness of the Refuge. While our outreach efforts would be increased from Alternative A, they would be less intensive than under Alternative B. We would continue to keep residents of Martha's Vineyard informed of Refuge activities and any initiatives by keeping the Refuge website updated and by submitting press releases as necessary. We would also continue to further strengthen partnerships within the region, and coordinate with these partners to accomplish biological objectives.

## Strategies

Continue to:

- Provide resource information to Town of Chilmark for first and second grade classrooms in conjunction with existing school programs.
- Maintain website; issue news releases as needed.
- Participate in one local special event every five years on Martha's Vineyard.
- When funding allows, hire a local resident as a summer visitor services intern to conduct outreach and interpretive programming.

## Monitoring Elements

- Number of media articles about the Refuge.
- Maintain website.

Goal 3. Recognize the archaeological and cultural importance of the island.

## Objective 3.1. Archaeological and Cultural Resources

Follow Service protocol to document and prevent the loss of archaeological and cultural resources on Nomans Land Island NWR when possible over the next 15 years.

Develop a partnership agreement with the Wampanoag Tribe of Gay Head (Aquinnah) that would incorporate limited access for cultural and ceremonial use of the Refuge.

## Rationale

Under this alternative, we would note any evidence of new sites or artifacts as encountered during site visits and would notify the proper agencies. We would coordinate with the Tribe and our other partners, the Town of Chilmark, U.S. Coast Guard, U.S. Navy, and MA state law enforcement to establish a protocol for the preservation of archaeological and cultural resources as they are discovered, and would ensure that Navy operations were in compliance with the National Historic Preservation Act. We would continue to develop a partnership agreement with the Wampanoag Tribe of Gay Head (Aquinnah) that provides limited access for cultural and ceremonial purposes.

## Strategies

Continue to:

- Coordinate with the Navy to ensure compliance with National Historic Preservation Act coordination as necessary.

- Record cultural and archaeological items and/or sites as encountered annually and contact the appropriate agencies and organizations.
- Collaborate with the Wampanoag Tribe of Gay Head (Aquinnah) to develop a mutually beneficial partnership agreement incorporating cultural and ceremonial use of the Refuge by the Tribe.

Within 10 years of CCP approval:

- Develop a protocol for when archaeological and/or cultural items are found within 10 years.

Within 15 years of CCP approval:

- Conduct a cultural resources overview within the next 15 years.

#### Monitoring Elements

- Number of archaeological sites protected

### Objective 3.2. Burial Site Protection

Maintain the Luce cemetery as staff availability and opportunity allows over the next 15 years. Continue to pursue the possible repatriation of Wampanoag tribal remains on the Refuge and coordinate with the Tribe regarding existing burial sites, if found, through the development of a partnership agreement between the Tribe and the Service.

#### Rationale

As described in Alternative B, the Luce cemetery on Nomans Land Island has cultural importance to communities on Martha's Vineyard. In Alternative C, Refuge staff would be primarily responsible for maintaining the cemetery while on the Refuge when possible, as staff visits would be equivalent in frequency to Alternative A, and visits to the Refuge would be of shorter duration and have a more targeted itinerary.

It is also likely that there are remains of ancestral Tribe members on the Refuge. While no known sites exist, any remains would be protected if discovered in the conduct of Refuge operations in compliance NAGPRA and other federal mandates. We would continue to work with the Tribe towards a partnership agreement, including repatriation and the protection of potential future discoveries of burial sites on the Refuge. Any ground disturbance activities would require UXO Tech Support, and would therefore need to be coordinated with the Navy.

#### Strategies

Continue to:

- Maintain the Luce cemetery by Service staff as opportunity allows.
- Meet with representatives of the Wampanoag Tribe of Gay Head (Aquinnah) to continue to develop a mutually beneficial partnership agreement incorporating repatriation of Wampanoag Tribal remains, and the protection of potential Tribal burial sites on the Refuge.

Within five years of CCP approval:

- Work with partners to evaluate the threat of erosion to the cemetery and determine the best strategy to protect it within one to three years.

## Monitoring Elements

- Protection of Luce cemetery site.

## Objective 3.3. Cultural Interpretation

Within the next 15 years, work with partners to provide at least one activity, display or set of materials that interprets the cultural and archaeological resources of the island.

### Rationale

The cultural importance of Nomans Land Island to the Tribe and residents of Martha's Vineyard has been described under Alternative B. Under this alternative, we would endeavor to work with the Tribe and our other partners to provide some level of Refuge cultural resource interpretation to Martha's Vineyard, despite no change in staffing from present. We would also work with the Chilmark Historical Commission to make available the results of any research conducted on those residents interred in the Luce cemetery.

### Strategies

Continue to:

- Work with partners to interpret known cultural and archaeological resources associated with Nomans Land Island as opportunity allows, including maintenance of the virtual tour on the website.

## Monitoring Elements

- Number of partner projects planned.
- Number of accessioned museum property collections.

## Goal 4. Protect, maintain, enhance, and preserve the wilderness character of Nomans Land Island NWR.

### Objective 4.1. Protect and Maintain Wilderness Values

Upon CCP approval, continue to maintain the wilderness character (e.g., naturalness, solitude, supplemental values) of Nomans Land Island. Achievement of this objective will be evaluated by assessing loss or degradation of values that qualified it for potential designation (see Appendix C) over the next 15 years.

### Rationale

Nomans Land Island NWR is located in the Atlantic Ocean three miles south of Martha's Vineyard. The Refuge has been and will remain closed to public access. Human visitors to the island are limited to Refuge and Navy personnel and authorized researchers or volunteers. In 1996, the Navy ceased using the area for military purposes and transferred management responsibility of the island to the Service in 1998. The island has been and would continue to be managed as a wild, natural area. Nomans Land Island generally appears to have been affected primarily by the forces of nature, with the imprint of human uses and activities substantially unnoticeable. Natural processes would continue to be the primary force at work in the island's habitats.

Pending and after wilderness designation, Nomans Land Island NWR would be managed to accomplish Refuge purposes and the Refuge System mission, while also preserving wilderness character and natural values for future generations. Refuge management strategies and techniques would be chosen to comply with wilderness stewardship principles and prevent degradation of wilderness character. Refuge management activities and Refuge uses would be conducted in such a manner as not to detract from the wilderness values identified in the Wilderness Review (Appendix C).

## Strategies

Continue to:

- Evaluate Refuge management activities and Refuge uses through an MRA and use the minimum tool necessary to manage Refuge resources.
- Manage Nomans Land Island as wilderness.
- Monitor values of wilderness character including qualities of “untrammeled,” “naturalness,” “undeveloped,” and “solitude or primitive and unconfined recreation.”
- Provide off-site interpretation opportunities to inform the public about Refuge wilderness values.

## Monitoring Elements

- Number of interpretive projects planned regarding wilderness.

Table 2.1. Matrix of the Alternatives.

Refuge Resource or Program	Alternative A: Current Management	Alternative B: Enhanced Wildlife Management and Visitor Services	Alternative C: Natural Processes Emphasis, Focal Species Management and Wilderness Designation (Service-Preferred Alternative)
Goal 1. Perpetuate the biological integrity and diversity of coastal island habitats to support native wildlife and plant communities, including species of conservation concern.			
Responds to Issues: How can we best monitor and manage for migratory and nesting avian species on the Refuge? How can we effectively increase our survey and inventory efforts to fill in information gaps and maintain diversity? What are the most effective and efficient measures we can undertake to protect, restore, and conserve shrubland and grassland habitats on the Refuge?			
Shrubland Habitat	<p>Obj 1.1: Over the next 15 years, continue to minimally manage approximately 400 acres of maritime shrubland habitat that supports nesting focal species of conservation concern, including eastern towhee and gray catbird. Obj 1.2: Over the next 15 years, continue to minimally manage approximately 400 acres of maritime shrubland habitat that supports migrating landbirds, including raptors (e.g., state endangered peregrine falcon).</p> <p>Strategies for Obj 1.1 and Obj 1.2:</p> <p>Allow natural processes to influence Refuge shrub habitat, except for potential prescribed burns conducted by the Navy as part of their operations and maintenance plan.</p> <p>Provide oversight and coordination with Navy</p>	<p>Obj 1.1: Annually manage approximately 400 acres of maritime shrubland habitat for breeding gray catbirds, eastern towhees, and other species of high conservation concern, including Leach’s storm petrel and rare plants. Evaluate the feasibility of introducing New England cottontail within 5 years, and if determined to be feasible, then begin species introduction within 3 years of determination.</p> <p>Obj 1.2: Annually manage approximately 400 acres of maritimeshrubland stop-over habitat for migrating landbirds, raptors ( such as state endangered peregrine falcons), and butterflies (including monarchs).</p> <p>Strategies for Obj 1.1:</p>	<p>Obj 1.1: Annually provide approximately 400 acres of maritime shrubland stop-over habitat with no more than 10 percent invasive species tolerated, for migrating landbirds, raptors (such as peregrine falcons), butterflies (including monarchs) and other species of high conservation concern.</p> <p>Strategies for Obj 1.1:</p> <p>Coordinate with the U.S. Navy annually to promote communication and to exchange information on their operations and management planning for the Refuge.</p> <p>Within five years , explore the possibility of introducing New England cottontail on the Refuge</p> <p>Implement a biologically-based prescribed fire regime as habitat conditions warrant during</p>

	<p>contaminant and UXO cleanup and strive towards actions that benefit shrubland birds.</p> <p>Control invasive species and map new infestations, when feasible.</p> <p>Maintain the two existing access loop paths</p> <p>Work through existing partnerships to meet objectives.</p>	<p>Within five years , explore the possibility of introducing New England cottontail on the Refuge.</p> <p>Strategies for Obj 1.1 and 1.2:</p> <p>Implement a biologically-based prescribed fire regime every 7 to 12 years, or as habitat conditions warrant, during the dormant season. Through the use of fire breaks burn on a rotational basis.</p> <p>Initiate a concerted effort to control invasive species and map new infestations within 1-5 years.</p> <p>Work with the U.S. Navy to identify areas where additional trails can be established to support monitoring and management actions.</p>	<p>the dormant season to maintain native shrub communities.</p> <p>Initiate a concerted effort to control invasive species within one to five years.</p>
<p>Vegetated Dune</p>	<p>Obj 1.3: Over the next 15 years, continue to minimally manage approximately 15 acres of vegetated dune habitat consisting of American beach grass (<i>Amophilla</i> species) and other herbaceous vegetation which provides suitable nesting habitat for shorebirds (including American oystercatchers and piping plovers) and terns (including common and roseate terns).</p> <p>Strategies for Obj 1.3:</p> <p>Conduct limited and specific predator control actions annually, as needed</p>	<p>Obj 1.3: Annually manage approximately 15 acres of vegetated dune habitat to benefit rare plants and beach-nesting birds, including piping plovers, terns and American oystercatcher. Provide a mix of open sandy habitat and herbaceous vegetation including (but not limited to) American beach grass (<i>Amophilla</i> species), beach pea, and goldenrod to provide suitable nesting habitat. In years when piping plovers nest, maintain an average productivity of 1.5 chicks per pair according to state and federal</p>	<p>Obj 1.2: Annually conduct minimal management in approximately 15 acres of vegetated dune habitat consisting of American beach grass (<i>Amophilla</i> species) and other herbaceous vegetation to benefit rare plants and provide suitable nesting habitat for shorebirds (including American oystercatchers and piping plovers) and terns (including common and roseate terns).</p> <p>Strategies for Obj 1.2:</p> <p>Evaluate the need for predator control strategies if common tern colony</p>

	<p>and as permits are approved.</p> <p>Control invasive species and map new infestations, when feasible.</p> <p>Work through existing partnerships to meet objectives.</p>	<p>guidelines. If terns nest, maintain an average productivity of 1 chick per nest. Minimize nesting greater black-backed and herring gulls on at least 5 acres of the best suitable nesting habitat for terns.</p> <p>Strategies for Obj 1.3:</p> <p>Annually select the optimal five acres for nesting terns, and evaluate predator control actions when warranted.</p> <p>Control invasive species through most effective means as necessary, be it chemical, biological, and/or mechanical and map new infestations on an annual basis.</p> <p>Work with partners to accomplish objectives..</p>	<p>exceeds 50 pairs.</p> <p>When feasible, control invasive species and map new infestations.</p>
<p>Marine Intertidal Beach / Rocky Shore</p>	<p>Obj 1.4: Over the next 15 years, continue to passively oversee approximately 100 acres of marine intertidal beach and rocky shore habitat to benefit nesting waterbirds (double-crested cormorants), migrating shorebirds and, marine mammals (seals).</p> <p>Strategies for Obj 1.4:</p> <p>Coordinate with partners to respond to emergency bird mortality and marine mammal stranding events.</p> <p>Utilize existing partnerships to meet objectives.</p>	<p>Obj 1.4: Annually minimally manage approximately 100 acres of marine intertidal beach and rocky shore habitat to benefit nesting waterbirds (double-crested cormorants), migrating shorebirds (e.g., semipalmated sandpiper, short-billed dowitcher and lesser yellowlegs), and marine mammals (seals).</p> <p>Strategies for Obj 1.4:</p> <p>Coordinate with partners to respond to emergency bird mortality and marine mammal stranding events.</p> <p>Work with partners to control invasive species</p>	<p>Obj 1.3: Annually passively oversee 100 acres of marine intertidal beach and rocky shore habitat to benefit nesting waterbirds (double-crested cormorants), migrating shorebirds (e.g., semipalmated sandpiper, short-billed dowitcher and lesser yellowlegs), and marine mammals (seals)</p> <p>Strategies for Obj 1.3:</p> <p>Coordinate with partners to respond to emergency bird mortality and marine mammal stranding events.</p>

		(e.g., sea cucumbers, algae) within one to five years.	
Scrub Shrub and Emergent Wetlands, Bogs, and Open Water	<p>Obj 1.5: Over the next 15 years, continue to minimally manage approximately 100-150 acres of freshwater wetland communities to support breeding marshbirds (including but not limited to Virginia rail) and native plant and animal communities.</p> <p>Strategies for Obj 1.5:</p> <p>Control purple loosestrife and Phragmites as time and funding permits and map new infestations.</p> <p>Utilize existing partnerships to meet objectives.</p>	<p>Obj 1.5: Annually manage approximately 100 to 150 acres of freshwater wetland communities to support breeding marshbirds (including Virginia rail), native plant communities, and to benefit rare wetland plants including <i>Arethusa bulbosa</i>. Maintain robust emergent vegetation including cattails (<i>Typha</i>) and bulrush (<i>Scirpus</i>) (Conway 1995).</p> <p>Strategies for Obj 1.5:</p> <p>Control purple loosestrife at the brackish pond and reinitiate control of Phragmites and other invasive aquatic plant species on an annual basis.</p>	<p>Obj 1.4: Annually minimally manage approximately 100 to 150 acres of freshwater wetland communities to support breeding marshbirds (including but not limited to Virginia rail) and native plant and animal communities.</p> <p>Strategies for Obj 1.4:</p> <p>Control purple loosestrife and Phragmites through biological, chemical, and/or mechanical means as needed, and as time and funding permits and map new infestations.</p> <p>Work through existing partnerships to meet objectives.</p>
<p>Goal 2. Promote awareness and stewardship of our coastal natural resources by working with our partners to provide interpretation, education and outreach opportunities.</p>			
<p>Responds to Issues: How can we communicate effectively with the public about the management activities we perform on the Refuge and what, if any, impacts there are for them? How can we best communicate the state of remediation of the Refuge, updates on Refuge activities and species? How can we engage members of the public through interpretation and education to provide an experience of the Refuge in other ways given the ban on public access?</p>			
EE/I	<p>Obj. 2.1: Over the next 15 years, continue to maintain the current level of interpretation.</p> <p>Strategies for Obj. 2.1:</p> <p>Interpret the Refuge through the virtual tour on the Refuge website.</p>	<p>Obj. 2.1: Over the next 15 years develop and implement quality environmental education and interpretation programs and activities with the Tribe and our partners to further communicate our knowledge and understanding of Nomans Land Island coastal ecosystems and the</p>	<p>Obj. 2.1: Over the next 15 years update existing interpretive materials, develop Refuge brochures and pursue a partnership to develop an interpretive trail and associated viewing area at the Aquinnah Cultural Center.</p> <p>Strategies for Obj. 2.1:</p> <p>Update existing materials</p>

		<p>federal trust resources that depend upon them. In the next 5 years, work with the Tribe on creating a display for their interactive kiosk, and with the Aquinnah Cultural Center on an interpretive trail and spotting scope to view Nomans Land Island NWR.</p> <p>Strategies for Obj. 2.1:</p> <p>Review and update the website annually. Evaluate possible updates for the virtual tour</p> <p>Create a general brochure and rack card for the Refuge within two years to be distributed at appropriate sites on Martha's Vineyard.</p> <p>Partner with the Aquinnah Cultural Center and Tribe to develop a kiosk display and an interpretive trail with panels and a spotting scope, and create brochures and materials to be distributed at the Center and kiosk within five years.</p> <p>Develop an environmental education trunk and other materials for local classrooms and investigate opportunities with Teach-the-teacher and local libraries within seven years.</p> <p>Coordinate with partners including Wampanoag Tribe of Gay Head (Aquinnah) and Massachusetts Audubon</p>	<p>and create Refuge brochure</p> <p>Maintain virtual tour.</p> <p>Collaborate with ACC and Town of Aquinnah to install interpretive trail and panels on Land Bank property and at ACC Historical Museum.</p> <p>Collaborate with Wampanoag Tribe to place materials at kiosk and install virtual tour on e-kiosk at Gay Head</p> <p>Coordinate with Town of Chilmark and Marthas Vineyard Cultural Council to provide and distribute Refuge information throughout the town and Island-wide.</p>
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		Society to develop environmental education capabilities within seven years.	
Community Partnership/Outreach	<p>Obj. 2.2. Over the next 15 years, maintain existing partnerships with the Tribe, and regional and local organizations and agencies to ensure that citizens of and visitors to Martha's Vineyard are aware of the biological resources that exist on Nomans Land Island, the Service presence there, and the connection of Nomans NWR to the Refuge System.</p> <p>Strategies for Obj. 2.2.</p> <p>Explore the possibility of a partnership agreement with the Wampanoag Tribe of Gay Head (Aquinnah) to determine outreach and other opportunities for partnership.</p> <p>Issue press releases for large-scale management activities on the Refuge.</p>	<p>Obj. 2.2. Establish and encourage reciprocal partnerships with Tribal, regional, and local organizations and agencies to ensure that citizens of and visitors to Martha's Vineyard are aware of the biological, cultural and historic resources that exist on Nomans Land Island, the Service presence there, and the connection of Nomans Land Island NWR to the Refuge System.</p> <p>Strategies for Obj. 2.2.</p> <p>Post opportunities on the Refuge website for volunteers to become involved with visitor services programs when possible, within three years.</p> <p>Notify public of large-scale management activities, their purposes, and possible impacts by submitting notices and/or press releases in a timely fashion, updating the Refuge website, and posting relevant plans online, within three years.</p> <p>Develop an electronic newsletter for the refuge complex which includes Nomans Land Island NWR updates and by contacting interested parties on our Refuge mailing list within three years.</p>	<p>Same objective as B.</p> <p>Strategies for Obj. 2.2.</p> <p>Provide resource information to Town of Chilmark for 1st and 2nd grade classrooms in conjunction with existing school programs.</p> <p>Maintain website; issue news releases as needed.</p> <p>Participate in special events every five years.</p> <p>When funding allows, hire a local resident as a summer visitor services intern to conduct outreach and interpretive programming</p>

		Participate in at least one local special event annually that interprets the importance of Nomans Land Island NWR and its natural resources within five years.	
Goal 3. Recognize the archeological and cultural significance of Nomans Land Island NWR.			
Responds to Issues: How can we best address future findings of human remains and cultural preservation items to ensure their protection, preservation and transfer to appropriate authorities? How can we best inventory the known human habitation remains on the Refuge given limitations with respect to access, funding, and personnel? Can we, and if so how, allow access to the Wampanoag Tribe of Gay Head (Aquinnah) for traditional tribal ceremonial purposes?			
Archaeological and Cultural Resources	<p>Obj. 3.1: Over the next 15 years, follow Service protocol to prevent the loss of, and document, the archaeological and cultural resources on Nomans Land Island when possible. Continue to develop a partnership agreement with the Wampanoag Tribe of Gay Head (Aquinnah) that would incorporate limited access for cultural and ceremonial use of the Refuge.</p> <p>Strategies for Obj. 3.1:</p> <p>Coordinate with the Navy to ensure compliance with the National Historic Preservation Act as necessary.</p> <p>Record cultural and archaeological items and/or sites as encountered annually, or as necessary, and contact the appropriate agencies and organizations.</p>	<p>Obj. 3.1: Improve knowledge of the prehistoric and historic archaeology sites on the Refuge by initiating a cultural resources overview and identifying at least one new project over the next 15 years.</p> <p>Develop a partnership agreement with the Wampanoag Tribe of Gay Head (Aquinnah) that would incorporate limited access for cultural and ceremonial use of the Refuge.</p> <p>Strategies for Obj. 3.1:</p> <p>Add known archaeological sites and historic structures to Service site inventory within five years.</p> <p>Within five years, develop a protocol to identify and protect archaeological artifacts.</p> <p>Initiate a concerted effort to find things already collected by people from Nomans Land Island</p>	Same as A.

	<p>Collaborate with the Wampanoag Tribe of Gay Head (Aquinnah) to develop a mutually beneficial partnership agreement incorporating cultural and ceremonial use of the Refuge by the Tribe.</p>	<p>within the next five years.</p> <p>Prepare a cultural resource overview within the next 15 years for Nomans Land Island to synthesize all the information and add palaeoenvironmental reconstruction. Use aerial photos to relate old maps and descriptions to current situation.</p> <p>Evaluate the need to implement dune restoration projects to prevent erosion and protect archaeological sites within the next five years.</p> <p>Collaborate with the Wampanoag Tribe of Gay Head (Aquinnah) to develop a mutually beneficial partnership agreement incorporating cultural and ceremonial use of the Refuge by the Tribe.</p>	
<p>Burial Site Protection</p>	<p>Obj. 3.2: Continue to maintain the Luce cemetery by removing vegetation when possible, and continue to explore opportunities to work with volunteers from interested groups in Chilmark over the next 15 years.</p> <p>Continue to pursue the possible repatriation of Wampanoag tribal remains on the Refuge and coordinate with the Tribe regarding existing burial sites, if found, through the development of a partnership agreement</p>	<p>Obj. 3.2: The Service will coordinate with the Tribe and Chilmark Historical Commission volunteers to maintain, manage and protect, on at least a bi-annual basis, the Luce cemetery on the Refuge by removing vegetation in conjunction with Service staff site visits over the next 15 years.</p> <p>Continue to pursue the possible repatriation of Wampanoag remains on the Refuge and coordinate with the Tribe regarding existing burial sites, if found, through the development of a</p>	<p>Obj. 3.2: Maintain the Luce cemetery as staff availability and opportunity allows over the next 15 years. Continue to pursue the possible repatriation of Wampanoag tribal remains on the Refuge and coordinate with the Tribe regarding existing burial sites, if found, through the development of a partnership agreement between the Tribe and the Service.</p> <p>Strategies for Obj. 3.2:</p> <p>Maintain the Luce cemetery by Service staff</p>

	<p>between the Tribe and the Service.</p> <p>Strategies for Obj. 3.2:</p> <p>Maintain the Luce cemetery by Service staff as opportunity allows, and continue to explore a partnership with the Chilmark Historical Commission for volunteers to conduct site visits with Service staff to remove vegetation at the cemetery when possible.</p> <p>Meet with representatives of the Wampanoag Tribe of Gay Head (Aquinnah) to continue to develop a mutually beneficial partnership agreement incorporating repatriation of Wampanoag Tribal remains, and the protection of potential Tribal burial sites on the Refuge.</p>	<p>partnership agreement between the Tribe and the Service.</p> <p>Strategies for Obj. 3.2:</p> <p>Meet with representatives of the Wampanoag Tribe of Gay Head (Aquinnah) to continue to develop a mutually beneficial partnership agreement incorporating repatriation of Wampanoag Tribal remains, and the protection of potential Tribal burial sites on the Refuge.</p> <p>Work with partners to evaluate the threat of erosion to the cemetery, and determine the best course of action to protect it within the next one to three years.</p> <p>Allow the Chilmark Historical Commission to maintain the part of the cemetery within the enclosed wall within five years.</p> <p>Encourage the Chilmark Historical Commission to conduct research in primary documents to learn more about residents buried in the cemetery and incorporate the results in a narrative report within five years.</p> <p>If safety approved by the Navy, work with partners such as the Chilmark Historical Commission to conduct non-invasive remote sensing survey (Ground Penetrating Radar, magnetometer, or</p>	<p>as opportunity allows.</p> <p>Meet with representatives of the Wampanoag Tribe of Gay Head (Aquinnah) to continue to develop a mutually beneficial partnership agreement incorporating repatriation of Wampanoag Tribal remains, and the protection of potential Tribal burial sites on the Refuge.</p> <p>Work with partners to evaluate the threat of erosion to the cemetery and determine the best strategy to protect it within one to three years.</p>
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		<p>soil resistivity) of Luce Cemetery, to determine whether there are unmarked graves in or outside the stone wall of the cemetery within five to ten years.</p>	
<p>Cultural Interpretation</p>	<p>Obj. 3.3: Over the next 15 years, continue to coordinate with the Tribe and our partners to interpret the cultural and archaeological resources of the island as staff availability and resources allow</p> <p>Strategies for Obj. 3.3:</p> <p>Interpret the Refuge's cultural history through the virtual tour on the Refuge website.</p>	<p>Obj. 3.3: Within 10 years of CCP approval, work with the Tribe, the Chilmark Historical Commission and other partners to provide at least two activities, displays or materials that interprets the cultural and archaeological resources of the island.</p> <p>Strategies for Obj. 3.3:</p> <p>Develop educational materials in concert with partners for distribution and displays (including for ferries, kiosks, and museum, etc.) within five to ten years.</p> <p>Coordinate with partners to interpret and, when appropriate, display Nomans Land Island artifacts within five to ten years.</p> <p>Use the Service's cultural resource overview, the Wampanoag Tribe's oral history, document research and information in the Chilmark Historical Commission's archives to create a web page about the history of Nomans Land Island within five to ten years.</p> <p>Work with the Wampanoag Tribe and the Chilmark Historical Commission to conduct an oral history project to</p>	<p>Obj. 3.3: Within the next 15 years, work with partners to provide at least one activity, display or set of materials that interprets the cultural and archaeological resources of the island.</p> <p>Strategies for Obj. 3.3:</p> <p>Work with partners to interpret known cultural and archaeological resources associated with Nomans Land Island as opportunity allows, including maintenance of the virtual tour on the website.</p>

		<p>collect information about Noman's Land Island within five to ten years. Pursue support, including Visitor Service challenge cost share grant (with the Tribe as a partner).</p> <p>Include information about the island's significance to the Wampanoag Tribe, presented by Tribe members, the Luce cemetery, and other historical information about the island in the enhanced virtual tour on the web site within five to ten years.</p> <p>Pursue a cultural resource overview with paleoenvironmental reconstruction of the island within five to ten years.</p> <p>Allow the Chilmark Historical Commission to document stone walls, cellar holes, and other evidence of human habitat for cultural history within five to ten years. We would first consult with the Navy to determine the feasibility of this and ensure this took place within approved safety zones. Once complete, we would add this information to the virtual tour on the Refuge website.</p>	
<p>Goal 4. Protect, maintain, enhance, and preserve the wilderness character of Nomans Land Island NWR.</p>			
<p>Responds to Issues: Is the Nomans Land Island WSA suitable for wilderness designation? If so, can we manage Nomans Land Island NWR to maintain wilderness values and character long-term, without jeopardizing our management to achieve the Refuge's established purposes and Refuge System mission?</p>			

<p>Wilderness Values</p>	<p>N/A</p>	<p>N/A</p>	<p>Obj. 4.1: Upon CCP approval, continue to maintain the wilderness character (e.g., naturalness, solitude, supplemental values) of Nomans Land Island. Achievement of this objective will be evaluated by assessing loss or degradation of values that qualified it for potential designation (see Appendix C) over the next 15 years.</p> <p>Strategies for Obj. 4.1:</p> <p>Evaluate Refuge management activities and Refuge uses through an MRA and use the minimum tool necessary to manage Refuge resources.</p> <p>Manage Nomans Land Island as wilderness.</p> <p>Monitor values of naturalness and solitude.</p> <p>Provide off-site interpretation opportunities to inform the public about Refuge wilderness values.</p>
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