

## Chapter 4



Doug Racine

*Widgeons*

# Management Direction and Implementation

- Introduction
- General Refuge Management
- Conducting Additional NEPA Analysis
- Refuge Goals, Objectives, and Strategies



## Introduction

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 describe the refuge purpose and our vision, and provide a foundation for developing specific management objectives and strategies.

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

Where possible, we incorporated the principles of SHC in the development of our objectives and strategies. According to “Strategic Habitat Conservation: Final Report of the National Ecological Assessment Team” (USFWS 2006b): “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 USFWS mission and goals in a strategic, standardized, and transparent way, it also helps refuges ensure that they contribute to local and regional conservation priorities and goals as well.

A rationale accompanies each objective to explain its context and importance. We will use the objectives described later in this chapter to write the refuge step-down plans.

Next we identified strategies, or the actions, tools, and techniques we may use to achieve each objective. The list of strategies in each objective represents the suite of actions we propose to 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.

We believe the management goals, objectives, and strategies described below provide the best combination of actions to meet the Refuge System mission and policies, meet the refuge purposes, vision, goals, and respond to public issues. It emphasizes management of emergent marsh habitats and for priority bird species of conservation concern in the BCR 13 and PIF 15 plans and the New York State CWCS. In addition, under this plan we will enhance our current level of: (1) visitor services, (2) species inventory and monitoring, (3) law enforcement, and (4) partnerships.

## General Refuge Management

There are some actions we will take in managing Montezuma NWR over the next 15 years that are required by law or policy, or represent actions that have undergone previous NEPA analysis, public review, agency review, and approval. Others may be administrative actions that do not necessarily require public review, but we want to highlight them in this public document. They may also be actions we believe are critical to achieving the refuge's purpose, vision, and goals.

All of the following actions, which we discuss in more detail below, are current practices or policies that will continue:

- Continuing land protection by purchasing fee title and conservation easements from willing sellers, and accepting donations, within the current, approved acquisition boundary.
- Using an adaptive management approach where appropriate.
- Monitoring and controlling invasive species.
- Monitoring and abatement of diseases affecting wildlife and forest health.
- Monitoring and controlling pest plants and animals.
- Facilitating or conducting biological research and investigations.
- Protecting threatened and endangered species.
- Responding to climate change.
- Providing refuge staffing and administration.
- Distributing refuge revenue sharing payments.
- Protecting cultural resources.
- Providing wildlife-dependent recreational opportunities.
- Completing findings of appropriate use and compatibility determinations.
- Allowing cooperative farming.
- Conducting wilderness reviews.

### Protecting Land and Refuge Expansion

As of October 2012, the Service was authorized to protect 19,510 acres. At that time, we had acquired 9,184 of those acres in fee title and conservation easements. We will continue to work with willing sellers and in partnership with other agencies and organizations to acquire lands within the current acquisition boundary. Hence, we are unable to predict the exact size, type, and location of lands that may come under our management within the next 15 years. As new lands are acquired, we will evaluate their potential for habitat restoration and will determine appropriate habitats (i.e., emergent marsh, forest, shrubland, grassland) based on soils, surrounding habitat, current vegetation community, and landscape level priorities. We will continue to comply with all applicable laws, regulations, and Executive Orders as we acquire and restore new lands.

As part of this CCP, we have expanded the current approved acquisition boundary. Specific parcels are identified in a Land Protection Plan (LPP) which has been updated in conjunction with this document (see appendix F). In 1991, an EIS was completed for the Northern Montezuma Wetlands Project which proposed a joint State and Service acquisition boundary

encompassing 49,150 acres (USFWS and NYSDEC 1991). Following the EIS, an LPP was developed in 1994 to establish the expanded acquisition boundary (USFWS 1994). In cooperation with NYSDEC, we are proposing to increase the refuge's acquisition boundary by approximately 1,223 acres. We expanded the boundary to avoid a patchwork of State and Federal ownership that would be confusing for the public and to improve management capabilities by allowing us to better connect previously acquired parcels.

We intend to acquire, from willing sellers, interests in 1,431 acres near the northeast section of the refuge. This includes: 1) 1,223 acres which we have recently added to the refuge's current approved acquisition boundary, and 2) two parcels (totaling about 208 acres) that were previously added to the approved acquisition boundary but have not been acquired (see table F.4 and map F.4). We estimate that it will cost about \$2.2 million (in 2010 dollars) to acquire those 1,431 acres (as full fee simple or conservation easements). This estimate is based on the following assumptions:

- All fee simple lands purchased are privately owned and primarily farmland, totaling approximately 1,255 acres. We used a median estimated price of \$1,750 per acre for farmland, based on estimates of land value completed between 2008 and 2009. Thus, the cost of acquiring all the farmland in this area will be  $1,255 \text{ acres} \times \$1,750/\text{acre} = \$2,196,250$ .
- All conservation easements will be forested wetlands totaling about 176 acres. We used a median price of \$300/acre for forested wetlands. Conservation easements typically cost approximately 75 percent of the full fee title value. Hence, the cost of acquiring all the available conservation easements will be  $176 \text{ acres} \times \$300/\text{acre} \times 0.75 = \$39,600$ .

As part of the refuge expansion, we assume the Service will acquire some structures, most of which will not support the refuge or Service mission and will be slated for demolition. Prior to any demolition activity, the refuge will comply with the NHPA. For structures older than 50 years in age, we will evaluate the structure's eligibility for listing in the National Register of Historic Places in consultation with the Regional Historic Preservation Officer (RHPO) and the SHPO. If any structures are found to be eligible for listing, we will work with our RHPO and SHPO to complete comprehensive documentation and any other legal requirements prior to demolition or alteration.

Structures we are likely to obtain include single-family homes and farm buildings. Some buildings that are in excellent condition could be used for refuge quarters, equipment storage, or a visitor contact facility, although we did not identify that as an objective in this CCP. Although we have not conducted a facilities survey on all 1,431 acres, we estimate, on average, to demolish one building for every four parcels we purchase in fee. We will address parcels we obtain by easement on a case-by-case basis. The most cost-effective way to remove a structure is usually for the refuge staff or a contractor to demolish it, although other methods will be used, where available and appropriate (e.g., local fire department burning for training, etc.). Tables 4.1 and 4.2 below show the anticipated costs. We have also identified the costs associated with posting signs for boundaries and seasonal closures. We identify the contaminant costs as Level 1 surveys for most parcels, although we recommend some soil testing because of the possibility of

contamination from previous land uses such as agriculture. We do not anticipate acquiring any contaminated sites because they will require substantial funding for remediation.

Table 4.1. Estimated One-time Costs Associated with Operating and Maintaining Lands in the Expansion Area for Montezuma National Wildlife Refuge.

<b>Estimated One-Time Operating Costs</b>	<b>Costs in Dollars</b>
Establish new impoundments and water control structures	\$150,000
Post informational, regulatory, boundary signs	\$5,000
Demolition of houses/small buildings	\$40,000
Demolition of barns	\$10,000
Hazardous Materials Inventory and abatement (all structures)	\$20,000
Contaminant (level 1) studies and soil testing	\$10,000
Construction of public use sites (trails, blinds)	\$5,000
Construction/improvement of parking areas	\$5,000
New kiosks/exhibits	\$5,000
Construction of Wildlife Drive Extension	\$50,000
<b>Total Estimated One-Time Operations Cost</b>	<b>\$300,000</b>

\*These costs assume the full implementation of the final CCP. These estimates do not include requirements for NHPA compliance.

Table 4.2. Estimated Annual Costs Associated with Operating and Maintaining Lands in the Expansion Area for Montezuma National Wildlife Refuge.

<b>Estimated Annual O&amp;M Costs</b>	<b>Costs in Dollars</b>
Waterfowl impoundment maintenance and Management	\$2,000
Habitat inventories	\$2,000
General maintenance of public use facilities	\$5,000
Mowing and haying	\$1,000
Total Estimated Annual O&M Cost	\$10,000
Estimated Annual Refuge Revenue Sharing Payment*	\$5,000

\*These costs assume the full implementation of the final CCP and 100 percent of eligible reimbursement.

### Historic Habitat Conditions

Under this plan we will study historic habitat conditions to inform our habitat restoration. Past and ongoing land use patterns have greatly altered ecological communities. In many areas, land cover conversion has so dramatically changed former vegetative communities that historic

conditions have become difficult to detect (e.g., conversion of marsh to forest to agriculture). Effective landscape restoration requires a thorough understanding of the historic conditions.

### **Impacts to Wildlife from Highways**

Under this plan we will assess wildlife and highway interactions through specific studies, likely conducted in collaboration with outside researchers. Refuge lands span a large area that is intersected by the NYS Thruway, as well as other smaller roads. In addition to causing direct mortality, roads and highways can alter the behavior of some wildlife species. Some species avoid roads, potentially causing their populations to become isolated. Based on the results of studies, we will consider constructing wildlife underpasses or mitigate the impacts of roads in other ways as feasible.

### **Hydrological Studies**

As detailed in chapter 3, the area's hydrology has been dramatically altered due to the construction of the NYS Canal System, levees, and drainage ditches. Because wetlands require water, it is important for the refuge to understand the hydrology. Therefore, we will study surface and subterranean hydrology to determine water availability and quality and adjust management as needed.

### **Adaptive Management**

We will employ an adaptive management approach for improving resource management by added 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. Secretarial Order No. 3270 provides 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. This adaptive management guidebook was updated in 2009 (Williams et al. 2009). It defines adaptive management, the conditions under which we should consider it, and the process for implementing it and evaluating its effectiveness.

The guidebook defines adaptive management as, “a decision process that promotes flexible decision-making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood.”

For the refuge, monitoring key resources and management actions and outcomes, will be critical to implementing an adaptive management process. Ongoing restoration and impounded wetlands management activities are examples of refuge programs where an adaptive management approach will continue to be implemented and refined. Thus, adaptive 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. The refuge manager will be 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, assuming the activities, if conducted by nonrefuge personnel, are determined compatible by the refuge manager in a compatibility determination. Many of our objectives identify monitoring elements. Our Inventory and Monitoring Plan (IMP) will determine future survey efforts and prioritize inventory and monitoring efforts (see “Inventory and Monitoring Plan” under “Developing Refuge Step-down Plans” below).

### **Strategic Habitat Conservation**

Strategic Habitat Conservation is a framework that uses adaptive management to redefine broad scale conservation from the general pursuit of conserving “more” habitat and species, to a more planned approach. As discussed in chapter 1 under “Conservation Plans and Initiatives Guiding the Proposed Action,” the goal of strategic habitat conservation is to set specific population objectives for species that are limited in some way by habitat, and to use targeted habitat management approaches to meet those objectives. Inherent in the process is a continual evaluation of outcomes and approaches, with the intent to adapt the overall strategy in response to changing circumstances and new information.

### **Managing Invasive Species**

Over the past several decades, government agencies, conservation organizations, and the public have become more aware of the negative effects of invasive species. Many plans, strategies, and initiatives target the more effective management of invasive species (e.g., USFWS 2004b, National Wildlife Refuge Association 2002). The establishment and spread of invasive species is a significant problem that reaches across all habitat types. For the purposes of this discussion, we use the following definition of invasive species (Service Manual 750 FW 1; USFWS 2011): “alien species whose introduction does or is likely to cause economic or environmental harm, or harm to human health. Alien species, or nonindigenous species, are species that are not native to a particular ecosystem.”

The spread of invasive species threatens the biological diversity, integrity, and environmental health of all refuge habitats. We referred to the National Wildlife Refuge System Invasive Species Management Strategy released in May 2004 (USFWS 2004b) for additional tools, processes, and strategies. This report is complemented by an invasive species survey of refuges completed in 2004 as well (Simonson et al. 2004). These reports together give both a status review and a management strategy for combating invasive species. The Refuge System biological discussion database and relevant workshops continually provide new information and updates on recent advances in control techniques. Sources of funding are available, both in the Service budget and through competitive grants, to conduct inventory and control programs.

Guidance is derived from several laws and regulations. These and other information on managing invasive species on refuges can be found at: <http://www.fws.gov/invasives>.

The National Wildlife Refuge System Invasive Species Management Strategy recommends the following priority order of action for invasive species management:

- 1) Prevent invasion of potential invaders.
- 2) Eradicate new and/or small infestations.
- 3) Control and/or contain large established infestations.

The following actions are preferred strategies for the refuge:

- 1) Incorporate invasive species prevention in all facilities and construction projects.
- 2) Incorporate invasive species prevention in impoundment design and management.
- 3) Minimize disturbances in habitats dominated by native species.
- 4) 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.
- 5) Map and monitor invasive species populations and control efforts.
- 6) Remove the parent sources of highly invasive species (e.g., species that are high seed producers or vigorous rhizome producers).
- 7) Eradicate new and/or small infestations by facilitating early detection and rapid response.
- 8) Prioritize the control of established infestations as follows:
  - a. Smallest scale of infestation.
  - b. Poses greatest threat to land management objectives.
  - c. Greatest ease of control.
- 9) When limited resources prevent the treatment of entire populations, prioritize control as follows:
  - a. Treat the smallest infestations (satellite populations).
  - b. Treat infestations on pathways of spread.
  - c. Treat the perimeter and advancing front of large infestations.
- 10) Restore altered habitats and reintroduce native plants.
- 11) Develop an integrated pest management plan to guide the prevention, control, or eradication of invasive species. This plan will comprehensively evaluate all management options, including defining threshold/risk levels that will initiate management actions.

Within the past 5 years we have worked to control the following invasive plants, listed in alphabetical order by common name: autumn olive, bull thistle, (nonnative) bush honeysuckles, Canada thistle, common buckthorn, common (European) frogbit, (nonnative) common reed, European (pale) swallow-wort, flowering rush, garlic mustard, Japanese knotweed, Japanese stiltgrass, multiflora rose, Oriental bittersweet, purple loosestrife, tree of heaven, and yellow sweetclover.

### **Controlling Pest Plants and Animals**

At times, native plants and animals interfere with management objectives. The Refuge Manual (7 RM 14.4A; USFWS 1989) 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 could include the invasive species defined above, but in this section, we describe some situations involving native species and the conditions under which we will initiate control.

An integrated approach to pest control uses various methods, including natural, biological, cultural, mechanical, and chemical controls. For example, although muskrats can be beneficial in maintaining marsh interspersed with open water, at high densities they can damage habitat and infrastructure (their burrows can undermine levees). To maintain muskrat densities at optimal levels, the refuge issues special use permits to commercial trappers, allowing them to remove muskrats in specific parts of the refuge.

- 1) We will determine the need for site-specific control based on the potential to affect our management objectives for a given area.
- 2) We will employ integrated pest management techniques when a species is having a significant impact on an area resulting in major habitat replacement and loss of natural habitat structure or processes. As with all management actions, we will monitor results to ensure we are achieving management objectives.

### **Integrated Pest Management (IPM)**

In controlling pests, whether invasive or native species, we use an integrated approach. The Service Manual (USFWS 2011) 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.”

In accordance with Service guidelines, an integrated pest management approach will be utilized, where practicable, to eradicate, control, or contain pest and invasive species on the refuge. An IPM approach will underline all decisions on control of invasive species. IPM will involve using methods based upon effectiveness, cost, and minimal ecological disruption, which considers minimum potential effects to nontarget organisms and the refuge environment. Pesticides may be used where physical, cultural, and biological methods or combinations thereof, are impractical or incapable of providing adequate control, eradication, or containment. Furthermore, pesticides will be used primarily to supplement, rather than as a substitute for, practical and effective control measures of other types. If a pesticide is needed on the refuge, the most specific (selective) chemical available for the target species will be used unless considerations of persistence or other environmental and/or biotic hazards will preclude it.

The refuge’s IPM plan will be written within 5 years of the approval of this CCP and will be on file at the refuge 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.

### **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; USFWS 1989) 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 serious wildlife disease that receives considerable attention worldwide is avian influenza. Of particular concern is the highly pathogenic Eurasian form (H5N1). The refuge completed an Avian Influenza Surveillance and Contingency Plan in 2006. Monitoring efforts for this disease, which has not been detected in North America at this time, are coordinated at the Atlantic Flyway and national levels.

These are the general strategies for preventing or controlling disease:

- 1) Continue to conduct disease surveillance in conjunction with other fieldwork.
- 2) Cooperate with other agencies, particularly NYSDEC and USDA, 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 zoonotic diseases transmitted through wildlife to humans and measures to avoid contracting them (e.g., Lyme disease).
- 4) Monitor habitats for indicators of the increased occurrence of pests or disease. For example, note changes in the seasonal timing (phenology) of flowering or fruiting that do not appear to be linked to global climate change, 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.
- 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; USFWS 1989):

- 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.
- 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. Research that directly benefits refuge management has priority over other research” (603 FW 1.10 D (4); USFWS 2011).

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 or management activity. We expect opportunities to conduct research on the refuge to arise under this plan and we propose to employ the following research-related 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.
- 4) Facilitate appropriate and compatible research by providing temporary housing and equipment, if available, for persons conducting fieldwork.

All researchers will be required to submit detailed research proposals following the guidelines established by Service policy and refuge staff. Through the use of SUPs, the refuge identifies 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 or operations.

### **Responding to 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 International 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 mid-twentieth 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 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. 2006). For additional information on effects of climate change on the Great Lakes region, refer to the chapter 3, “Climate Change” section. In response to the growing threat of climate change, the Service developed a strategic plan (USFWS 2010b) titled “Rising to the Urgent Challenge: Strategic Plan for Responding to Accelerating Climate Change,” which establishes a basic framework within which the Service will work as part of the larger conservation community to help ensure the sustainability of fish, wildlife, plants and habitats in the face of accelerating climate change. The plan details specific steps the Service will take during the next 5 years to implement and identifies three key strategies to address climate change:

- Adaptation—Minimizing the impact of climate change on fish and wildlife through the application of cutting-edge science in managing species and habitats.
- Mitigation—Reducing levels of greenhouse gases in the Earth’s atmosphere.
- Engagement—Joining forces with others to seek solutions to the challenges and threats to fish and wildlife conservation posed by climate change.

Under this plan, the refuge will work to first understand how climate change might be affecting hydrology, habitats, and wildlife. The information yielded from baseline surveys and monitoring efforts will then be used to develop specific adaptation and mitigation strategies to minimize the impacts of a changing climate on refuge resources. As part of this process, the refuge will continue to evaluate results of plant and wildlife surveys every 5 years and may coordinate with the National Phenology Network to document potential changes related to climate change on the refuge and broader geographic scales.

### **Protecting Cultural Resources**

As a Federal land management agency, we are entrusted with protecting historic structures and archaeological sites on our land which are eligible for, or listed on, the National Register of Historic Places. Service archaeologists in the regional office keep an inventory of known sites and structures, and ensure that we consider them in planning new ground disturbing or structure altering changes on the refuge. This applies not only to refuge lands, but also on lands affected by refuge activities. We consult with the New York State Historic Preservation Office (SHPO) concerning projects which might affect sites and structures, and conduct archaeological or architectural surveys when needed. Projects can usually be redesigned to avoid affecting National Register eligible sites or structures.

Under this plan, we will conduct an evaluation of the potential for our projects to impact archaeological and historical resources as appropriate; we will continue to consult with the Service’s archaeologists and the respective SHPO. This will be especially important for those projects that include moving or displacing soil or removing buildings. A pre-project evaluation of activities will ensure we comply with section 106 of the National Historic Preservation Act. That compliance may require any or all of the following: a State Historic Preservation Records survey, literature review, or field survey.

### **Wildlife-dependent Recreation Program**

The overarching goal of the National Wildlife Refuge System’s wildlife-dependent recreation policy is to enhance wildlife-dependent recreation opportunities, and to provide access to quality visitor experiences, while managing refuges to conserve fish, wildlife, plants, and their habitats. The Refuge Improvement Act designated six priority public uses on national wildlife refuges. These are: hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation. Currently all six priority public uses are supported to some degree on the refuge.

Several criteria are provided to ensure quality, wildlife-dependent recreation on national wildlife refuges by the General Guidelines for Wildlife-Dependent Recreation, Service Manual, 605 FW 1 (USFWS 2011). As established in the Service Manual, quality, wildlife-dependent recreation:

- 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.
- 11) Uses visitor satisfaction to help to define and evaluate programs.

The USGS in collaboration with the Service periodically conducts visitor surveys for selected refuges nationwide. Between October 23 and November 6, 2010, with help from our volunteers, the refuge requested contact information from visitors. The USGS then contacted and interviewed participants. This process was repeated on the refuge in March and April 2011. The information collected will be presented in a report made available to the public. This effort allows for a better understanding of visitors' recreational, educational and informational experiences, and measures satisfaction with current services, access, and facilities. The refuge will use information obtained by the USGS visitor survey to help improve its public use programs.

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 problems in our nation's youth (Louv 2005). With local partners, we intend to promote connecting children and families with nature in all of our compatible recreational and educational programming.

### **Appropriateness and Compatibility Determinations**

Chapter 1 describes the requirements for determinations of appropriateness and compatibility. Appendix B includes appropriateness and compatibility determinations consistent with implementing this CCP. Some of these are already approved, while others were presented in the draft CCP/EA for review and comment. Appendix B of the final CCP includes all approved findings of appropriateness and compatibility determinations. These activities were evaluated based on whether or not they contribute to meeting or facilitating refuge purposes, goals, and objectives. As noted above, environmental education and interpretation, wildlife observation and photography, hunting, and fishing, are the priority wildlife-dependent uses of the Refuge System. According to Service Manual 605 FW 1 (USFWS 2011), those uses should receive preferential consideration in refuge planning and management before the refuge manager analyzes other recreational opportunities for appropriateness and compatibility.

### **Activities Not Allowed**

As specified in the Refuge Administration Act, we cannot, “initiate or permit a new use of a refuge or expand, renew, or extend an existing use of a refuge” unless we have determined that the use is compatible. In addition, certain uses are generally or specifically prohibited on refuges by Service regulation (see 50 C.F.R. §27 for details). Therefore, the refuge is closed to public uses except those specified in this plan. Upon request, the refuge manager determines in writing appropriateness and, if applicable, compatibility for nonpriority public uses. To date, Montezuma NWR has not needed to prepare any formal determinations of appropriateness where the public use was found not to be appropriate or compatible.

### **Activities Allowed**

In addition to the six priority public uses, we have determined that some other public uses are appropriate and compatible on refuge lands under certain conditions. Some of these are ongoing uses of the refuge, and are occurring under existing, completed findings of appropriateness and compatibility determinations (e.g., cooperative farming). Others are existing uses that we are proposing to modify somewhat (e.g., pedestrian access) or are new public uses (e.g., turkey hunting). Some nonpriority public uses will also continue to be authorized (e.g., vehicular traffic on the refuge, dog walking). These activities are discussed in more detail later in this chapter. Appendix B contains current versions (where a new or modified use is proposed) of the findings of appropriateness and compatibility determinations for public use activities authorized or proposed for authorization on the refuge.

### **Refuge Staffing and Administration**

Our proposals in this document do not constitute a commitment for funding or staffing increases. Congress determines our annual budgets, and our Washington Headquarters and regional offices distribute these funds to the individual Service offices and refuges.

### **Permanent Staffing and Operational Budgets**

Under this plan, 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 the CCP. Often, many highly visible projects are conducted through special project funds that typically have a 1- to 2-year duration. Although those funds are very important, their flexibility is limited because we cannot use them for any other priority projects 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.

We will seek to fill positions which we believe are necessary to accomplish our highest priority projects and are within the guidelines of the new base budget approach. The staffing requests will provide depth in our biological, visitor services and law enforcement programs (see appendix C for proposed staffing charts). We identify our recommended priority order for new staffing in the Refuge Operations Needs System (RONS) tables in appendix D.

### ***Facilities Construction and Maintenance***

Under this plan, we will continue to make incremental progress in constructing new, modest, high quality visitor services facilities, such as interpretive and informational signs and small contact stations (e.g., kiosks and pavilions). We have identified the need for additional directional signs both on and offsite.

### ***Refuge Operating Hours***

Under this plan we will continue to open the refuge for public use from one half-hour before official sunrise to one half-hour after sunset, 7 days a week, to ensure visitor safety and protect refuge resources. However, the refuge manager does have the authority to issue special use permits to allow non-Service visitors access outside those periods. For example, we may permit access for research personnel or hunters at different times, or organized groups to conduct nocturnal activities, such as wildlife observation and educational and interpretive programs.

### ***Protecting Resources and Ensuring Visitor Safety***

Currently the refuge does not have a law enforcement officer on staff. However, a Service Zone Officer and NYSDEC officers provide law enforcement support on the refuge; and the refuge provides a NYSDEC officer with office space. Under this plan, law enforcement support will continue to be provided in collaboration with our regional Zone Officer and the NYSDEC.

### ***Special Use Permits***

This plan will require the refuge manager to evaluate activities that require SUPs for their appropriateness and compatibility on a case-by-case basis. All commercial uses require SUPs.

### ***Conducting a Wilderness Review***

The Refuge System planning policy requires that we conduct a wilderness review during the CCP process. The first step is to inventory all refuge lands and waters the Service owns in fee title. Our inventory of this refuge determined that no areas meet the eligibility criteria for a wilderness study area as defined by the Wilderness Act. Therefore, we did not further analyze the refuge's suitability for wilderness designation. See appendix G for the results of the wilderness inventory. The refuge will undergo another wilderness review in 15 years as part of the next comprehensive conservation planning process.

### ***Cooperative Farming***

We will continue to use cooperative farming while we work to convert former and current agricultural lands into native habitats in support of the Service policy on Biological Integrity, Diversity and Environmental Health (601 FW 3; USFWS 2011). The use of cooperative farming, as an interim measure, will keep fields open in preparation for conversion to native plants and

will help keep these areas from being colonized by nonnative, invasive species. It has been an integral component of refuge habitat restoration and management.

As of 2010, the cooperative farming program included 367 acres. In lieu of paying rent for the use of refuge farm fields, the cooperator supports the accomplishment of our habitat management objectives by performing farming-related activities (e.g., disking, planting, mowing, and purchasing supplies) in support of our annual habitat management program and activities. The program will adhere to the general conditions for cooperative farming programs listed in the Refuge Manual (6 RM 4 Exhibit 1; USFWS 1989). In addition, participants in the refuge's cooperative farming program are not allowed to cultivate genetically modified crops on refuge lands.

Cooperators must have prior approval of the refuge manager before applying any pesticide, and they must supply the refuge manager at least 3 months before farming with: the common name of the pesticide, the EPA Registration Number, the application rate, the number of applications, method(s) of applications, application period, and target pests. At the time of application, cooperators must complete a pesticide spray record furnished by the refuge. Those records provide the refuge information on trace residues and improve pest control practices.

Under this plan, no refuge units are identified for inclusion in the cooperative farming program. We intend to phase out this program as we work toward full compliance with refuge system policies on biological integrity, diversity, and environmental health. However, as we acquire new lands or as we identify currently owned tracts for restoration, we likely will need to use the cooperative farming program as a strategy toward achieving our habitat restoration goals. As a result, we expect the conversion of cropland to native habitats to be a gradual process that may not be complete within 15 years of this plan's approval.

### **Monitoring and Enforcing Farmers Home Administration Interests**

From the late 1980s to the mid-1990s, the Farmers Home Administration (FmHA) acquired many properties throughout the country through foreclosure sales. Under the terms of a memorandum of understanding between FmHA and the Service, a review team consisting of their staff, our staff, staff from USDA Natural Resources Conservation Service, and staff from USDA Agricultural Stabilization and Conservation Service evaluated those properties for their conservation value. Based on those evaluations, and before reselling the properties, the FmHA placed permanent conservation easements on most of these properties to protect important habitats. FmHA retained full ownership in a smaller number of the properties. The responsibility for monitoring and enforcing those easements and managing the retained properties rests with the Service, which has usually delegated it to the manager of the closest refuge.

Montezuma NWR currently administers a variety of FmHA interests, including lands owned in fee and easements. Several buildings are located on these lands, including an office and shop area. There is also one staff member stationed there. One of these properties is located near oil and gas extraction activities. See section on Monitoring Oil and Gas Development for additional information.

Under this plan, the responsibility for administering these properties will remain with the refuge manager at Montezuma NWR for now. It is difficult to predict how much time and effort administering these interests will require in the future. Currently, most of these properties are visited by refuge staff opportunistically, in response to land owner calls. Refuge staff visit some properties with more active partnerships more often. If we were to begin sustained and systematic monitoring of those easements, rather than only the current opportunistic enforcement, the time commitment would be substantially greater than it has been to date. We do not anticipate having the staff available to monitor all of these interests on a regular basis.

We will implement the following strategies to meet our obligations on FmHA properties:

- Respond to reports of violations or possible violations as we learn of them. Work with landowners and partners to cooperatively resolve and remedy any violations. If necessary, work with the Northeast Region Solicitor's Office or Assistant U.S. Attorney's Office to ensure remediation and future compliance.
- We will continue to maintain existing partnerships and maintain existing staff and infrastructure on these parcels.

### **Monitoring Oil and Gas Development**

As discussed in chapter 2, there are several shale plays in the Northeast. The U.S. Energy Information Administration (EIA) estimates that the Northeast accounts for 63 percent of the technically recoverable shale gas reserves in the U.S. (EIA 2011). EIA (2012) projects that by 2035 almost 50 percent of the natural gas produced in the U.S. will come from shale plays. In comparison, only 23 percent of the natural gas produced in the U.S. came from shale plays in 2010 (EIA 2012).

Because of the ongoing demand for energy, advances in drilling, and substantial estimated oil and gas reserves in the area, we expect interest in oil and gas development in the area surrounding the refuge to increase over the next 5 to 15 years. The Service classifies oil and gas extraction as natural resource extractions, and these activities are governed by several laws, regulations, and policies. Except for Alaska, federally owned oil and gas rights on Refuge System lands are not available for leasing (43 CFR 3101.5-1) except where drainage occurs (43 CFR 3100.2). Drainage is defined as a process where petroleum resources in a geologic formation in land controlled by, in this case the Service, are depleted by the extraction of petroleum from the same formation by an operation located on adjacent land of another owner (43 CFR 3100.2).

In some instances others own oil and gas rights to Refuge System lands. In those cases, the owner of the oil and gas rights has the right to sell, lease, explore for, and remove those minerals subject to the terms by which that interest was acquired or reserved and to the State laws governing protection of the surface and the rights of the surface owner (43 CFR 3100.2). We work closely with these parties when they exercise these rights to minimize disturbance and damage to refuge resources.

At Montezuma NWR, the U.S. Government acquired interests in lands as early as 1937, so status of subsurface rights is not well known for all properties. A report from the U.S. General

Accounting Office (GAO 2003) made several recommendations on how the Service could better manage oil and gas activities on Refuge System lands. We considered those recommendations in developing the strategies listed below.

Strategies:

- Continue to monitor existing oil and gas extraction project near one FmHA easement where drainage is occurring.
- As recommended by a recent report (GAO 2003), review existing deeds and appropriate realty documents to determine subsurface mineral right status on current Montezuma NWR lands. If mineral rights are reserved on refuge lands, consider acquiring them from willing sellers.
- Keep abreast of NYSDEC's development of general regulations on natural gas extraction.
- Request to be involved in the permitting process for any projects proposed within a mile of the refuge lands or interests.
- Coordinate with the Service's NYES office on natural gas extraction issues that may affect refuge.
- Collect and use baseline data on water quality and refuge resources to assist in determining potential effects of resource extraction if needed.

### **Developing Refuge Step-down Plans**

Service planning policy identifies 25 step-down plans that may be applicable on any given refuge. We have identified several 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 CCP, but others will be completed under this plan and the associated level of funding and staffing will be provided to complete them.

We describe the most relevant step-down plans 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.

The following step-down plans have been prepared for the refuge:

- Annual Habitat Work Plan (AHWP), completed annually.
- Chronic Wasting Disease Surveillance and Contingency Plan, completed in 2005.
- Avian Influenza Surveillance and Contingency Plan, completed in 2007.
- Habitat Management Plan, completed in 2008.
- Fire Management Environmental Assessment (see appendix H).

The following step-down management plans are scheduled to be completed for the refuge after completion of the CCP:

- Inventory and Monitoring Plan, within 2 years of CCP approval.
- Safety Management Plan, updated within 1 year of CCP approval (completed in 2005).
- Visitor Services Management Plan, within 1 year of CCP approval.
- Law Enforcement Management Plan, within 5 years of CCP approval.

- Cultural Resources Management Plan, within 5 years of CCP approval.
- Integrated Pest Management Plan, within 5 years of CCP approval.

### ***Habitat Management Plan***

A HMP is a dynamic working document that provides refuge managers with a decision-making process, guidance for the management of refuge habitat, and consistency for habitat management on refuge lands. Each plan incorporates the role of refuge habitat in international, national, regional, tribal, state, ecosystem, and refuge goals and objectives; guides analysis of specific habitat management strategies to achieve habitat goals and objectives; and utilizes key data, scientific literature, expert opinion, and staff expertise. Specifically, the HMP defines management areas and treatment units, identifies the type or method of treatment, establishes the timing for management actions, and defines how we will measure success over the next 15 years. We used the biological goals in the HMP as a guide for developing the CCP goals. Additionally, many of the HMP objectives and strategies were used in the CCP. After a public comment and review period, the refuge finalized the HMP in 2008 (USFWS 2008b).

### ***Annual Habitat Work Plan***

The AHWP is an essential component of an adaptive management approach. Each year, we generate an AHWP that outlines specific management activities for that year. It details incremental tasks in support of goals and objectives and identifies habitat management strategies outlined in the CCP and HMP to be completed within the plan year. Typically, AHWPs evaluate progress toward achieving the habitat objective(s) from the present management strategies and prescriptions and provide an analysis of results. They also evaluate the response of the resources of concern as well as nontarget resources to the habitat management strategies and prescriptions. They provide an analysis of monitoring results identifying the positive and negative impacts of each prescribed strategy. The refuge uses this information to help select the management strategies with the most positive effect on refuge resources as a whole.

### ***Inventory and Monitoring Plan***

The IMP for the refuge is a priority for completion upon CCP approval and is vital for measuring our success in meeting the objectives. The IMP will outline methods 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 or to support landscape level monitoring. We will continue modifying existing protocols, adding new ones, and dropping old ones as necessary to inform adaptive management decisions and to address changing management priorities. As with all of our activities, the degree to which we can conduct monitoring and inventories depends on the availability of resources, including refuge funding and staff, and the contributions of partners and volunteers. Our IMP will also establish priorities for our inventory and monitoring efforts. 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.

### ***Visitor Services Plan***

Every national wildlife refuge is required to complete a visitor services step-down plan which will help focus visitor services efforts. It is a priority for completion upon CCP approval. Visitor

services plans encompass all aspects of visitor services on the refuge, including wildlife observation and photography, environmental interpretation, environmental education, hunting, fishing, outreach, and signage. The visitor services plan will identify themed messages and topics that will apply to all environmental education and interpretation programming. The plan will also identify strategies, and establish evaluation criteria for all visitor services. Careful planning will provide the visiting public with opportunities to enjoy and appreciate fish, wildlife, plants, and other refuge resources. As a result, the visiting public will develop an understanding and will build an appreciation of each individual's role in the environment today and into the future.

### **Distributing Refuge Revenue Sharing Payments**

As described in chapter 3, we have provided funding in the form of shared revenues to the towns of Tyre, Seneca Falls, Clyde, Galen, Savannah, and Montezuma. Those annual payments are calculated by formula determined by, and with funds appropriated by, Congress. Under this plan we will continue or discontinue 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 site-specific analysis and disclosure of their impacts, either in a categorical exclusion, EA, or EIS. Generally, those include the administrative actions listed in chapter 4. Most of the major actions in this CCP were fully analyzed in the draft CCP/EA and are described in enough detail to comply with NEPA, and will not require additional environmental analysis. Although this list is not all-inclusive, the following projects fall into that category:

- Inventory and Monitoring Plan.
- Controlling invasive plants.
- Implementing a predator or pest management program.
- Opening the Wildlife Drive to limited bicycle and pedestrian use.
- Construction of small kiosks, signs, photography blinds, and other small-scale visitor facilities.
- Enhancing our offsite priority public use program.

## **Refuge Goals, Objectives, and Strategies**

### **Habitat Management**

Emergent marsh management will remain the focus on the refuge, but we will take a more active approach to habitat restoration compared to the current management. We will focus efforts on improving existing emergent wetland habitat and restoring additional acres. The primary target for restoration will be formerly farmed mucklands; however, we will evaluate restoration projects to determine the most appropriate habitat to target for restoration based on soils, vegetation, surrounding habitats, and landscape scale needs. Therefore, we will restore grasslands, shrublands, and wetland and riparian forests where appropriate. More upland forest will be promoted through succession or planting native species. Additionally, grassland management will focus on creating larger patches with less edge, resulting in fewer grassland

units overall, but with higher quality habitat in the remaining units for focal species. Map 4.1 shows the target habitats under this plan, and table 4.5 shows current and projected acreages.

### **Inventories and Monitoring**

We will develop an IMP for the refuge that will include flexibility to modify, add, or remove protocols as needed to address changing information, priorities, and needs. In addition to continuing wildlife and plant surveys, the refuge will:

- Map and monitor additional invasive species populations and control efforts.
- Monitor vegetation in refuge impoundments per the Integrated Waterbird Monitoring and Management Program.
- Map the bathymetry of all the refuge impoundments that have not previously been mapped.
- Conduct breeding bird surveys in additional forested habitats.
- Monitor general habitat conditions in reforestation areas.
- Monitor vegetative response to management actions in refuge scrub/shrub habitats.
- Conduct American woodcock singing ground surveys on refuge.
- Monitor vegetative response to management actions in refuge grasslands.
- Map vernal pools.
- Conduct a reptile and amphibian inventory.
- Conduct small mammal surveys to assess species and population status.
- Work with the NYSDEC to ensure that the closest existing American woodcock singing ground survey routes are completed each year in support of the national survey coordinated by the Division of Migratory Birds.

### **Visitor Services**

Under this plan, opportunities for visitors to participate in priority public uses will increase. Added trails, viewing areas, and photography blinds will support additional opportunities for wildlife observation and photography (see map 4.2). In addition, the refuge will develop a formal, curriculum-based environmental education program. Environmental interpretation will be enhanced through construction of a new visitor contact station, updated interpretive displays, and associated services (e.g., more guided programs and lectures, additional roving naturalists, etc.). Hunting opportunities will be increased and enhanced (e.g., the refuge will be opened to new goose hunts and turkey hunting, and will provide more accessible sites; see maps 4.3, 4.4, and 4.5). Fishing opportunities will be increased by providing additional access to canal waters for anglers. Dog walking will be restricted to the refuge's headquarters area and Seneca Trail.

With expanded opportunities under this plan, we anticipate an increase in visitation. Table 4.3 shows estimated visitation growth for the next 15 years.

Table 4.3. Current and Future Estimated Visitation for Montezuma NWR.

<b>PRIORITY PUBLIC USE</b>	<b>CURRENT ESTIMATE</b>	<b>PROPOSED 15-YEAR GOAL</b>
<b>Visitor Contact Station Visits</b>		
Visitor Contact Station Visits	16,938	25,410
<b>Wildlife Observation and Photography</b>		
Wildlife Observation	63,000	94,000
Wildlife Photography	60,404	91,110
<b>Environmental Interpretation</b>		
Self-Guided Uses (Interpretive panels, Guide by Cell, refuge brochures)	Numbers currently captured in Observation and Photography and visitor contact station Visits counts	105,260 <i>(noted as a subset of Wildlife Observation and Photography and Visitor contact station Visits count, so that 50 percent of those visitors also participate in self-guided environmental interpretation; not double counted in total)</i>
Guided Interpretive Programs (talks, tours)	702	1,050
<b>Special Events</b>		
Special Events	1,040	2,000
<b>Hunting</b>		
Waterfowl Hunting	355	1,000 <sup>1</sup>
White-tailed Deer Hunting	1,897	2,500
Turkey Hunting	N/A	300
<b>Fishing</b>		
Fishing	3,937	4,570
<b>Environmental Education</b>		
Self-Guided Environmental Education	818	1,000
Staff-Guided Environmental Education	N/A	300
Partner-Guided Environmental Education	N/A	700
<b>Total Refuge Visitation and Participation</b>	<b>149,091</b>	<b>223,940</b>

<sup>1</sup> This number includes projected hunters participating in Canada and snow goose hunts.

### Refuge Administration

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 goal of this model was to quantify staffing and law enforcement resource needs. The model indicated that Montezuma NWR should have 14 permanent positions, including two law enforcement positions. Under this plan, we will increase the staff from the current eight permanent positions to 14 permanent positions by adding the following six positions: facilities manager, maintenance worker, wildlife

biologist, two law enforcement park rangers, and a student trainee (biology) (see appendix C for the proposed staffing chart).

Under this plan, we will also collocate the refuge staff and staff from the Service's NYES office on the refuge. New facilities will be needed to accommodate collocation, the increase in staff, and expanded visitor services opportunities. To meet these needs, we propose the following: 1) construct a new administrative building that will accommodate the NYES staff and refuge staff, and construct a stand-alone visitor contact station or expand the current visitor contact station; or 2) construct a combined administrative and visitor facility to accommodate staff and visitor service needs. This combined facility could be one or two stories, depending on site selection. The proposed facilities will provide adequate office space, as well as provide additional space for an enhanced visitor center and shop and storage space for heavy equipment (see objective 4.2 for proposed criteria and appendix J for standard conceptual design plans).

## **Objectives and Strategies to Meet Refuge Goals**

**Goal 1: Provide, enhance, and restore where possible, freshwater emergent marsh, open water wetland, and mudflat habitats to benefit native wildlife and plant communities, particularly migrating waterfowl, shorebirds, and breeding marshbirds.**

### ***Discussion***

The continued existence and management of the NYS Canal System is to maintain an artificially low water table, giving rise to the need to create and manage impoundments to provide freshwater emergent marsh, open water wetland, and mudflat habitats.

### ***Strategies***

Strategies that apply to all objectives under this goal include (see USFWS 2008a for additional details and maps):

- Restore up to 188 acres of emergent marsh, open water wetland, and mudflat habitat.
- Manage furbearers in marshes to minimize muskrat damage to dikes and to maintain water level management capabilities.
- Map the bathymetry of each impoundment not previously mapped to correlate water gage readings with actual water depths.
- Enhance at least 75 additional acres of the Dry Marsh (53 more acres than current management).
- Consider creating openings in other cattail monocultures (using Dry Marsh techniques).
- Compared to the refuge's current management, restore 132 additional acres of emergent marsh, open water wetland, and mudflat habitats.
- Work with the NYS Canal Corporation to learn when water levels will be altered to allow for more efficient management of refuge impoundments.
- Explore the feasibility of restoring hydrologic connectivity at Knox-Marsellus Marsh, Puddler Marsh, and the Stowell Property by connecting directly to the canal system.
- Explore the feasibility of improving connectivity of the Knox-Marsellus Marsh to the grassland habitat on its western edge.

### **Monitoring Elements**

- Continue to maintain records of proposed and actual water levels for each impoundment at least two times per month.

### **Objective 1.1 Emergent (Hemi) Marsh – Migrating Waterfowl (Dabbling Ducks, especially Pintail and American Black Duck)**

Over the life of the plan, annually provide a minimum of 2,000 acres of spring (March through April) and fall (September through November) waterfowl migration and staging habitat consisting of shallow flooded wetlands (less than 12 inches deep) with a target of at least 25 percent cover of annual and 25 percent cover of perennial vegetation dominated by native species with high waterfowl food value.

### **Rationale**

The refuge is one of the most important migratory stopover sites for waterfowl in the Northeast. Each year more than 700,000 waterfowl pass through the MWC, including over 500,000 Canada geese, 15,000 snow geese (*Chen caerulescens*), 100,000 mallards, and 25,000 black ducks (*Anas rubripes*) (Burger and Limer 2005). This objective will benefit waterfowl during spring and fall migration, especially dabbling ducks, including several species listed as priorities in the BCR 13 Plan (ACJV 2007) and the New York State CWCS (NYSDEC 2005a), such as American black duck, mallard, northern pintail, and wood duck.

Waterfowl require large amounts of carbohydrate-rich foods to aid them in their fall migration to wintering grounds. In addition, they need large amounts of energy to sustain them as cooler temperatures drain their energy reserves. Seed production in moist-soil units as a result of wetland drawdowns provides a readily available source of carbohydrates. These drawdowns are conducted in the spring to ensure the greatest amount of annual vegetation and highest species diversity will result. Typically, annual species need a minimum of a 60-day growing period to produce seeds. In advance of fall migration, wetlands that have been drawn down are reflooded in preparation for the arrival of waterfowl. Ideally, water levels are kept to 12 inches or less as this depth has been found to provide the best foraging habitat for most dabbling duck species. Dabbling ducks will forage on these areas until they continue their fall migration or until ice conditions force them to move to open water elsewhere.

Spring migrant waterfowl require large amounts of protein-rich foods to prepare them for the remainder of their northward migration. Invertebrate populations thrive on the residual annual vegetation resulting from the previous year's drawdown, and they emerge as soon as temperatures rise sufficiently to melt the ice. Additionally, this protein-rich diet is supplemented by carbohydrate-rich seeds produced by annual plants during previous years which are still available the following spring to northward migrating waterfowl.

Under this plan, of the total 4,444 current acres of marsh habitat, we will manage a minimum of 2,000 acres to provide emergent marsh habitat for migrating waterfowl. This is 500 more acres than the current management. As more resources become available for management (e.g., increased staff), the acreage of high quality emergent marsh habitat will increase. We will continue to provide this habitat, primarily to support migrating dabbling ducks, like the

American black duck. Under this plan, we will expand restoration efforts to increase the amount of suitable habitat for priority species.

The canal system is the source of much of the water that we use to manage impoundments. Therefore, we plan to work with the NYS Canal Corporation to gain a better understanding of the water level regime in the canal system, so that we can better plan our impoundment flooding and draining events.

### ***Strategies***

Strategies are the same as those listed under goal 1.

### ***Monitoring Elements***

- Maintain records of proposed and actual water levels for each impoundment at least two times per month.
- Conduct waterfowl surveys during spring and fall migration to determine bird response to management.
- Annually monitor the response of moist-soil vegetation.
- Continue to monitor purple loosestrife response to bio control.
- Support the Division of Migratory Birds by banding ducks as needed.
- Monitor and control carp, if necessary, in impoundments.
- Monitor the impacts of nonnative herbivores, such as resident population Canada geese and mute swans, on emergent marsh vegetation and control populations if necessary to protect habitat.

### ***Objective 1.2 Emergent Marsh – Breeding Marshbirds***

Over the life of the plan, annually provide a minimum of 2,000 acres of habitat for breeding marshbirds consisting of 50 percent well-interspersed emergent vegetation and 50 percent open water, stable water levels throughout the breeding season, and abundant nest substrates.

### ***Rationale***

Similar to the rationale described under objective 1.1, we will expand marsh restoration efforts to benefit breeding marshbirds, several of which are declining regionally.

The American bittern, black tern, pied-billed grebe, and least bittern are listed as priorities in the BCR 13 Plan (ACJV 2007) and are species of greatest conservation concern in the New York State CWCS (NYSDEC 2005a). The black tern is listed as endangered and pied-billed grebe and least bittern are listed as threatened in New York. The abundance of these three breeding species was included as an important criterion in designating the MWC as an Important Bird Area in New York.

Pied-billed grebes, least bitterns, and black terns generally nest in vegetation over deeper water (greater than 12 inches) adjacent to or near open water for foraging. Large patches of open water also provide habitat for a variety of diving ducks such as canvasback, greater scaup (*Aythya marila*), and lesser scaup (*Aythya affinis*), also listed as priorities in the BCR 13 Plan and the New York State CWCS. Large wetlands with substantial amounts of open water also provide

ideal roosting areas for migrating Canada geese. Geese on the refuge include birds from the Atlantic and Southern James Bay populations, which are ranked highest priority in the BCR 13 Plan. Other bird species, including bald eagle and osprey, also utilize open waters on the refuge, predominantly as foraging areas during the ice-free months.

Conversely, species such as American bittern and Virginia rail are usually associated with shallower water areas supporting a slightly more robust vegetation component with less open water. These species stand in water to forage, thus restricting them to areas where water levels are less than 4 inches deep. These habitats are generally found on the edges of the deeper areas described above.

### ***Strategies***

In addition to the strategies listed under goal 1 and objective 1.1, we will:

- Enhance up to 32 acres of the Dry Marsh.
- Restore up to 188 acres of emergent marsh, open water wetland, and mudflat habitat.
- Manage furbearers in marshes to minimize muskrat damage to dikes and to maintain water level management capabilities.
- Gradually draw down impoundments in the spring, to encourage vegetative growth on an as needed basis.
- Create openings or hemi-marsh conditions, where needed.
- Postpone summer drawdowns until after marshbirds have fledged if they are breeding in an impoundment.
- Provide tern nesting platforms when needed.
- Drain impoundments in the spring on a rotation with a long enough interval between drawdowns to provide open water habitat.
- Manage furbearers in marshes to provide an appropriate mix of vegetation and open water and to ensure adequate muskrat houses for marshbird nest sites.
- Provide 500 additional acres of habitat for breeding marshbirds.

### ***Monitoring Elements***

In addition to the monitoring elements listed under goal 1 and objective 1.1, we will continue to:

- Maintain records of proposed and actual water levels for each impoundment at least two times per month.
- Annually monitor moist-soil vegetation response.
- Conduct breeding marshbird callback surveys to determine bird response to management.
- Conduct black tern nesting colony surveys annually.

### ***Objective 1.3 Shallow Water Mudflats – Migrating Shorebirds***

Over the life of the plan, provide a minimum of 100 acres of shallow water wetlands (less than 4 inches deep) and mudflats with sparse (less than 15 percent) vegetation from April through November to benefit migrating shorebirds.

### ***Rationale***

Inland shorebirds utilize shallow water mudflats on the refuge during migration. Under this plan, our management efforts will continue to support this group of birds, many of which are declining across the region. We will work to increase the suitability and availability of this habitat, potentially allowing a greater number of shorebirds to utilize the refuge.

Most shorebirds using the Great Lakes region are long-distance migrants that require stopover sites to replenish their fat reserves and meet the high energy demands of migration. These staging areas require shallow water and/or mudflat habitats with sparse vegetation, undisturbed roosting areas, and abundant invertebrate food resources. In this region, these conditions can occur in various habitats including natural and managed wetlands, lakeshore, sand and gravel bars, reservoirs, and flooded agricultural fields.

Variable climatic conditions common to inland areas make natural or unmanaged shorebird habitat unpredictable compared to coastal regions. Precipitation and hydrology patterns are highly variable from year to year and in different locations. In addition, loss of wetlands because of urban development, hydrological disturbance, and agriculture has reduced the amount of habitat in the region. With the ability to manage water levels, despite these unpredictable conditions, the refuge can contribute significantly to providing habitat for migrating shorebirds.

Fifteen shorebird species that are of conservation concern in the Upper Mississippi Valley/Great Lakes Shorebird Plan pass through the refuge each year. The populations of these species are known or believed to be small or declining, and they are experiencing other known or potential threats (de Szalay et al. 2000). Because the refuge supports a variety of migrating shorebirds and the southbound migration is protracted with adults leaving their breeding grounds first followed later by juveniles, ideal habitat needs to be provided for almost 8 months per year. With the ability to manage water levels, the refuge can contribute to providing mudflats and shallow water through this entire timeframe.

### ***Strategies***

In addition to the strategies listed under goal 1, we will:

- Flood units for at least 30 days prior to ice up.
- Flood units for at least 30 days prior to usual shorebird arrival date.
- Not keep impoundments flooded for more than 4 continuous months prior to shorebird migration.
- Improve habitat quality by grading approximately 8 acres.
- Assess the feasibility of restoring additional shorebird habitat.
- Conduct gradual spring drawdowns to expose mudflats during the spring shorebird migration.
- Maintain high water until mid-summer to stunt vegetative growth, then slowly draw down the impoundment to expose mudflats in time for fall migration.
- Stagger the drawdown schedule of different impoundments through the spring and fall migrations, to expose mudflats through the entire migration periods.
- Shallowly disk dry vegetated units in summer prior to flooding.

- Control invasive plants prior to disking units.

### ***Monitoring Elements***

In addition to the monitoring elements listed under goal 1, we will:

- Annually monitor habitat conditions in response to management.
- Conduct shorebird surveys during spring and fall migration to determine response to management.

## **Goal 2: Restore and maintain forested wetlands, riparian forests along the Seneca and Clyde Rivers, and upland forests to benefit priority native species, including songbirds, bats, and important plant communities.**

### ***Discussion***

Under this plan the refuge will increase efforts to reduce fragmentation of forested habitats. It also aims to increase efforts to reduce the negative impacts caused by overabundant deer. Although deer are native and provide many benefits, they can cause damage to forests at high densities due to their browsing habits (Rawinski 2008). It is particularly important to maintain appropriate numbers of deer in reforestation areas, as high numbers of this species can seriously impact reforestation efforts by browsing on naturally occurring and planted seedlings and saplings. The refuge is currently working with the U.S. Forest Service to study the effects of deer on forested habitats and with the NYSDEC to estimate the density of deer in the vicinity of the refuge. Under this plan, the refuge will work with the NYSDEC to maintain the herd within carrying capacity. The NYSDEC Deer Management Assistance Program (DMAP) is one such tool available to eligible landowners and managers. DMAP permits, issued by NYSDEC, enable the taking of additional antlerless deer, a strategy which has been shown to be an important component of a deer management program by controlling targeted populations. Further details about this program can be obtained at NYSDEC's Web site: <http://www.dec.ny.gov/animals/33973.html>.

### ***Strategies***

The following strategies apply to all objectives under this goal:

- Plant only tree species for which the refuge is in the middle or northern edge of their range to mitigate the impacts of climate change.
- Promote the reforestation of artificial forest openings, areas surrounding forest peninsulas, gaps between isolated forest tracks, and riparian corridors to create more forest interior for area-sensitive species.
- Rely on natural tree fall gaps within mature forests to create a multilayered forest structure with dead and down woody debris.
- Implement recovery efforts, in cooperation with the Service's New York Ecological Services (NYES) office and the NYSDEC, for the Indiana bat and other bat species occurring on the refuge.

- Rely on natural tree fall gaps within mature forests to increase sun exposure for potential roost trees for bats.
- Reduce the impact of deer herbivory by working with the NYSDEC DMAP.
- Within 5 years of plan approval, work with partners to determine the need for bat houses on the refuge and install where appropriate if deemed worthwhile.
- Plant other species of native trees adjacent to ash trees in existing forest units to mitigate the impacts of the emerald ash borer (*Agrilus planipennis*).
- Evaluate options for forest management in light of new invasive species such as the emerald ash borer and the Asian longhorned beetle (*Anoplophora glabripennis*).

### ***Monitoring Elements***

The following monitoring elements apply to all objectives under this goal:

- Conduct forest health assessments including number of snags and cavities to determine if silvicultural prescriptions are needed.
- Monitor tree survival in reforestation areas.
- Monitor deer herbivory impacts.
- Monitor for the presence of the emerald ash borer.
- Conduct acoustic bat surveys.
- Monitor deer populations.
- Monitor general habitat conditions in reforestation areas.
- Identify and map vernal pools.
- Inventory reptiles and amphibians.
- Conduct breeding bird surveys in forested tracts in addition to Unit 17 and the Main Pool Forest.

### ***Objective 2.1 Forested Wetlands – Cerulean Warbler, Wood Thrush, Wood Duck, Bats***

Over the life of the plan, maintain and restore, as necessary, a minimum of 1,941 acres of mature forested wetlands and areas converting to mature bottomland floodplain forest dominated by native species to provide foraging and breeding habitat for migratory songbirds, cavity nesting waterfowl, amphibians, and bats.

### ***Rationale***

Under this plan we propose to improve the habitat quality of Unit 17 (on the southern end of the refuge, see map 3.5), the largest forested wetland tract on the refuge, possibly by breaching or removing parts of the surrounding dike system. This impounded forest is likely to benefit from a more natural hydrological regime that allows the soils to dry more frequently and for longer periods than is currently occurring. The feasibility of this approach will be examined.

The species composition within all the forested wetland tracts on the refuge is poised to be highly altered by the approaching emerald ash borer, a nonnative invasive insect that causes 100 percent mortality in ash trees. Green ash is codominant with red and silver maple in refuge bottomland floodplain forests. Black ash also is common in these areas. The refuge will plant other native tree species in the affected units to mitigate this loss (USDA 2010).

### **Strategies**

In addition to the strategies listed under goal 2, within 5 years we will:

- Allow approximately 30 acres of existing shrublands to naturally convert to bottomland floodplain forest.
- Stop flooding the interior of Unit 17 East and Unit 17 West during the growing season.
- Keep the ditches surrounding Unit 17 East and Unit 17 West flooded.
- Rely on natural tree cavities for nest sites for wood ducks and other cavity nesters.
- Evaluate which newly acquired mucklands could be restored to bottomland hardwood forest.
- Control invasive plants and plant native trees and shrubs to reforest the mowed-grass dike separating Unit 17 East and Unit 17 West.
- Reduce the impact of deer herbivory on forested habitats by working with DMAP to obtain additional antlerless deer tags and then possibly requiring hunters to take an antlerless deer prior to an antlered deer.

In addition to the strategies listed above, within 10 years we will:

- Study the feasibility of draining and reforesting North and South Spring Pools.
- Study the desirability of breaching the dikes in Unit 17 and do it if it will improve habitat conditions or minimize needed management.
- Allow succession to occur or plant native trees to restore an additional 227 acres of floodplain forest, compared to the current management.

### **Monitoring Elements**

Same as those listed under goal 2.

### **Objective 2.2 Riparian Forest Corridor – Cerulean Warbler, Bald Eagle, Bats**

Over the life of the plan, maintain and restore, as necessary, up to 1,197 acres of riparian forest corridor (at least 490 feet wide) along the Seneca and Clyde Rivers. These areas will be dominated by native species to achieve connectivity of forested habitats, to protect the water quality of the rivers, and to provide foraging and breeding habitat for migratory songbirds, cavity nesting waterfowl, bald eagles, amphibians, and bats.

### **Rationale**

Under this plan the refuge will increase efforts to reduce fragmentation of this habitat and will protect and restore additional acres to benefit species that use this habitat.

Although riparian habitats generally occupy small areas on the landscape, they are often more diverse and have more plants and animals than adjacent upland areas. Riparian areas help control nonpoint source pollution by holding and using nutrients and reducing sedimentation, supply food, cover, and water for many species, and serve as migration routes and stopping points between habitats for a variety of wildlife. Riparian vegetation shades streams to optimize light and temperature conditions for aquatic plants, fish, and other animals.

Water levels within the NYS Canal System are the result of timed water releases managed by the NYS Canal Corporation. Despite these hydrological alterations and numerous habitat disturbances resulting from the NYS Canal System, the New York Natural Heritage Program designated the Seneca River Montezuma Floodplain Forest a significant natural community. This forest extends 12 miles from the Howland's Island Unit of Northern Montezuma Wildlife Management Area south through the refuge to the north end of Cayuga Lake. This floodplain forest is considered significant mainly due to its extensive range. Patches in the refuge occur between the Clyde River and Erie Canal, and along the Seneca River. Despite being discontinuous, this floodplain forest remains one of the largest examples of floodplain forests in the State.

Refuge staff is currently working to reforest areas along the Clyde and Seneca Rivers. Increased connectivity between forested tracts will benefit a host of species, particularly those that prefer forest interiors. This objective could benefit the wood turtle, a species of greatest conservation need in New York that relies on healthy riparian habitats. It will also benefit the bald eagle, a threatened species in the State that breeds in trees and artificial structures adjacent to waterways where they forage for fish.

### ***Strategies***

In addition to the strategies listed under goal 2, we will:

- Restore approximately 44 acres of riparian forest, including the Seneca Trail area, by planting native tree and shrub saplings and seedlings and by direct seeding of native plants, including woody and herbaceous species.
- Rely on natural tree cavities for nest sites for wood ducks and other cavity nesters.
- Limit visitor access near bald eagle nests during the nesting season to minimize disturbance.
- Restore and maintain at least 120 additional acres of riparian forest compared to the current management.
- Control reed canary grass and plant native species to promote succession along riparian corridors.

### ***Monitoring Elements***

All of the monitoring elements that apply to this objective are listed under goal 2.

### ***Objective 2.3 Mature Upland Forest – Cerulean Warbler, Wood Thrush, Bats***

Over the life of the plan, promote the succession of native upland plant communities to mature forest on at least 507 acres to benefit migratory breeding birds including wood thrush and cerulean warbler.

### ***Rationale***

Although mature upland forest comprises a small component of the refuge (given the refuge's low-lying characteristics), it is nonetheless important to several priority species. Under this plan we will choose tracts to maintain as forest or to reforest based on their proximity to other forested tracts (e.g., forested wetlands and forests in other ownership) to reduce fragmentation of the landscape, provide travel corridors, and benefit interior, forest-dwelling species.

### ***Strategies***

Strategies will be the same as those listed under goal 2, except we will:

- Use a combination of natural succession and active restoration to increase mature upland forest on the refuge by 264 acres compared to current habitats.
- Maintain approximately 28 acres as shrubland rather than allowing them to convert to upland forest because these areas are adjacent to croplands and early successional habitat.

### ***Monitoring Elements***

In addition to the elements listed under goal 2, we will:

- Monitor vegetation for negative impacts caused by excessive deer herbivory.

## **Goal 3: Manage grassland and shrubland habitats primarily to benefit bird species of conservation concern.**

### ***Objective 3.1 Shrublands – Shrubland Birds and Migrating Songbirds***

Over the life of the plan, provide a minimum of 396 acres of shrubland habitat dominated by native species consisting of an equal mix of shrubs and herbaceous vegetation with or without scattered trees to provide breeding habitat for shrubland-dependent birds, and to provide food sources for migrating songbirds.

### ***Rationale***

The refuge will focus shrubland habitat management on units where this early successional habitat type does not cause increased fragmentation of the landscape. Shrubland units that are currently surrounded by forest will be reforested (e.g., the Esker Thicket). Units with a lot of edge due to surrounding land uses will be maintained as shrublands. Maintaining some shrubland habitat will benefit species that depend on this habitat type. However, as described in chapter 1, much of the landscape around Montezuma NWR was once late successional forest. Currently this area is dominated by agricultural lands interspersed with wetlands and forest fragments. Consolidating shrubland habitat and reforesting shrubland patches within or adjacent to existing forested areas will decrease habitat fragmentation in forested areas of the refuge, while still maintaining foraging habitat for migrating songbirds and supporting shrubland-dependent species.

A range of habitat types are included under shrubland habitat ranging from brushy old field conditions to regenerating forests to more naturally maintained, relatively stable shrublands associated with wetlands. Refuge shrublands support the following high priority bird species in the BCR 13 Plan: blue-winged warbler, American woodcock, brown thrasher, and field sparrow. Managing small areas (less than 20 acres) of shrubland habitat can be effective for many shrubland-dependent birds. A habitat generalist, the blue-winged warbler uses a variety of successional habitats, including woodland clearings, forest edges, and old fields (Dunn and Garrett 1997).

Breeding brown thrashers prefer dense woody vegetation associated with shrub thickets, hedgerows, forest edges, or mid-successional forests (Cade 1986). Field sparrows prefer woody edges and dry to slightly mesic, moderately tall grasslands with moderately abundant litter and a shrub component. Optimal habitat characteristics includes areas greater than 5 acres containing dense, moderately tall grass, low to moderate shrub density with 50 to 75 percent of shrubs less than 5 feet tall, and shrub cover between 15 to 35 percent (Sousa 1983).

Typically, shrublands represent a successional stage that is transforming to forest. Without active management, larger trees will begin to dominate, and forest with a more open understory will develop. For shrubland to be maintained, succession needs to be “set back,” by mechanical or chemical means. By staggering treatments of shrublands between units, the refuge will provide a mosaic of this habitat in different stages of succession, increasing spatial heterogeneity and providing a range of microhabitats that can be utilized by a diversity of species. Even smaller patches of shrub habitat can be valuable since shrub dependent birds are not typically sensitive to habitat patch size and many will use small patches of shrub habitat (Watts 2000).

Actual amount of shrubland habitat on the refuge will likely be greater than the 396 acres we intend to actively manage. Patches of early successional habitat already exist and will continue to be present within existing forests. These canopy gaps have not been mapped or included in the target acreage for shrublands. Some of these open areas resulted from natural disturbance (e.g., beaver activity), some are human-related (e.g., maintenance of a powerline right of way). Indeed, the following species of conservation concern that use early successional habitats were detected during breeding bird surveys in two forested units on the refuge (Unit 17 and the Main Pool Forest Unit) from 2007 to 2011: American woodcock, Baltimore oriole, northern flicker, song sparrow, and willow flycatcher. Unfortunately, we are poised to lose great chunks of our forest canopy over the course of the next 15 years as a result of the emerald ash borer. The U.S. Forest Service identified white ash as a dominant tree in four of the ten forest stands surveyed on the refuge for a Forest Health Assessment in 2010. The legacy of the emerald ash borer will be to create significant gaps in the forest canopy leading to considerable patches of early successional habitat within forested habitats not only on the refuge but statewide. In New York State, there are approximately 900 million ash trees, and 10 percent of the trees in New York’s hardwood forests are ash. As these trees die, forest gaps and early successional habitats will increase throughout the state. These should benefit not only species that require early successional habitats but also the postbreeding success of forest interior species. The management challenge will be to promote native vegetation in these areas so they do not become dominated by nonnative, invasive species.

### ***Strategies***

To accomplish objective 3.1, we will:

- Brush hog every 5 years.
- Use selective herbicide application to maintain shrubland habitats with vegetative cover that has about equal abundance of herbs and patches of shrubs.
- Within 5 years of CCP approval consolidate shrubland habitat by converting approximately 57 acres of grasslands to shrublands by planting native shrubs.
- Use prescribed fire to maintain shrubland habitats.

### ***Monitoring Elements***

To accomplish objective 3.1, we will:

- Conduct American woodcock singing ground surveys.
- Conduct breeding bird and vegetation surveys in refuge shrublands.

### ***Objective 3.2 Grasslands – Grassland Dependent Birds, especially short-eared owl and bobolink***

Over the life of the plan, continue to maintain a minimum of 287 acres of grassland habitat in patches greater than 50 acres primarily for grassland obligate nesting birds and wintering raptors (especially short-eared owl).

#### ***Rationale***

Under this plan grasslands will be reduced in acreage. The units that will no longer be managed for grassland habitat are poor quality and have not had many grassland obligate species using them. During breeding bird surveys from 2008 through 2010, the only grassland obligate breeding birds detected were two savannah sparrows and one bobolink in 2009, one savannah sparrow in 2008, and one savannah sparrow in 2010 (USFWS undated). Because grassland habitat takes more resources to maintain and larger patches of grassland habitat are more valuable to wildlife than smaller patches, we will focus habitat management on larger, higher quality patches of grassland habitat. Smaller patches will be enhanced to become shrubland or mature forest, depending on site characteristics.

One of the primary goals of the grassland management program is to manage larger units adjacent to or surrounded by open habitats as grasslands, thereby reducing habitat fragmentation. Fragmented natural communities are subjected to high rates of invasion by nonnative and invasive species, changes in microclimate, and other factors that result in further degradation (Lindenmayer and Fischer 2006). These consequences of fragmentation can be classified as “edge effects.” Though beneficial to some species, pronounced edges can be detrimental to others, and the intensity and severity of edge effects tend to be inversely related to the ratio of the area compared to its perimeter or “edge” (Soule 1986). This means that smaller habitat fragments have proportionally more edges.

Populations of grassland birds are declining as their habitats are converted to agricultural, residential, and other urban uses. Norment (2002) identifies a need to approach grassland bird conservation in the Northeast with, “particular wisdom and care.” He notes that despite the relatively recent (last 200 years) rise and fall of grassland habitats and associated birds in the Northeast, the region may still be important for these species given their continental decline and habitat loss in the core of their ranges in the Midwest.

Refuge grasslands provide breeding habitat for songbirds and wintering habitat for raptors. The short-eared owl depends on grasslands in winter for foraging and roosting and is endangered in New York State, a species of medium concern in BCR 13, and included in the Service’s Region 5 and national lists of birds of conservation concern. The northern harrier is threatened in New York State and is a species of medium concern in BCR 13; this bird not only forages over grasslands in winter but also relies on grasslands (and emergent marsh) for breeding.

Based on Statewide land cover data and the relative abundance of breeding grassland birds relative to other parts of the State, the refuge was identified as a grassland focus area by Audubon New York (Morgan and Burger 2008). They went on to prioritize the following “focus area target species:” vesper sparrow, grasshopper sparrow, horned lark, savannah sparrow, and wintering short-eared owl. Savannah sparrows are common on the refuge, not listed in other conservation plans, and not addressed in this plan but will benefit from habitat management actions that benefit other grassland obligate breeding birds. Horned larks breed in drained impoundments and are not addressed in this CCP.

Refuge grasslands have the potential to support a number of grassland obligate nesting birds of conservation concern including bobolink and Eastern meadowlark, both medium priority species in the BCR 13 Plan (ACJV 2007) and listed in the New York State CWCS (NYSDEC 2005a); sedge wren, a threatened species in New York, and vesper sparrow, a species of special concern in the State. Table 4.4 shows habitat requirements of grassland obligate nesting birds that are likely to breed on the refuge (Morgan and Burger 2008).

Table 4.4. Habitat Requirements of Grassland Obligate Breeding Birds of Conservation Concern Likely to Breed on the Refuge.

Species	Field Size	Shrub Tolerance	Forb Component	Litter Depth	Vegetation Height
Northern harrier	≥ 75 acres	1 to 5 percent cover	10 percent cover	No preference	≥ 23.5 inches
Bobolink	≥ 25 acres	< 1 percent cover	50 percent cover	1 to 1.5 inches	12 to 16 inches
Eastern meadowlark	≥ 40 acres	2 to 3 percent cover	20-30 percent cover	1 to 2.5 inches	8 to 16 inches
Sedge wren	≥ 25 acres	3 to 8 percent cover	≤ 10 percent cover	0.5 to 1.5 inches	≥ 31.5 inches
Vesper sparrow	≥ 25 acres	< 1 percent cover	<u>High when overall vegetation density is low.</u>	≤ 0.5 inches	≤ 8 inches

Refuge grasslands are a mix of managed warm and cool season fields. Big bluestem, switchgrass, and goldenrod dominate the warm season grasslands. Timothy grass, smooth brome, bluegrass (*Poa* spp.), and reed canary grass are common in cool season grasslands. Canada thistle is a problem in all refuge grasslands. Grasslands are currently managed using a combination of mowing, chemical spraying, haying, and prescribed burns. The objectives of this management are to control unwanted vegetation and woody growth and to maintain nesting and wintering habitat for a diversity of priority grassland birds. Refuge grassland units range in size from 55 to 136 acres.

### Strategies

To accomplish objective 3.2, we will:

- Manage grasslands to provide larger areas of habitat with minimal edge, less surrounding forest, and more surrounding open habitats (e.g., old fields and emergent wetlands). This includes converting up to 47 acres of shrubland to grassland to create larger, contiguous grassland patches.

- Maintain cool season grassland areas by mowing or haying in the late summer, provided that no nesting grassland-dependent birds are detected in the target field during a July survey, or absent a July survey, between August 15 and October 15.
- Control goldenrod by mowing when it is in the bud stage.
- Use prescribed fire in the spring to encourage the growth of warm season grasses where warm season grasses and goldenrod are sparse.
- Remove hedgerows and small patches of trees to increase connectivity of open habitats.
- Evaluate growing season management options such as mowing, haying, or burning for approximately 110 acres of shrub and grasslands to reduce warm season grass cover and increase species and structural diversity.
- Remove hedgerows, shrubs, and trees among grassland patches to create larger, contiguous grassland habitat (see USFWS 2008b for details).
- Begin a summer haying program, as needed, to reduce the density of warm season grasses and goldenrod.

### *Monitoring Elements*

To accomplish objective 3.2, we will:

- Monitor grassland units for vegetative response to management actions.
- Study small mammals in grasslands in winter to determine composition and relative abundance of prey species for wintering raptors.

**Goal 4: Ensure visitors of all abilities and varied interests participate in and enjoy the refuge’s opportunities for wildlife observation, interpretation, photography, and environmental education. Motivate them to value, support, and contribute to the refuge, Montezuma Wetlands Complex, and National Wildlife Refuge System. Increase their understanding of wetlands and wetland functions, and help them become better environmental stewards.**

### *Monitoring Elements Common to All Goal 4 Objectives*

Strategies listed will be entered into the refuge’s Refuge Annual Performance Plan (RAPP), according to the listed yearly measures (within 1 year, within 10 years, etc.). Refuge staff is held accountable for progress and completion of projects listed in RAPP each year. Listing in RAPP prioritizes these projects above others that may present themselves at a later date.

### **Objective 4.1 Wildlife Observation and Photography**

Over the life of the plan, provide at least 10 additional opportunities for wildlife observation and photography.

### *Rationale*

Wildlife observation and photography are two of the six priority public uses required by the Refuge Improvement Act to receive enhanced consideration on refuges. The refuge provides opportunities to view and photograph wildlife in natural settings at nature trails and overlooks (map 4.2). The refuge has historically been a popular birding site and has been recognized as an Important Bird Area by the National Audubon Society. It is a stopover point for migratory

waterfowl and attracts hundreds of thousands of birds during migration. The refuge's diverse habitat also attracts songbirds, shorebirds, raptors, marshbirds, reptiles, amphibians, and mammals.

The 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation indicates that over 3.8 million people participated in wildlife-watching activities in the State of New York during 2006 and spent more than \$1.5 billion on activities and equipment related to wildlife watching (USFWS 2006). Providing a high quality wildlife observation and photography on the Refuge promotes visitor appreciation and support for refuge programs, while also benefitting the local economy.

Under this plan, opportunities for wildlife observation and photography will be increased, as outlined in the strategies below. Connecting the Wildlife Drive with the MAC will increase visitation and exposure to both sites and give the public a greater sense that these two entities are part of a larger complex. Likewise, potential future trails that connect the refuge to area trails will help develop a greater understanding and appreciation for the recreational and conservation value that the region has to offer, and will provide more opportunities to experience upland habitats at a closer range. We also plan to open the Wildlife Drive seasonally to bicycles, which will allow a larger audience to experience the refuge.

Because much of the refuge consists of inaccessible wetlands and sensitive areas (i.e., used by easily disturbed foraging and resting migratory waterfowl), opportunities for wildlife observation and photography will be increased through the addition of an observation tower, discovery areas, photography blinds, pulloffs, etc. All these improvements will increase viewing from the edges of habitats.

We are always striving to find new ways to connect people with nature. To that end, under this plan, we propose to develop discovery areas. These are designated areas on the refuge, most likely adjacent to existing trails, where visitors are allowed to go off trail to freely explore nature. In some areas, seasonal restrictions may be necessary to protect natural resources or visitor safety, and will be at the refuge manager's discretion.

We will also work to better orient, inform, and guide the visiting public, and help create a more fulfilling wildlife observation and photography experience through a variety of means, including additional roving naturalists, trailheads, updated orientation information, etc.

### ***Strategies***

We will continue to:

- Maintain current visitor facilities such as observation towers, trails, the Wildlife Drive, observation areas, and photography blinds.
- Maintain special structures like martin condos, bluebird boxes, and osprey nesting platforms.
- Maintain wildflower and native plant gardens.
- Support Friends' photography contest and calendar.

- Staff the visitor contact station daily from the middle of March through November (weekends: 10 a.m. to 4 p.m., weekdays: 10 a.m. to 3 p.m.).
- Provide roving refuge naturalist program (currently two volunteers).
- Seasonally update the refuge's 1610 AM radio message to reflect current refuge conditions and seasons.
- Maintain and update the refuge's Web site to reflect current refuge conditions and happenings.
- Develop and promote a Family Nature Club at the refuge.

Within 1 to 5 years we will:

- Extend the visitor contact station hours to 10 a.m. to 6 p.m., 7 days a week, from mid-March through November.
- Repair the existing photography blind, located off of the Wildlife Drive.
- Work with the established Friends photography club to increase use by photographers, and enlist members as volunteers.
- Enlist local photographers to adopt refuge photography blind sites within 1 year of plan approval, and as new sites are developed.
- Every 1 to 3 years after approval of this plan, evaluate refuge orientation information (Web site, maps, brochures, signage) to ensure clarity/readability, accuracy of information, and that FWS standards are met.
- Create trailhead areas at all refuge trail locations.
- Expand the proposed Oxbow Trail.
- Build an observation area or tower at the Dry Marsh restoration site.
- Develop two discovery areas: one along the southwest corner of the refuge north of 5 and 20 and the other to be determined.
- Develop a second photography blind site.
- Develop at least two new wildlife observation trails.

Within 7 to 10 years we will:

- Develop products and programs to better orient visitors to the Knox-Marsellus Marsh.
- Explore connecting with Cayuga-Seneca and Erie Canalway trails.
- Construct up to four new pulloffs for observation and photography opportunities.
- Extend Wildlife Drive to connect to MAC.

Over the life of the plan we will:

- Continue to maintain and update the refuge's Web site to reflect current refuge conditions and happenings.
- Train in-house staff to maintain the Web site and increase content.
- Upon plan approval, open the Wildlife Drive to bicycles and pedestrian use in the summer.
- Expand the roving refuge naturalist program (to an additional 4 to 5 volunteers) and time schedule.

- Provide updates to the refuge's 1610 AM radio message to reflect current refuge conditions, seasons, and special events, and increase local radio station signs. Current updates should occur seasonally (April, July, September/October, December).

### **Objective 4.2 Environmental Education**

Within 5 years, develop an Environmental Education Program that meets New York State learning standards for grades pre-kindergarten through grade 12.

#### ***Rationale***

Environmental Education is one of the six priority public uses required by the Refuge Improvement Act to receive enhanced consideration on refuges. Due to our small staff and available funding we look to partnerships to provide quality environmental education programs. Two environmental education centers exist within 20 miles of the refuge (Montezuma Audubon Center and Seneca Meadows Environmental Education Center); we will continue to work with these partners toward quality environmental education programs.

Local schools are incorporating wildlife and wetland topics into their curriculums to meet science-based standards of learning and help students understand scientific concepts, principles and theories pertaining to their physical setting and living environment. The refuge can provide educational materials as well as an outdoor laboratory to augment the teachers' existing curriculum and tie into NYS learning standards.

Providing high quality environmental education on the refuge promotes visitor appreciation and support for refuge programs. The Refuge System's guiding principles for environmental education programs are detailed in the Service Manual (605 FW 6; USFWS 2011) and include:

- Teach awareness, understanding, and appreciation of our natural and cultural resources and conservation history.
- Allow program participants to demonstrate learning through refuge-specific stewardship tasks and projects that they can carry over into their everyday lives.
- Establish partnerships to support environmental education both onsite and offsite.
- Support local, state, and National education standards through environmental education on refuges.
- Assist refuge staff, volunteers, and other partners in obtaining the knowledge, skills, and abilities to support environmental education.
- Provide appropriate materials, equipment, facilities, and study locations to support environmental education.
- Give refuges a way to serve as role models in the community for environmental stewardship.
- Minimize conflicts with visitors participating in other compatible wildlife-dependent recreation activities.

Under this plan, opportunities for environmental education will be increased based on increasing demand for guided environmental education programs and on Service Policy 605 FW 1 (USFWS 2011). We will develop a formal, curriculum-based environmental education program that meets

Federal and New York State education standards. Each course of study will include, at a minimum, a plan of instruction that details what students need to know, how they will learn it, what the instructor’s role is, and the context in which the teaching and learning take place. We will further facilitate and support environmental education on the refuge by building a new visitor contact station (which is currently too small to adequately support environmental education and other programs) and expand environmental education partnerships.

**Strategies**

Over the life of this plan we will:

- Construct a new stand-alone visitor contact station or combined administrative and visitor facility (see appendix J for standard conceptual design plans). The new facility will include a classroom and conference room, a multipurpose room, a kitchen, enhanced visitor center shop, and added storage space for heavy equipment. At this time, the location and exact nature of the necessary facilities have not been determined and funding has not been identified. Under this plan, site selection will be based on the following criteria (if applicable):
  - Sufficient buildable area
  - Sufficient wetland buffers
  - Access or ability to create access to suitable water and sewer
  - Proximity to a major road
  - Visibility of Service buildings from road
  - Site impacts of buildings and parking areas
  - View and access to trails, wildlife observation areas, and other visitor resources
- Incorporate at least one refuge field trip into partners’ environmental education programs.
- Evaluate the need for an amphitheater or pavilion to conduct outdoor classes.
- Work to partner with home-school groups to help facilitate environmental education.
- Develop environmental education curricula for pre-kindergarten through grade 12 that meet NYS standards for learning; curricula will offer self-guided options for teachers, as well as some refuge-guided options to be used at the refuge manager’s discretion.

**Objective 4.3 Environmental Interpretation**

Over the life of the plan, expand the environmental interpretation program by updating at least three refuge brochures to reflect current information and FWS graphics standards, producing 5 to 10 new interpretive products, and developing at least one new program series.

**Rationale**

Interpretation is one of the six priority public uses required by the Refuge Improvement Act to receive enhanced consideration on refuges. The guiding principles of the Refuge System’s interpretive programs (FW 605 7; USFWS 2011) are to:

- Promote visitor understanding of, and increase appreciation for, America’s natural and cultural resources and conservation history by providing safe, informative, enjoyable, and accessible interpretive opportunities, products, and facilities.

- Develop a sense of stewardship leading to actions and attitudes that reflect interest and respect for wildlife resources, cultural resources, and the environment.
- Provide quality interpretive experiences that help people understand and appreciate the individual refuge and its role in the Refuge System.
- Provide opportunities for quality recreational and interpretive experiences consistent with criteria describing quality found in 605 FW 1.6 (USFWS 2011).
- Assist refuge staff, volunteers, and community support groups in attaining knowledge, skills, and abilities in support of interpretation.
- Minimize conflicts with visitors participating in other compatible wildlife-dependent recreational activities.

According to the National Association for Interpretation (NAI), interpretation is a mission-based communication process that forges emotional and intellectual connections between the interests of the audience and the meanings inherent in the resource. The refuge can reach nearly 150,000 visitors yearly through interpretive programs including activities, talks, publications, audio-visual media, signs, and exhibits that convey key natural and cultural resources messages to visitors. After participating in refuge interpretive programs, visitors should be able to understand their relationships to, and impacts on, these resources.

### ***Strategies***

We will continue to:

- Update, when there are major changes in information, the refuge's Wildlife Watching Guide and Bird Brochure.
- Update interpretive panels on the refuge periodically.
- Plan and implement special guest speaker programs (about six per year) such as the "Nature of Montezuma" Program lecture series.
- Provide the "Guide by Cell" automated cell phone tour, in partnership with the Friends, Montezuma Audubon Center, and NYSDEC.
- Host winter program series like the recent Montezuma Book Club and Eco-Chat Program.

Within 1 to 5 years we will:

- Update the refuge's general brochure to reflect current refuge information.
- Develop a general refuge PowerPoint presentation for use in the visitor contact station and offsite.
- Participate in the NAI Interpreter Certification Process to train volunteers and new visitor services staff in Environmental Interpretation.
- Update existing interpretive panels and include new ones.
- Replace the existing brochures for the Esker Brook Trails and the Bald Eagle Story.

Within 7 to 10 years we will:

- Construct a new visitor contact station or expand the current visitor contact station (see details under strategies for objective 4.2).
- Build interpretive displays connecting with MAC in the visitor contact station.
- Develop a DVD series about the refuge for use in the visitor contact station and at outreach events.
- Develop and produce a series of brochures and podcasts (available for download from either the refuge Web site or Friends' Web site) to interpret refuge resources and recreational opportunities.

Within 15 years we will:

- Create interpretive exhibits for the visitor contact station.

Over the life of the plan we will:

- Expand program series like the Montezuma Book Club and Eco-Chat Programs.

**Goal 5: Provide opportunity for hunters and anglers to enjoy and support hunting and fishing on the refuge and increase their understanding of the regional environmental importance of the refuge and of the greater Montezuma Wetland Complex.**

***Objective 5.1 Waterfowl Hunting***

Over the life of the plan, allow access for hunting of waterfowl (including Canada and snow goose) in accordance with New York State regulations and consistent with sound biological principles to provide participants with reasonable harvest opportunities, uncrowded conditions, and minimal conflicts with other users.

***Rationale***

As discussed previously, hunting is one of the six priority public uses required by the Refuge Improvement Act to receive enhanced consideration on refuges. Hunting is a popular and traditional activity in the area and a management tool to keep wildlife populations at healthy numbers to maintain healthy habitats. In general, the demand for hunting on public land has increased as private lands have become less available for hunting. We manage our waterfowl hunt program with the intent to provide opportunities for compatible wildlife-dependent recreation as required by Refuge Improvement Act and permit use of a sustainable natural resource.

The refuge hunting public has requested additional hunting opportunities for waterfowl, including increased access, universal accessibility, and the addition of goose hunting during the resident Canada goose season and the late snow goose seasons. Opening portions of the northeast section of the refuge to hunting for the regular waterfowl season at the refuge manager's discretion will help meet these needs. Opening these additional areas to hunting will occur only

when the refuge manager judges there to be sufficient quality habitat available that can be accessed by hunters on foot or by boat without disturbing sensitive species or impinging upon other priority public uses. In accordance with Federal law and Service policy, we may only allow hunting of migratory game birds on no more than 40 percent of refuge land purchased through the Migratory Bird Conservation Fund, unless we find that opening up more land to hunting will benefit the species (16 U.S.C. 668dd(d)(1)(A), National Wildlife Refuge System Administration Act; 16 U.S.C. 703-712, Migratory Bird Treaty Act; and 16 U.S.C. 715a-715r, Migratory Bird Conservation Act). Nearly all of the refuge lands were purchased with through the Migratory Bird Conservation Fund.

The Service analyzed the impacts of the additional Canada goose and snow goose seasons in the Final Environmental Impact Statement: Resident Canada Goose Management (USFWS 2005b) and the Final Environmental Impact Statement: Light Goose Management (USFWS 2007c), respectively. The additional Canada goose hunt days and areas will contribute to the Service goal of reducing the resident Canada goose population in the Atlantic Flyway from more than one million to 620,000 and the Service and the NYSDEC goal of reducing the number of resident population Canada geese in the State, estimated at 257,000 (<http://www.dec.ny.gov/animals/67311.html>), to at or below 85,000 birds (USFWS 2005b). The additional snow goose hunt days and areas will contribute to the Service goal to reduce the population of lesser snow geese by 50 percent from the level observed in the late 1990s (USFWS 2007c).

The proposed actions for hunting at Montezuma NWR have been developed and analyzed in an environmental assessment (see appendix E). We will develop a detailed hunt plan and will complete an opening package for the refuge hunt program, prior to opening the refuge to these additional hunting opportunities.

In 2010, the NYSDEC and partners opened the Tim Noga Memorial youth and universally accessible blind. This blind is located within the MWC, on the Colvin Marsh, Northern Montezuma Wildlife Management Area, State Route 89, Savannah, NY. The blind is open to youth hunters and their mentors, as well as hunters with disabilities (must possess a NYS Department of Motor Vehicle plate or parking permit for People with Severe Disabilities) and their assistants. The blind is available for use during the first split of the NYS Waterfowl Hunting Season for the Western Zone (typically mid-October through early December), on Tuesdays, Thursdays, Saturdays, and Sundays. Reservations for use of the blind are taken by refuge staff as part of the refuge's reservation system. No reservations for the Tim Noga Memorial youth and universally accessible blind were requested for the 2010 or 2011 waterfowl hunting seasons.

### ***Strategies***

We will expand the waterfowl hunt program as described under alternative B of the "Montezuma NWR Hunt Program EA" (appendix E) as follows (also see map 4.3).

We will continue to:

- Promote waterfowl hunting opportunities on the refuge via press releases, Web site information, information boards, email, phone and personal communication with the public.
- Follow NYSDEC waterfowl hunting regulations, as well as special refuge regulations.
- Cooperate with the Friends to administer the waterfowl hunting program.
- Provide access to Tschache Pool for waterfowl hunting.
- Implement the waterfowl hunting permitting system.
- Offer NYSDEC waterfowl identification courses for adults and for youth.
- Participate in the NYSDEC Youth Waterfowl Hunt.
- Work with the NYSDEC to promote hunter education programs and disseminate outreach materials.
- Partner with the NYSDEC to help provide universal access to waterfowl hunters within the MWC, using the existing Tim Noga Memorial youth and universally accessible blind as an example.

Within 2 years of plan approval, we will:

- Permit waterfowl hunting on the refuge during the first split on Tuesdays, Thursdays, and Saturdays only, as long as the migratory game bird season dates for the Western Zone remain the same (i.e., late October through the beginning of December for the first split and late December through the beginning of January for the late split).
- Open portions of the northeast section of the refuge, to waterfowl hunting during the regular season at the refuge manager's discretion, these areas will correspond to those that could be opened to the late snow goose seasons and the resident Canada and late snow goose seasons (see map 4.3).
- Open some refuge grasslands for the "early" or "resident" Canada goose hunting season (generally September 1 through 25).
- Coordinate with farmers in the refuge's cooperative farming program to open designated areas for the "early" or "resident" Canada goose hunting season (generally September 1 through 25).
- Open designated areas of the Main Muck to snow goose hunting during the late (winter) snow goose hunting season (generally late January through the beginning of March) and the Light Goose Conservation Order (generally the beginning of March through mid-April).

Over the 15 year life of the plan, we will:

- Open newly acquired lands, where approved by the refuge manager, to waterfowl hunting.
- Develop one to two universal access points on the refuge, and enlist waterfowl hunters as volunteers to help fund, build, and maintain universal access areas.

### ***Monitoring Elements***

Hunter numbers will be calculated by directly counting the number of permits used and reservations filled each day during the hunting seasons. The quality and safety of the hunts will

be monitored via direct observation by refuge and law enforcement staff, law enforcement activities, and direct communication with hunters (in person, by phone, or by email), as well as direct communication with refuge neighbors.

### **Objective 5.2 Deer Hunting**

Over the life of the plan, allow access for hunting of white-tailed deer in accordance with New York State regulations and consistent with sound biological principles to provide participants with reasonable harvest opportunities, uncrowded conditions, and minimal conflicts with other users.

#### **Rationale**

Similar to waterfowl hunting above, hunters at the refuge have requested additional hunting opportunities for white-tailed deer including increased access and universal accessibility. In addition, NYSDEC has recently completed a management plan for white-tailed deer (NYSDEC 2011). Per the Refuge Improvement Act and Service policy, we will work with NYSDEC in implementing our hunt program, including implementing appropriate aspects of this new plan (e.g., establishing youth hunt events).

Currently, the deer population on the refuge is high enough that negative effects on refuge habitats are apparent (Rawinski 2010). Approximately 220,000 deer are harvested from the State of New York each year (NYSDEC 2011), however accurate live populations are difficult to estimate. Deer overpopulation can lead to outbreaks of devastating diseases such as hemorrhagic disease, bluetongue, and chronic wasting disease (Demarais et al. 2000), and browsing pressure on landscapes, vegetation, and crops, and severe habitat degradation (Cypher and Cypher 1988). Furthermore, overpopulation can lead to starvation, more numerous car-deer collisions, and poorer herd health overall. Regulated hunting has proven to be an effective deer population management tool and has been shown to be the most efficient and least expensive technique for removing deer and maintaining deer at desired levels (Northeast Deer Technical Committee 2009). Increasing opportunities for deer hunting by expanding the program will include Sunday hunting which will lengthen the archery season to coincide with the State opener. If deer populations continue to be high, we will work with the NYSDEC to manage a more effective hunt through their DMAP to have a beneficial impact on the overall health of the deer herd in the area.

The proposed actions for hunting on the refuge have been developed and analyzed in an environmental assessment (see appendix E, Montezuma NWR Hunt Program EA). We will develop a detailed hunt plan and will complete an opening package for the refuge hunt program, if warranted by Federal regulations. These actions will be implemented in accordance with NEPA.

#### **Strategies**

We will expand the deer hunt program as described under alternative B of the “Montezuma National Wildlife Refuge Hunt Program EA” (appendix E) as follows (see also map 4.4):

- Send out press releases, update Web site information, information boards, and communicate with the public through email, phone, and personal communication.

- Provide access to designated deer hunting areas on the refuge.
- Open the Seneca Trail area at the refuge manager's discretion.
- Maintain and post no hunting zones.
- Follow NYSDEC hunting regulations and specific refuge regulations.
- Work with the NYSDEC to promote hunter education programs and disseminate outreach materials related to current and future NYSDEC programs (e.g., benefits of nontoxic ammunition).
- Except for Esker Brook Trail area, the refuge archery season will open with the State season (usually mid-October), rather than waiting until November 1. Esker Brook Trail area will continue to open November 1 to minimize conflicts with other refuge users.
- Sunday hunting will be allowed for all deer hunt seasons.
- The Wildlife Drive will be closed to other users and open to hunters beginning December 1.
- Seneca Trail area will be open to late season archery hunting every year (usually mid to late December for about 9 days).
- The Main Pool and Tschache Pool will be open to deer hunters when they are frozen.
- When deer densities are high, the refuge will work with the NYSDEC DMAP to maximize the harvest of female deer.
- If the deer harvest remains below desired levels after the DMAP is implemented, the refuge will explore options to provide additional hunter access to areas where deer densities are high.
- Within 1 year of plan approval, improve the universally accessible site for deer hunters.
- Within 1 year of plan approval, increase the number of hunters allowed to use firearms on the refuge from 150 to 175. As additional lands are acquired, total permits issued will equal approximately 1 permit for every 50 refuge acres, based on the refuge's hunt EA (see appendix E) and annual hunt plan.
- Within 2 years of plan approval, work with the NYSDEC to develop and implement a youth deer hunt program on the refuge.
- Within 7 years of plan approval, develop three new universal access points and standards for obtaining a refuge universal access permit for deer hunters on the refuge, and enlist deer hunters as volunteers to help site, build, and maintain the universal access area.

### ***Monitoring Elements***

Deer hunter numbers will be calculated by directly counting the number of permits used each day during the hunting seasons. The quality and safety of the hunts will be monitored via direct observation by refuge and law enforcement staff, law enforcement activities, and direct communication with hunters (in person, by phone, or by email), as well as direct communication with refuge neighbors.

### ***Objective 5.3 Fishing***

Provide opportunities for fishing on the refuge in a manner that minimizes conflicts between fishing and biological resources, particularly nesting birds, and provide participants with reasonable harvest opportunities, uncrowded conditions, and minimal conflict with other users.

### ***Rationale***

Access to fishing is limited on the refuge. Under this plan we will work to expand and improve visitors' fishing experience on the refuge in support of the Refuge Improvement Act. We propose to provide increased access to fishing areas along the canal. In addition, we will work to develop and offer specific informational materials to anglers, and will increase efforts to promote fishing in other ways as further described in the strategies below.

The Refuge Improvement Act identifies fishing as one of the six priority wildlife-dependent public uses. It states, "Compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the [Refuge] System."

According to the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation approximately 741,000 residents and nonresidents participated in fishing in New York during 2006 (USFWS 2006). Approximately 247,000 more anglers fished in the Great Lakes. Anglers spent more than \$925 million on activities and equipment related to fishing during 2006.

Providing high quality fishing opportunities on the refuge promotes visitor appreciation and support for refuge programs. According to Service policy (605 FW 3; USFWS 2011), the guiding principles for our fishing program include the following:

- Effectively maintain healthy and diverse fish communities and aquatic ecosystems through the use of scientific management techniques.
- Promote visitor understanding of, and increase visitor appreciation for, America's natural resources.
- Provide opportunities for quality recreational and educational experiences consistent with criteria describing quality found in 605 FW 1.6 (USFWS 2011).
- Encourage participation in this tradition deeply rooted in America's natural heritage and conservation history.
- Minimize conflicts with visitors participating in other compatible wildlife-dependent recreational activities.

As with hunting, we recognize fishing as a healthy, traditional outdoor past time. It, too, promotes public understanding and appreciation of natural resources and their management on all lands and waters in the Refuge System. Although refuge-owned waters are not open to fishing, the adjacent canal system offers opportunities for anglers. As described in "Chapter 3, Existing Environment," the refuge does not allow fishing in the impoundments to minimize disturbance to sensitive species. We provide fishing access to the canal waters, which are State-owned navigable waters. New York State fishing regulations apply.

### ***Strategies***

To accomplish objective 5.3, we will:

- Continue to maintain and provide fishing access at May's Point.
- In cooperation with NYSDEC, continue to maintain and provide fishing access at the boat launch site south of U.S. Highway 20, across from the refuge entrance.

- Update the refuge fishing information on the refuge’s Web site and profile page as needed.
- Within 2 years of plan approval, develop a fishing plan for the refuge.
- Develop and implement a Family Fishing Day within 5 years of plan approval.
- Within 10 years of plan approval, open at least two additional fishing areas within the refuge.
- Upon development of additional refuge fishing areas, develop and produce a refuge fishing brochure.
- Within 12 years of plan approval, develop an interpretive sign for refuge fishing access points.
- Over the life of the plan, annually promote fishing opportunities on the refuge.

### ***Monitoring Elements***

Angler numbers will be calculated using a combination of trail and traffic counters and estimation according to the National Wildlife Refuge System Visitor Estimation Handbook (USFWS 2005a). Strategies listed will be entered into the refuge’s RAPP, according to the listed yearly measures (within 1 year, within 10 years, etc.). Refuge staff is held accountable for progress and completion of projects listed in RAPP each year. Listing in RAPP prioritizes these projects above others that may present themselves at a later date.

### ***Objective 5.4 Turkey Hunting***

Over the life of the plan, allow access for hunting of turkey during the youth and fall hunt seasons in accordance with New York State regulations and consistent with sound biological principles to provide participants with reasonable harvest opportunities, uncrowded conditions, and minimal conflicts with other users.

### ***Rationale***

Historically, turkeys were abundant in New York State during the 1600s. However, uncontrolled hunting and deforestation resulted in their population crash (Roberts et al. 2011). They were re-established in New York by 1957, but occupied only the extreme southwest portion of the State. At this same time, the NYSDEC live trapped and transferred turkey to areas of the State that were capable of sustaining a population. Numbers have increased dramatically from an estimated 2,000 in 1959 to over 65,000 in 1990 (Roberts et al. 2011).

Refuge lands currently consist of 88 percent wetland habitat, which is not typically used by turkeys. Oak mast is the most important fall and winter food for wild turkeys (Dickson 1990); however, oak trees are rare at the refuge. No recent turkey population studies have been conducted on the refuge. Although turkeys are present, sightings on refuge property are infrequent. Turkeys are spotted regularly on adjacent uplands due to the large amount of agricultural cropland on which they thrive.

As discussed elsewhere in this document, hunting is one of the priority public uses identified for refuges. Service policy also states that, where practicable, we should make our hunt regulations consistent with state regulations. The NYSDEC has requested we consider providing opportunities for turkey hunting. While suitable turkey habitat on the refuge is somewhat limited,

there is sufficient land for us to consider opening the refuge to hunting. Opening these additional areas to hunting will occur only when the refuge manager judges there to be sufficient quality habitat available that can be accessed by hunters without disturbing sensitive species or impinging upon other priority public uses.

The proposed actions for hunting at Montezuma NWR have been developed and analyzed in an environmental assessment (see appendix E, Hunt Program EA). We will develop a detailed hunt plan and will complete an opening package for the refuge hunt program, if warranted. These actions will be implemented in accordance with NEPA.

### *Strategies*

We will expand the hunt program to include youth and fall turkey hunting as described under alternative B of the “Montezuma NWR Hunt Program EA” (appendix E) as follows:

Prior to opening the refuge to turkey hunting, an information meeting, Web site articles, handouts, and press releases will be developed to inform the public about the turkey hunt, special refuge regulations, and hunting on refuges. Refuge turkey hunting maps and regulations will be posted on the refuge’s Web site, and mailed or emailed upon request. All information related to hunting on the refuge will be posted at the refuge’s hunter check station prior to the seasons’ openings.

#### *Youth Turkey Hunting:*

- During the NYS youth turkey hunt (usually in late April), turkey hunting will be permitted according to State regulations in designated areas throughout the refuge. Hunting will not be permitted in areas closed to hunting to protect facilities and structures, certain habitats, and select public use areas. See map 4.5 for designated hunting areas.
- Daily permits will be required. The number of permits will be set annually by the refuge manager and will be based on maximizing hunt opportunities, providing for a quality hunt experience, demand, minimizing disturbance to sensitive wildlife and plant species, and balancing other public use demands and the administrative work load. Currently we will permit a maximum of 14 hunt groups (mentor and youth(s)) per day, based on the above criteria.
- There will be no hunt fee.
- Hunting season dates, hours, implement restrictions, bag limits, etc. will follow State regulations. However, the refuge manager reserves the right to restrict hunt season dates and bag limits in the future, as needed, to achieve various refuge management goals.
- Implementing the refuge’s youth turkey hunt will depend on a commitment from partners to mentor youth hunters. We will work with partners to recruit and sign up youth hunters and their mentors for this hunt.
- Youth hunters and their mentors may be required to attend an orientation program conducted by the refuge, in cooperation with partners. The orientation will review hunter safety, turkey calling, equipment, ethics, and sportsmanship, as well as conservation and messages about the Refuge System.

*Fall Turkey Hunting:*

- Turkey hunting will be permitted in areas open to deer hunting. The Wildlife Drive will not be open to turkey hunting because fall turkey season usually ends in November, before the Wildlife Drive opens to hunting. The Wildlife Drive will be open to fall turkey hunting if the State extends the turkey season into December. See map 4.5 for designated hunting areas.
- Daily permits will be required. The number of permits will be set annually by the refuge manager and will be based on maximizing hunt opportunities, providing for a quality hunt experience, demand, minimizing disturbance to sensitive wildlife and plant species, and balancing other public use demands and the administrative work load. Currently we will set the daily permit limit at a maximum of 40 per day, based on the above criteria.
- There will be no reservation system; it will be a first come, first served basis each hunt day until the day's permits are all taken.
- There will be no hunt fee.
- Hunting season dates, hours, weapon restrictions, bag limits, etc. will follow State regulations. However, the refuge manager reserves the right to adjust hunt season dates and bag limits in the future, as needed, to achieve various refuge management goals.

*Monitoring Elements*

The number of turkey hunters will be calculated by directly counting the number of permits used each day during the hunting seasons. The quality and safety of the hunts will be monitored via direct observation by refuge and law enforcement staff, law enforcement activities, and direct communication with hunters (in person, by phone, or by email), as well as direct communication with refuge neighbors.

**Goal 6: Increase awareness and cooperation among State and Federal agencies, local communities, environmental organizations, universities and other partners. Help them understand the role of the refuge and the Montezuma Wetlands Complex in the community, and encourage participation in achieving the goals, vision and mission of the complex.**

*Objective 6.1 Refuge Partnerships*

Over the life of the plan, continue to work with NYSDEC, TNC, Audubon New York, and other partners to promote ecotourism opportunities on the refuge, and within the Montezuma Wetlands Complex.

*Rationale*

Although the refuge has cultivated several strong partnerships, it recognizes that there are other entities in the region with which it can partner, with mutual benefits, and with the aim of promoting ecotourism. Some of these are listed in the strategies below.

### ***Strategies***

To accomplish objective 6.1, we will:

- Maintain existing relationships with the Seneca, Cayuga, and Wayne Counties tourism offices, as well as with the Cayuga Lake Scenic Byway.
- Maintain existing relationships with NYSDEC, TNC, Audubon New York, Ducks Unlimited, Cornell Lab of Ornithology, and others.
- Partner with local services and attractions to create area tour packages and promotions.
- Accommodate various media outlets.
- Partner with interviews conducted by NYS Canal Corporation in promotion of tourism opportunities.
- Within 3 years of plan approval, develop new partnerships (i.e., Rosamond Gifford Zoo at Burnett Park in Syracuse and the Seneca Park Zoo in Rochester, Savannah Dhu, NYS Thruway, NPS, NYS Canal Corporation, NYSDOT).
- Within 5 years of plan approval, join the New York State Visitors and Convention Bureau.
- Within 5 years of plan approval, join the Finger Lakes Tourism Alliance.
- Over the life of the plan, outreach to motor-coach tour associations.
- Over the life of the plan, provide offsite programs to a broad variety of civic organizations, upon request.

### ***Monitoring Elements***

Strategies listed will be entered into the refuge's RAPP, according to the listed yearly measures (within 1 year, within 10 years, etc.). Refuge staff is held accountable for progress and completion of projects listed in RAPP each year. Listing in RAPP prioritizes these projects above others that may present themselves at a later date.

### ***Objective 6.2 Refuge Partnerships – Collaboration on Biological Monitoring and Research and Habitat Management and Restoration***

Over the life of the plan, continue to work with NYSDEC, TNC, Audubon New York, USGS, and other partners to accomplish mutual biological monitoring, research, habitat management, and restoration goals and objectives on the refuge, within the MWC, and within the Upper Midwest and Great Lakes LCC.

### ***Rationale***

The Service is committed to using sound science in its decision-making and is focusing on the use of strategic habitat conservation (SHC) to accomplish this goal. SHC incorporates biological planning, conservation design, conservation delivery, monitoring, and research in an ongoing process that changes and evolves. The intention is for refuges to work with partners to achieve landscape level conservation. To ensure we are putting science in the right places, the Service and USGS have developed a national geographic framework for implementing strategic habitat conservation at landscape scales. The framework provides a platform upon which the Service can work with partners to connect project- and site-specific efforts to larger biological goals and outcomes across the continent. The framework serves as a base geography for Landscape Conservation Cooperatives, which are management-science partnerships that inform integrated

resource management actions addressing climate change and other stressors within and across landscapes. LCCs are fundamental units of planning and science capacity to help us carry out the functional elements of SHC. Montezuma NWR is part of the Upper Midwest and Great Lakes LCC. Through the use of SHC and by working with partners, the refuge can make better management decisions at the refuge level and therefore make a greater contribution to landscape level conservation.

**Strategies**

To accomplish objective 6.2, we will:

- Participate in MWC partner meetings to reestablish contact, seek new partners, share information, and collaborate on new projects.
- Seek qualified researchers and funding to address specific refuge questions.
- Work with partners to host the Montezuma Wetlands Complex Research Symposium every 7 years.
- Participate in appropriate multi-refuge studies conducted in partnership with USGS.
- Facilitate logistical support for researchers.
- Consider assisting with funding a temporary project coordinator to support and develop partnership opportunities (including organizing the MWC Research Symposium- see last bullet).
- Work with partners to reinvigorate the Montezuma Research Institute.
- Work with partners to increase the frequency of the MWC Research Symposium from every 7 years to every 3 years.

**Objective 6.3 Refuge Partnerships – Friends Group**

Over the life of the plan, continue to support the Friends of the Montezuma Wetlands Complex.

**Rationale**

Across the nation, Friends groups provide invaluable time and expertise to the Refuge System. At Montezuma NWR, the Friends of the Montezuma Wetlands Complex contributes thousands of hours annually to support the refuge with visitor service activities, invasive plant removal, surveys, and other important tasks.

**Strategies**

To accomplish objective 6.3, we will continue to:

- Effectively communicate with the Friends by participating in Friends’ meetings and coordinating with Friends members as needed.
- Provide logistical support for Friends activities (e.g., assist with their quarterly newsletter, annual member events, calendar, and photography contest).
- Provide space and logistical support for the Friends’ nature store.
- Inform the Friends on how they can further assist the refuge.
- Attend Friends Board meetings.
- Help expand the Friends group to increase membership, levels of activities, and support for refuge management activities.

### **Objective 6.4 Refuge Partnerships – Volunteers**

Over the life of the plan, continue to implement volunteer programs that connect people with nature and support refuge needs.

#### ***Rationale***

Volunteers are integrated into all aspects of Montezuma's management including maintenance, habitat management, visitor services, and outreach programs. Their hard work and enthusiasm enhances the programs we can offer. In fact, many of the Service's visitor use programs at Montezuma NWR are supported by the Friends of the Montezuma Wetlands Complex and volunteers, thus making it feasible for the refuge to offer these programs.

#### ***Strategies***

To accomplish objective 6.4, we will:

- Conduct the Montezuma Alliance for the Restoration of Species and Habitats volunteer program.
- Explore avenues for funding to implement a phenology project volunteer program.
- Recruit and train visitor contact station and roving naturalist volunteers, as well as volunteers to support the refuge's biological and maintenance programs.
- Cooperate with the Student Conservation Association to recruit and train volunteers and generate additional support for the biological program, refuge operations, and maintenance.
- Within 5 years of plan approval, work with the Friends group and MWC partners to form volunteer committees to help meet refuge and complex management and public use needs.
- Within 10 years of plan approval, work with tourism bureaus and other partners to develop an ecotourism committee covering Seneca, Wayne, and Cayuga (and possibly other) Counties.

### **Objective 6.5 Refuge Partnerships – Outreach**

Over the life of the plan, expand outreach efforts to share refuge news and management projects with local media outlets, partners, Friends, and visitors.

#### ***Rationale***

Effective outreach depends on open and continuing communication and collaboration between the refuge and its many publics. Effective outreach involves determining and understanding the issues, identifying audiences, listening to stakeholders, crafting messages, selecting the most effective delivery techniques, and evaluating effectiveness. If conducted successfully, the results we achieve will further refuge purpose(s) and the Refuge System mission. Under this plan, refuge staff will focus on expanding outreach efforts to increase awareness and understanding of refuge management projects and volunteer and recreational opportunities.

#### ***Strategies***

To accomplish objective 6.5, we will continue to:

- Prepare and distribute press releases about refuge events and activities.
- Accommodate various media outlets with interviews and information.
- Maintain the refuge Web site.
- Provide links to Friends' Web site.
- Provide links to other Web sites.
- Participate in onsite and offsite fairs/festivals (four per year).
- Partner with tourism agencies, nonprofit organizations, and other entities.
- Sit on the Board of Directors for Cayuga Lake Scenic Byway.
- Offer programs in partnership with the Cayuga Lake Watershed Network.
- Conduct tours with The Nature Conservancy and other organizations on request.
- Plan a birding event with the Cayuga Wine Trail.
- Coordinate events with area birding groups.

Within 1 year we will:

- Offer a guided refuge tour to local news media personnel and discuss their preferred methods of information sharing each spring and fall thereafter.
- Increase outreach with local news media beyond press releases.
- Optimize the refuge Web site to help improve its standing on internet search engines.
- Evaluate the refuge's capabilities to use podcasts via its Web site (podcasts are currently on the Friends of the Montezuma Wetlands Complex Web site, [www.friendsofmontezuma.org](http://www.friendsofmontezuma.org)).

Within 5 to 7 years we will:

- Regularly participate in additional festival events in New York State.
- Distribute refuge brochures and event calendars to local businesses, attractions, visitor/welcome centers, and tourism bureaus.

Within 15 years we will:

- Partner with a local media outlet to develop and run a regular media spot about the refuge.

Over the life of the plan we will:

- Work with partners to communicate more frequently with local officials regarding the refuge and the MWC.
- Use new media (like Facebook and Twitter) to promote the refuge, as allowed by the Department of the Interior and the Service.

Table 4.5. Current and Projected Acreages for Montezuma National Wildlife Refuge Habitats.

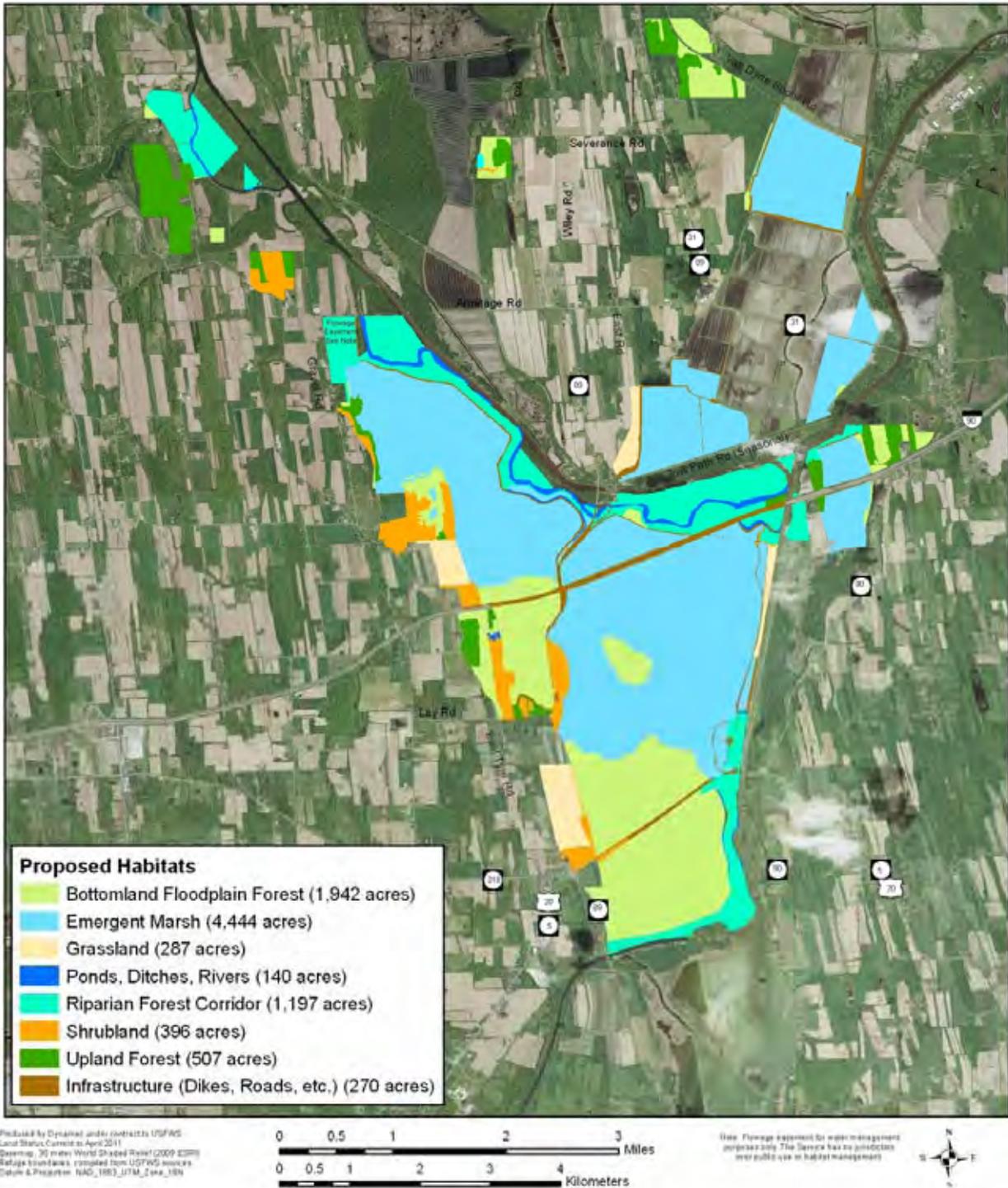
Habitat Type	Acreage <sup>1</sup>	
	Current	Projected
Emergent Marsh	4,307	4,444
Ponds, ditches, rivers	179	140
Bottomland Floodplain Forest	1,685	1,942
Riparian Forest Corridor	1,033	1,197
Upland Forest	299	507
Shrublands	866	396
Grasslands	316	287
Croplands	183	0
Infrastructure	316	271
<b>Total</b>	<b>9,184</b>	<b>9,184</b>

<sup>1</sup>Acreages are current as of October 2012.

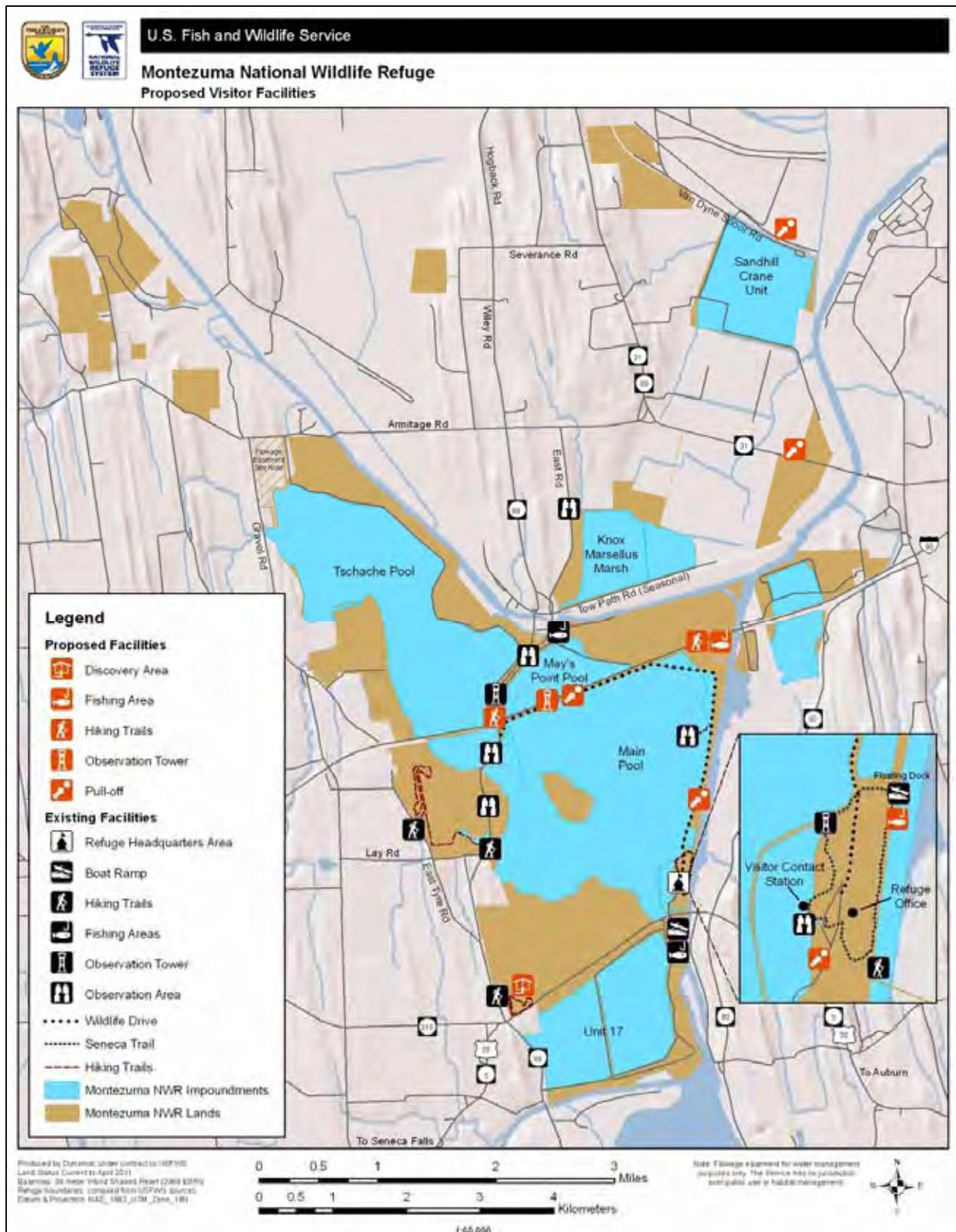


U.S. Fish and Wildlife Service

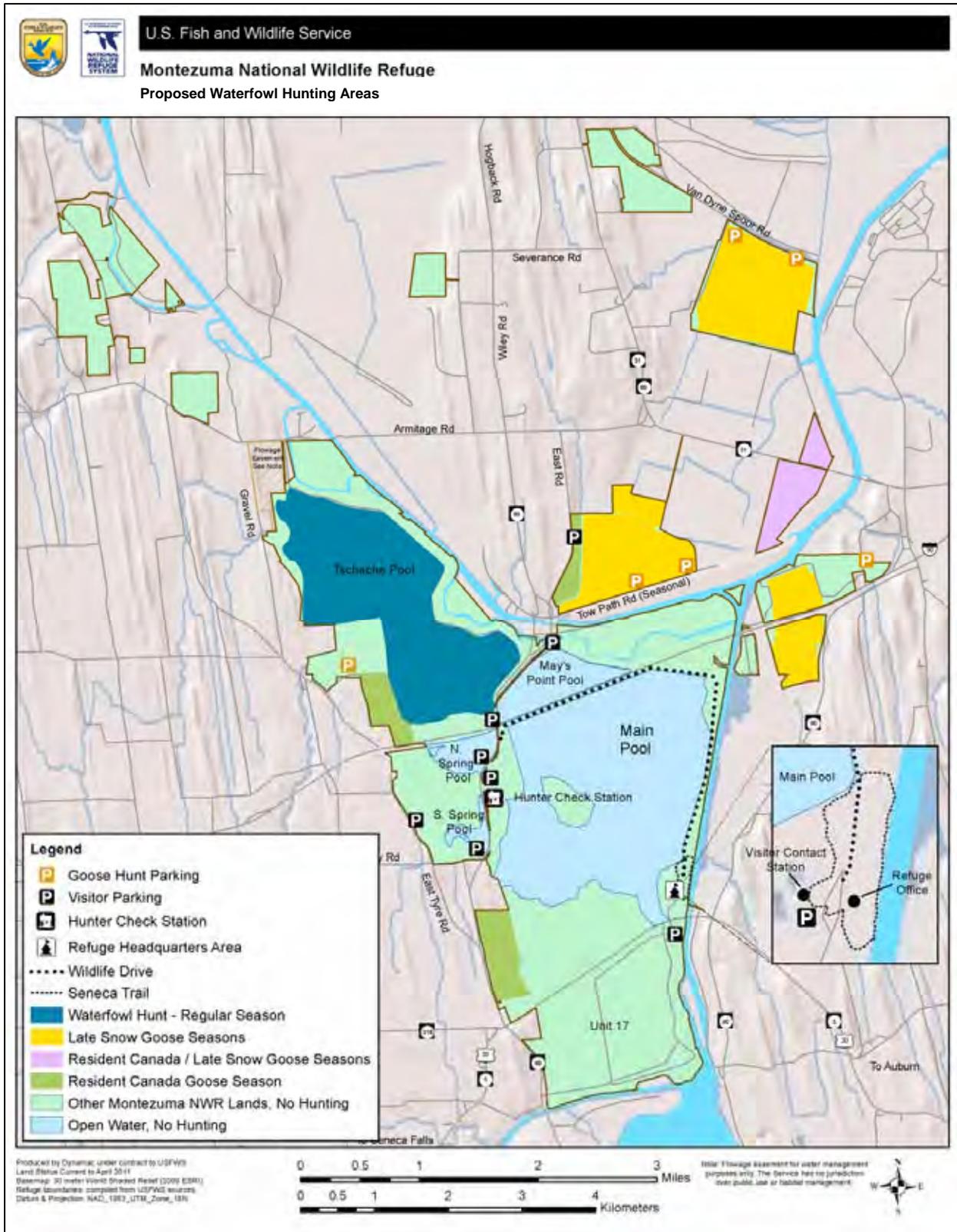
**Montezuma National Wildlife Refuge**  
Proposed Habitat Types



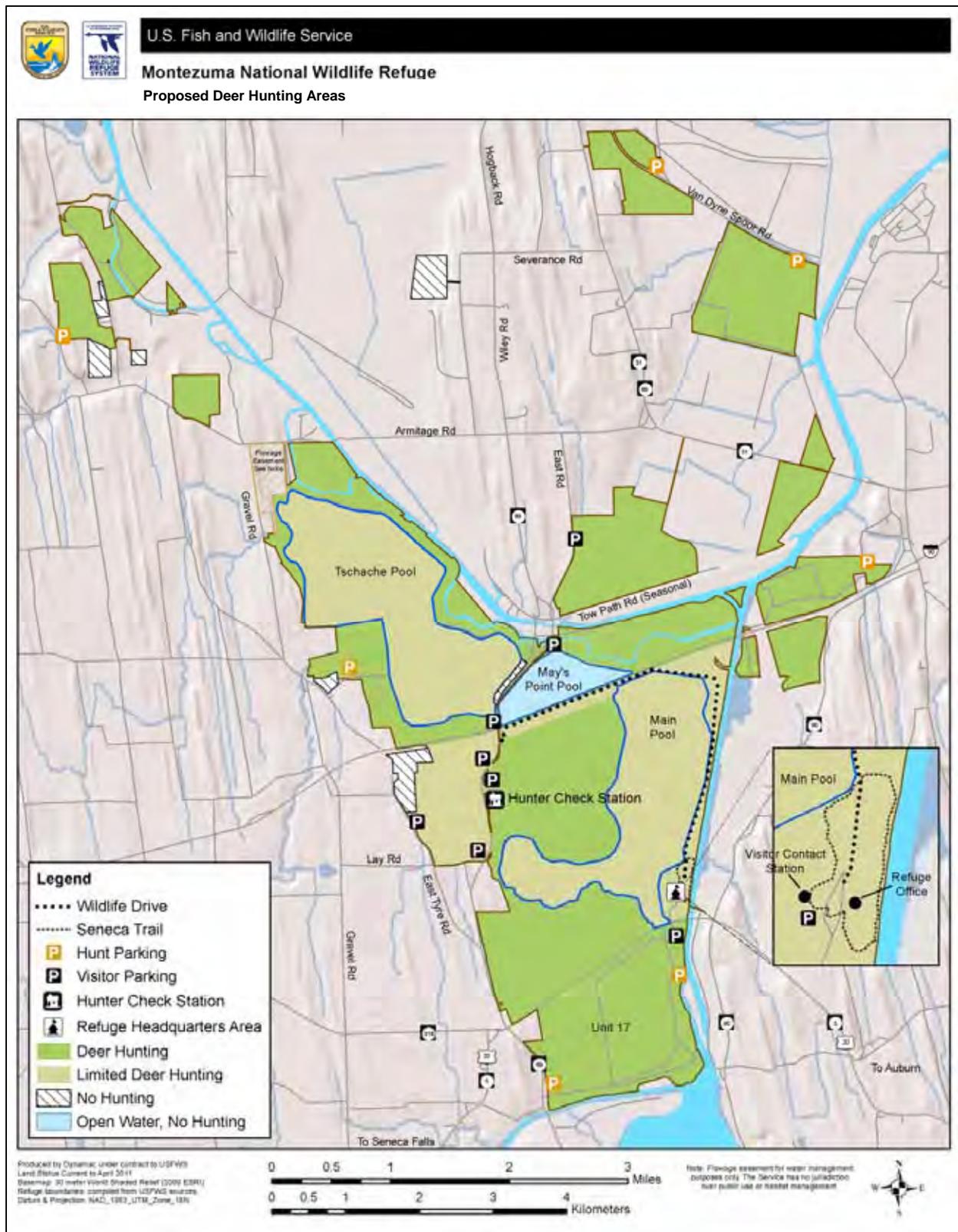
Map 4.1. Proposed Habitat Types on Montezuma NWR.



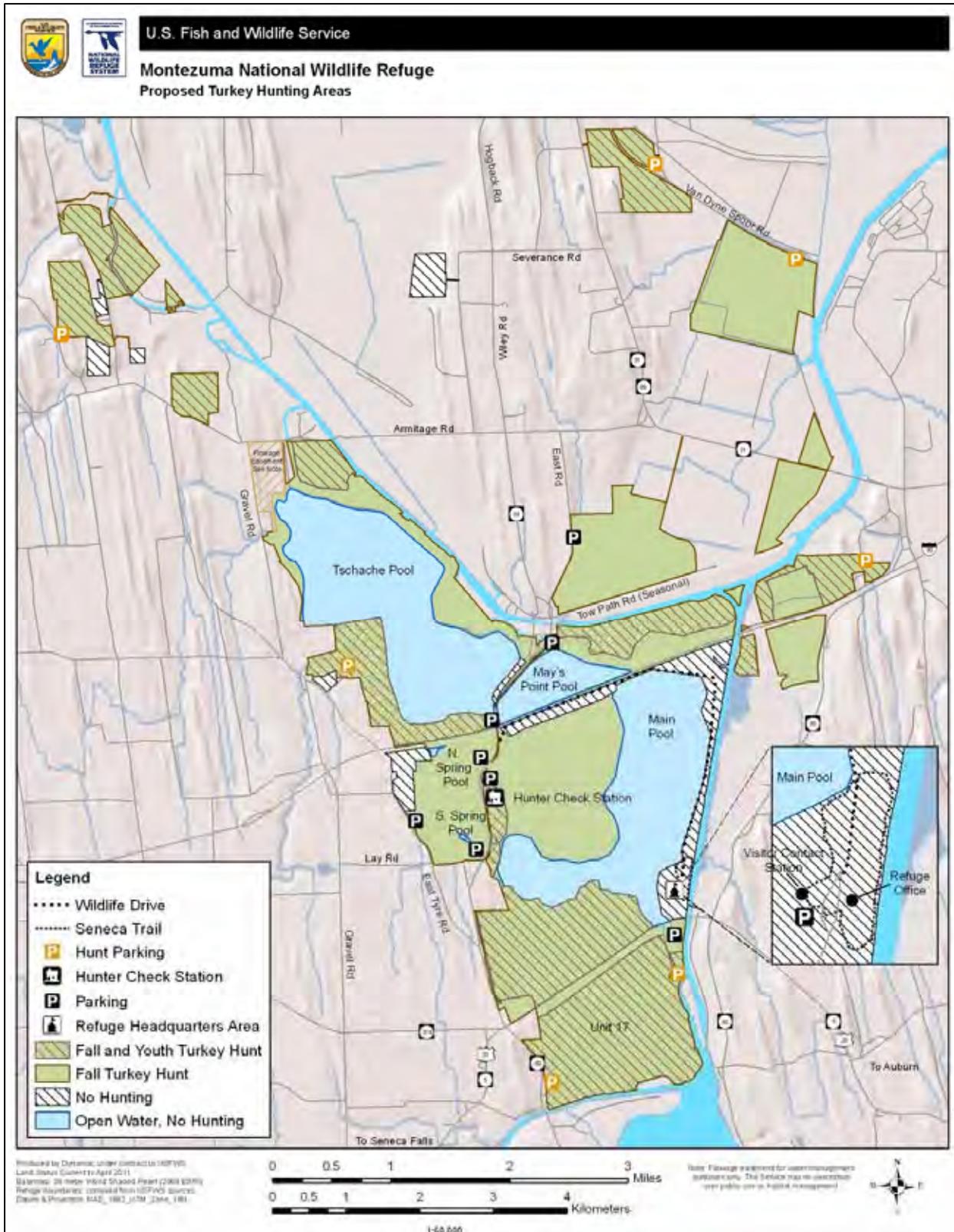
Map 4.2. Proposed Visitor Facilities on Montezuma NWR.



Map 4.3. Proposed Waterfowl Hunting Areas on Montezuma NWR.



Map 4.4. Proposed Deer Hunting Areas on Montezuma NWR.



Map 4.5. Proposed Turkey Hunting Areas on Montezuma NWR.