

Appendix E

Mitch Virmig/USFWS



Young waterfowl hunter

Montezuma National Wildlife Refuge Hunt Program Environmental Assessment

**Montezuma National Wildlife Refuge
Hunt Program Environmental Assessment**

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I. Introduction

The Montezuma National Wildlife Refuge (Montezuma NWR, refuge) lies at the north end of Cayuga Lake in the heart of the Finger Lakes region of central New York State (NYS) (map E.1) and currently includes 9,184 acres¹. The refuge manages 14 impoundments that provide more than 4,000 acres of freshwater wetland habitat to more than 1,000,000 waterfowl, as well as a diversity of shore, wading, and songbirds each year. A diversity of marsh and wading birds breed here, including bitterns, rails, black terns, and grebes, along with several pairs of bald eagles.

Montezuma NWR is part of a larger 50,000-acre Montezuma Wetlands Complex (MWC) that encompasses public and private lands. The NYS Department of Environmental Conservation (NYSDEC) also manages 8,000 acres of public lands for wildlife and public use in the MWC. Audubon New York maintains an education center in the MWC and has highlighted the area as a globally significant Important Bird Area due to its value for migratory birds, breeding marshbirds, and other species. Those other species include Federal trust species, such as shorebirds and neotropical migrant songbirds (passerines). The MWC is one of the most significant stopover sites for shorebirds in upstate New York, regularly hosting 1,000 or more individuals of 25 species. The refuge area supports the second largest population of cerulean warblers in New York—a species of high conservation concern that breeds in riparian, forested wetlands, a habitat that was drained or cleared in many other areas.

Montezuma NWR was established by Executive Order 7971 on September 12, 1938, “...as a refuge and breeding ground for migratory birds and other wildlife...” Since then, we have acquired lands under the authority of the Migratory Bird Conservation Act (16 U.S.C. 715-715r), as amended, “...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds.”

Recently, the U.S. Fish and Wildlife Service (Service, we, our) began developing a Comprehensive Conservation Plan (CCP) for Montezuma NWR. A CCP provides strategic management for a refuge for 15 years, addressing a wide range of refuge activities including everything from habitat management, to facilities (maintenance and new construction), to public uses. Through the CCP process, we have identified six goals for the refuge:

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.

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.

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

¹Acreages are current as of October 2012.

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.

Goal 5: Provide opportunities 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.

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 vision of the complex.

These goals are consistent with refuge purposes, the National Wildlife Refuge System (Refuge System) mission and goals, the Service mission and policies, the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee; Refuge Administration Act) as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57; 111 Stat. 1253; Refuge Improvement Act).

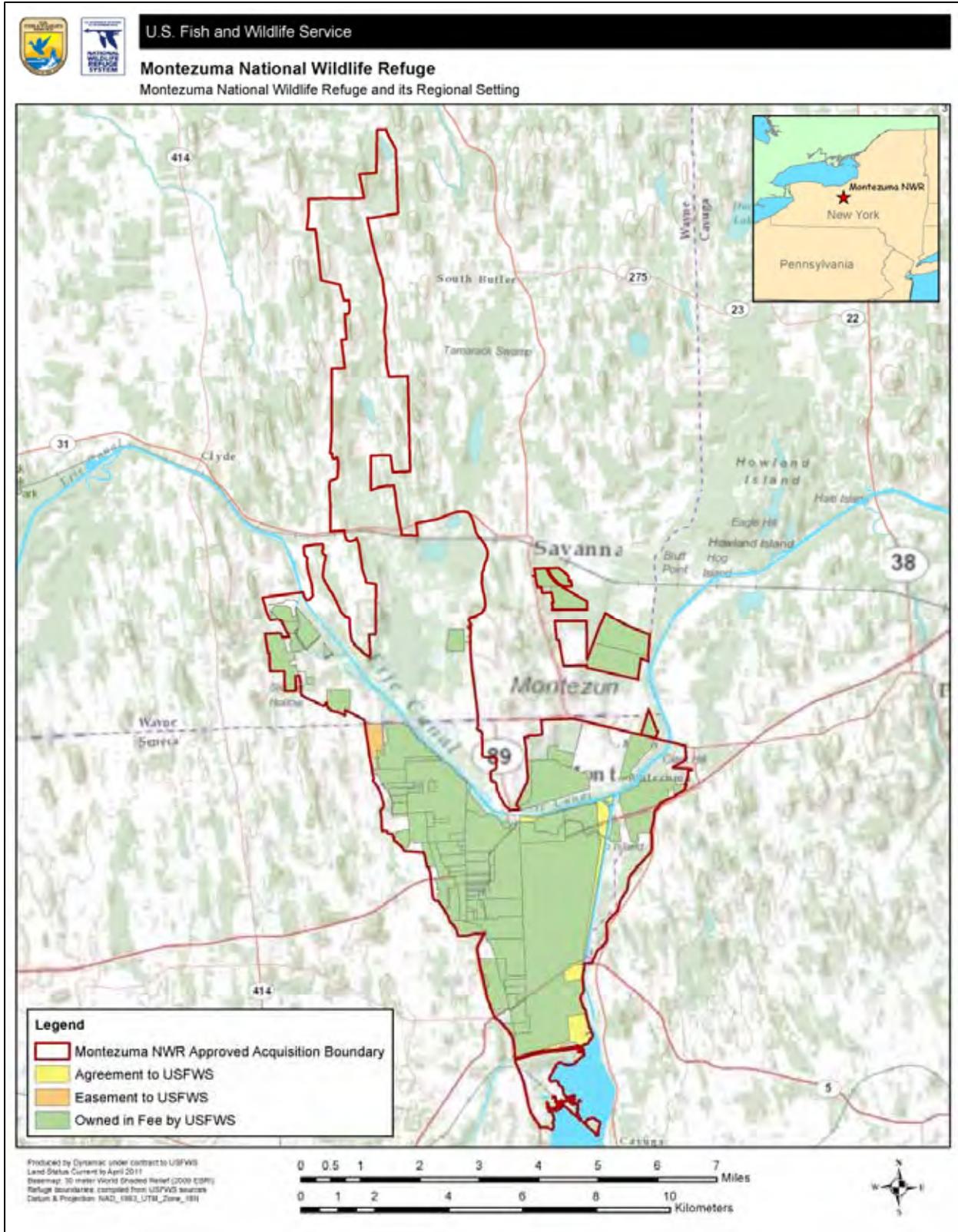
As required by the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321 et seq.; 83 Stat. 852), we have prepared this Environmental Assessment (EA) for Montezuma NWR's hunt program. NEPA regulations require an evaluation of a reasonable range of alternatives, and a description of their foreseeable impacts on the socioeconomic, physical, biological, and cultural environments in the project area. The range of alternatives must include a proposed (or preferred) action, no action, and, if deemed appropriate, one or more other reasonable alternatives.

II. Purpose of, and Need for, the Proposed Action

In 1997, the Refuge Improvement Act prepared the way for a renewed vision for the future of the Refuge System where:

- Wildlife comes first.
- Refuges are anchors for biodiversity and ecosystem-level conservation.
- Lands and waters of the Refuge System are biologically healthy.
- Refuges are national and international leaders in habitat management and wildlife conservation.

The Refuge Improvement Act also identifies six wildlife-dependent priority public uses: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. The act specifies that these public uses are to receive enhanced consideration on national wildlife refuges.



Map E.1. Montezuma National Wildlife Refuge and its Regional Setting.

A. Proposed Action

The Service proposes to update the hunt program at the Montezuma NWR to be consistent with the goals, objectives, and strategies established in the refuge's CCP and support the refuge purposes, Refuge System mission, Service mission, and Refuge Improvement Act.

B. Purpose

The purpose of the refuge's hunt program is to encourage the use of refuge lands for wildlife-dependent public recreation and to be consistent with the goals, objectives, and strategies identified in the refuge's CCP. Allowing hunting on the refuge provides an opportunity to make visitors aware of resource issues, management plans, and how the refuge contributes to the Refuge System and Service mission. In addition, we are required to manage wildlife-dependent recreation, including hunting, in strict accordance with all applicable Federal laws and regulations and, to the extent practicable, consistent with applicable State and Tribal laws (605 FW 2, 50 CFR Subchapter C).

The Service strives to provide hunting opportunities on refuges which: (1) promote the safety of participants, other visitors, and facilities; (2) promote compliance with applicable laws and regulations and responsible behavior; (3) minimize or eliminate conflict with fish and wildlife population or habitat goals or objectives in an approved plan; (4) minimize or eliminate conflicts with other compatible wildlife-dependent recreation; (5) minimize conflicts with neighboring landowners; (6) promote accessibility and availability to a broad spectrum of the American people; (7) promote resource stewardship and conservation; (8) promote public understanding and increases public appreciation of America's natural resources and our role in managing and conserving these resources; (9) provide reliable and reasonable opportunities to experience wildlife; (10) use facilities that are accessible to people and blend into the natural setting; and (11) use visitor satisfaction to help define and evaluate programs (605 FW 1.6).

C. Need for the Proposed Action

The current refuge hunt plan was approved in 1989, over 20 years ago. Since that time, the refuge's land base has grown and wildlife populations and habitats have changed. Also, Congress has passed the Refuge Improvement Act, and the Service has developed and implemented new policies and guidance. As part of the CCP process, we are reevaluating the refuge's hunt program based on comments received from the public and our partners, issues identified by Service staff, and the goals, objectives, and strategies identified in the CCP.

Hunting is a popular and traditional activity in the area and an important management tool to keep wildlife populations healthy, to maintain healthy habitats, and to collect biological data on game species. Hunting can instill a unique understanding and appreciation of wildlife, their behavior, and their habitat needs. We manage our hunting programs to help promote understanding and appreciation of natural resources and their management on lands and waters in the Refuge System.

The Service encourages the development of hunting programs on national wildlife refuges when they are compatible with the refuge's legal purpose, biologically sound, affordable, properly

coordinated with other refuge programs, and fit the Service description of a quality hunt. For the purposes of this document, we are defining quality hunts as those which are planned, supervised, conducted, and evaluated to promote positive hunting values and ethics such as fair chase and sportsmanship. At Montezuma NWR, we rely on close cooperation and coordination with the NYSDEC in developing and managing hunting opportunities on the refuge.

III. Alternatives Considered but not Fully Developed

During the alternatives development process, the following alternatives were discussed, but were not fully developed.

A. Closing the Refuge to all Hunting

Hunting is an historic use of refuge lands, and has been allowed on the refuge since 1957. There are many laws, policies, establishment documents, and other mandates that we use to guide public use programs on the refuge. The Refuge Improvement Act identifies hunting as one of six priority public uses that are to receive enhanced consideration in refuge planning. The others are fishing, wildlife observation and photography, and environmental education and interpretation. Our mandate is to provide high-quality opportunities for those priority uses when they are compatible with refuge purposes, goals, and other management priorities. The Refuge Improvement Act does not establish a hierarchy among the six priority uses, but requires us to facilitate them when they are compatible and appropriate.

Executive Order No. 13443 (August 16, 2007), “Facilitation of Hunting Heritage and Wildlife Conservation,” reinforces the importance of hunting for recreational and management purposes on national wildlife refuges. That order directs the Department of the Interior and other Federal land management agencies to “facilitate the expansion and enhancement of hunting opportunities and the management of game species and their habitat.” It also states that Federal agencies are to “manage wildlife and wildlife habitats on public lands in a manner that expands and enhances hunting opportunities, including through the use of hunting in wildlife management planning.” Lastly, one of the objectives specified in the 1991 Northern Montezuma Wetlands Project Final Environmental Impact Statement which authorized the refuge expansion is to improve “accessibility to this wetland complex for compatible wildlife-related public recreation, education, and research” (USFWS and NYSDEC 1991).

The purpose of this document is to update the refuge’s hunt program to be consistent with refuge purposes, and the goals, objectives, and strategies as described in the refuge’s CCP, and to support the Refuge System mission, Service mission, and Refuge Improvement Act. Closing the refuge to all hunting would not meet the purpose of this document because: 1) it would not satisfy goal 5 of the CCP to provide opportunities for hunters and anglers to enjoy and support hunting and fishing on the refuge, 2) it would not support the objectives of the 1991 Northern Montezuma Wetlands Project Final Environmental Impact Statement, and 3) it would not support the provision of the Refuge Improvement Act that identifies hunting as one of the six priority public uses that should receive enhanced consideration in refuge planning if they are compatible.

B. Reducing Hunt Opportunities on the Refuge

There are many laws, policies, establishment documents, and other mandates that we use to guide public use programs on the refuge. In addition to the mandates described in the above section “Closing the Refuge to all Hunting,” Service policy requires regulations permitting hunting of wildlife within the Refuge System to be, to the extent practicable, consistent with state fish and wildlife laws, regulations, and management plans (605 FW 2). Hunting is an historic use of the refuge, and we have found implementing the current hunt program to be practicable since it was initiated in 1989.

The purpose of this document is to update the refuge’s hunt program to be consistent with refuge purposes, and the goals, objectives, and strategies as described in the refuge’s CCP, and to support the Refuge System mission, Service mission, and Refuge Improvement Act. Reducing hunting opportunities on the refuge would not meet the purpose of this document because: 1) it would not satisfy the objectives and strategies under goal 5 of the CCP, and 2) it would not support the Service’s policy to be consistent with state fish and wildlife laws, regulations, and management plans where practicable.

IV. Alternatives Considered

A. Summary of the Alternatives

NEPA requires that we evaluate a reasonable range of alternatives for managing the hunt program at Montezuma NWR before selecting an alternative for implementation. This section outlines our process for formulating alternatives, describes features common to all alternatives, and provides a description of the three alternatives we analyzed in detail. These three alternatives include the following:

- **Alternative A—Current Management.** Alternative A satisfies the NEPA requirement for a “no action” alternative. It describes our current hunt program, and serves as a baseline for comparing and contrasting the other alternatives and how well each meets the purpose of and need for a hunt program that is consistent with the CCP.
- **Alternative B—Service-preferred Alternative.** This alternative would expand the hunt program by providing additional opportunities for white-tailed deer (*Odocoileus virginianus*), waterfowl, and youth and fall turkey (*Meleagris gallopavo*) hunting. Alternative B is our preferred alternative and the action that we recommend for final selection.
- **Alternative C—Spring Turkey Hunt.** This alternative would include the hunt expansions described under alternative B and further expand the hunt program by administering a spring turkey hunt.

These alternatives reflect management approaches based on existing wildlife populations, Federal, State, and refuge regulations, the refuge’s purposes, endangered species concerns,

Service policies and guidance, and safety considerations. We believe these three alternatives represent a reasonable range as required by the NEPA.

B. Description of Alternatives

1. Actions Common to all Alternatives

Hunting on the refuge would be conducted within the framework of applicable Federal and State laws and regulations, as well as refuge regulations to ensure safety, practice sound management, comply with legal mandates, ensure compatibility with the purposes for which the refuge was established, and provide a quality hunting experience.

2. Alternative A—Current Management

Hunting has been authorized on the refuge since 1957. Current hunting activities and methods permitted on the refuge were initially established in 1989 through a refuge hunting plan (USFWS 1989). Refuge staff complete a new annual hunt plan each year detailing specifics for that year's hunt program.

Under this alternative, the refuge would continue to offer deer and waterfowl hunting. Participants must have a valid NYS hunting license and follow NYS laws and NYSDEC regulations including discharge, possession limits, manner of taking, tagging, reporting, etc.

Since hunting was first opened at Montezuma NWR, the refuge has managed the hunt program through a hunt permit system administered at a hunter check station (per 605 FW 2.7). The check station provides many benefits to the hunt program. The close contact with hunters has allowed the refuge to collect biological information such as the gathering of harvest data and the collection of samples for disease monitoring, such as avian influenza, in recent years. In addition, the permit system provides for a higher quality hunt by limiting the number of hunters per 605 FW 1.6. The close contact that refuge staff has with hunters provides for outreach opportunities, so hunters are more aware of applicable regulations minimizing unintentional violations.

Refuge-specific hunting regulations for each hunt category are listed below.

Deer Hunting:

Under alternative A, the following current regulations would continue:

- 1) Deer hunting on the refuge would continue to begin on November 1, after the mid-October opener of the NYS seasons and ends when the NYS seasons end.
- 2) The refuge would continue to be open to all seasons offered in New York, which include early archery, firearms, and late archery/muzzleloader. Permitted hunting implements follow State regulations.
- 3) For all deer hunting seasons, permits and parking passes would continue to be required and could be picked up daily at the refuge's hunter check station, located at 1095 Route 89, Seneca Falls, New York.
- 4) Hunters would continue to be required to carry their refuge hunt permit on their person.

Parking passes would need to be displayed on vehicle dashboards when hunters are afield. Permits and parking passes would continue to be available at the Route 89 check station from refuge personnel or on a self-service basis from the permit box. Permits are a different color each day.

- 5) For all deer hunting seasons, we would continue to not allow advanced scouting, and boats or canoes would continue to not be allowed on refuge waters.
- 6) Hunters would continue to be required to remove tree stands at the end of each hunt day. Screw-in tree steps would continue to be prohibited.
- 7) For the firearms, or regular season, hunters would continue to be required to wear at least 400 square inches (2,600 square centimeters) of solid blaze orange on the head, chest and back (minimum of a hat and vest). Camouflage orange or red would not be permitted.
- 8) Sunday deer hunting would continue to be prohibited.
- 9) The Wildlife Drive, Main Pool, and Tschache Pool would continue to be closed to deer hunting. Seneca Trail would also be closed to deer hunting unless the refuge manager specifically opens it (see map E.2 for hunting areas under alternative A).

Waterfowl Hunting:

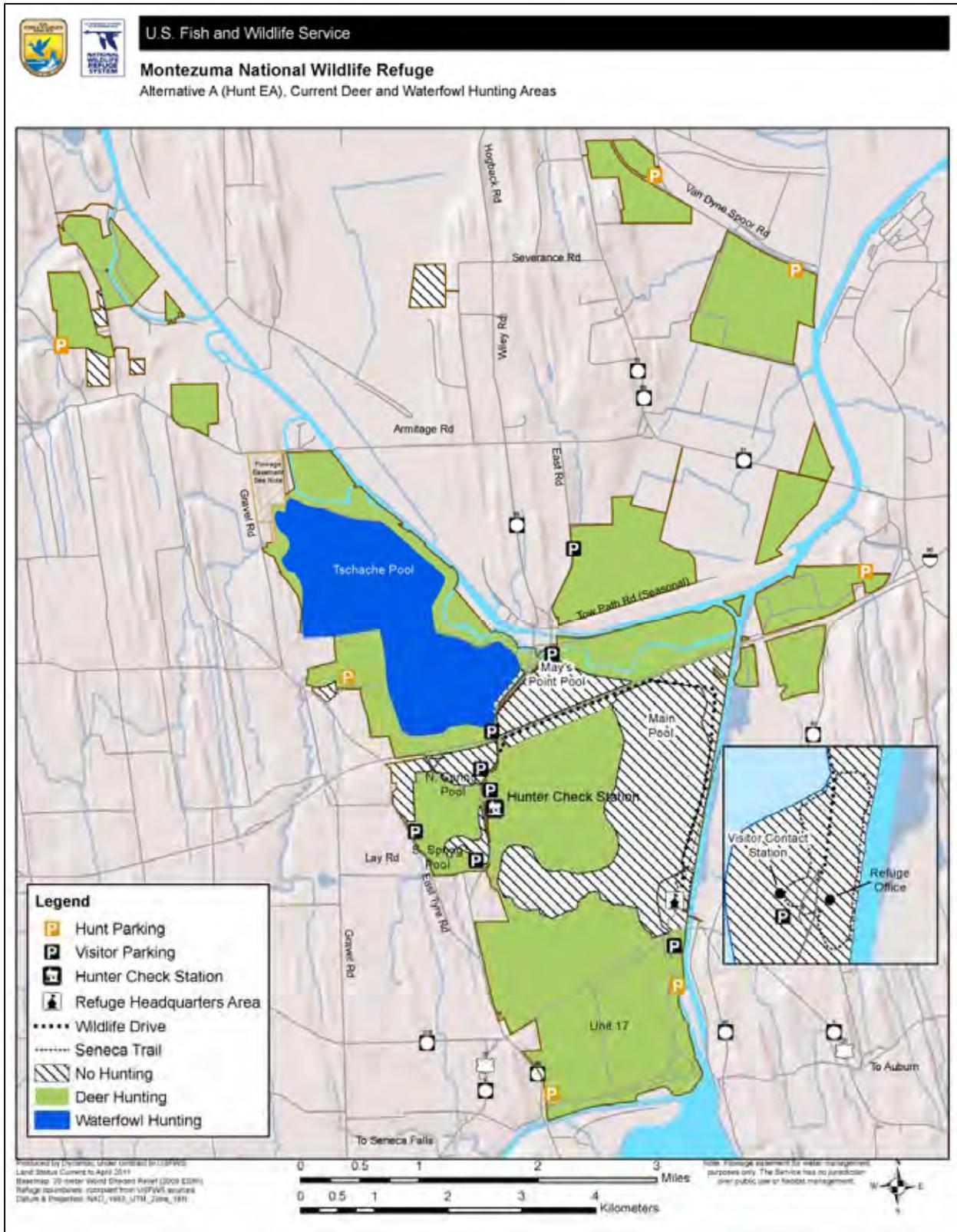
- 1) Hunting of waterfowl would continue to be allowed, at the refuge manager's discretion, on designated areas of the refuge in accordance with State regulations (see map E.2). The refuge would continue to be open for waterfowl hunting on Tuesday, Thursday, and Saturday mornings until noon during the first split of the State's regular waterfowl season (generally late October to early December).
- 2) The refuge would continue to participate in the NYS Youth Waterfowl Hunt Program by offering a Youth Waterfowl Identification Course, as well as by hosting a youth waterfowl hunt on Tschache Pool on the Saturday of the State's Youth Waterfowl Hunt weekend.
- 3) Boats would continue to be required while hunting on designated refuge impoundments. We would continue to limit boats to one boat per reservation. Motors on boats would continue to be prohibited. Hunters would continue to be allowed to select where to hunt within the designated hunting area once they are on the water. Parking sites would continue to be selected by the hunter when placing their reservation.
- 4) Hunting would continue to be by permit only via reservation system. There would continue to be a limit of 20 reservations per day with a maximum of two people per reservation. All reservations would continue to be first-come, first-served. Persons with a reservation may bring one companion. Hunters would continue to reserve the parking area of their choice when making their hunt reservation.

- 5) All hunters with reservations (and their companions) would be required to check in at least 1 hour before legal shooting time (currently legal shooting time is 0.5 hours before sunrise; so check-in would be required by 1.5 hours before sunrise). If hunters do not check in at least one hour before legal shooting time, their reservation could be forfeited. Check-in would continue to be at the hunter check station on Route 89. Hunt permits would continue to cost \$10 per reservation.
- 6) All waterfowl hunters would continue to be required to successfully complete the NYS Waterfowl Identification Course, the Montezuma Nonresident Waterfowl Identification Course, or a suitable nonresident State Waterfowl Identification Course to hunt on the refuge. Hunters would continue to be required to show proof of waterfowl identification course completion each time they hunt.

While not under the Service's jurisdiction, we expect the Seneca and Clyde Rivers adjacent to the refuge would continue to be closed to waterfowl hunting. These areas have been closed to hunting since 1957. Although these waters are managed by the NYS Canal Corporation, they were closed per the request of the refuge. At that time, there were safety and access issues with hunters. This area has remained closed to provide a buffer around the refuge and preclude trespass of waterfowl hunters on portions of the river within or near the refuge.

Canada Goose (Branta canadensis) Hunting:

Waterfowl hunters would continue to be allowed to take Canada geese during the first split of the State's regular waterfowl season. All Federal, State, and refuge regulations would continue to apply.



Map E.2. Hunting Areas on Montezuma NWR for Alternative A, Current Management

3. Alternative B—Service-preferred Alternative

Under this alternative, the refuge would expand the current hunt program in several ways. Hunting would continue to occur per Federal and State regulations, with some minor exceptions related to managing a quality hunt. The hunt program would apply to lands now a part of the refuge and lands added to the refuge in the future.

Deer Hunting:

Under alternative B, the refuge deer hunt program would be the same as alternative A except for the following changes (see map E.3 for proposed hunt areas):

- 1) Except for Esker Brook Trail area, the refuge archery season would open with the State season (usually mid-October), rather than waiting until November 1. Esker Brook Trail area would continue to open November 1 to minimize conflicts with other users.
- 2) Sunday hunting would be allowed for all deer hunt seasons.
- 3) The upland areas adjacent to the Wildlife Drive would be open to hunters beginning December 1.
- 4) Seneca Trail area would be open for the late archery season every year (usually mid to late December for about 9 days).
- 5) The Main Pool and Tschache Pool, when frozen, would be open to deer hunting.
- 6) When deer densities are high, the refuge would work with the NYSDEC Deer Management Assistance Program (DMAP) to maximize the harvest of female deer. An “earn a buck” or similar incentive program may be implemented if harvested sex ratios do not meet our objectives under voluntary incentives. Additional antlerless tags, up to the maximum allowed by State regulations, would be supplied to hunters by the refuge.
- 7) Increase the number of hunters allowed to use firearms on the refuge from 150 to 175, based on the following formula: $TPI = (TRA)/50$ where,
 - TPI = Total Permits Issued
 - TRA = Total Refuge Acreage
 - 50 = constant (approximately 50 acres per hunter for firearms)
 - This number may change as additional acreage is added to refuge ownership.
- 8) We would 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).
- 9) If the NYSDEC designates a Youth Deer Hunt, we would open portions of the refuge to youth deer hunting and implement a youth deer hunt program.
- 10) We would increase the number of universal access points on the refuge. We would enlist deer hunters as volunteers to help build and maintain universal access areas.

Waterfowl Hunting – Regular Season:

Under alternative B, the refuge regular waterfowl hunt program would be the same as alternative A except for the following (see map E.4 for proposed hunt areas):

- 1) As long as the migratory game bird season dates for the NYSDEC 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), waterfowl hunting would be permitted on designated areas of the refuge during the first split on Tuesdays, Thursdays, and Saturdays only. If the Western Zone season dates change dramatically, then the refuge manager would determine when the refuge would be open in accordance with Federal and State regulations.
- 2) Portions of the northeast section of the refuge would be opened annually at the refuge manager's discretion during the first split on Tuesdays, Thursdays, and Saturdays only or at the refuge manager's discretion if the season dates change. Additional areas that may be opened to the regular waterfowl hunt season correspond to those that would be opened to the late snow goose seasons and the resident Canada and late snow goose seasons (see map E.4). Opening these additional areas to hunting would occur only when the refuge manager determines there is sufficient quality habitat available that can be accessed by hunters on foot or by boat without disturbing sensitive species or conflicting with other priority public uses.
- 3) Newly acquired lands, where approved by the refuge manager, also may be opened to waterfowl hunting. Opening these areas would be subject to the same criteria as those listed above.

Canada and Snow Goose (Chen caerulescens) Hunting:

Under alternative B, the refuge Canada and snow goose hunt program would be the same as alternative A except for the following:

- 1) Some refuge grasslands would be opened for the “early” or “resident” Canada goose hunting season (generally September 1 through 25, see map E.4).
- 2) We would 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, see map E.4).
- 3) Portions of the Main Muck would be open for snow goose hunting during the late snow goose hunting season (generally late January to the beginning of March) and the expanded Light Goose Conservation Order (generally the beginning of March through mid-April; see map E.4). These hunts would be regulated differently than the regular waterfowl season as follows:
 - a. Hunting would be permitted 7 days per week.
 - b. There would be no reservation system.
 - c. There would be no fee for a hunt permit.

- d. There would be no limit to the number of shot shells per hunter.
- e. Hunters would have the option to hunt at any time during legal shooting hours.
- f. Successful completion of a waterfowl identification course would not be required.

As with other refuge hunts, all State and Federal regulations apply. Per current State regulations, use of recorded or electrically amplified calls or sounds is allowed and use of shotguns capable of holding more than three shells is allowed during the Conservation Order (generally mid-March to mid-April). All other stipulations of alternative A would apply, including the requirement for hunters to check-in at the Hunter Check Station on Route 89.

Turkey Hunting:

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

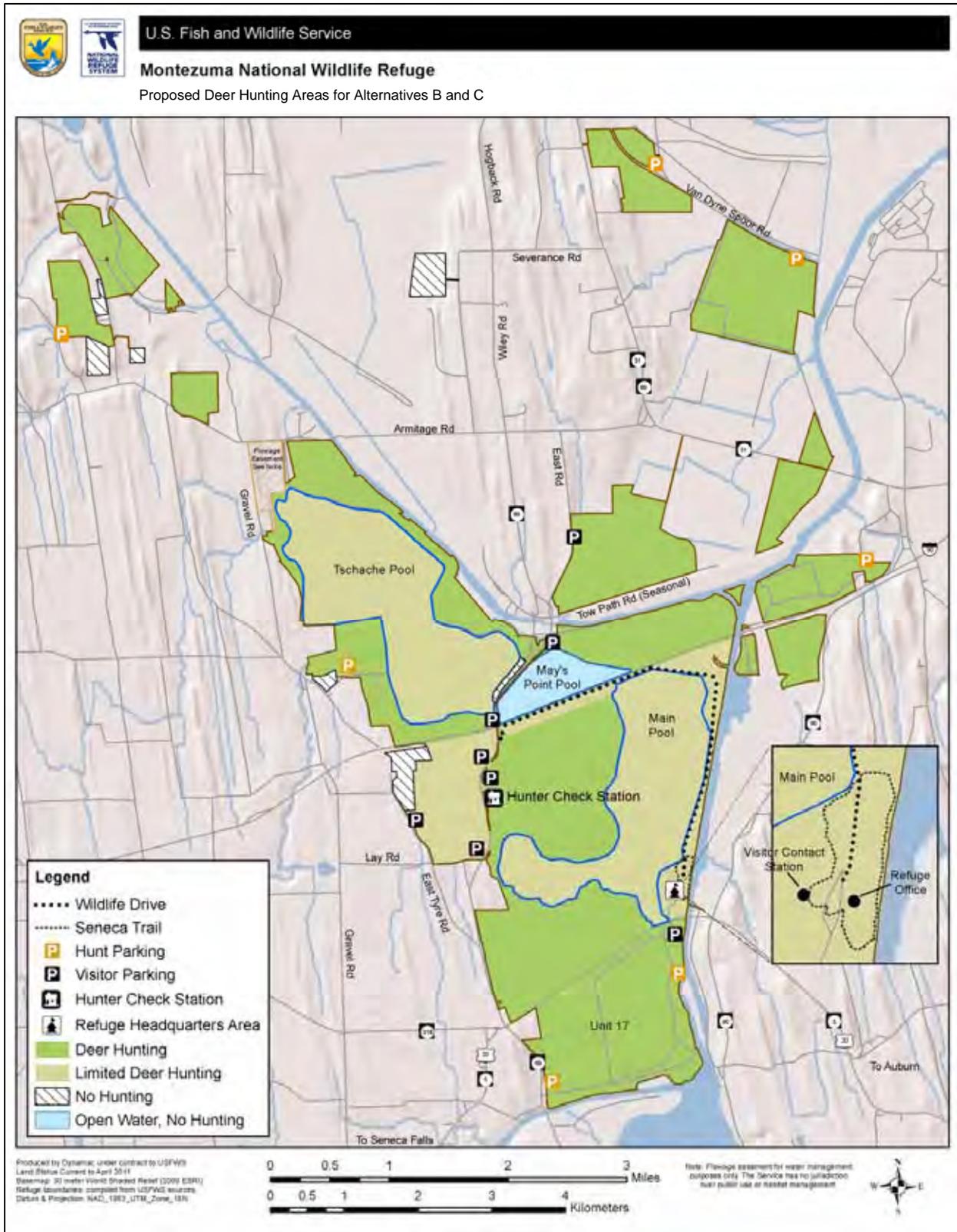
Youth Turkey Hunting

- 1) During the NYS youth turkey hunt (usually in late April), young hunters would be permitted to hunt turkeys according to State regulations in designated areas of the refuge (see map E.5). Hunting would not be permitted in areas closed to hunting to protect facilities and structures, certain habitats, and select public use areas.
- 2) Daily permits would be required. The number of daily permits would be set by the refuge manager each year based on available hunting area(s), maximizing hunt opportunities, providing for a quality hunt experience, public demand, minimizing disturbance to sensitive wildlife and plant species, balancing other public use demands, and the administrative work load. Under current conditions, we would permit 14 hunt groups (mentor and youth(s)) per day, based on the above criteria.
- 3) Participants would be required to make a reservation.
- 4) There would be no hunt fee.
- 5) Hunting season dates, hours, weapon restrictions, bag limits, etc. would follow Federal and 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.
- 6) Every year, implementing the refuge's youth turkey hunt would depend on a commitment from partners to mentor youth hunters. We would work with partners to recruit and sign up youth hunters and their mentors for this hunt.
- 7) Youth hunters and their mentors may be required to attend an orientation program

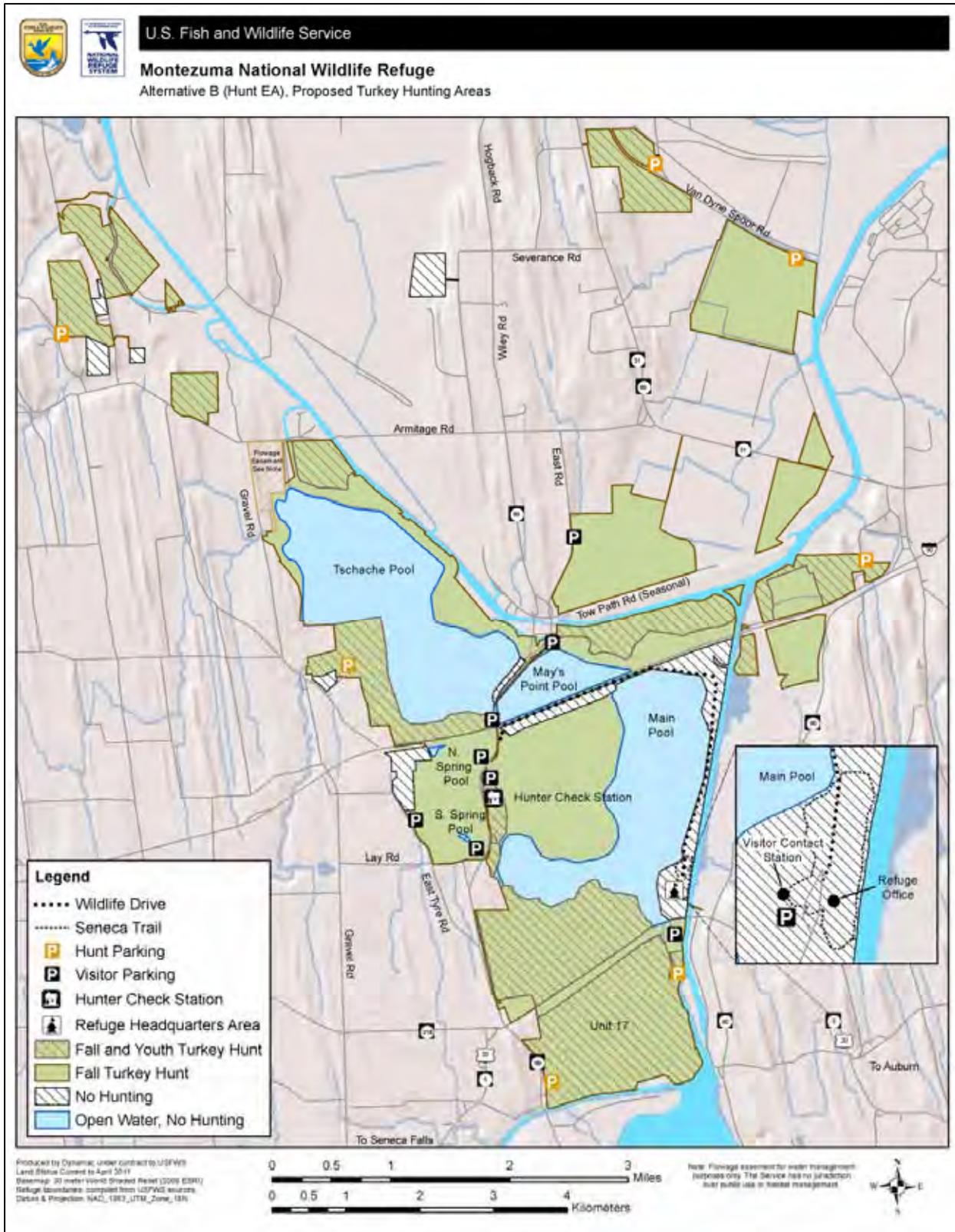
conducted by the refuge, in cooperation with partners. The orientation would include hunter safety, turkey calling, equipment, ethics, and sportsmanship, conservation and information about the refuge system, and other topics relevant to the hunt, Service, or refuge resources.

Fall Turkey Hunting

- 1) Fall turkey hunting would be permitted in areas open to deer hunting. The Wildlife Drive would not be open to turkey hunting because fall turkey season usually ends in November, before the Wildlife Drive opens to hunting. The Wildlife Drive would be open to fall turkey hunting if the State extends the turkey season into December. See map E.5 for designated hunting areas.
- 2) Daily permits would be required. The number of daily permits would be set by the refuge manager each year based on available hunting area(s), maximizing hunt opportunities, providing for a quality hunt experience, public demand, minimizing disturbance to sensitive wildlife and plant species, balancing other public use demands, and the administrative work load. Under current conditions, we would allow 40 permits per day, based on the above criteria.
- 3) There would be no reservation system. Permits would be available on a first-come, first-served basis each hunt day until the day's permits are all taken.
- 4) There would be no hunt fee.
- 5) Hunting season dates, hours, weapon restrictions, bag limits, etc. would follow refuge and State regulations. 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.



Map E.3. Proposed Deer Hunting Areas on Montezuma NWR for Alternatives B and C.



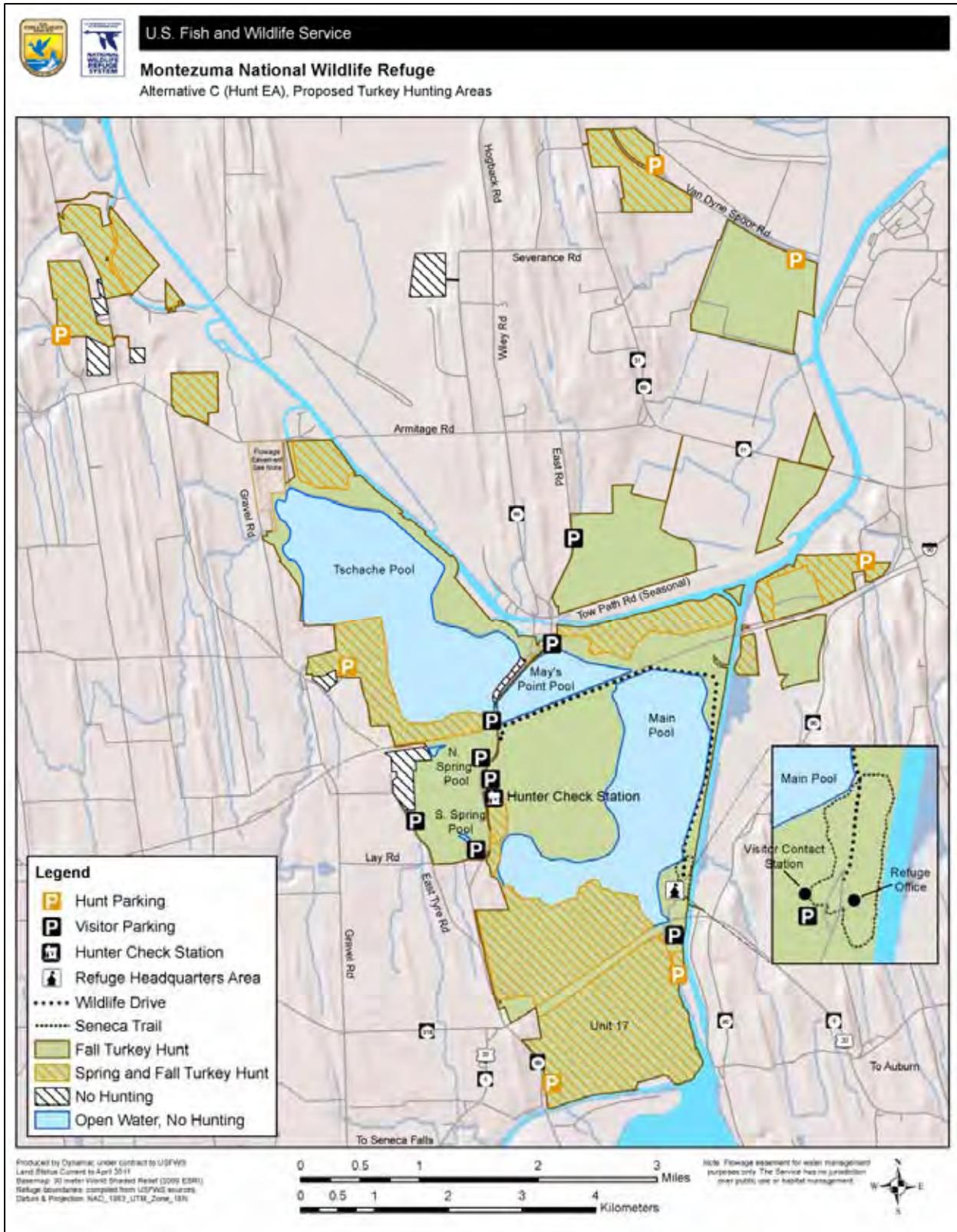
Map E.5. Proposed Turkey Hunting Areas at Montezuma NWR for Alternative B, Service-preferred Alternative.

4. Alternative C—Spring Turkey Hunt: Expand current waterfowl and deer hunting opportunities and administer youth, spring and fall turkey hunts

Under this alternative, the expanded hunts proposed in alternative B would be implemented. In addition, parts of the refuge would be open to spring turkey hunting according to NYS regulations. As with alternative B, the hunt program would apply to current refuge lands and properties acquired in the future.

Spring Turkey Hunting:

- 1) Turkey hunting would be permitted in designated areas of the refuge except areas closed to hunting to protect facilities and structures, certain habitats, and select public use areas. See map E.6 for designated hunting areas.
- 2) Daily permits would be required. The number of daily permits would be set by the refuge manager each year based on available hunting area(s), maximizing hunt opportunities, providing for a quality hunt experience, public demand, minimizing disturbance to sensitive wildlife and plant species, balancing other public use demands, and the administrative work load. It would match the number of permits issued for the youth hunt, which would currently be 14 hunt groups per day, based on the above criteria.
- 3) There would be no reservation system. Permits would be available on a first-come, first-served basis each hunt day until the day's permits are all taken.
- 4) There would be no hunt fee.
- 5) Hunting season dates, hours, weapon restrictions, bag limits, etc. would follow refuge and State regulations. 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.



Map E.6. Proposed Turkey Hunting Areas on Montezuma NWR for Alternative C, Spring Turkey Hunt.

V. Affected Environment

The physical environment of the Montezuma NWR has been fully described in the refuge's Habitat Management Plan (USFWS 2008), as well as the Montezuma NWR Draft Comprehensive Conservation Plan and Environmental Assessment (draft CCP/EA) (USFWS 2012). These descriptions are incorporated by reference, with the affected resource areas summarized here. There are many resources of concern on the refuge, including federally listed, threatened and endangered species, State-listed threatened and endangered species, species of concern, and significant ecological communities. For a list of the refuge's resources of concern, please see appendix A of the draft CCP/EA (USFWS 2012).

The scope of the affected environment analyses and discussion is limited to resident wildlife, migratory birds, federally listed, endangered species, socioeconomic resources, other refuge wildlife-dependent recreation, refuge facilities, cultural resources, refuge environment, and the local community. All of these resources were determined to be potentially impacted positively or negatively by a hunting program.

A. Resident Wildlife

1. Mammals

The refuge supports a diversity of mammal species that contribute to the ecological, economic and aesthetic value of the refuge. A total of 43 species of mammals have been recorded on the refuge for at least a portion of the year. The most commonly observed mammal species include eastern cottontail (*Sylvilagus floridanus*), woodchuck (*Marmota monax*), gray squirrel (*Sciurus carolinensis*), white-tailed deer (*Odocoileus virginianus*), and numerous furbearers.

Eastern cottontail rabbits utilize agricultural fields, grasslands and scrub-shrub habitats. Although formal surveys have not been performed, the population status of eastern cottontail appears to be healthy.

Woodchucks are commonly seen around central New York in old farm fields and other tall grass areas. With minimal woodchuck habitat on the refuge, populations appear to be healthy.

Gray squirrels are present at Montezuma NWR, but they are likely uncommon due to the low abundance of oak and hickory trees. No recent population studies on gray squirrels have been conducted on the refuge.

White-tailed deer are an edge specialist, thriving on habitat that contains grassland, agricultural fields, and wooded cover in close proximity. The refuge provides ample habitat for deer. Approximately 220,000 deer are harvested from the State of New York each year (NYSDEC 2011a) however live populations are difficult to estimate accurately. It is evident that the population is large due to the negative effect the deer exhibit on refuge habitat (i.e., browse damage on herbaceous and woody plants) (Rawinski 2010 personal communication). Further, recent trends (1991 to 2006) have demonstrated that deer hunters in the State of New York are

declining (Aiken 2010). The number of refuge archery hunt visits follows this trend; whereas gun hunt visits on the refuge are increasing.

Furbearers on the refuge include muskrat (*Ondatra zibethicus*), American beaver (*Castor canadensis*), American mink (*Neovison vison*), striped skunk (*Mephitis mephitis*), weasel (*Mustela* sp.), raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginiana*), red and gray fox (*Vulpes vulpes* and *Urocyon cinereoargenteus*), and coyote (*Canis latrans*). These species are all managed through the refuge's Trapping Program. Healthy populations of these species exist at the refuge as well as throughout the northeastern U.S. and Canada (NFRTC 2000). In addition, river otter (*Lontra canadensis*) are present on the refuge with a growing population as a result of restoration efforts throughout western New York. They are a protected species due to their relatively low numbers.

The importance of flooded forests and emergent wetlands on the refuge as summer bat habitat has been recently documented through acoustic surveys in cooperation with NYSDEC. Preliminary results suggest exceptionally high concentrations of big brown bats (*Eptesicus fuscus*) along the Main Pool and tri-colored bats (*Perimyotis subflavus*) throughout the complex. Other species detected include: silver-haired bat (*Lasionycteris noctivagans*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), and little brown bat (*Myotis lucifugus*).

2. Reptiles and Amphibians

Sleggs (1997) conducted a baseline inventory of reptiles and amphibians on the refuge in 1995 and 1996 using various methods including evening audio surveys for frogs and toads, visual encounter surveys, and live-trapping using pitfalls, drift fences, funnel traps, minnow traps, and aquatic hoop traps. Frogs and toads recorded during this survey include American toad (*Bufo americanus*), gray treefrog (*Hyla versicolor* and *H. chrysoscelis*), spring peeper (*Pseudacris crucifer*), western chorus frog (*Pseudacris triseriata triseriata*), bullfrog (*Rana catesbeiana*), green frog (*Rana clamitans melanota*), wood frog (*Rana sylvatica*), and northern leopard frog (*Rana pipiens*). Salamanders included mudpuppy (*Necturus maculosus*), blue spotted/Jefferson salamander (*Ambystoma laterale* and *Ambystoma jeffersonianum*), and northern two-lined salamander (*Eurycea bislineata*). Spotted salamanders (*Ambystoma maculatum*) also have been documented. Turtles observed during the survey included snapping turtle (*Chelydra serpentina*), common musk turtle (*Sternotherus odoratus*), midland and eastern painted turtles (*Chrysemys picta marginata* and *C. picta picta*). Documented snakes include northern water snake (*Nerodia sipedon sipedon*), northern brown snake (*Storeria dekayi dekayi*), and eastern garter snake (*Thamnophis sirtalis sirtalis*). The refuge has potential habitat for a number of other reptile and amphibian species including eastern newt (*Notophthalmus viridescens*), northern dusky salamander (*Desmognathus fuscus*), Allegheny mountain dusky salamander (*D. ochrophaeus*), four-toed salamander (*Hemidactylium scutatum*), eastern red-backed salamander (*Plethodon cinereus*), pickerel frog (*Rana palustris*), spotted turtle (*Clemmys guttata*), wood turtle (*Glyptemys insculpta*), milksnake (*Lampropeltis triangulum*), eastern ribbon snake (*Thamnophis sauritus*), and smooth greensnake (*Liochlorophis vernalis*) (Gibbs et al. 2007).

3. Turkey

Historically, turkeys were abundant in NYS during the 1600s. However, uncontrolled hunting and deforestation resulted in their population crash (Roberts et al. 2011). They were reestablished 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 turkeys 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).

No recent population studies have been conducted on the refuge. Wetland habitats comprise 88 percent of refuge lands. Oak mast is the most important fall and winter food for turkeys (Dickson 1990); however, oak trees are not common at 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.

B. Migratory Species

1. Waterfowl (Ducks and Geese)

The Montezuma NWR supports one of the largest migratory concentrations of waterfowl in the Northeast. On the refuge, impoundments are managed to provide optimal habitat for migrating waterfowl. During fall migration, waterfowl require large amounts of carbohydrate-rich foods to aid their migration and build up their energy reserves. The refuge periodically drains impoundments in the spring to promote the growth of moist-soil vegetation; seeds of these plants provide a readily available source of carbohydrates. In advance of fall migration, wetlands that have been drawn down are reflooded in preparation for the arrival of waterfowl.

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.

New York is situated within the Atlantic Flyway which had an estimated population of over one million resident Canada geese in 2009 (USFWS 2009). These geese take up residence on or near the refuge year round. A September hunt was developed in New York to aid in controlling the population of these resident populations.

2. Shorebirds

The Montezuma Marsh basin was historically the most significant migratory stopover site for shorebirds in upstate New York and is still considered one of the most important inland shorebird sites in the Northeast (Rosenberg 2011 personal communication). On the refuge, water levels on various impoundments are managed seasonally to provide exposed mudflats for foraging shorebirds.

Volunteers conducted weekly shorebird surveys on Montezuma NWR throughout the year in 2010. They detected 19 species and two peaks in abundance with almost 1,000 shorebirds detected in mid-August and again in mid-September. The most common species were least sandpiper (*Calidris minutilla*) and semipalmated sandpiper (*C. pusilla*).

3. Marsh and Wading Birds

Emergent marsh impoundments on the refuge support a diversity of marsh nesting birds. Callback surveys conducted during 2009 and 2010 confirmed breeding by American bittern (*Botaurus lentiginosus*), least bittern (*Ixobrychus exilis*), pied-billed grebe (*Podilymbus podiceps*), Virginia rail (*Rallus limicola*), sora (*Porzana carolina*), American coot (*Fulica americana*), and common moorhen (*Gallinula chloropus*).

Black terns (*Chlidonias niger*) produced approximately 500 young on the refuge in 1958. By the early 1990s, there were none nesting on the refuge, most likely due to the purple loosestrife (*Lythrum salicaria*) invasion and declining black tern populations regionwide, also due to habitat loss (USFWS 2008). By 1998, black terns were nesting on the refuge again in low numbers. In 2009, 22 nesting pairs were observed on Tschache Pool.

A nesting colony of great blue herons (*Ardea herodias*) has been present on the refuge many years throughout the history of the refuge. Nest colonies move, and the rookeries have been in various locations on the refuge, including Maple Island, Tschache Pool, and Unit 17 East.

Black-crowned night-herons form nesting colonies on the refuge intermittently. They have nested on Maple Island and in cattails in the Main Pool, and in 2011, a colony was observed in the Sandhill Crane Unit.

In the U.S., by the 1930s, the sandhill crane (*Grus canadensis*) population was nearly decimated across its range (USFWS 2008). Today the population has recovered to 650,000 birds. Sandhill cranes were first observed in the MWC during spring migration in 1999. In 2003, a few cranes were observed during migration and the first confirmed breeding occurred. A pair with young was observed again in the 2004 through 2010 breeding seasons. A pair of sandhill cranes bred on the refuge for the first time in 2011.

4. Land Birds

Many species of land birds find refuge in the different habitats Montezuma NWR offers. The following species of concern have been detected on the refuge: osprey (*Pandion haliaetus*), bald eagle (*Haliaeetus leucocephalus*), northern harrier (*Circus cyaneus*), peregrine falcon (*Falco peregrines*), sharp-shinned hawk (*Accipiter striatus*), short-eared owl (*Asio flammeus*), common nighthawk (*Chordeiles minor*), chimney swift (*Chaetura pelagic*), northern flicker (*Colaptes auratus*), horned lark (*Eremophila alpestris*), willow flycatcher (*Empidonax traillii*), wood thrush (*Hylocichla mustelina*), brown thrasher (*Toxostoma rugum*), blue-winged warbler (*Vermivora pinus*), cerulean warbler (*Dendroica cerulean*), prothonotary warbler (*Protonotaria citrea*), scarlet tanager (*Piranga olivacea*), rose-breasted grosbeak (*Pheucticus ludovicianus*), field sparrow (*Spizella pusilla*), bobolink (*Dolichonyx oryzivorus*), eastern meadowlark (*Sturnella neglecta*), rusty blackbird (*Euphagus carolinus*), and Baltimore oriole (*Icterus galbula*).

Within the last 2 to 3 years, NYSDEC and the Service have been conducting winter raptor surveys. Many raptors have been identified on the refuge including two State-listed species, the short-eared owl and northern harrier. They were found to be using grasslands and marshes on the refuge and in the MWC. Recent radio telemetry records of a short-eared owl show use of the refuge's Main Pool.

According to a 1995 breeding bird survey, the 10 most frequently recorded species were song sparrow (*Melospiza melodia*), American robin (*Turdus migratorius*), yellow warbler (*Dendroica petechia*), common yellowthroat (*Geothlypis trichas*), red-winged blackbird (*Agelaius phoeniceus*), eastern wood-pewee (*Contopus virens*), brown-headed cowbird (*Molothrus ater*), swamp sparrow (*Melospiza georgiana*), veery (*Catharus fuscescens*), and wood thrush (*Hylocichla mustelina*).

The MWC is one of four sites in New York with exceptional numbers of cerulean warblers recorded during the Cerulean Warbler Atlas Project (Rosenberg et al. 2000). This warbler is among the highest priority landbirds for conservation in the U.S. based on a small total population size and a significant decline in Breeding Bird Survey trend throughout its range (-4.2 percent per year since 1966) (Rosenberg et al. 2000). On the MWC, the cerulean warbler occurs in forested wetlands. Despite the extensive agricultural landscape, the MWC supports the second highest concentration of ceruleans in New York.

Prior to the 1950s more than 70 pairs of bald eagles nested in NYS, by the 1960s only one active nest remained. In the 1970s NYSDEC, in cooperation with the Service, led the national recovery of the bald eagle. From 1976 to 1980, 23 young eagles were released at Montezuma NWR. The first wild pair of eagles nested again at Montezuma NWR in 1987, after a 30-year absence. Adult and immature eagles use the refuge throughout the year. While the Main Pool was draining to encourage vegetative growth in 2007, 59 bald eagles were counted on one early June morning.

C. Federally Listed Species

Two federally listed species, the endangered Indiana bat (*Myotis sodalis*) and the threatened bog turtle (*Clemmys muhlenbergii*), are found on or near the refuge. The Indiana bat has been found on Howland's Island on the NYSDEC Northern Montezuma Wildlife Management Area and likely occurs on the refuge. Indiana bats roost under the peeling bark of dead and dying trees in wooded or semi-wooded areas during summer. Roost trees are likely to be exposed to direct sunlight throughout the day, and are commonly found in upland habitats or in floodplain forests.

The bog turtle is known to occur in the three counties that intersect on the refuge. However, the New York Natural Heritage Program determined that habitat for this species does not currently exist on the refuge (Sechler 2008).

D. Socioeconomic Setting

In the largely rural setting surrounding the refuge, hunting has always been a traditional recreational activity. During the 1980s and 1990s, hunting decreased in many states, including New York, with the overall number of hunters in the U.S. decreasing and not keeping pace with population growth.

Although the population of New York grew by approximately 8 percent between 1990 and 2009, the counties surrounding the Montezuma NWR had relatively slow population growth or their population declined over a similar timeframe. In terms of economic activity, the three counties

are very similar. The major industries are education, healthcare, and manufacturing, accounting for at least 20 percent of the jobs in each county (U.S. Census Bureau 2010).

Land use in the tri-county area is dominated by agriculture. More than 1,010 farms cover over 60 percent of Cayuga County, with approximately 259,300 acres under cultivation (Cayuga County Chamber of Commerce 2010). For Seneca County, in 2003 there were 127,000 acres in farms, 61 percent of the county's total 207,944 acres (Cornell University Cooperative Extension 2010). In 2007, Wayne County had 938 farms on 168,000 acres, or 45 percent of the county's land area (Wayne County Agricultural Development Board 2009).

County-specific data regarding the economics of wildlife-related recreational opportunities were not available during the preparation of this report. However, the Service has prepared several reports (USFWS 2006), which summarize the expenditures associated with various wildlife-related activities. Most participants engaged in wildlife watching (84 percent), followed by fishing (25 percent), and hunting (12 percent). You'll note that the sum of these exceeds 100 percent because many participants engaged in more than one activity.

During 2006, State residents and nonresidents spent \$3.5 billion on all types of wildlife recreation in New York. The majority of that total was spent on equipment (\$1.6 billion), followed by trip-related expenditures (\$1.5 billion), licenses, contributions, land ownership and leasing, and other items (\$491 million). Roughly one-third of all people engaged in wildlife activities in New York were nonresidents. Compared to 1996, the number of participants engaged in fishing and hunting declined, as did associated expenditures. During that same 10-year period, wildlife watching increased, but associated expenditures declined. Full reports (1996, 2001, and 2006) can be viewed online at: <http://www.census.gov/prod/www/abs/fishing.html>.

Hunting has an important national and local economic impact. Hunters contribute to the local economy by purchasing gasoline, food, lodging, ammunition, etc. Approximately 566,000 residents and nonresidents participated in hunting in New York in 2006. That group spent more than \$715 million on activities and equipment related to hunting (USFWS 2006). With the proposed expansion of the hunt program at Montezuma NWR, it is likely that additional refuge visitors, and refuge visits, would bring more money into the local economy.

E. Other Wildlife Dependent Recreation

The purpose of the Visitor Services Program is to provide opportunities for appropriate and compatible wildlife-dependent recreation that enable the public to enjoy the refuge. The refuge provides wildlife-dependent recreational opportunities while recognizing that wildlife conservation is the first priority of the Refuge System. Per the Refuge Improvement Act, the six priority public uses of the Refuge System are hunting, fishing, wildlife observation and photography, and environmental education and interpretation (<http://www.fws.gov/policy/605fw1.html>). The Service develops wildlife-dependent recreation programs based on the following criteria:

- 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 define and evaluate programs.

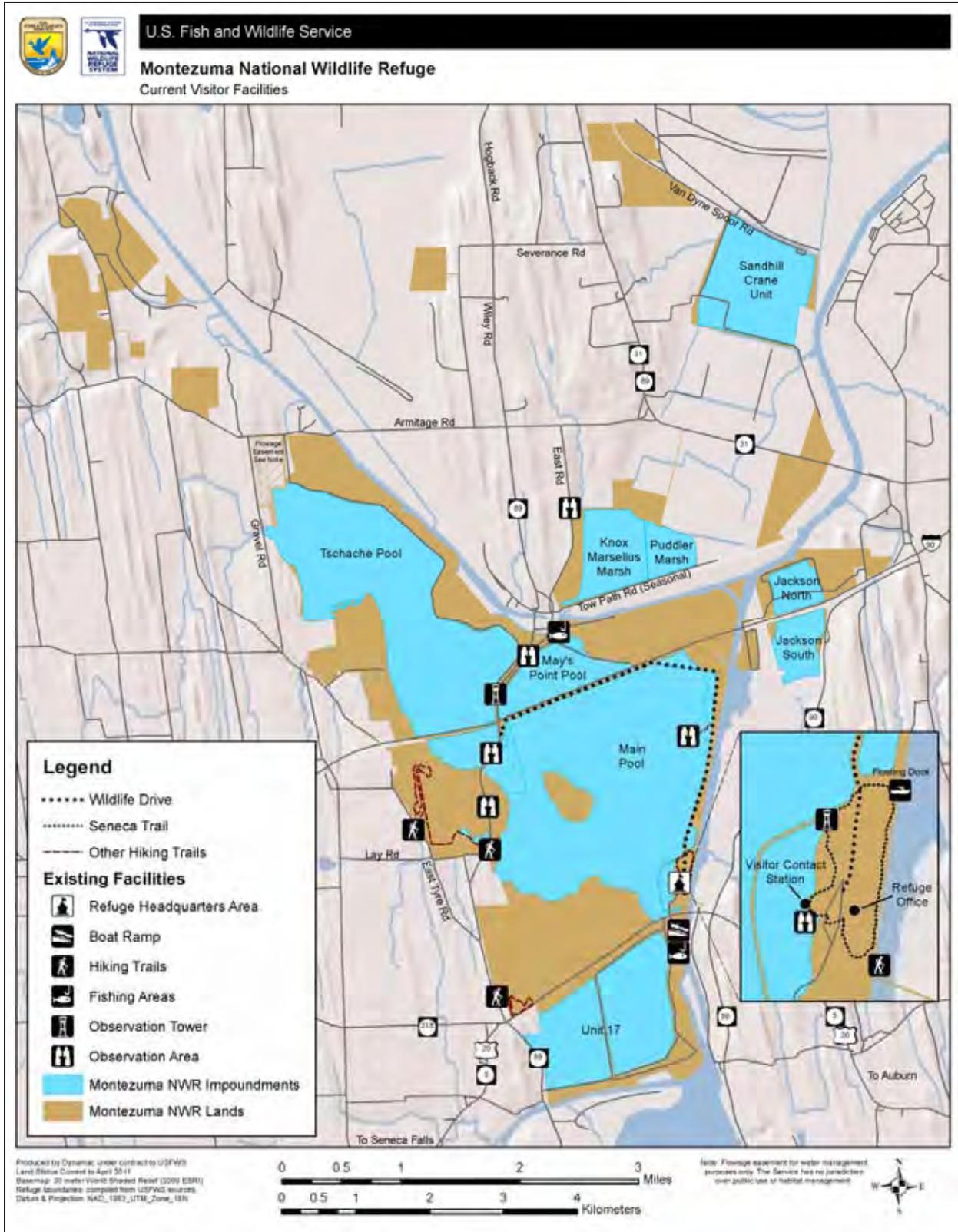
The refuge hosts an average of 143,000 annual visits (5-year average) and facilitates opportunities for all six priority public uses. Map E.7 shows the major public use facilities on the refuge, such as observation towers and trails. Table E.1 shows the estimated number of visits for the six priority public uses that are allowed on the refuge.

Table E.1. Visits¹ to Montezuma National Wildlife Refuge Between 2006 and 2010.

Type of Visit ²	2006	2007	2008	2009	2010
Visitor Contact Station	11,696	15,525	14,846	15,234	16,938
Waterfowl Hunt	600	563	352	152	355
Big Game Hunt	1,351	1,371	1,909	1,893	1,897
Fishing	4,072	4,224	3,972	3,922	3,937
Wildlife Observation and Photography	112,720	116,600	117,021	127,790	123,404
Environmental Education	524	1,986	854	949	818
Interpretive Program	480	612	922	1,450	702
Special Events	-	480	493	715	1,040
Total	131,443	141,361	140,369	152,105	149,091

¹ A refuge visit is defined as “the entry of one person onto a Refuge System station to engage in one recreational or educational activity. ... One visitor could account for several visits” (USFWS 2005a).

² Visitor numbers are based on direct counts by refuge staff, volunteers, a traffic counter, and a counter at the visitor contact station. Some estimation and professional judgment are used to determine visits for wildlife observation and photography, interpretation, and fishing using methods in chapter 2 of the National Wildlife Refuge System Visitation Estimation Workbook (USFWS 2005a).



Map E.7. Current Montezuma National Wildlife Refuge Visitor Facilities.

Hunting is just one aspect of a broad education and recreation program on the refuge which strives to increase public awareness of wise wildlife and habitat stewardship. Refuge visitors seek high quality public access and public use opportunities.

1. Wildlife Observation and Photography Opportunities

In 2005, the Northeast Region Visitor Services Review Team identified visitor programs of emphasis for each refuge. Wildlife observation is one of two areas of emphasis for Montezuma NWR. The refuge offers numerous opportunities for wildlife observation and photography, including a Wildlife Drive, photography blind, walking trails, a floating boat dock, and observation areas throughout the refuge. Visitors have the opportunity to view and photograph a variety of habitats and wildlife. In addition, there is currently an annual photography contest coordinated by the Friends of the Montezuma Wetlands Complex (Friends). In the visitor contact station, visitors can view osprey nesting activities via an osprey cam; this is also available during the osprey breeding season, online at: <http://www.friendsofmontezuma.org>.

2. Environmental Education and Interpretation

Environmental interpretation is the second area of emphasis identified for the refuge. Interpretive panels and the complexwide “Guide by Cell” cellphone tour (funded by the Friends), along with the refuge’s Wildlife Watching Guide, convey not only orientation information, but also information about the refuge’s history and management. Special guest speaker programs are offered every other month as part of the Nature of Montezuma Series, in cooperation with the Montezuma Audubon Center (MAC) and supported by the Friends. Guided interpretive bus tours are given by refuge staff upon request and as part of the Wildflowers and Wine Festival in June and the National Wildlife Refuge Week Celebration in October. An annual guided interpretive walk on International Migratory Bird day highlights refuge work on cerulean warbler habitat. Winter program series, such as the Montezuma Book Club and Eco-Chat, have also been used as platforms for environmental interpretation.

Environmental education is not an area of emphasis for the refuge; with limited staff, the focus is on wildlife observation and environmental interpretation. The visitor services manager (with the help of volunteers) accommodates groups requesting programs when time permits. Other opportunities for visitors to engage in environmental education exist nearby at facilities where the main purpose is environmental education. The MAC is one of those facilities located in the MWC. The visitor services manager works with MAC environmental educators to create programs that include visits to both sites. The Seneca Meadows Environmental Education Center is another facility located just outside of the MWC and is growing in the number and variety of environmental education programs offered.

3. Fishing

Public fishing access is provided at both the May’s Point fishing access area and the Seneca River site on Routes 5 and 20, near the refuge headquarters. Both areas follow State seasons and regulations. There is a universally accessible fishing platform at May’s Point. Both sites are very popular for anglers.

F. Refuge Facilities

Refuge facilities are spread out in different locations. The refuge headquarters is situated north of State Routes 5 and 20 adjacent to the Seneca River and includes the main office, the visitor contact station, the main shop, storage buildings, a small office locally called the fur house, a public restroom, a viewing platform and tower, as well as a floating dock on the Seneca River. The refuge subheadquarters is located west of the Main Pool along Route 89 and encompasses the hunter check station, a public restroom, a house (quarters) for seasonal employees, and a small garage. There is also a second house (quarters) and garage on the Clyde River just south of the village of Clyde.

The refuge maintains 3.5 miles of paved roads, and approximately 30 miles of unpaved roads, mostly consisting of impoundment dikes. Several miles of dikes and numerous water control structures are maintained. Public use facilities include the visitor contact station, two viewing towers, three viewing platforms, three pulloffs/overlooks, two fishing access sites, two public restrooms, and approximately 5.5 miles of trails.

G. Cultural Resources

The body of Federal historic preservation laws has grown dramatically since the enactment of the Antiquities Act of 1906. Several themes recur in these laws, their promulgating regulations, and more recent Executive Orders. They include: 1) each agency is to systematically inventory the historic properties on their holdings and to scientifically assess each property's eligibility for the National Register of Historic Places; 2) federal agencies are to consider the impacts to cultural resources during the agencies' management activities and seek to avoid or mitigate adverse impacts; 3) the protection of cultural resources from looting and vandalism are to be accomplished through a mix of informed management, law enforcement efforts, and public education; and, 4) the increasing role of consultation with groups, such as Native American tribes, in addressing how a project or management activity may impact specific archaeological sites and landscapes deemed important to those groups. The Service, like other federal agencies, is legally mandated to inventory, assess, and protect cultural resources located on those lands that the agency owns, manages, or controls. The Service's cultural resource policy is delineated in the Service Manual section 614 FW 1-5 and 126 FW 1-3 (available at: <http://www.fws.gov/policy/manuals/>).

Service acquisition of land with known or potential archaeological or historical sites provides two major types of protection for these resources: protection from damage by federal activity and protection from vandalism or theft. The National Historic Preservation Act requires that any actions by a Federal agency which may affect archaeological or historical resources be reviewed by the Service's Regional Historic Preservation Officer as well as the State Historic Preservation Office, and that the identified effects must be avoided or mitigated. The Service's policy is to preserve these cultural, historic, and archaeological resources in the public trust, and avoid any adverse effects wherever possible.

Land acquisition by the Service provides some degree of protection to significant cultural and historic resources. Archaeological surveys and other information collected on the refuge indicate that there are several cultural resource sites at Montezuma NWR. These sites, while

located in hunting zones, are relatively unknown locations that are buried, therefore no impacts from hunters are anticipated.

H. Refuge Environment (Vegetation/Habitat Types)

The refuge supports the following habitats: emergent marsh, open water, inland mudflat, bottomland floodplain forest, scrub/shrub, upland forest, cropland, grassland, and developed infrastructure. The refuge consists of approximately 88 percent wetlands (including emergent marsh, open water, mudflats, bottomland floodplain forest, canal, rivers, ditches, ponds, and portions of grassland and shrubland habitats) and 12 percent uplands.

Cowardin (1965) compiled an annotated list of vascular plants on the refuge. He notes in his introduction that the most important plant communities on the refuge are bottomland hardwood forests and cattail (*Typha* spp.) marsh. See table E.2 and map E.8 for more information about refuge habitats.

Table E.2. Habitats on Montezuma NWR.

Habitat Type	Acres ¹	Percent
Emergent Marsh	4,307	46.9
Bottomland Floodplain Forest	1,685	18.3
Riparian Forest Corridor	1,033	11.2
Scrub/Shrub	866	9.4
Upland Forest (all successional stages)	299	3.3
Cropland	183	2.0
Grassland	316	3.4
Canals/Rivers/Ditches/Ponds	179	1.9
Infrastructure (dikes, facilities, trails, etc.)	316	3.4
Total	9,184	100

¹Acres are current as of October 2012.

I. Wetlands

The three major types of wetlands on the refuge, according to Cowardin et al. (1979), are aquatic bed, emergent wetland, and forested wetland. Aquatic bed refers to wetlands and deepwater habitats that are dominated by plants which grow primarily on or below the water surface. Emergent wetlands are characterized by rooted herbaceous hydrophytes and usually occur in calm, shallow water. These habitat types provide numerous benefits, including flood protection by acting as sponges which absorb excess water; improved water quality by filtering toxins introduced by agricultural runoff; and diverse habitat for wildlife (EPA 2010). The ratio of aquatic bed to emergent wetland on the refuge is dependent on water level management in refuge impoundments.

2. Uplands

Most of the upland habitat on the refuge is maintained in an early successional (grassland and shrublands) stage through active management. Succession is set back in these areas through a variety of management techniques, including mowing, burning, disking, planting, hydroaxing, and chemical treatment.

3. Rare Plants and Significant Ecological Communities

The New York Natural Heritage Program tracks rare species and rare or exemplary ecological communities in the State. The program provided a list of rare plants and significant ecological communities known to occur on or near the refuge (see appendix A). The New York Natural Heritage Program considers three vegetation associations at Montezuma NWR to be significant or exemplary occurrences of natural communities: Floodplain Forest, Silver Maple-Ash Swamp, and Red Maple-Hardwood Swamp. Several other rare species (appendix A) and plant communities (appendix B) are documented on or near the refuge.

I. Community

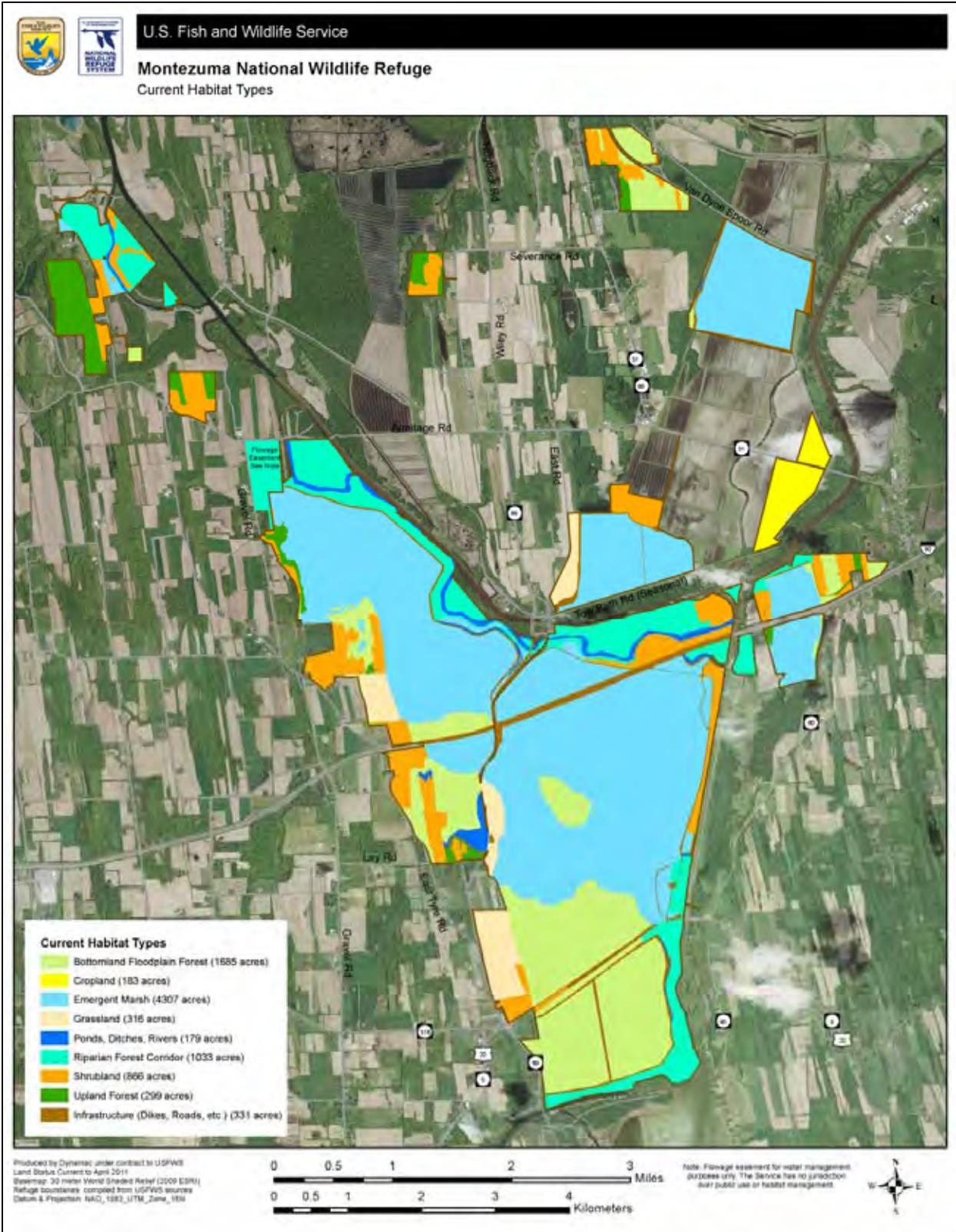
The Montezuma NWR is nestled in the heart of NYS's Finger Lakes region. Visitors come from all over to enjoy the beauty and recreational opportunities of the lakes and surrounding landscapes. While agriculture is prevalent, in more recent years wineries have been increasing, making the Finger Lakes New York's largest wine producing region.

The refuge is located on the northern end of the second largest finger lake, Cayuga Lake. The lake is approximately 38 miles in length with the city of Ithaca at its southern tip, where Cornell University is located.

The NYS Thruway or Interstate 90 traverses the heart of the refuge. Nearly equidistant, 60 miles to the east and west are the cities of Syracuse and Rochester, respectively. The immediate area surrounding the refuge is largely rural with smaller towns dominating, such as Seneca Falls, Savannah, and Montezuma. Ten miles to the east is the city of Auburn.

The refuge lies within the Southeast Lake Ontario Basin (SELO Basin). The SELO Basin covers 4.3 million acres (all or part of 19 counties) in west central New York from Rochester east to the mouth of Stony Creek and south encompassing the Finger Lakes. Important habitat types within the SELO Basin include emergent marsh, riparian forest, and grassland. According to the EPA's land classification, 50 percent of the SELO Basin is forested. The rest of the land area is dominated by agriculture, 24 percent in row crops and 16 percent in hay or pasture. Forty-five percent of the 1.7 million people that live in the SELO Basin are in and around Syracuse. The population of the Basin is expected to continue to decline (NYSDEC 2005).

The NYS Comprehensive Wildlife Conservation Strategy identified conservation priorities within the major watershed basins of the State (NYSDEC 2005). The watershed basin boundaries are taken from the U.S. Geological Survey (USGS) 4-digit Hydrologic Unit Codes. The refuge is within an area of broad, flat wetland basins at the north and south ends of "finger lakes," interspersed with oval-shaped hills (drumlins) left by the glaciers.



Map E.8. Current Habitats of Montezuma National Wildlife Refuge.

Much of the lands in and around the MWC are in private ownership dominated by muck farms. The major crops are corn, potatoes, onions, beans, wheat, and hay. Muck is the organic soil from drained wetlands, exposed across large areas when the canals were created during the height of agriculture in the 1800s and 1900s. Muck farming was an important part of farming in New York and other states. Onions, potatoes, celery, and carrots grow especially well on these soils. However, today the most commonly grown crops in this area are corn, soybeans, and potatoes.

VI. Environmental Consequences

The scope of analysis for the environmental consequences is limited to those resources that could be impacted by the proposed action and its alternatives, specifically, the natural environment, vegetation communities, wildlife populations, wildlife-dependent recreation, and the local economy. NEPA requirements associated with constructing additional infrastructure (e.g., pulloffs, hunting blinds, accessible sites) are either addressed in the draft CCP/EA or will be addressed separately as needed. Therefore, we do not address impacts associated with these activities in this document. Implementation of other aspects of the hunting program, under any of the three alternatives presented, is not expected to have effects on the Montezuma NWR cultural or visual resources, or land use. Since areas surrounding Montezuma NWR are traditionally heavily hunted areas, there should be no increase in traffic resulting from opening the refuge to public hunting. Therefore no impacts are anticipated from traffic congestion or to air quality from vehicular emissions.

A. Anticipated Direct and Indirect Impacts

The refuge hunt program is expected to have an overall beneficial impact on wildlife as hunting provides opportunities for visitors to become interested in and enjoy quality wildlife and outdoor experiences and potentially learn about, understand, and support natural resource protection and management. Local populations of game animals will be managed to levels supported by available food and cover.

1. Soils

Impacts on soils under alternative A—Current Management

Under all alternatives, hunters would continue to be allowed to hunt off trail; however, vegetation trampling and associated soil erosion and compaction are expected to be minimal. Hunting is controlled through special use permits, and refuge staff is not aware of any adverse effects to water quality or hydrology associated with this activity to date. Parking areas for hunting are located in upland areas to minimize risks of erosion and impacts to sensitive wetland habitats. We would continue to monitor the refuge for potential impacts and would take steps to limit access or close areas as needed to protect resources.

Impacts on soils under alternative B—Service-preferred Alternative

In addition to the impacts discussed under alternative A, we would be opening additional areas of the refuge to hunting and opening the refuge to new hunting seasons (e.g., turkey hunting). Similar to alternative A, the number of hunters for each season would be controlled through special use permits. This allows refuge staff to protect refuge resources and ensure a quality hunt

by limiting the number of daily permits issued. The maximum number of daily hunt permits that can be issued is based on a variety of factors, including areas open to hunting. This ensures that the number of hunters is kept at levels that have only negligible impacts on refuge resources, including soils. We would continue to monitor the refuge for potential impacts and would take steps to limit access or close areas as needed to protect resources.

Impacts on soils under alternative C—Spring Turkey Hunt

In addition to the impacts discussed under alternatives A and B, we would be opening the refuge to the NYS spring turkey hunt season. As described under alternative B, the maximum number of daily hunt permits that can be issued is based on a variety of factors, including areas open to hunting. This ensures that the number of hunters is kept at levels that have only negligible impacts on refuge resources, including soils. We would continue to monitor the refuge for potential impacts and would limit access or close areas as needed to protect resources.

2. Water Quality

Impacts on water quality under alternative A—Current Management

Hunters would continue to be allowed to hunt off trail; however, vegetation trampling and associated soil erosion and possible impacts to water quality are expected to be minimal. Hunting is controlled through special use permits, and refuge staff is not aware of any adverse effects to water quality or hydrology associated with this activity to date. Only nonmotorized boats are allowed in impoundments for waterfowl hunting, so there would be no risk of chemical contamination from boat motors in refuge waters. Parking areas for hunting are located in upland areas to minimize risks of erosion and runoff into area waterways. We would continue to monitor the refuge for potential impacts and would take steps to limit access or close areas as needed to protect resources.

Impacts on water quality under alternative B—Service-preferred Alternative

In addition to the impacts discussed under alternative A, we would be opening additional areas of the refuge to hunting and opening the refuge to new hunting seasons (e.g., turkey hunting). Similar to alternative A, the number of hunters for each season would be controlled through special use permits. This allows refuge staff to protect refuge resources and ensure a quality hunt, by limiting the number of daily permits issued. The maximum number of daily hunt permits that can be issued is based on a variety of factors, including areas open to hunting. This ensures that the number of hunters is kept at levels that have only negligible impacts on refuge resources, including water quality. We would continue to monitor the refuge for potential impacts and would take steps to limit access or close areas as needed to protect resources.

Impacts on soils under alternative C—Spring Turkey Hunt

In addition to the impacts discussed under alternatives A and B, we would be opening the refuge to the NYS spring turkey hunt season. As described under alternative B, the maximum number of daily hunt permits that can be issued is based on a variety of factors, including areas open to hunting. This ensures that the number of hunters is kept at levels that have only negligible impacts on refuge resources, including water quality. We would continue to monitor the refuge for potential impacts and would limit access or close areas as needed to protect resources.

3. Resident Wildlife

a. Mammals

Impacts on mammals under alternative A—Current Management

Deer hunting would continue at current levels under this alternative. Deer have restricted home ranges and continued local hunting efforts are not expected to affect regional populations. The NYSDEC has divided the State into geographical units of ecological and land use similarities, called Wildlife Management Units (WMUs) to set hunting seasons and regulations. The refuge is in WMUs 8J, 8F, and 7F. The total number of deer harvested in these WMUs in the last 55 years (1954 to 2010) has been increasing steadily, indicating a likely increase in the overall deer population (figure E.1). State deer density estimates for this region are approximately 20 per square mile and have been increasing across NYS in the last few years, based on harvest data (<http://www.dec.ny.gov/>). Deer hunting has been carefully managed and monitored by refuge staff and NYSDEC for many years with no observed negative impacts on the deer population as a whole. In fact as discussed previously, the local deer population is currently increasing; therefore, continued hunting is not expected to decrease the area’s deer populations (NYSDEC 2011b).

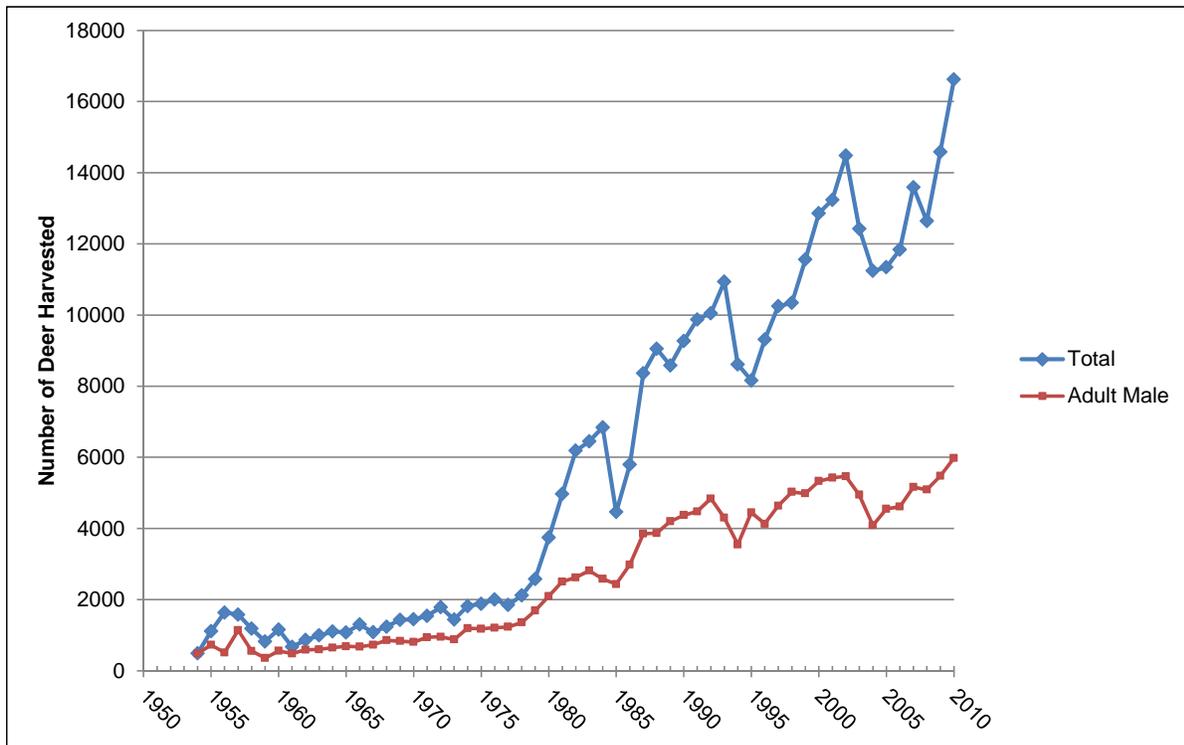


Figure E.1. Total Number of Deer Harvested in WMUs 7F, 8F, and 8J Between 1954 and 2010.

Based on the refuge's current acreage (9,184 acres), this deer density estimate would result in an estimate of nearly 300 deer on refuge lands. However, the refuge's deer population is likely higher than that estimate because of the prevalence of dense cover available to deer. Refuge and NYSDEC staff initiated deer population surveys on the refuge in 2011. Preliminary data indicate there are approximately 32 deer per square mile (Kautz 2012). The two most important factors affecting refuge deer numbers and movements are farming practices on adjacent agricultural lands and the severity of winter weather. During severe winters, the refuge serves as a sheltering area for deer from a distance of 8 to 10 miles (13 to 16 kilometers). The refuge's large tracts of hardwood bottomlands and cattail swales provide cover for deer, as evidenced by overbrowsing in these habitats (Rawinski 2010 personal communication).

Under alternative A, negative impacts to mammals resulting from high deer densities likely would occur. Studies have found that high densities of white-tailed deer have negative impacts on small mammals not only by altering the understory vegetation (e.g., Brooks and Healy 1988) but also by directly competing for acorns (e.g., McShea and Schwede 1993).

Under this alternative, the refuge's deer population would likely continue to increase, assuming it trends consistent with NYS harvest data. In much of the Northeast, deer populations continue to increase and have reached densities in some areas that are above the carrying capacity of the habitat. When deer overpopulate, they overbrowse their habitat, and can completely change the species composition of a forest, in addition to reducing its overall biodiversity (Côté et al. 2004). Tree seedlings can be killed by overbrowsing, limiting recruitment. The failure of forests to regenerate due to overbrowsing by deer would have negative impacts on future resident and migratory populations of native wildlife, including deer. Additionally, deer overpopulation can lead to outbreaks of devastating diseases such as hemorrhagic disease, bluetongue, and chronic wasting disease. Furthermore, overpopulation leads to starvation, more numerous car-deer collisions, and poorer herd health overall (Northeast Deer Technical Committee 2009).

Waterfowl hunting has been authorized on the refuge for decades, and refuge staff is not aware of any adverse effects on mammals associated with this activity. Therefore, anticipated direct, indirect, and cumulative impacts to mammal populations on the refuge from waterfowl hunts are expected to be negligible.

Impacts on mammals under alternative B—Service-preferred Alternative

Under alternative B, we would expect increased benefits to mammals compared to alternative A. 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 would include opening designated new areas to deer hunting (current lands and those acquired in the future), allowing Sunday hunting, and lengthening the archery season to coincide with the State opener.

As discussed under alternative A, the local deer population has been increasing. Deer overpopulation has had adverse impacts on refuge habitats and continued increases in the local deer population could lead to negative impacts on the health of the deer herd as well. The proposed increase in deer hunting is intended to reduce and stabilize the local deer population to maintain healthy densities of deer that also protect habitats. Also, if deer populations continue to

be high, we would 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 (NYSDEC 2011b). These changes would improve our ability to manage and maintain the refuge's deer population at or below the refuge's carrying capacity. This would improve forest regeneration and development of the understory by decreasing deer browse pressure. Both of which would benefit the deer population and other mammal populations using these habitats on the refuge. Maintaining the deer population at beneficial levels could also benefit the deer population by decreasing risks of disease and starvation. We would continue to monitor deer hunting on the refuge and would work with NYSDEC to change the refuge's hunt program if needed to maintain healthy deer populations around the refuge.

We do not expect increased encounters with mammals resulting from the proposed goose hunts and youth and fall turkey hunts to have long-term adverse impacts to mammal populations. As described under "Soils" above, the maximum number of daily hunt permits that can be issued is based on a variety of factors, including areas open to hunting. This ensures that the number of hunters is kept at levels that have only negligible impacts on refuge resources. We would continue to monitor the refuge for potential impacts and would limit access or close areas as needed to protect resources.

Impacts on mammals under alternative C—Spring Turkey Hunt

Impacts to mammals under alternative C would be similar to those described under alternative B. The addition of spring turkey hunting could result in minor increases in disturbance to the refuge's mammal populations. Because the refuge controls the number of hunters and where they are allowed to hunt, adverse effects are expected to be minimal. We would continue to monitor the refuge for potential impacts and would limit access or close areas as needed to protect resources.

b. Reptiles and Amphibians

Impacts on reptiles and amphibians under alternative A—Current Management

It is possible that refuge visitors in areas occupied by reptiles and amphibians could have a negative impact on these species. For example, Garber and Burger (1995) found that after a previously protected area was opened to limited public recreation, two previously stable wood turtle populations were extirpated within 10 years. However, they speculate that these extirpations may have been caused by the construction of a new parking lot, removal and handling by recreationists, increased predation as a function of food waste and increased predators, and disturbance by dogs. Since these mechanisms are unlikely to be introduced as a result of hunting activities under alternative A, negative impacts, other than temporary displacement due to disturbance, are unlikely. Hunts would occur during a time of year when reptiles and amphibians are becoming inactive and thus the likelihood of hunter interaction is rare. We do not expect isolated encounters with reptiles and amphibians to have cumulative adverse impacts on these populations.

Impacts on reptiles and amphibians under alternative B—Service-preferred Alternative

Reptiles and amphibians are active in September, when a Canada goose hunt would occur. However, this hunt would be limited to agricultural lands and mowed fields with little use by reptiles and amphibians. Reptiles and amphibians are likely to be active on the Main Muck in

March and April when the snow goose season would be open. We do not expect isolated encounters with reptiles and amphibians to have cumulative negative effects on populations.

Reptiles and amphibians would be active during the youth turkey hunt in April. However, because the hunt would be limited to one weekend and there would be a limited number of hunters in a limited area of the refuge, we do not expect these isolated encounters with reptiles and amphibians to have cumulative negative effects on refuge populations.

Impacts on reptiles and amphibians under alternative C—Spring Turkey Hunt

Ficetola et al. (2006) compared species richness of amphibians and reptiles in wooded patches with different human disturbance levels. Disturbance was measured by the number of pedestrians on trails during early June. They found that species richness of reptiles was negatively correlated with disturbance. The relationship was similar but not significant for amphibians. The timing of the disturbance in this study is similar to the time when spring turkey hunting would occur on the refuge (currently May per State regulations). However, this study occurred at a park where visitor use is much greater than we expect as a result of a spring turkey hunt. Because the number of spring turkey hunters would be limited, we do not expect isolated encounters with reptiles and amphibians to have cumulative negative effects on populations.

c. Turkey

Impacts on turkey under alternative A—Current Management

Anticipated direct, indirect, and cumulative impacts to turkey populations on the refuge from current deer and waterfowl hunts are believed to be negligible. These are historic uses of the refuge and refuge staff is unaware of any adverse effects associated with these activities.

Impacts on turkey under alternative B—Service-preferred Alternative

In alternative B, the Service proposes to open turkey hunting during the youth and fall hunt seasons according to the State's regulations. New York has two turkey seasons: a spring season when only gobblers (males) are harvested, and a fall season when either sex is legal game. While individual turkeys would be harvested, NYSDEC annually sets the timing of the seasons, season lengths, and bag limits conservatively to ensure a sustainable harvest and to maintain healthy game population levels (www.dec.ny.gov/outdoor/48823.html). Expanding waterfowl and deer hunt areas and seasons on the refuge could have short-term adverse effects on turkeys by increasing disturbance. Because the daily numbers of deer and turkey hunters are limited and because the State manages hunt programs conservatively to maintain healthy populations of game species, we do not anticipate any adverse consequences on the wild turkey population.

Impacts on turkey under alternative C—Spring Turkey Hunt

Adverse impacts would be slightly greater than those described under alternative B, because the Service would open spring turkey hunting according to NYS regulations. However, the timing of the season, season length, and bag limits are set to minimize the risk of overharvest and adverse impacts on nesting hens and breeding behavior (www.dec.ny.gov/outdoor/48823.html). As discussed under alternative B, because the daily numbers of deer and turkey hunters are limited and the State manages hunt programs to maintain healthy populations of game species, no long-term adverse impacts to local or regional turkey populations are expected from expanding hunting opportunities on the refuge.

4. Migratory Species

a. Waterfowl (Ducks and Geese)

Impacts on waterfowl under alternative A—Current Management

Waterfowl are managed by flyways, which follow their major migratory routes. Their population trends are monitored by the Service through the collection of data including band recoveries, hunter questionnaires, wing returns, breeding population surveys, habitat surveys, and mid-winter waterfowl surveys (Caithamer and Dobovsky 1995). The migratory waterfowl at Montezuma NWR are only part of the larger population of birds that are managed by the Service on a flyway basis. The Service designs the bag limits and season lengths for migratory waterfowl to maintain healthy populations of these species (USFWS 1988). Therefore, offering waterfowl hunting opportunities on the refuge as currently designed does not have an adverse impact on the overall waterfowl population.

Further, portions of the refuge remain closed to waterfowl hunting per legislation and subsequent Service policy (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). These laws and this policy apply to those refuges, like Montezuma NWR, that have been designated, acquired, reserved, or set apart as inviolate sanctuaries. If a refuge, or portion thereof, is considered to be an inviolate sanctuary, refuge managers are required to restrict hunting of waterfowl to no more than 40 percent of the refuge unless it is found that taking of any species in more than 40 percent of the area would be beneficial to the species. We estimate that, under alternative A no more than 13 percent of the refuge would be open to waterfowl hunting within a given year.

Disturbance to waterfowl resulting from the deer hunt is minimal because the Main Pool and Tschache Pool, where most waterfowl are concentrated on the refuge, are closed to deer hunters.

Impacts on waterfowl under alternative B—Service-preferred Alternative

Under this alternative, the area open to waterfowl hunters during the regular season would be expanded to include additional restored emergent marsh habitats. Additional hunt locations may include portions of the Main Muck or the Jackson Property and would be determined annually depending on habitat conditions, hunter access, and to minimize impacts to nontarget species. Adverse impacts to waterfowl would increase as the hunt area increased but would still be under the protection of the Service's flyway-wide bag limits and season lengths, and spatially segregated from no-hunting areas, as described under alternative A. As discussed under alternative A, if a refuge, or portion thereof, is considered to be an inviolate sanctuary, refuge managers are required to restrict hunting of waterfowl to no more than 40 percent of the refuge unless it is found that taking of any species in more than 40 percent of the area would be beneficial to the species. Under alternative B, we estimate no more than 29 percent of the refuge would be open to waterfowl hunting within a given year. This number would likely be less as the refuge manager would only open additional areas after determining there is sufficient quality habitat available that can be accessed by hunters on foot or by boat without disturbing sensitive species or conflicting with other priority public uses.

Under this alternative, there would be expanded opportunities for goose hunting. Some of the refuge lands managed as grasslands or enrolled in the cooperative farming program would be open during the resident Canada goose season, and portions of the Main Muck and Jackson Property would be open for the late snow goose season and the Light Goose Conservation Order. 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 2005) and the Final Environmental Impact Statement: Light Goose Management (USFWS 2007), respectively.

The additional Canada goose hunt days and areas would contribute to the Service goal of reducing the number of resident population Canada geese in the Atlantic Flyway from more than one million to 620,000 and the Service and NYSDEC goal of reducing the number of resident population Canada geese in the State from 257,000 (<http://www.dec.ny.gov/animals/67311.html>) to at or below 85,000 birds (USFWS 2005b). Resident geese, as their name implies, spend most of their lives in one area, although some travel hundreds of miles to wintering areas. In recent years, flocks resident geese have become year-round inhabitants of parks, waterways, residential areas, and golf courses in New York State, and too often, they are causing significant problems. Problems include over-grazed lawns, accumulations of droppings and feathers on play areas and walkways, nutrient loading to ponds, public health concerns at beaches and drinking water supplies, aggressive behavior by nesting birds, and safety hazards near roads and airports (NYSDEC and USDA 2007). In addition, studies have shown that when resident Canada goose populations are high, they can have profound negative impacts on wetland vegetation (Haramis and Kearns 2007, Laskowski et al. 2002).

The additional snow goose hunt days and areas would 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 2007). Some populations of snow geese have become so numerous that they are damaging their Arctic and sub-Arctic nesting habitats (Abraham and Jefferies 1997, Jano et al. 1998). These studies show that parts of the fragile tundra habitats where these geese traditionally nest are being seriously degraded or destroyed, primarily by overgrazing. Snow geese in the mid-continent region are showing signs of overpopulation in lower-than normal body size in both goslings (Cooch et al. 1991a, b) and adults (Reed and Plante 1997). Populations of other bird species that breed in the Arctic and sub-Arctic are declining; researchers believe these declines are caused, at least in part, by habitat degradation caused by snow goose populations (Rockwell et al. 1997 as cited in USFWS 2007).

Adverse impacts to other waterfowl resulting from the resident Canada goose season is not expected as the hunt would not occur in emergent marsh habitat and is before the peak of the waterfowl migration. Adverse impacts are not expected during the late snow goose season or the Light Goose Conservation Order as the snow goose migration through the area in late winter and early spring generally is rapid (Bellrose 1980, Ziembra 2011 personal observation) so the time window in which any impacts would occur to other species would be brief. However, an increased take of snow geese would contribute to the beneficial impacts to other waterfowl species that are expected as a result of a decrease in the snow goose population (USFWS 2007).

Under this alternative, deer hunting would be open on Sundays and begin with the State season (currently mid-October); however, no additional disturbance to waterfowl is expected as the Main Pool and Tschache Pool would remain closed to deer hunting until they are frozen and waterfowl have left the area.

Under this alternative, turkey hunting would be open during the youth (currently one weekend in April) and fall (currently October to mid-November) seasons. Turkey hunters would cause little disturbance to migratory waterfowl since there is little overlap in turkey and waterfowl habitat. Many refuge impoundments are either closed to hunting, or impractical to hunt because of the difficulty of access.

Impacts on waterfowl under alternative C—Spring Turkey Hunt

While there would be additional turkey hunters in the spring, impacts to waterfowl under alternative C would be similar to those described under alternative B as the same conditions apply.

b. Shorebirds

Impacts on shorebirds under alternative A—Current Management

Shorebirds are localized on the refuge, primarily occurring in refuge impoundments managed to provide mudflats during migration. The shorebird migrations are protracted and shorebirds may be present on the refuge from March into November. Adverse impacts to shorebirds under alternative A are not observed because hunting activities are spatially segregated from important shorebird stopover sites. When Tschache Pool has enough water to allow waterfowl hunting, it is too deep to provide shorebird habitat. Deer hunting on the refuge does not open until November 1, well past the peak shorebird migration.

Impacts on shorebirds under alternative B—Service-preferred Alternative

Impacts to shorebirds under this alternative are expected to be minimal. Areas with optimal conditions for waterfowl hunting would be open for this public use. These will be emergent marshes with high quality waterfowl habitat and deep enough water to provide hunter access. Shorebirds will be in areas with very shallow water and mudflats so will be spatially segregated from waterfowl hunting.

The lands that would be open during Canada and snow goose seasons are not heavily used by shorebirds. Under this alternative, deer hunting would be open on Sundays and begin with the State season (currently mid-October) and turkey hunting would be open during the youth (currently one weekend in April) and fall (currently October to mid-November) seasons. However, no additional disturbance to shorebirds is expected because hunters do not utilize shorebird habitat (i.e., mudflats).

Impacts on shorebirds under alternative C—Spring Turkey Hunt

While there would be additional turkey hunters in the spring, impacts to waterfowl under alternative C would be similar to those described under alternative B as the same conditions apply.

c. Marsh and Wading Birds

Impacts on marsh and wading birds under alternative A—Current Management

There has been little research assessing disturbance of nonhunted species associated with waterfowl hunting. Measures designed to provide sanctuary to waterfowl such as limiting hunt days, times, and areas also would benefit marsh and wading birds. If there were adverse impacts, they would be mitigated by bird sanctuary areas that secretive marshbirds and waders could utilize. Disturbance to marsh and wading birds resulting from the deer hunt is likely minimal because of the dates of the hunt and the locations where deer hunting is allowed.

Impacts on marsh and wading birds under alternative B—Service-preferred Alternative

As described under alternative A, measures designed to provide sanctuary to waterfowl such as limiting hunt days, times, and areas also would benefit marsh and wading birds. No adverse impacts are expected from the Resident Canada goose season because marsh and wading birds do not use the agricultural lands and mowed fields that would be hunted. Migrating marsh and wading birds may be displaced from the main muck during the snow goose seasons but alternative emergent marsh habitat is available for them in other refuge impoundments. No additional adverse impacts to marsh and wading birds are expected due to expanded deer hunting or fall turkey hunting opportunities as the Main Pool and Tschache Pool would remain closed until they are frozen when most marsh and wading birds have left the area. Turkey hunters would cause little disturbance to marsh and wading birds since turkey hunting does not occur in emergent marsh habitat and wooded areas with active heron rookeries would not be open to hunters.

Impacts on marsh and wading birds under alternative C—Spring Turkey Hunt

Spring turkey hunting could occur in forested wetlands where great blue herons and black-crowned night-herons (*Nycticorax nycticorax*) have had nesting colonies. Rodgers and Smith (1995) studied flushing distances of breeding colonial waterbirds caused by approaching pedestrians and recommended a 100 meter buffer around great blue heron and black-crowned night-heron colonies. However, hunt areas would be set annually by the refuge manager and would be based on minimizing disturbance to sensitive wildlife and plant species—these sensitive areas would be closed.

d. Landbirds

Impacts on landbirds under alternative A—Current Management

The cumulative effects of disturbance to nonhunted migratory birds are believed to be negligible under alternative A because the hunting season does not coincide with the nesting season.

Disturbance to the daily wintering activities of birds, such as feeding and resting, could occur at the current management level. For example, a number of raptors, including species of conservation concern, such as short-eared owl and northern harrier, forage over refuge grasslands during winter. Holmes et al. (1993) approached six species of wintering grassland raptors a total of 162 times and found that the birds being approached flushed 97 percent of the time. He did not follow up on this research to determine if these disturbances led to higher mortality or any measurable effect in the following year's reproductive rates. We do not believe hunters cause any cumulative impacts to wintering raptors in refuge grasslands at current times and levels of

access. Hunting ends in mid-December and the number of hunters decreases dramatically throughout the season.

Under alternative A, negative impacts to forest birds would likely occur due to continued degradation of the vegetation's physical structure and diversity as a result of overbrowsing by deer. Adverse impacts of overbrowsing on forest bird communities have been documented in a number of studies (see Latham et al. 2005 for a summary).

Impacts on landbirds under alternative B—Service-preferred Alternative

As stated under alternative A, overbrowsing by deer can have negative impacts on nesting songbirds in upland areas. A study conducted in Pennsylvania showed that both species diversity and abundance declined in areas with high densities of deer as a result of reduced nesting habitat (deCalesta 1994). Alternative B includes an expanded deer hunt; which would include working under the NYSDEC DMAP to increase the deer harvest. This would result in beneficial impacts on landbirds through the change to vegetation as a result of lower deer densities.

There would be increased presence in the field and possible displacement of birds due to disturbance by deer and turkey hunters under this alternative. Hunts would start earlier in the season and Sunday hunting would be permitted. However, we believe these temporary disturbance effects would be far outweighed by the beneficial impacts resulting from improved habitat conditions as the deer herd is reduced. Furthermore, the number of turkey hunters is going to be limited to lower densities.

Impacts on landbirds under alternative C—Spring Turkey Hunt

Birds are most vulnerable to disturbance during the breeding season (Gabrielson and Smith 1995); therefore, spring turkey hunting is more likely to have adverse impacts on passerines than the other hunt programs—which occur at other times of year. Indeed, several studies indicate that human presence during the breeding season can have a negative impact on avian breeding behavior in both forested (Gutzwiller and Anderson 1999, Gutzwiller et al. 1994) and grassland (Miller et al. 2001, Fernandez-Juricic et al. 2005) habitats. Also, many species show a greater reaction when people walk unpredictably in the landscape as opposed to on designated trails (Gabrielson and Smith 1995, Miller et al. 2001). However, due to the secretive and relatively sedentary nature of spring turkey hunting, impacts to breeding landbirds from turkey hunting is expected to be minimal.

5. Federally Listed Species

a. Indiana Bat

Currently, the Indiana bat is the only federally listed species on the refuge. It is currently listed as endangered. There are no known maternity colonies on the refuge, and no known hibernacula (overwintering area). The refuge does offer summer foraging and roosting habitat for this species.

Impacts on Indiana bats under alternative A—Current Management

Under alternative A, the lack of tree regeneration in some parts of the refuge may eventually have a negative impact on Indiana bats if roost trees become limiting in the area.

Impacts on Indiana bats under alternative B—Service-preferred Alternative

An increase in tree regeneration resulting from increased deer harvest under alternative B may have a positive impact on the Indiana bat.

Impacts on Indiana bats under alternative C—Spring Hunt

Same as under alternative B.

B. Anticipated Direct and Indirect Impacts of Alternatives on Refuge Programs, Facilities, and Cultural Resources

1. Other Wildlife Dependent Recreation

Impacts to other refuge wildlife-dependent recreation under alternative A—Current Management

The current hunt program was developed to work in synch with the five other priority wildlife-dependent public uses on the refuge. A demand for white-tailed deer and waterfowl hunting access has persisted since the hunt program's inception. Hunters account for 7.3 percent of the refuge's annual visitation, based on a 5-year average. Hunters are generally limited to areas otherwise closed to public use, and waterfowl hunting is limited to the morning hours, 3 days per week. Esker Brook and South Spring Pool Trails are closed to other users during the white-tailed deer season, beginning each year on November 1 and into December. Impact on other visitors is minimal since there are other refuge trails that remain open and the main attraction to the refuge at that time is viewing the waterfowl migration along the Wildlife Drive. This spatial separation minimizes contact and potential conflict among user groups. Refuge staff is unaware of any adverse impacts to other wildlife-dependent recreation from the current hunt program.

Table E.3. Cost of Administering the Montezuma National Wildlife Refuge Hunts in 2009.

	DEER ARCHERY		DEER FIREARMS		WATERFOWL		
	Staff Hours	Hunt Costs	Staff Hours	Hunt Costs	Staff Hours	Hunt Costs	Fee Money Collected
Check-in/Check Station	10	\$ 322.00	15	\$ 440.00	60	\$ 1,500.00	\$ 1,920.00
Law Enforcement	--	--	4	\$ 100.00	4	\$ 100.00	
Planning	4	\$ 100.00	4	\$ 100.00	20	\$ 500.00	
Public Information	6	\$ 170.00	7	\$ 175.00	10	\$ 250.00	
Postage	--	\$ 8.00	--	\$ 10.00	--	\$ 40.00	
Supplies	--	\$ 350.00	--	\$ 400.00	--	\$ 735.00	
Data Collection	10	\$ 250.00	15	\$ 375.00	10	\$ 250.00	
Maintenance-Facilities	5	\$ 125.00	5	\$ 125.00	5	\$ 125.00	
Maintenance-Vehicles	2	\$ 50.00	2	\$ 50.00	2	\$ 50.00	
Utilities	--	\$ 25.00	--	\$ 25.00		\$ 25.00	
TOTALS	37	\$ 1,400.00	77	\$ 1,800.00	136	\$ 3,575.00	\$ 1,920.00

ANNUAL TOTAL: \$6, 775.00 - \$1,920.00 = \$4,855.00

Impacts to other refuge wildlife-dependent recreation under alternative B—Service-preferred Alternative

In 2005, the Northeast Regional Visitor Services Review Team identified visitor programs of emphasis for each refuge. The programs identified for this refuge were environmental interpretation and wildlife observation and photography. The refuge's visitor services program is designed to offer high quality wildlife-dependent recreation emphasizing wildlife observation and interpretation, with sufficient wildlife sanctuary, while minimizing conflicts among various users (www.fws.gov/policy/605fw1.html). Resource protection and wildlife-dependent recreation have existed at Montezuma NWR with minimal, if any, conflict. Areas may be closed or seasonally restricted to protect natural resources or provide for a greater degree of visitor safety; however, alternate sites would likely be available in other areas of the refuge. NYS deer and waterfowl hunting seasons would continue to be adhered to.

Under the proposed alternative, the number of hunters and the number of days the refuge is open to hunting would increase, and when deer densities are high, the refuge would work with the DMAP to maximize the harvest of female deer. Currently hunting does not occur on the refuge before November 1, regardless of the start of the State seasons. This was done to avoid conflict between hunters and other visitors at the Esker Brook Trails. The deer population in the vicinity of the refuge is still considered higher than optimal, indicating that current hunting levels are not affecting the population substantially and that the hunting program is not adversely affecting the deer population (NYSDEC 2009).

Implementation of DMAP would involve supplying additional antlerless tags to hunters by the refuge and would require closer contact with refuge hunters to ensure compliance if an “earn a buck” system is instituted. This process should be relatively seamless because refuge staff already manages the hunt program through a hunt permit system administered at the hunter check station. Negative impacts to other public use programs due to shifting resources to implement and administer this new program should continue to be minimal.

We propose to open the refuge to deer and turkey hunting with the NYS opener (typically early to mid-October), but keep the Esker Brook Trail area closed to hunting until November 1. The refuge would be opened to Sunday hunting throughout the NYS seasons. Hunting hours are sunrise to sunset for deer and fall turkey seasons. We may adjust hunt season dates and bag limits in the future as needed to achieve balanced wildlife population levels within habitat carrying capacities.

Those areas designated as open for deer season would also be open to fall turkey hunters (see map E.5). The areas open and the number of groups permitted would be designated annually by the refuge manager and would 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. Based on lands currently owned, the refuge would accommodate a maximum of 40 fall turkey hunters per day. In addition to NYS requirements, deer and turkey hunters would be required to turn in a refuge harvest report. The addition of turkey hunters on refuge lands should result in minimal conflict with other refuge users due to the small number of turkey hunters and the fact that these areas are already open to deer hunters.

We also propose to open the refuge to the NYS youth turkey hunt. The State youth turkey hunt is currently open to youths ages 12 to 15. Implementing the refuge’s youth turkey hunt would be dependent on a commitment from partners to mentor youth hunters. Youth hunters and their mentors may be required to attend an orientation program conducted by the refuge, in cooperation with partners. The orientation would review hunter safety, turkey calling, equipment, ethics, and sportsmanship, as well as conservation and messages about the refuge system. All junior hunters must be accompanied by an adult both at the orientation and during the day of the hunt. Adult mentors are required to have a valid NYS hunting license for turkey, but may not hunt.

Designated areas would be open to youth hunters and their mentors during the NYS youth turkey hunt (see map E.5). The areas open and the number of groups permitted would also be designated annually by the refuge manager and would be based on maximizing hunt opportunities, providing for a quality hunt experience, public demand, minimizing disturbance to sensitive wildlife and plant species, balancing other public use demands, and the administrative work load. Based on lands currently owned, the refuge could accommodate a maximum of 14 youth hunting groups. In addition to NYS requirements, youth turkey hunters would be required to turn in a refuge harvest report. We expect minimal conflicts between youth turkey hunters and other refuge user groups because of the low number of turkey hunters, short season (currently 2-3 days), and because areas of the refuge that would be open to the spring youth hunt would be closed to other user groups during this season.

Implementing the fall turkey hunt should result in only minor increases to administrative costs because the fall turkey hunt would occur simultaneously with the deer hunt program when administrative resources are already focused on the refuge's hunting program. Therefore, minimal impacts other aspects of the refuge's public use program are expected due to implementing a fall turkey hunt.

The youth turkey hunt would occur for a limited time during the upswing of the refuge's high visitation period. Since the implementation of the youth turkey hunt is dependent on partner participation, refuge resources can be better balanced to accommodate it. Moreover, the benefits of conducting a youth hunt merit staff time. It offers opportunities for developing new partnerships, mentoring youth, and providing education about hunting, ethics, conservation, the refuge, and the National Wildlife Refuge System.

Visitation on the refuge peaks during the spring and fall bird migrations since the refuge is a prime birding area along the Atlantic Flyway. Historically, both waterfowl and white-tailed deer hunting have been permitted on the refuge from October through December (deer hunting running November and December). Under this alternative, the refuge would continue to minimize conflicts among different user groups and provide quality visitor experiences for both hunters and nonhunters by spatially segregating different uses.

Hunting would continue to be prohibited along the Wildlife Drive, including the Oxbow Trail, in October and November when the waterfowl migration is at its peak and use by wildlife observers and photographers is high. However, as opposed to under alternative A, the Wildlife Drive would be open to hunters and closed to other users beginning December 1. Also, the Seneca Trail would be open annually for the late archery season (usually mid to late December for about 9 days) and closed at this time to all other users. In order to accommodate fall birders who desire upland walking trail experiences, Esker Brook and South Spring Pool Trails would continue to remain open for wildlife observation, photography, environmental interpretation, and education and closed to hunting until November 1 each year. From November 1 through the rest of the white-tailed deer hunting seasons, the Esker Brook and South Spring Pool Trails would be closed to visitors, except to hunters with a valid refuge deer hunting permit, as has been the case historically on the refuge. All other hunting opportunities would continue to take place in areas not open to other recreational uses.

Restrictions on hunting implements follow NYS regulations and safety zones and are designed to ensure visitor safety and address public safety concerns. The refuge would reserve the right to close areas to hunting should it become necessary to facilitate other uses or safety, or to address resource protection and/or restoration.

Extending the hunting season, adding an additional weekly hunting day (Sunday), and increasing the number of hunters on the refuge would incur a minor additional impact on other wildlife-dependent uses on the refuge in terms of potential conflict between user groups. Some users may be impacted by the presence and noise associated with shotgun and muzzleloader hunting which occurs on the entire refuge. However, we don't expect the impact to be significant. Conflict between users does not appear to be a problem under current management practices, so

expanding hunting would not exacerbate any preexisting issue. In the future, if conflict should arise we may need to further manage public use to minimize conflicts and ensure public safety. That may include public outreach or further zoning to separate user groups.

By following Federal and State regulations, as well as refuge-specific regulations for hunting and other public uses, the proposed hunting program on the refuge is not likely to have significant impacts on other refuge wildlife-dependent recreation programs.

Impacts on other refuge wildlife-dependent recreation under alternative C—Spring Turkey Hunt

Impacts under alternative C would be similar to those stated above for alternative B. Under alternative C, spring turkey hunting would be permitted. When the refuge was initially open to hunting, small game hunting was permitted. This practice was ended due to lack of interest among refuge hunters. Over the years, there has been little to no demand for small game and turkey hunting. During the scoping process for the refuge's CCP, the demand for increased education and outreach was far greater than the number of requests for turkey hunting, and interested hunters already have opportunities to hunt turkeys during the spring and fall seasons nearby at the Northern Montezuma Wildlife Management Area.

Hunters have approached refuge staff, rather, to ask for increased access to areas for deer and waterfowl hunting, as well as for access during goose hunting seasons. Hunters have also asked for more universally accessible areas in order to accommodate a broader population of sportsmen.

The spring turkey hunt would occur at a time of high public use in other disciplines of the refuge's public use program. Requests for school programs and guided tours increase, festival planning and outreach events require staff time, increased visitation at the visitor center and other refuge facilities increase, and the refuge's main volunteer programs are in full swing. All of these activities demand administrative resources imperative to offering a well-balanced, high-quality public use program.

If the refuge adopted the habitat management objectives and strategies under alternative C of the Montezuma NWR Draft CCP, habitats and priorities on the refuge would change with more focus on forested habitats and forest-dependent wildlife and less focus on waterbirds. At that time, turkey hunting may prove to be a more fitting expansion of the refuge's hunt program. However, waterfowl hunting would likely continue as under alternative A rather than increase as under alternative B due to lack of emergent marsh habitat. This shift would be reflected in a shift of administrative resources towards turkey hunting, but would still maintain a balance in the refuge's Public Use Program.

2. Refuge Facilities

Impacts on refuge facilities under alternative A—Current Management

Hunting is conducted on foot by individuals or small groups. This direct impact of foot travel by hunters on the habitat is often different from that of other wildlife-dependent recreational users because hunters tend to travel in dispersed patterns over wide areas, minimizing the chances of negatively impacting sites. This is in contrast to the tendency of many other wildlife-dependent recreational users to congregate on a limited number of trails and observation areas.

Impact to refuge roads and trails from hunting activities would be minimal. Most of the refuge is only accessed by foot as units are not open for vehicle or off-road vehicle traffic. Parking areas would receive normal wear and tear from hunters as well as from other wildlife dependent recreation users.

Impacts on refuge facilities under alternative B—Service-preferred Alternative

The increased hunting opportunities associated with expanding the deer and waterfowl hunts are likely not to significantly impact refuge facilities. There may be additional parking areas required to expanded waterfowl and goose hunting, but the refuge has both the staff and equipment to make these minor improvements, therefore the costs should be negligible.

Impacts on refuge facilities under alternative C—Spring Turkey Hunt

Same as alternative B.

3. Cultural Resources

Impact to cultural resources from hunting activities on the refuge would be minimal for all alternatives because hunters tend to travel in dispersed patterns over wide areas, minimizing the chances of negatively impacting sites. Under each of the alternatives, the refuge would continue to protect known and unrecorded archaeological sites from unauthorized disturbance and looting. The Service's policy is to preserve cultural, historic, and archaeological resources in the public trust, and avoid any adverse effects wherever possible. Refuge staff would continue to work with our regional archaeologists and consult with the State Historic Preservation Officer and other parties as appropriate to ensure compliance with the National Historic Preservation Act and other applicable laws and regulations.

C. Anticipated Impacts of Proposed Action on Refuge Environment and Community

1. Refuge Environment (Vegetation/Habitats)

Impacts on habitats under alternative A—Current Management

The physical effects of hunting various game species on the vegetation of the refuge are believed to be minimal. The most destructive effects are typically from vehicular traffic. However, only certain dikes, short access roads, and parking areas are open to vehicular traffic, and these areas have minimal habitat values. All-terrain vehicles are not allowed on the refuge. Direct impacts to the refuge environment by hunters have been and are expected to be minimal; insignificant soil compaction as a result of foot traffic is an example.

Hunting is conducted by boat or on foot by individuals or small groups, sometimes accompanied by a hunting dog (waterfowl). This direct impact of foot travel by hunters on the habitat is often different from that of other wildlife-dependent recreation users because hunters tend to travel in very dispersed patterns over wide areas, minimizing the chances of negatively impacting sites (in contrast to the tendency of many other wildlife-dependent recreation users to congregate on a limited number of trails).

Overbrowsing by white-tailed deer on plant communities at Montezuma NWR is well documented. Deer are suppressing plant growth and succession, and deer browsing has defoliated trees and shrubs in many areas to a height of 6 feet and has suppressed regeneration of saplings and shrubs in others (Rawinski 2010 personal communication). Due to deer overbrowsing, the natural diversity of understory plants and natural abundance of woody species regeneration has been reduced, thus altering the habitat and potentially the wildlife diversity the refuge was created to protect. Continuing the current deer hunt would result in harvesting approximately the same number and sex ratio of deer and the continued decline of forested habitats on the refuge. As mature trees die and fall, they are being replaced by nonnative invasive species (e.g., common buckthorn (*Rhamnus cathartica*)). Therefore, alternative A is resulting in an adverse impact on some forested areas of the refuge. Adverse impacts to other habitat types have not been identified.

Impacts on habitats under alternative B—Service-preferred Alternative

Positive, indirect effects on the vegetation would result from a reduction in the white-tailed deer population. The negative impacts of dense deer populations on forest regeneration and the composition and diversity of the herbaceous understory have been well documented (see Latham et al. 2005 for a summary) and observed at Montezuma (Rawinski 2010 personal communication). Well-managed hunting can effectively control deer and produce striking changes in the forest vegetation (Behrend et al. 1970). Working with the NYSDEC DMAP, as proposed under alternative B, would have a beneficial impact on forested habitats on the refuge. We expect better regeneration of forest canopy species and an increase in the diversity of the herbaceous understory.

Impacts on habitats under alternative C—Spring Turkey Hunt

Same as under alternative B.

2. Community

Under each alternative, the refuge would provide socioeconomic benefits by providing a hunting program which would result in hunters spending money in the local area. The refuge also contributes money to local economies directly by purchasing goods and services within the local community in support of the hunt program.

Currently, more than 150,000 visitors annually come to the refuge. Hunters currently account for over 2,000 visitors (1,800 deer and 300 waterfowl). Hunters would continue to contribute to the local economy through consumption of goods and services, and other expenditures associated with hunt opportunities made available on the refuge.

A detailed analysis and discussion of how money associated with national wildlife refuges makes its way through local economies can be found in, “Banking on Nature 2006: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation” (Carver and Caudill 2007). They estimated that, on average, approximately 4 dollars were generated in the local economy for every dollar spent by the Service.

The refuge would work closely with State, Federal, and private partners to minimize impacts to adjacent lands and associated natural resources; however, no indirect or direct negative impacts

are anticipated. Under alternatives B and C, the newly opened hunts would result in a net gain of public hunting opportunities positively impacting the general public, nearby residents, and refuge visitors. The refuge expects increased visitation and tourism to bring additional revenues to local communities but not a significant increase in overall revenue in any area.

D. Other Past, Present, Proposed, and Reasonably Foreseeable Hunts and Anticipated Impacts

Cumulative effects on the environment result from incremental effects of a proposed action when these are added to other past, present, and reasonably foreseeable future actions. While cumulative effects may result from individually minor actions, they may, viewed as a whole, become substantial over time. The proposed hunt has been designed to be sustainable through time given relatively stable conditions. Changes in refuge conditions, such as sizeable increases in refuge acreage or public use, are likely to change the anticipated impacts of the current proposal and may trigger a new assessment process.

The implementation of the alternative B—Proposed Action would have both direct and indirect effects. An example of an indirect effect is that new hunt site inclusion may result in increased public use, thus increasing vehicular traffic, disturbance, etc. However, the cumulative effects of these actions are not expected to be substantial, especially since hunting both at the refuge as well as the surrounding areas is already a popular activity, the number of hunters is controlled through special use permits, and measures will be taken to monitor and limit access if needed.

Since 1938, Montezuma NWR has grown to 9,184 acres, which include a wide diversity of habitats. This diversity of vegetation provides wildlife with high quality habitat, escape cover to provide safety from predators, including humans; shelter from weather related elements; resting areas; food; and water. The most important consideration in the maintenance of wildlife populations is the protection of their habitat, and protection within a large geographic area, as in the case of the 50,000-acre MWC, is the most effective.

The Service, NYSDEC, and other partners are all working to acquire and restore the historic Montezuma marshes and their adjacent uplands. Habitat restoration fulfills the Service's congressional mandate to preserve, restore, and enhance habitat for threatened and endangered species, songbirds, waterfowl, other migratory birds, resident wildlife, and plants. Habitat restoration would have a positive effect on wildlife populations on the refuge and in some cases well beyond the refuge borders.

Changes to the hunt program in the past decade have been made to open hunting on more land within the refuge. These lands were usually those that had been recently acquired and had been hunted historically. In addition, hunting is monitored, regulated, and designed to ensure that harvest does not reduce populations to unsustainable levels.

E. Anticipated Impacts if Individual Hunts are Allowed to Accumulate (Cumulative Impacts)

The Service has concluded that there would be no significant cumulative impacts on the refuge's wildlife populations, either hunted or nonhunted species, under any of the alternatives. The

Service has also concluded that the alternatives would not cumulatively impact the refuge environment or other refuge programs. This determination was based upon a careful analysis of potential environmental impacts of hunting on the refuge in combination with other habitat projects and visitor service actions.

Hunting is an appropriate wildlife management tool that can be used to manage wildlife populations. Some wildlife disturbance would occur during hunting seasons. Federal and State regulations and additional refuge restrictions, if needed, would minimize any negative impacts to wildlife populations using the refuge.

Hunters would be required to report take of deer, waterfowl, and turkey according to refuge and State regulations and would offer field observations of these and other wildlife. Field checks by refuge law enforcement officers would be planned, conducted, and coordinated with staff and other agencies to maintain compliance with regulations and assess species populations and numbers harvested. Wildlife surveys would be performed periodically to monitor populations of deer, waterfowl and other species of interest.

Montezuma NWR conducts hunting programs within the framework of State and Federal regulations. The proposed hunt proposal has been reviewed and is supported by the NYSDEC. Additionally, the refuge coordinates with the NYSDEC annually to maintain consistent regulations and programs.

VII. Consultation and Coordination

NYSDEC staff has helped write and review this document and support the regulated consumptive public use of the natural resources associated with Montezuma NWR. The Service also provided an in depth review by Regional Office personnel and staff biologists. This document is being released for public review and comment as part of the Montezuma NWR Draft CCP/EA.

VIII. Regulatory Compliance

Comprehensive Conservation Plan and Visitor Services Plan: The Montezuma NWR completed its Comprehensive Conservation Plan in February 2013. Step-down plans such as the Visitor Services Plan that tier off the CCP will follow. In the past, refuge management has been guided by the Station Management Plan.

Compatibility Determinations: Compatibility determinations for the hunt program at Montezuma NWR have been completed, and are included as appendix B of the final CCP (USFWS 2013).

National Environmental Policy Act Documentation: This Environmental Assessment meets the NEPA requirements.

Endangered Species Act Section 7 Evaluation: A Section 7 Evaluation was completed in conjunction with the refuge's CCP.

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X. Appendixes

Appendix A. New York Natural Heritage Program Survey of Rare Plant Species Within Cayuga, Seneca, and Wayne Counties. Exported from www.dec.ny.gov.

Common Name	Scientific Name	Distribution Status	State Protection Status
Northern False Foxglove	<i>Agalinis paupercula</i> var. <i>borealis</i>	Historically Confirmed	Threatened
Yellow Giant-hyssop	<i>Agastache nepetoides</i>	Recently Confirmed	Threatened
Woodland Agrimony	<i>Agrimonia rostellata</i>	Recently Confirmed	Threatened
Water-plantain	<i>Alisma gramineum</i>	Historically Confirmed	
Nodding Wild Onion	<i>Allium cernuum</i> var. <i>cernuum</i>	Recently Confirmed	Threatened
Hairy Angelica	<i>Angelica venenosa</i>	Possible but not Confirmed	
Puttyroot	<i>Aplectrum hyemale</i>	Possible but not Confirmed	Endangered
Dragon's Mouth Orchid	<i>Arethusa bulbosa</i>	Historically Confirmed	Threatened
Purple Milkweed	<i>Asclepias purpurascens</i>	Possible but not Confirmed	
Cooper's Milkvetch	<i>Astragalus neglectus</i>	Confirmed	Endangered
Water-marigold	<i>Bidens beckii</i>	Recently Confirmed	Threatened
Smooth Bur-marigold	<i>Bidens laevis</i>	Historically Confirmed	Threatened
Seaside Bulrush	<i>Bolboschoenus maritimus</i> ssp. <i>paludosus</i>	Confirmed	Threatened
Blunt-lobe Grape Fern	<i>Botrychium oneidense</i>	Recently Confirmed	Endangered
New England Northern Reedgrass	<i>Calamagrostis stricta</i> ssp. <i>inexpansa</i>	Historically Confirmed	Endangered
Tall Bellflower	<i>Campanulastrum americanum</i>	Historically Confirmed	Threatened
Purple Cress	<i>Cardamine douglassii</i>	Historically Confirmed	
Emmons' Sedge	<i>Carex albicans</i> var. <i>emmonsii</i>	Recently Confirmed	
		Historically Confirmed	

Common Name	Scientific Name	Distribution Status	State Protection Status
Narrow-leaved Sedge	<i>Carex amphibola</i>	Historically Confirmed	Endangered
Brown Bog Sedge	<i>Carex buxbaumii</i>	Recently Confirmed	Threatened
Hair-like Sedge	<i>Carex capillaris</i>	Historically Confirmed	Endangered
Carey's Sedge	<i>Carex careyana</i>	Historically Confirmed	
Creeping Sedge	<i>Carex chordorrhiza</i>	Historically Confirmed	Threatened
Creeping Sedge	<i>Carex chordorrhiza</i>	Historically Confirmed	Threatened
Northeastern Sedge	<i>Carex cryptolepis</i>	Recently Confirmed	
Cypress-knee Sedge	<i>Carex decomposita</i>	Historically Confirmed	Endangered
Handsome Sedge	<i>Carex formosa</i>	Historically Confirmed	Threatened
Frank's Sedge	<i>Carex frankii</i>	Recently Confirmed	Endangered
Elk Sedge	<i>Carex garberi</i>	Historically Confirmed	Endangered
Northern Bog Sedge	<i>Carex gynocrates</i>	Historically Confirmed	Endangered
Cloud Sedge	<i>Carex haydenii</i>	Historically Confirmed	Endangered
James' Sedge	<i>Carex jamesii</i>	Historically Confirmed	Threatened
False Hop Sedge	<i>Carex lupuliformis</i>	Historically Confirmed	Rare
Troublesome Sedge	<i>Carex molesta</i>	Possible but not Confirmed	Threatened
Muhlenberg's Sedge	<i>Carex muehlenbergii</i> var. <i>enervis</i>	Possible but not Confirmed	
Black Sedge	<i>Carex nigra</i>	Confirmed	Endangered
Reflexed Sedge	<i>Carex retroflexa</i>	Historically Confirmed	Endangered
Sartwell's Sedge	<i>Carex sartwellii</i>	Historically Confirmed	Threatened
Schweinitz's Sedge	<i>Carex schweinitzii</i>	Historically Confirmed	Threatened
Short's Sedge	<i>Carex shortiana</i>	Recently Confirmed	Endangered
Straw Sedge	<i>Carex straminea</i>	Historically Confirmed	Endangered
Willdenow's Sedge	<i>Carex willdenowii</i>	Historically Confirmed	Threatened
Big Shellbark Hickory	<i>Carya laciniosa</i>	Recently Confirmed	Threatened
Scarlet Indian-paintbrush	<i>Castilleja coccinea</i>	Historically Confirmed	Endangered

Common Name	Scientific Name	Distribution Status	State Protection Status
American Bittersweet	<i>Celastrus scandens</i>	Historically Confirmed	
Spreading Chervil	<i>Chaerophyllum procumbens</i>	Historically Confirmed	Endangered
Fairy Wand	<i>Chamaelirium luteum</i>	Historically Confirmed	Threatened
		Possible but not	
Red Pigweed	<i>Chenopodium rubrum</i>	Confirmed	Threatened
Hair-pointed moss	<i>Cirriphyllum piliferum</i>	Recently Confirmed	
Button-bush Dodder	<i>Cuscuta cephalanthi</i>	Historically Confirmed	Endangered
Red-rooted Flatsedge	<i>Cyperus erythrorhizos</i>	Historically Confirmed	
Rusty Flatsedge	<i>Cyperus odoratus</i>	Historically Confirmed	
		Possible but not	
Schweinitz's Flatsedge	<i>Cyperus schweinitzii</i>	Confirmed	Rare
Ram's-head Ladyslipper	<i>Cypripedium arietinum</i>	Historically Confirmed	Threatened
Lowland Fragile Fern	<i>Cystopteris protrusa</i>	Historically Confirmed	Endangered
		Possible but not	
Little-leaf Tick-trefoil	<i>Desmodium ciliare</i>	Confirmed	Threatened
		Possible but not	
Nuttall's Tick-trefoil	<i>Desmodium nuttallii</i>	Confirmed	Endangered
		Possible but not	
Small-flowered Tick-trefoil	<i>Desmodium pauciflorum</i>	Confirmed	Endangered
Velvet Panic Grass	<i>Dichanthelium scoparium</i>	Historically Confirmed	Endangered
Log Fern	<i>Dryopteris celsa</i>	Historically Confirmed	Endangered
Angled Spikerush	<i>Eleocharis quadrangulata</i>	Recently Confirmed	Endangered
Three-ribbed Spikerush	<i>Eleocharis tricostata</i>	Historically Confirmed	Endangered
Salt-marsh Spikerush	<i>Eleocharis uniglumis</i> var. <i>halophila</i>	Historically Confirmed	Threatened
Smooth Scouring Rush	<i>Equisetum laevigatum</i>	Extirpated	Endangered
	<i>Eriophorum angustifolium</i> ssp. <i>angustifolium</i>		
Narrow-leaf Cottongrass		Historically Confirmed	Endangered
Rough Avens	<i>Geum virginianum</i>	Historically Confirmed	Endangered
Kentucky Coffee Tree	<i>Gymnocladus dioicus</i>	Recently Confirmed	Endangered
Common Mare's-tail	<i>Hippuris vulgaris</i>	Historically Confirmed	Endangered

Common Name	Scientific Name	Distribution Status	State Protection Status
Golden-seal	<i>Hydrastis canadensis</i>	Historically Confirmed	Threatened
Shrubby St. John's-wort	<i>Hypericum prolificum</i>	Recently Confirmed	Threatened
Twin-leaf	<i>Jeffersonia diphylla</i>	Historically Confirmed	Threatened
Butternut	<i>Juglans cinerea</i>	Historically Confirmed	
		Possible but not	
		Confirmed	
Creamy Wild-pea	<i>Lathyrus ochroleucus</i>	Confirmed	
Salt-meadow Grass	<i>Leptochloa fusca</i> ssp. <i>fascicularis</i>	Recently Confirmed	Endangered
Violet Bush-clover	<i>Lespedeza frutescens</i>	Historically Confirmed	Rare
Large Twayblade	<i>Liparis liliifolia</i>	Historically Confirmed	Endangered
Southern Twayblade	<i>Listera australis</i>	Recently Confirmed	Endangered
		Possible but not	
		Confirmed	
Hoary Puccoon	<i>Lithospermum canescens</i>	Confirmed	
Wild Lupine	<i>Lupinus perennis</i>	Historically Confirmed	
Basil-balm	<i>Monarda clinopodia</i>	Historically Confirmed	Endangered
Southern Water-nymph	<i>Najas guadalupensis</i> ssp. <i>olivacea</i>	Recently Confirmed	Endangered
Spiny Water-nymph	<i>Najas marina</i>	Historically Confirmed	Endangered
		Possible but not	
		Confirmed	Threatened
Oakes' Evening-primrose	<i>Oenothera oakesiana</i>	Confirmed	Threatened
Ohio Goldenrod	<i>Oligoneuron ohioense</i>	Historically Confirmed	Threatened
Wiry Panic Grass	<i>Panicum flexile</i>	Historically Confirmed	Threatened
Swamp Lousewort	<i>Pedicularis lanceolata</i>	Historically Confirmed	Threatened
Swamp Smartweed	<i>Persicaria setacea</i>	Recently Confirmed	Endangered
Sweet Coltsfoot	<i>Petasites frigidus</i> var. <i>palmatus</i>	Recently Confirmed	Endangered
Heartleaf Plantain	<i>Plantago cordata</i>	Historically Confirmed	Threatened
Orange Fringed Orchid	<i>Platanthera ciliaris</i>	Historically Confirmed	Endangered
Hooker's Orchid	<i>Platanthera hookeri</i>	Historically Confirmed	Endangered
Eastern Prairie Fringed Orchid	<i>Platanthera leucophaea</i>	Historically Confirmed	Endangered
Slender Marsh Bluegrass	<i>Poa paludigena</i>	Historically Confirmed	Endangered
Woodland Bluegrass	<i>Poa sylvestris</i>	Historically Confirmed	Endangered

Common Name	Scientific Name	Distribution Status	State Protection Status
Erect Knotweed	<i>Polygonum erectum</i>	Historically Confirmed	Endangered
Northern Pondweed	<i>Potamogeton alpinus</i>	Historically Confirmed	Threatened
Spotted Pondweed	<i>Potamogeton pulcher</i>	Historically Confirmed	Threatened
Straight-leaf Pondweed	<i>Potamogeton strictifolius</i>	Historically Confirmed	Endangered
Bushy Cinquefoil	<i>Potentilla paradoxa</i>	Recently Confirmed	Endangered
Pink Wintergreen	<i>Pyrola asarifolia</i> ssp. <i>asarifolia</i>	Historically Confirmed	Threatened
Seaside Crowfoot	<i>Ranunculus cymbalaria</i>	Historically Confirmed	Endangered
Lake-cress	<i>Rorippa aquatica</i>	Historically Confirmed	Threatened
Golden Dock	<i>Rumex fueginus</i>	Historically Confirmed	Endangered
Pod Grass	<i>Scheuchzeria palustris</i>	Recently Confirmed	Rare
Slender Bulrush	<i>Schoenoplectus heterochaetus</i>	Historically Confirmed	Endangered
Low Nutrush	<i>Scleria verticillata</i>	Recently Confirmed	Endangered
Wild Pink	<i>Silene caroliniana</i> ssp. <i>pennsylvanica</i>	Possible but not Confirmed	Exploitably Vulnerable
Michaux's Blue-eyed-grass	<i>Sisyrinchium mucronatum</i>	Recently Confirmed	Endangered
Bear's-foot	<i>Smallanthus uvedalius</i>	Historically Confirmed	Endangered
Small Bur-reed	<i>Sparganium natans</i>	Historically Confirmed	Threatened
Pink Wild Bean	<i>Strophostyles umbellata</i>	Historically Confirmed	Endangered
Slender Pondweed	<i>Stuckenia filiformis</i> ssp. <i>alpina</i>	Historically Confirmed	Endangered
Sheathed Pondweed	<i>Stuckenia filiformis</i> ssp. <i>occidentalis</i>	Historically Confirmed	Endangered
Northern Bog Aster	<i>Symphyotrichum boreale</i>	Recently Confirmed	Threatened
Lindley's Aster	<i>Symphyotrichum ciliolatum</i>	Historically Confirmed	Endangered
Tall White Aster	<i>Symphyotrichum lanceolatum</i> var. <i>interior</i>	Historically Confirmed	Endangered
White Basswood	<i>Tilia americana</i> var. <i>heterophylla</i>	Historically Confirmed	
Marsh Arrow-grass	<i>Triglochin palustre</i>	Historically Confirmed	Threatened
Nodding Trillium	<i>Trillium flexipes</i>	Historically Confirmed	Endangered
Nodding Pogonia	<i>Triphora trianthophora</i>	Historically Confirmed	Endangered
Spreading Globeflower	<i>Trollius laxus</i>	Historically Confirmed	Rare

Common Name	Scientific Name	Distribution Status	State Protection Status
Cork Elm	<i>Ulmus thomasi</i>	Historically Confirmed	Threatened
Hiddenfruit Bladderwort	<i>Utricularia geminiscapa</i>	Historically Confirmed	
Lesser Bladderwort	<i>Utricularia minor</i>	Possible but not Confirmed	Threatened
Marsh Valerian	<i>Valeriana uliginosa</i>	Historically Confirmed	Endangered
Goosefoot Corn-salad	<i>Valerianella chenopodiifolia</i>	Possible but not Confirmed	Endangered
Tall Ironweed	<i>Vernonia gigantea</i> ssp. <i>gigantea</i>	Possible but not Confirmed	Endangered
Neckweed	<i>Veronica peregrina</i> ssp. <i>xalapensis</i>	Confirmed	Endangered
Culver's-root	<i>Veronicastrum virginicum</i>	Recently Confirmed	
Culver's-root	<i>Veronicastrum virginicum</i>	Historically Confirmed	Threatened
Culver's-root	<i>Veronicastrum virginicum</i>	Historically Confirmed	Threatened
Northern Bog Violet	<i>Viola nephrophylla</i>	Possible but not Confirmed	
Northern Bog Violet	<i>Viola nephrophylla</i>	Confirmed	Endangered

Appendix B. New York Natural Heritage Program Survey of Rare Natural Communities Within Cayuga, Seneca, and Wayne Counties. Exported from *www.dec.ny.gov*.

Natural Community	Habitat Type
Calcareous Shoreline Outcrop	Uplands
Dwarf Shrub Bog	Freshwater Nontidal Wetlands
Floodplain Forest	Freshwater Nontidal Wetlands
Great Lakes Aquatic Bed	Lakes and Ponds
Great Lakes Bluff	Uplands
Hemlock-Hardwood Swamp	Freshwater Nontidal Wetlands
Hemlock-Northern Hardwood Forest	Uplands
Inland Salt Marsh	Freshwater Nontidal Wetlands
Inland Salt Pond	Lakes and Ponds
Maple-Basswood Rich Mesic Forest	Uplands
Marl Fen	Freshwater Nontidal Wetlands
Medium Fen	Freshwater Nontidal Wetlands
Red Maple-Hardwood Swamp	Freshwater Nontidal Wetlands
Red Maple-Tamarack Peat Swamp	Freshwater Nontidal Wetlands
Rich Graminoid Fen	Freshwater Nontidal Wetlands
Rich Hemlock-Hardwood Peat Swamp	Freshwater Nontidal Wetlands
Rich Shrub Fen	Freshwater Nontidal Wetlands
Shale Cliff and Talus Community	Uplands
Shallow Emergent Marsh	Freshwater Nontidal Wetlands
Shrub Swamp	Freshwater Nontidal Wetlands
Silver Maple-Ash Swamp	Freshwater Nontidal Wetlands