



U.S. Fish & Wildlife Service

# Iroquois National Wildlife Refuge

*Comprehensive Conservation Plan*

*September 2011*



Cover Photo

*Bald Eagle*

Steve Hillebrand/USFWS

Inset Photos

*Wood Turtle*

John Mosesso/NBII

*Spotted Salamander*

USFWS

*Karner Blue Butterfly*

Joel Trick/USFWS



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

The *U.S. Fish and Wildlife Service* is the principal Federal agency responsible for conserving, protecting, and enhancing fish, wildlife, plants, and their habitats for the continuing benefit of the American people. The Service manages the 150-million acre National Wildlife Refuge System comprised of more than 550 national wildlife refuges and thousands of waterfowl production areas. It also operates 70 national fish hatcheries and 81 ecological services field stations. The agency enforces Federal wildlife laws, manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitat such as wetlands, administers the Endangered Species Act, and helps foreign governments with their conservation efforts. It also oversees the Federal Assistance Program which distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state wildlife agencies.

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



U.S. Fish & Wildlife Service

# Iroquois National Wildlife Refuge

## *Comprehensive Conservation Plan September 2011*

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**U.S. Fish & Wildlife Service**

# Iroquois National Wildlife Refuge

## *Comprehensive Conservation Plan September 2011*

### **Abstract**

<b>Type of Action:</b>	Administrative
<b>Lead Agency:</b>	U.S. Department of the Interior, Fish and Wildlife Service
<b>Responsible Official:</b>	Wendi Weber, Acting Regional Director, Region 5
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This Comprehensive Conservation Plan (CCP) for the 10,828-acre Iroquois National Wildlife Refuge is the culmination of a planning effort involving the local community and many partners, including the New York State Department of Environmental Conservation. The CCP establishes 15-year management goals and objectives for wildlife and habitat, public use and access, and administration and facilities. This document also contains nine appendices that provide additional information supporting our analysis.

This plan includes an array of management actions that, in our professional judgment, work best toward achieving the purposes of the refuge, our vision and goals for those lands, the National Wildlife Refuge System mission, and the goals in State and regional conservation plans. We will focus on enhancing the conservation of wildlife through habitat management, as well as providing additional visitor opportunities on the refuge. Our emphasis will be on decreasing habitat fragmentation and restoring native habitats. To achieve this, we will increase grassland, shrubland, and forest habitats by removing hedgerows, and replacing non-native conifer plantation with native forest species. Our monitoring and inventory program will continue to help us better understand the implications of our management actions and identify ways to improve their effectiveness. We will increase some existing wildlife-dependent recreational activities including wildlife observation and hunting, which includes implementing a permit system for hunting upland game, migratory birds, and big game. To facilitate greater cross-program collaboration, we will co-locate the Lower Great Lakes Fish and Wildlife Conservation Office with a new visitor contact station and administrative building by adding on to the existing building. Finally, we will expand our existing staff to include a full-time permanent law enforcement officer, maintenance worker, biological technician, and one part-time biological technician.



**U.S. Fish & Wildlife Service**

# Iroquois National Wildlife Refuge

*Comprehensive Conservation Plan  
September 2011*

## **Refuge Vision Statement**

Iroquois National Wildlife Refuge, known locally as part of the “Alabama Swamps” will be the ecological “puzzle piece” for western New York by creating and maintaining unsurpassed habitats including wetlands, grasslands, shrublands, and forests for migratory birds and other wildlife. By encouraging compatible wildlife-dependent recreation and working with partners, a deep understanding and appreciation for the refuge’s ecological integrity will be fostered in its visitors, regardless of generational, economic, or social boundaries. Through these efforts, future generations will cherish Iroquois National Wildlife Refuge’s interconnectivity to the much larger National Wildlife Refuge System.

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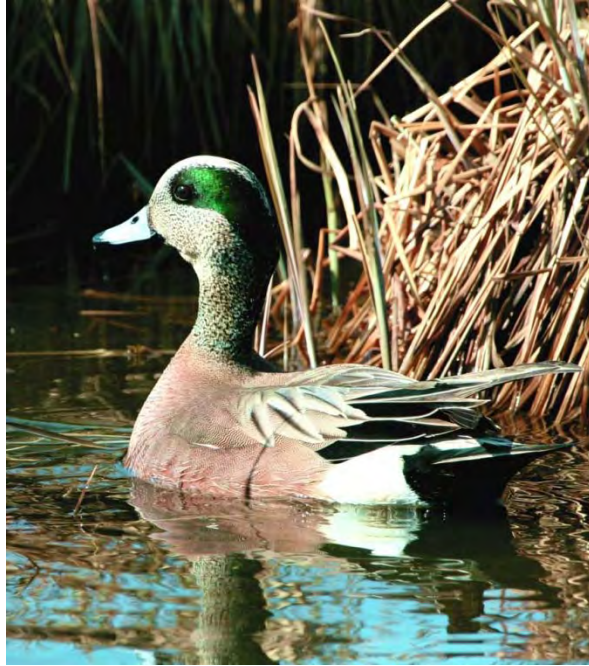
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## Chapter 1



Donna Dewhurst/USFWS

*American Widgeon Drake*

# The Purpose of and Need for Action

- Introduction
- Purpose and Need for Action
- Project Area
- The Service, Policies, and Legal Mandates
- Conservation Plans and Initiatives Guiding the Project
- Refuge Establishment, History, and Purpose
- Step-down Management Plans
- Iroquois Refuge Vision Statement
- Refuge Goals

## **Chapter 1**

### **The Purpose of and Need for Action**

#### **Introduction**

This Comprehensive Conservation Plan (CCP) for Iroquois National Wildlife Refuge (Iroquois Refuge, the refuge) is a requirement of the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (16 U.S.C. 6688dd, et seq.; Improvement Act). The CCP will serve as a guide for the refuge's management over the next 15 years.

The CCP is divided into five chapters with eight supporting appendices. This chapter introduces the purpose and need for the development of the CCP and sets the stage for chapters 2 through 4. This chapter includes:

- an explanation of the purpose and need for preparing a CCP for Iroquois Refuge;
- a description of the purposes for which the refuge was established;
- an overview of the U.S. Fish and Wildlife Service (the Service), its national and regional mandates and policies that influenced this document; and
- the vision and goals for Iroquois Refuge;

Chapter 2, "The Comprehensive Conservation Planning Process," provides an explanation of the planning process and how it is used to develop this document and issues and concerns addressed during the planning process.

Chapter 3, "Refuge Resources," describes the physical, biological, and human environment of the refuge.

Chapter 4, "Management Direction and Implementation," presents an array of management actions that work best in terms of our ability to meet the refuge's goals and objectives and respond to the key issues identified at the end of chapter 2.

Chapter 5, "Consultation and Coordination" describes the use, purpose and value of public and partner involvement throughout the planning process and identifies key individuals involved in preparation of this document.

This document also includes a glossary of terms, a list of commonly used acronyms and abbreviations and a bibliography.

#### **Purpose and Need for Action**

We developed a CCP that best meets the refuge's primary purpose, goals and objectives, contributes to the mission of the National Wildlife Refuge System (Refuge System), abides by Service policies and mandates, addresses key issues, and responds to public concerns.

Partner and public involvement is vital to the process of developing a CCP that will successfully guide management of Iroquois Refuge for the next 15 years. The CCP was developed to provide

- a clear vision of the desired future conditions of refuge habitat, wildlife populations, visitor services, staffing, and facilities;

- clear communication regarding refuge management actions to state agencies, refuge neighbors, visitors and partners;
- assurance that refuge management reflects the policies, legal mandates, and the mission of the Refuge System;
- assurance that current and future public use is compatible with the primary purpose of the refuge;
- long-term continuity in refuge management; and
- guidance for staffing, operating, maintenance, and annual budget requests.

The Improvement Act (Public Law 105–57; 111 Stat. 1282) requires that all national wildlife refuges have a CCP completed by 2012 to help fulfill the mission of the Refuge System.

This CCP benefits Iroquois Refuge for multiple reasons: First, it provides the refuge with an updated master plan to ensure fulfillment of its obligations in light of the dramatic changes in environmental, economic, and social conditions since the refuge was first established. Second, it prepares the refuge to better respond to concerns regarding future industries (quarries and wind farms) that may establish in local towns and have an impact on the refuge’s environment and wildlife. Lastly, it allows the refuge to address issues identified during the planning process by the public, partners, other agencies, and refuge staff that could adversely affect fish, wildlife, and plant populations on refuge lands.

This CCP will be reviewed, evaluated, and subsequently updated at least every 15 years in accordance with the Improvement Act and Service planning policy (602 Service 1, 3, and 4).

### **Project Area**

Iroquois Refuge was established in 1958 and encompasses 10,828 acres of open water, emergent marsh, forested wetland, upland forest, grassland, and shrubland habitats. The refuge lies within the rural towns of Alabama in Genesee County and Shelby in Orleans County in the Oak Orchard Creek Watershed on the Lake Plains of western New York (map 1-1 and 1-2). Oak Orchard Creek enters the refuge from the east, meanders northwest, and exits to the north, eventually emptying into Lake Ontario. The refuge is approximately 25 miles west of Lake Erie and 20 miles south of Lake Ontario. New York State Route 63 runs through the center of the refuge, bisecting it from east to west. Iroquois Refuge, in combination with neighboring New York State Wildlife Management Areas, forms the 19,000-acre Tonawanda-Iroquois-Oak Orchard Wetland Complex (map 1-3); this complex is one of the largest contiguous blocks of natural habitat in western New York and includes some of the most productive inland wildlife habitat in the eastern United States.



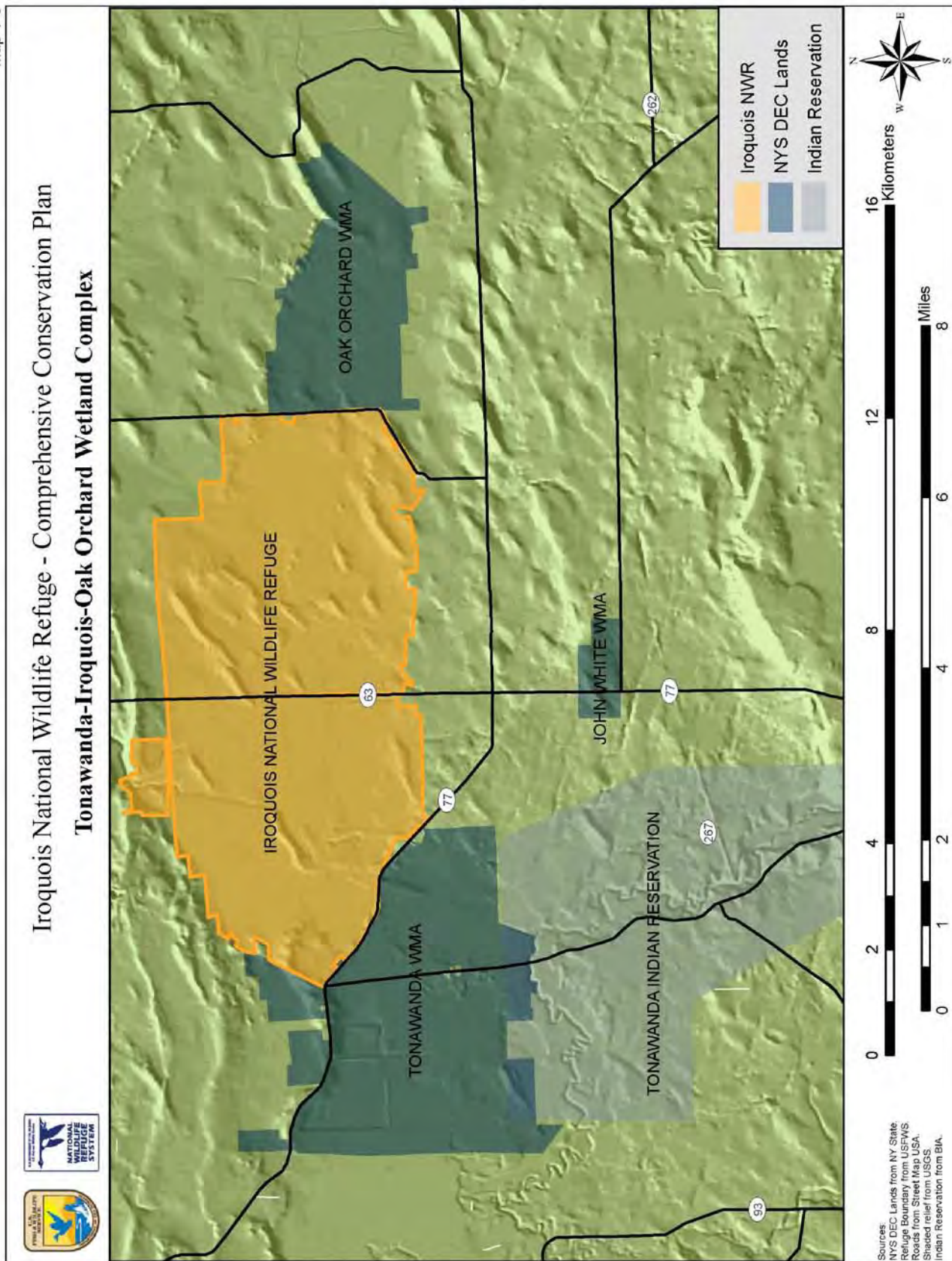
*Egret in wetland at Iroquois Refuge*







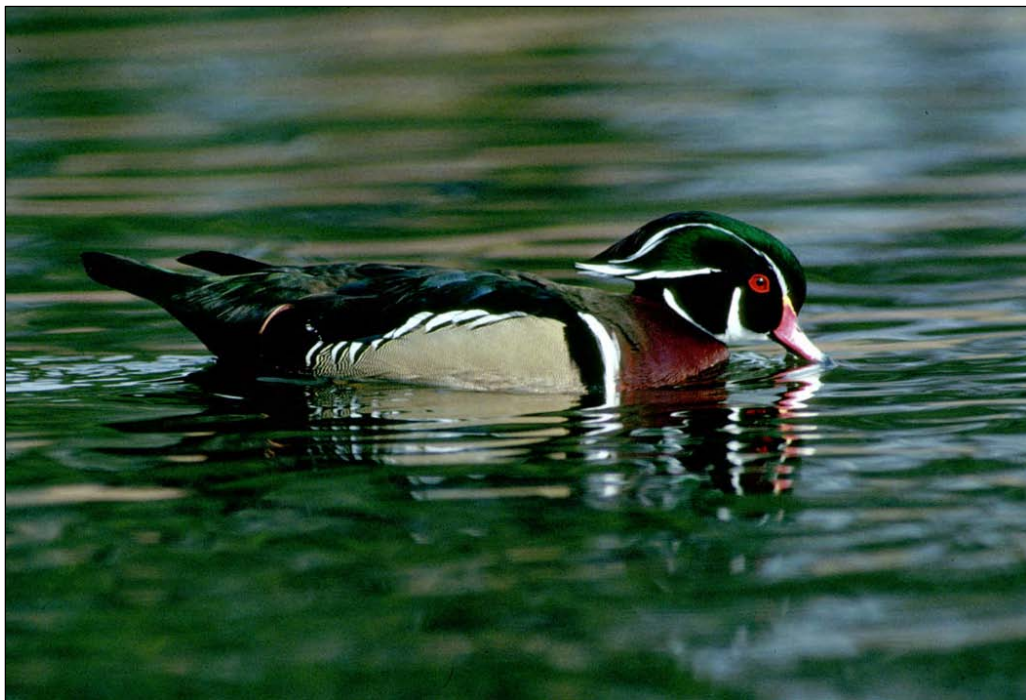
Map 1-3



Over half of the refuge is wetland (6,500 acres) with 4,000 of these wetland acres contained in 19 managed freshwater impoundments. Water levels are adjusted within and between years to mimic natural hydroperiods associated with unaltered wetlands to provide a variety of feeding, nesting, brood rearing, and resting habitats for migratory birds and resident wildlife. The interspersed of open water and aquatic and emergent plant communities provide resting and feeding habitat for over 120,000 waterfowl annually.

Forested wetlands comprise about 3,400 acres of the refuge and are located in the natural floodplain of Oak Orchard Creek and in Seneca Pool, a constructed greentree impoundment. Wood duck boxes and natural tree cavities in mature forested wetlands provide nesting sites for wood duck, hooded merganser, and more than a dozen species of resident and migratory landbirds, and habitat for many mammal species. Approximately 2,200 of the 4,100 acres of upland habitat at Iroquois Refuge are currently maintained in an early successional stage as grassland or shrubland through active management. Grasslands and impoundment dikes are mowed or burned according to a multi-year rotation schedule to suppress encroachment of broadleaf forbs and woody plants.

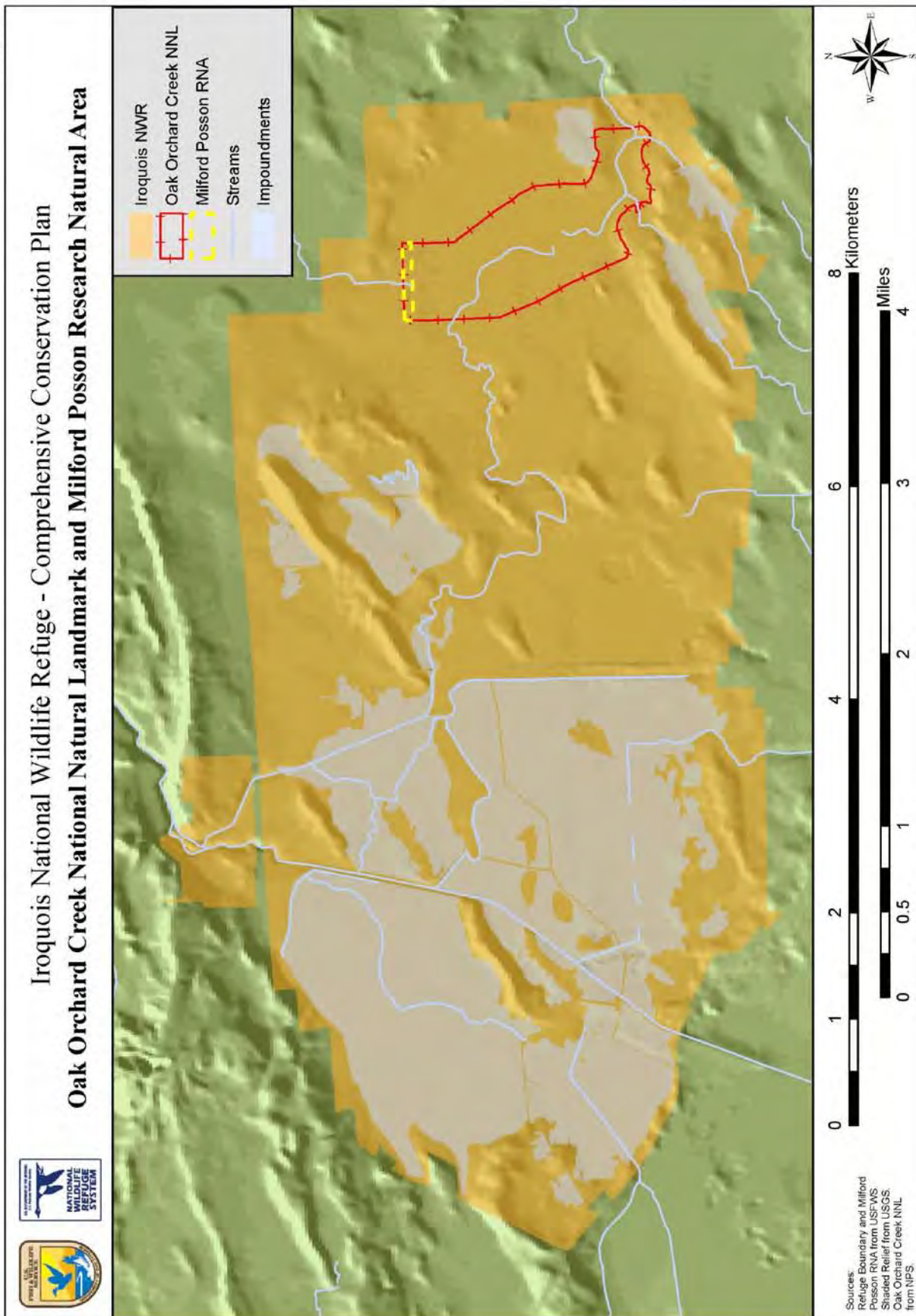
Iroquois Refuge was one of the first areas in New York designated as a National Audubon Society Important Bird Area. The 523-acre Oak Orchard Creek Marsh was designated in 1973 as a National Natural Landmark (NNL; map 1-4). When this landmark was established it included the 15-acre Milford Posson Research Natural Area (RNA; map 1-4).



USFWS

*Wood Duck*

Map 1-4



The refuge is open to the public and facilitates wildlife-dependent recreational opportunities including hunting, fishing, interpretation, environmental education, wildlife observation and photography. The Improvement Act encourages refuges to provide these types of opportunities when compatible with the primary purpose of the refuge or mission of the Refuge System. Total visitation to the refuge fluctuates year to year between 35,000 to 50,000 visits. A large portion of visitors (75 percent to 80 percent) participate in the refuge's non-consumptive uses such as wildlife observation and interpretation. Iroquois Refuge has four nature trails meandering over six miles allowing visitors to experience the diverse wildlife habitats found on the refuge. Four overlooks provide vantage points for viewing wildlife, including nesting bald eagles. A smaller percentage of Refuge visitors (20 percent to 25 percent) participate in consumptive recreation. Consumptive recreation includes fishing, and hunting for deer, turkey, waterfowl, rail, snipe, woodcock, rabbit, and squirrel. Trapping for furbearers including muskrat, beaver, and mink is conducted for management purposes.

The refuge has partnered with several organizations including Friends of Iroquois National Wildlife Refuge, Inc. (Friends of Iroquois Refuge), Lake Plains Waterfowl Association, Buffalo Audubon Society, the University of Buffalo, Canisius College, and Iroquois Job Corps Center to provide quality special events, youth orientations, environmental education, and interpretation programs. The refuge hosts a Spring into Nature Celebration each April in cooperation with partners providing a range of activities that introduce approximately 1,000 visitors to wildlife, wildlife habitat, and conservation on the refuge. Buffalo Audubon Society has been providing interpretive programs on and near the refuge since 2003. Their nature programs help reach approximately 1,000 people annually. A Youth Turkey Hunt, Youth Waterfowl Hunt, and Youth Fishing Derby are conducted each year to introduce younger generations to these outdoor activities and to provide them with a quality recreational opportunity.

### **The Service, Policies, and Legal Mandates**

This section provides an overview of the Service, the Refuge System, and Service policies and mandates that directly influenced the development of this CCP.

#### ***Our Mission***

The Service is part of the Department of the Interior. Our mission is:

*“Working with others, to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.”*

By law, Congress entrusts national resources to the Service for conservation and protection. Those trust resources consist of national wildlife refuges, migratory birds, Federal-listed endangered and threatened species, interjurisdictional fishes, wetlands, and certain marine mammals. To uphold our responsibilities and to achieve our mission we engage in a diversity of activities and programs. These include

- operation and management of the 150-million acre Refuge System which includes 553 national wildlife refuges and thousands of small wetlands and other special management areas;
- operation and management of 70 national fish hatcheries, 65 fishery resource offices, and 81 ecological services field stations;
- enforcement of Federal wildlife laws and international treaties on importing and exporting wildlife;
- protection, restoration and management of endangered species, migratory birds, marine mammals, nationally significant fisheries, and wildlife habitat such as wetlands;

- assistance to foreign governments with their international conservation efforts and development of wildlife conservation programs;
- oversight of the Federal Aid Program that distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state fish and wildlife agencies; and
- employment of approximately 7,500 people at facilities across the country, with a headquarters in Washington D.C., eight geographic regions, and nearly 700 field units.

The Service manual contains standing and continuing directives for implementing those authorities, responsibilities, and activities. The manual can be accessed at: <http://www.fws.gov/pdm/direct.html>.

Special Service directives that affect the rights of citizens or the authorities of other agencies are published separately in the Code of Federal Regulations (CFR), and are not duplicated in the Service manual. Most of the current regulations that pertain to the Service are issued in 50 CFR parts 1-99. The CFR can be accessed at: <http://www.access.gpo.gov/nara/cfr/index.html>.

### ***The National Wildlife Refuge System, Its Mission, and Policies***

The Refuge System is the world's largest network of public lands and waters set aside specifically for conserving wildlife and protecting ecosystems. The Refuge System began in 1903 when President Theodore Roosevelt designated the 3-acre Pelican Island in Florida as a national bird sanctuary. From its creation, the Refuge System has grown to 553 national wildlife refuges protecting 150 million acres of public lands; there is at least one refuge in all 50 States and there are waterfowl production areas in 10 states. Each year, more than 40 million visitors hunt, fish, observe and photograph wildlife, or participate in environmental education and interpretation on refuge lands. Varying in size from half-acre parcels to thousands of square miles, the majority of these lands are in Alaska, with the rest spread across the lower 48 States and U.S. territories. Like Pelican Island, many early wildlife refuges were created for herons, egrets, and other waterbirds. Other refuges were set aside for large mammals like elk and bison. But most national wildlife refuges were created to conserve migratory waterfowl. This is a result of the United States' responsibilities under international treaties for migratory bird conservation and legislation such as the Migratory Bird Conservation Act of 1929. Refuges dot the map along the four major "flyways" that waterfowl follow from their northern nesting grounds to southern wintering areas. Iroquois Refuge lies within the Atlantic Flyway.

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

The mission of the Refuge System is:

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

- Refuge Improvement Act; Public Law 105-57

The Improvement Act identifies six wildlife-dependent priority public uses: hunting, fishing, wildlife observation, photography, environmental education, and interpretation. These six uses receive priority

consideration on refuges and in the development of CCPs. The Improvement Act also declares that all existing or proposed refuge uses must be compatible with the refuge's purpose and consistent with public safety. The refuge manager determines if an existing or proposed use is compatible by evaluating its potential impact on refuge resources. This ensures that the use supports the System mission and does not materially interfere with or detract from the purpose for which the refuge was established.

The Refuge Manual provides a central reference for current policy governing the operation and management of the Refuge System not covered by the Service manual, including technical information on implementing refuge policies and guidelines. This manual can be reviewed at Iroquois Refuge headquarters.

### **Refuge System Planning Policy**

The Refuge System has developed a planning policy that provides guidance, systematic direction, and minimum requirements for developing all CCPs and step-down management plans. This policy also provides a systematic decisionmaking process that fulfills those requirements. The policy states that we will manage all refuges in accordance with an approved CCP. Once implemented, the CCP will achieve the purpose of the refuge, help fulfill the Refuge System mission, maintain and restore the ecological integrity of each refuge, help achieve the goals of the National Wilderness Preservation System, and meet other mandates that apply to the Refuge System (Fish and Wildlife Service Manual, 602 FW 1,2,3).

The Improvement Act stipulates that each CCP shall identify and describe

- the purposes of each refuge comprising the planning unit (chapter 1);
- the distribution, migration patterns, and abundance of fish, wildlife, and plant populations and related habitats within the planning unit (Chapter 3, Refuge Resources);
- the archaeological and cultural values of the planning unit (chapter 3);
- areas within the planning unit that are suitable for use as administrative sites or visitor facilities (Chapter 4, Management Direction and Implementation);
- significant problems that may adversely affect the populations and habitats of fish, wildlife, and plants within the planning unit and the actions necessary to correct or mitigate such problems (chapters 1, 3 and 4); and
- opportunities for compatible wildlife-dependent recreational uses (chapter 4).

### **Appropriate Refuge Uses Policy**

The Appropriate Refuge Uses Policy provides a national framework and procedure for refuge managers to follow when deciding if uses are appropriate on a refuge. It also clarifies and expands on the Compatibility Policy (603 FW 2.10D) which describes when refuge managers should deny a proposed use without determining compatibility. When we find a use is appropriate, we must then determine if the use is compatible before we allow it on a refuge. This policy applies to all proposed and existing uses in the Refuge System only when we have jurisdiction over the use and does not apply to refuge management activities or situations where reserved rights or legal mandates provide we must allow certain uses (603 FW 1). To view the policy and regulations online, visit: <http://www.fws.gov/policy/603fw1.html>.

### **Compatibility Policy**

Federal law and Service policy provide the direction and planning framework to protect the Refuge System from incompatible or harmful human activities and ensure that Americans can enjoy Refuge System lands and waters. The Improvement Act is the key legislation regarding management of public uses and compatibility. The compatibility requirements of the Improvement Act were adopted in the Service Final Compatibility Regulations and Final Compatibility Policy published October 18, 2000 (*Federal Register*, Vol. 65, No. 202, pp. 62458 to 62496). This Compatibility Policy changed or modified Service regulations contained in Chapter 50, Parts 25, 26, and 29 of the CFR (Service 2000a). The specific compatibility determinations for Iroquois Refuge can be found in appendix B. To view the policy and regulations online, visit: <http://www.fws.gov/policy/603fw2.html>.

### **Wildlife-Dependent Recreation Policy**

The Improvement Act defines and establishes that compatible wildlife dependent recreational uses (hunting, fishing, wildlife observation, photography, environmental education, and interpretation) are the priority general public uses of the Refuge System and will receive special consideration in refuge planning and management over other general public uses. The Wildlife Dependent Recreation Policy explains how we will provide visitors with opportunities for those priority public uses on units of the Refuge System and how we will facilitate these uses. To view the policy and regulations online, visit:

<http://www.fws.gov/policy/605fw1.html> (Wildlife Dependent Recreation Policy)

<http://www.fws.gov/policy/605fw2.html> (Hunting)

<http://www.fws.gov/policy/605fw3.html> (Recreational Fishing)

<http://www.fws.gov/policy/605fw4.html> (Wildlife Observation)

<http://www.fws.gov/policy/605fw5.html> (Wildlife Photography)

<http://www.fws.gov/policy/605fw6.html> (Environmental Education)

<http://www.fws.gov/policy/605fw7.html> (Interpretation)

### **Maintaining Biological Integrity, Diversity, and Environmental Health Policy**

This policy provides guidance on maintaining or restoring the biological integrity, diversity, and environmental health of the Refuge System including the protection of a broad spectrum of fish, wildlife, and habitat resources found in refuge ecosystems. Refuge managers are provided with a process for evaluating the best management direction to prevent the additional degradation of environmental conditions and restore lost or severely degraded environmental components. Guidelines are also provided for managing external threats to the biological integrity, diversity, and environmental health of a refuge and its ecosystem (601 FW 3) and can be found at: <http://www.fws.gov/policy/601fw3.html>.

### **Fulfilling the Promise**

In 1999 a report titled, "Fulfilling the Promise, The National Wildlife Refuge System; Visions for Wildlife, Habitat, People and Leadership" (Fulfilling the Promise) was published by the Service. The report is a culmination of a year-long process by teams of Service employees to create a vision for the Refuge System nationwide. This report was a result of the "System Conference" held in Keystone, Colorado in October 1998. It was attended by every refuge manager in the country, other Service employees, and scores of conservation organizations. The Fulfilling the Promise report contains 42 recommendations packaged within three vision statements focusing on wildlife and habitat, people, and leadership. We have often looked to the recommendations in this report for guidance when writing this CCP. For example, Fulfilling the Promise recommends forging new alliances through citizen and community partnerships and strengthening partnerships with the business community. One of the goals in

our CCP at Iroquois Refuge is devoted almost entirely to the development of community partnerships and several of our strategies focus on forging new partnerships or strengthening existing ones.

### **Other Mandates**

Service and Refuge System policy and the refuge's purposes provide a foundation for its management. However, other Federal laws, executive orders, treaties, interstate compacts, and regulations on the conservation and protection of natural and cultural resources also affect how refuges are managed. The Digest of Federal Resource Laws of Interest to the Service lists many of them and can be accessed at: <http://law.fws.gov/lawsdigest/indx.html>.

### **Conservation Plans and Initiatives Guiding the Project**

To the extent possible, a refuge CCP assists in meeting the conservation goals established in existing national and regional plans, state fish and wildlife conservation plans, and other landscape-scale plans covering the same watershed or ecosystem. We consulted the following plans in developing this CCP.

#### ***North American Bird Conservation Initiative***

The North American Bird Conservation Initiative (NABCI) brings together individual landbird, shorebird, waterbird, and waterfowl plans (described below) into a coordinated effort to protect and restore all native bird populations and their habitats in North America. This “all bird” conservation initiative reduces redundancy in the structure, planning, and implementation of conservation projects. It uses Bird Conservation Regions (BCRs) to guide landscape-scale, science-based approaches to conserving birds and their habitats. Iroquois Refuge lies within BCR 13 (map 1-5), the Lower Great Lakes/St. Lawrence Plain. This CCP takes guidance from priorities outlined in the BCR 13 preliminary plan and from the individual bird plans. For more information visit: <http://www.nabci-us.org>.



Steve Maslowski/USFWS

*Bobolink*





BCR 13 encompasses the vast, low-lying lake plain region surrounding Lake Erie and Lake Ontario, the St. Lawrence River Valley, low-lying regions between the Adirondack Mountains and the Laurentian Highlands, and upper regions of the Hudson River Valley. In addition to providing important lakeshore habitats and associated wetlands, this region was originally dominated by a mixture of oak-hickory, northern hardwood, and mixed-coniferous forests. Nearly 95 percent of the original habitat types have been lost and the landscape is now dominated by agriculture with interspersed wetlands and remnant forest stands.

BCR 13 plays a critical role in providing important staging and migrating habitat for birds during the spring and fall migration (Hartley 2007). Iroquois Refuge used the 2007 BCR 13 Conservation Plan and information in the four individual bird plans to identify important local bird species and to develop habitat management goals and objectives for the refuge. The four individual bird plans relevant to Iroquois Refuge include:

- Partners in Flight – Landbirds – Lower Great Lakes Plain
- North American Waterfowl Management Plan – Atlantic Coast Joint Venture
- North American Waterbird Management Plan – Upper Mississippi Valley/Great Lake Region
- U.S. Shorebird Conservation Plan and Northern Atlantic Regional Shorebird Plan

### ***Partners in Flight Landbird Conservation Plan***

In 1990, Partners in Flight (PIF) began as a voluntary, international coalition of government agencies, conservation organizations, academic institutions, private, industry, and other citizens dedicated to reversing the population declines of bird species and “keeping common birds common.” The foundation of PIF’s long-term strategy for bird conservation is a series of scientifically and geographically based Bird Conservation Plans. The initial focus on neotropical migratory bird species has since expanded to include all landbirds. You can view the PIF Landbird Conservation Plan at: [http://www.partnersinflight.org/cont\\_plan/default.htm](http://www.partnersinflight.org/cont_plan/default.htm).

Initially, PIF developed draft conservation plans within “physiographic areas”; Iroquois Refuge lies in PIF Area 15 – the Lower Great Lakes Plain (map 1-6). PIF developed a set of objective, science-based rules to evaluate the conservation status of all bird species using species population size, distribution, population trend, threats, and regional abundance to identify regional and continental conservation priorities. Those rules were adapted, and are now being used, to identify bird conservation priorities and opportunities within BCRs. National wildlife refuges, including Iroquois Refuge, protect critical habitats in New York to help reverse decline of priority bird species such as cerulean warbler, Henslow’s sparrow, and other grassland birds and shrub-dependent species.

Map 1-6

# Iroquois National Wildlife Refuge - Comprehensive Conservation Plan Partners In Flight (PIF) Area 15



Sources:  
Refuge Boundary from USFWS.  
Lakes and States from StreetMapUSA.  
PIF Area and Shadedrelief  
map from USGS.

### ***North American Waterfowl Management Plan: Atlantic Coast Joint Venture***

The North American Waterfowl Management Plan (NAWMP), signed by the United States and Canada in 1986 and by Mexico in 1994, provides a strategy to protect North America's remaining wetlands and conserve waterfowl populations through habitat protection, restoration, and enhancement (Service and Canadian Wildlife Service (CWS) 1986). The plan was updated in 1998 and again in 2004. The updated plan includes a stronger biological foundation, a landscape planning approach, and expanded partnerships (Service and CWS 2004). Implementation of the NAWMP is accomplished at the regional level in Joint Venture Habitat Areas. There are eleven Joint Venture Habitat Areas in the United States, four in Canada, and one that stretches across the United States/Canada border. Partners for habitat conservation include Federal, state, and local governments, Tribal nations, local businesses, conservation organizations, and individual citizens. By 2004, NAWMP partners had invested more than \$3.2 billion to protect, restore, or enhance more than 13 million acres of habitat. More information on the NAWMP is available at: <http://www.fws.gov/birdhabitat/nawmp/nawmphp.htm>.

Iroquois Refuge lies within the Atlantic Coast Joint Venture (ACJV); one of the original joint ventures formed under the NAWMP. The ACJV initially focused on protecting and restoring habitat for the American black duck and other waterfowl species in the Atlantic Coast region of the United States. Much of its support is generated through grants provided by the North American Wetlands Conservation Act. While maintaining a strong focus on waterfowl, the ACJV mission has evolved to include the conservation of habitats for all birds. At the regional scale, the ACJV is working on integrated planning efforts in eight BCRs. An important part of this planning effort is the development of Focus Area Plans. Focus Areas are discrete and distinguishable habitats or habitat complexes that are regionally important for one or more priority species during one or more life history stages. Focus Areas have been developed for waterfowl and are being developed for other migratory birds within the BCRs.

The Tonawanda-Iroquois-Oak Orchard Focus Area Plan (ACJV 1991) identified the rehabilitation of Mohawk Pool on Iroquois Refuge as a high priority project. The Service prepared an Environmental Assessment (EA) specifically for this project in 2002 (Service 2002). The initial phase of the project is complete; three new wetland sub-units in the Mohawk Pool provide significant improvement in wetland habitat. Rehabilitation of Mohawk Pool and other priorities from the local Focus Area Plan are incorporated into this CCP. For more information on the ACJV go to: <http://www.acjv.org>.

### ***North American Waterbird Conservation Plan***

The North American Waterbird Conservation Plan (NAWCP) reflects an independent partnership among individuals and institutions with interest and responsibility for conserving waterbirds and their habitats. The primary goal of the plan is to ensure that the distribution, diversity, and abundance of populations and habitats of breeding, migratory, and non-breeding waterbirds are sustained or restored throughout the lands and waters of North America, Central America, and the Caribbean. The plan provides a framework for conserving and managing colonially nesting water-dependent birds and promotes continentwide planning and monitoring, national-state-provincial conservation action, regional coordination, and local habitat protection and management (Kushlan et al. 2002). A draft conservation plan has been prepared for the Upper Great Lakes/Mississippi Valley Region.

We used the NAWCP in the development of objectives, actions, and strategies for protecting and managing waterbirds that breed on the refuge including black tern, American bittern, and great blue heron. The waterbird plan is available at: <http://www.waterbirdconservation.org>.

### ***U.S. Shorebird Conservation Plan and Northern Atlantic Regional Shorebird Plan***

The U.S. Shorebird Conservation Plan (USSCP) was developed by partners to ensure that stable, self-sustaining populations of all shorebird species are restored and protected. Collaborators include local,

state, and Federal agencies, non-governmental organizations (NGOs), business-related sectors, researchers, educators, and policymakers. The plan was closely coordinated with the NAWMP and Joint Venture staff, as well as PIF and the NAWCP teams as they concurrently developed their revised national plans. Team experts helped set conservation goals for each region of the country, identified critical habitat and research needs, and proposed education and outreach programs to increase awareness of shorebirds and the threats they face.

The USSCP (Brown et al. 2001) identifies three primary objectives: 1) Develop a standardized, scientifically sound system for monitoring and studying shorebird populations that will provide practical information to researchers and land managers for shorebird habitat conservation; 2) Identify the principles and practices upon which local, regional, and national management plans can effectively integrate shorebird habitat conservation with multiple species strategies; and 3) Design an integrated strategy for increasing public awareness and information concerning wetlands and shorebirds.

Regional plans, including the Upper Mississippi Valley/Great Lakes Regional Shorebird Plan, are being developed as part of the overall strategy (Clark and Niles 2000). We used the national and regional shorebird plans in developing the regional “resources of concern” list in appendix C, and in considering the value of the refuge for migrating shorebirds.

The USSCP can be accessed at: <http://shorebirdplan.fws.gov/USShorebird.htm> and the regional plan at: <http://www.fws.gov/shorebirdplan/RegionalShorebird/RegionalPlans.htm>.

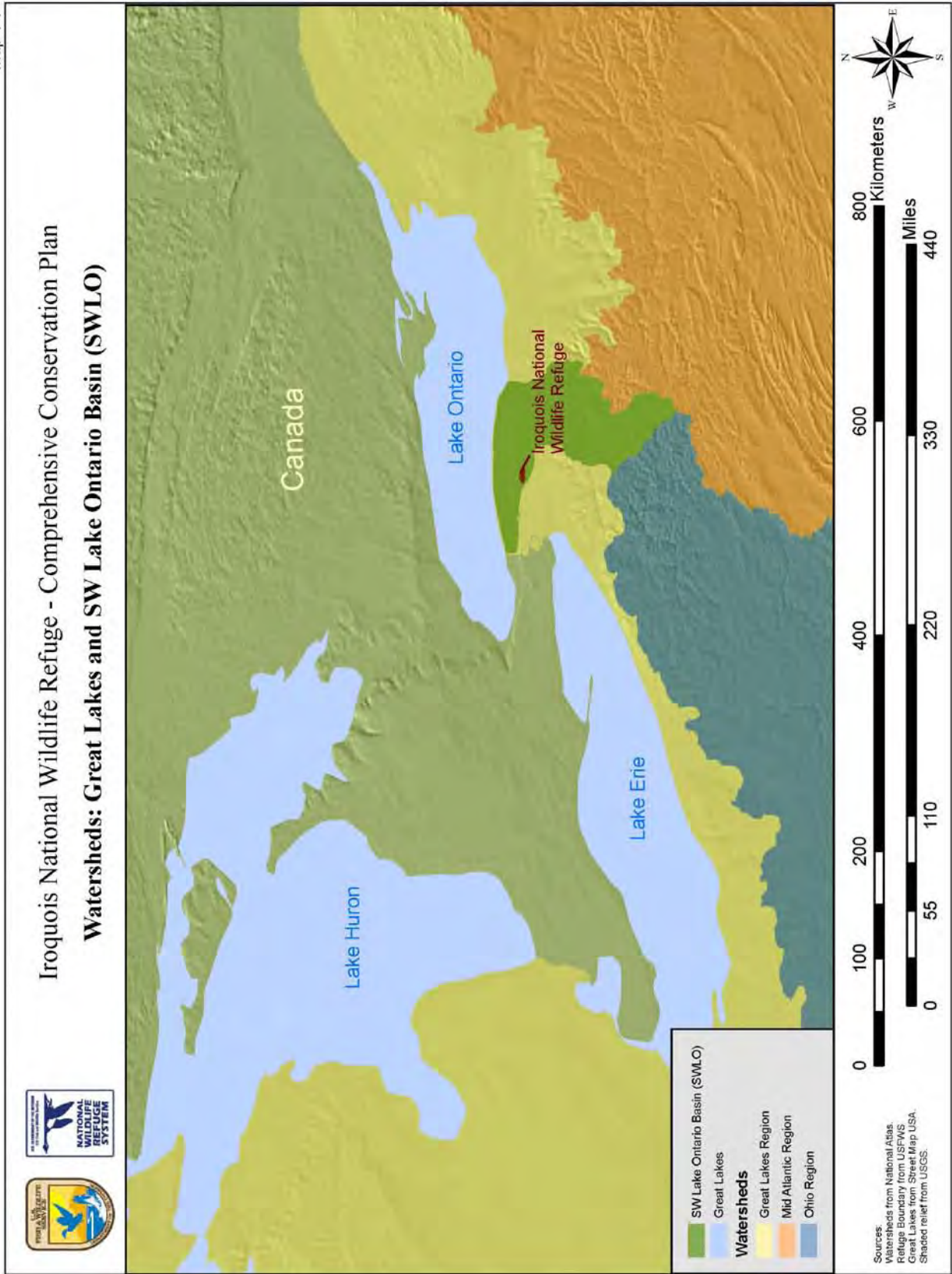
### ***New York State Wildlife Action Plan***

In fall 2001, Congress established a new “State Wildlife Grants” program that provided funds to state wildlife agencies for the conservation of fish and wildlife and their habitats. Each state was charged with developing a wildlife action plan by October 2005. State fish and wildlife agencies identified Species of Greatest Conservation Need (SGCN) while also addressing the full array of wildlife.

The New York Comprehensive Wildlife Conservation Strategy (CWCS) is available at: <http://www.dec.ny.gov/animals/30483.html>.

The New York State Department of Environmental Conservation (NYSDEC) prepared a CWCS for New York and organized the conservation recommendations within eleven watershed basins (NYSDEC 2005). Iroquois Refuge falls within the Southwest Lake Ontario (SWLO) Basin (map 1-7). The CWCS provides pertinent natural resource information on historical and current conditions for the region of Iroquois Refuge. The list of SGCN was included in the refuge’s potential list of resources of concern (appendix C).

Map 1-7



The SWLO Basin covers 2.2 million acres in western and central New York. The basin stretches across the State from north to south and includes three major sub-watersheds: West Lake Ontario, Lower Genesee, and Upper Genesee. The basin is characterized by a highly diverse landscape covering several ecological zones and a wide variety of vegetative cover, wildlife habitat, and land use. Although grasslands were historically found in the basin, there are no lands in the basin currently classified by the U.S. Environmental Protection Agency (EPA) as natural grasslands. The northern portion of the basin is primarily an agricultural region with scattered forest stands, diverse and extensive wetlands, and is generally flat. Iroquois Refuge, the only refuge in the basin, is abutted by NYSDEC-managed Oak Orchard Wildlife Management Area (WMA) to the east and Tonawanda WMA (partially in the basin) to the west.

### ***Important Bird Area and Bird Conservation Area Programs***

The Important Bird Area (IBA) program is an international bird conservation initiative to identify and conserve the most important places for birds. IBAs are identified according to standardized, scientific criteria through a collaborative effort among state, national, and international non-governmental conservation organizations, state and Federal government agencies, local conservation groups, academics, grassroots environmentalists, and birders. IBAs link global and continental bird conservation priorities to local sites that provide critical habitat for native bird populations. New York's IBA program began in 1996 and has identified 136 IBAs including the Tonawanda-Iroquois-Oak Orchard Wetland Complex. This IBA is noted for its large expanses of wetland, for providing habitat for over 100,000 migrating waterfowl, and breeding and migration habitat for a suite of at-risk bird species. More information can be found at: <http://iba.audubon.org/iba/profileReport.do?siteId=1729&navSite=search&pagerOffset=0&page=1>.

In 1997, the NYSDEC established the Bird Conservation Area (BCA) Program modeled after the IBA program. The BCA program safeguards and enhances bird populations and their habitats on state-owned lands and waters. The Oak Orchard and Tonawanda WMAs are a BCA immediately adjacent to Iroquois Refuge. The major management recommendations for this BCA include water level control to benefit waterbirds, invasive species control, and maintaining grasslands for nesting birds (<http://www.dec.ny.gov/animals/27111.html>). Given the juxtaposition of the State and Federal lands within the wetlands complex, there are management opportunities on the refuge that can contribute to the BCA objectives.

### **Refuge Establishment, History, and Purpose**

On May 19, 1958, the Federal government established the Oak Orchard National Wildlife Refuge using money from the sale of Migratory Bird Conservation Stamps, or “Duck Stamps.” To avoid confusion with the neighboring Oak Orchard State Game Management Area (later changed to Wildlife Management Area), the refuge was renamed Iroquois Refuge in 1964, in respect to the Iroquois Nation.

The purpose for which the refuge was established provides the basic framework for developing management direction for the refuge. The refuge purpose directs which management functions are developed and the types of uses and facilities that may be offered.

In 1958, Iroquois Refuge was established “...for use as an inviolate sanctuary, or any other management purposes, for migratory birds” under the Migratory Bird Conservation Act. A total of 10,828 acres of lands were acquired in the towns of Alabama and Shelby, in Genesee and Orleans County, New York (Table 1-1) under provisions of the Migratory Bird Conservation Act, Migratory Bird Hunting and Stamp Act, and other authorities. The majority of our land acquisition funds come from the Migratory Bird Conservation Fund, replenished primarily through the sale of Federal duck stamps to migratory waterfowl hunters and other conservationists.

**Table 1-1 History of Land Acquisition at Iroquois Refuge**

Acquired	Acres
1958	810.53
1959	1,822.22
1960	1,115.01
1961	1,211.62
1962	331.89
1963	665.16
1964	2,514.37
1965	2,315.95
1966	6.49
1970	34.82
<b>Total Acres</b>	<b>10,828.06</b>

The refuge is also responsible for over 444 acres on 23 easements held by Farmers Home Administration. These easements were acquired in the late 1980s and early 1990s and are spread out among seven western New York counties (map 1-8). The easements help protect wetlands and stream corridors. Table 1-2 provides a summary of these easements by county.



*Sutton's Marsh*

USFWS





**Table 1-2 Easements by County**

County	Acres
Allegany	80.0
Cattaraugus	50.1
Chautauqua	76.3
Erie	7.6
Livingston	60.0
Niagara	7.6
Wyoming	163.7
<b>Total Acres</b>	<b>444.8</b>

### Step-down Management Plans

The Service Manual (602 FW 4, “Refuge Planning Policy”) lists more than 25 step-down management plans that may be appropriate to ensure safe, effective, and efficient operation on every refuge. These plans contain specific strategies and implementation schedules for achieving refuge goals and objectives. Some plans require annual revisions; others are revised every 5 to 10 years. Some plans require additional NEPA analysis, public involvement, and compatibility determinations before they can be implemented.

Changes in recent policy will make some of the older refuge plans obsolete because they will become a component of other plans (Table 1-3). For example, the refuge has a Forest Management Plan, Grassland Management Plan, and Marsh and Water Management Plan. These will all be incorporated into the Habitat Management Plan. Likewise, public uses such as hunting, interpretation, and fishing will become a component of the Visitor Services Plan.

**Table 1-3 Step-down Management Plan Schedule for Iroquois Refuge**

Step-down Management Plan	Date Completed/Updated	Anticipated Date Completion/Update
Habitat Management Plan	----	2011
Forest Management Plan	4/04/1990	*
Grassland Management Plan	5/16/1990	*
Upland Habitat Plan	3/29/1990	*
Marsh and Water Management Plan	1/19/1984	*
Visitor Services Plan	----	2012
Public Use Plan	5/18/1992	+
Hunt Plan	10/15/1985	+
Fire Management Plan	2008	2014
Law Enforcement Plan (Crowd Control)	1971	2013
Wildlife Inventory and Monitoring Plan	5/11/1982	2012
Furbearer Management Plan	11/19/1983	2014
Fishery Resources Management Plan	5/04/1995	2016
Integrated Pest Management Plan	----	2015
Cultural Resources Management Plan	----	2015

\* Now incorporated into the Habitat Management Plan

+ Now incorporated into the Visitor Services Plan

### **Iroquois Refuge Vision Statement**

We developed the following vision statement for Iroquois Refuge to provide a guiding philosophy and sense of purpose for our planning effort:

*“Iroquois National Wildlife Refuge, known locally as part of the “Alabama Swamps” will be the ecological “puzzle piece” for western New York by creating and maintaining unsurpassed habitats including wetlands, grasslands, shrublands, and forests for migratory birds and other wildlife. By encouraging compatible wildlife dependent recreation and working with partners, a deep understanding and appreciation for the refuge’s ecological integrity will be fostered in its visitors, regardless of generational, economic, or social boundaries. Through these efforts, future generations will cherish Iroquois National Wildlife Refuge’s interconnectivity to the much larger National Wildlife Refuge System.”*

### **Refuge Goals**

Our planning team developed the following goals after reviewing the refuge purposes, the mission of the Service and Refuge System, our proposed vision, public and partner comments, and the mandates, plans and conservation strategies mentioned above.

**Goal 1:** Provide high quality freshwater wetland migration stopover and breeding habitat for waterfowl, marshbirds, shorebirds, and bald eagles in refuge impoundments through water level control.

**Goal 2:** Maintain the environmental health and integrity of Oak Orchard Creek and associated bottomland floodplain forests and wetlands as a natural free-flowing habitat with a diverse assemblage of native plants and animals.

**Goal 3:** Provide a diverse mix of grassland, shrubland, and forested upland habitats arranged to reduce fragmentation and edge effects, and enhance habitat quality for priority species of conservation concern.

**Goal 4:** Refuge visitors will understand and appreciate fish and wildlife conservation through high quality recreation, education, and interpretive programs.

**Goal 5:** Hunters and anglers will enjoy and support programs designed to provide high quality hunting and fishing experiences.

**Goal 6:** Enhance partnerships with local communities and various organizations to garner support and promote refuge programs and resources.

## Chapter 2



USFWS

*Canada Geese on Marsh 300*

# The Comprehensive Conservation Planning Process

- Planning Process
- Issues, Concerns, and Opportunities
- Final Decision

## Chapter 2

### The Comprehensive Conservation Planning Process

#### Planning Process

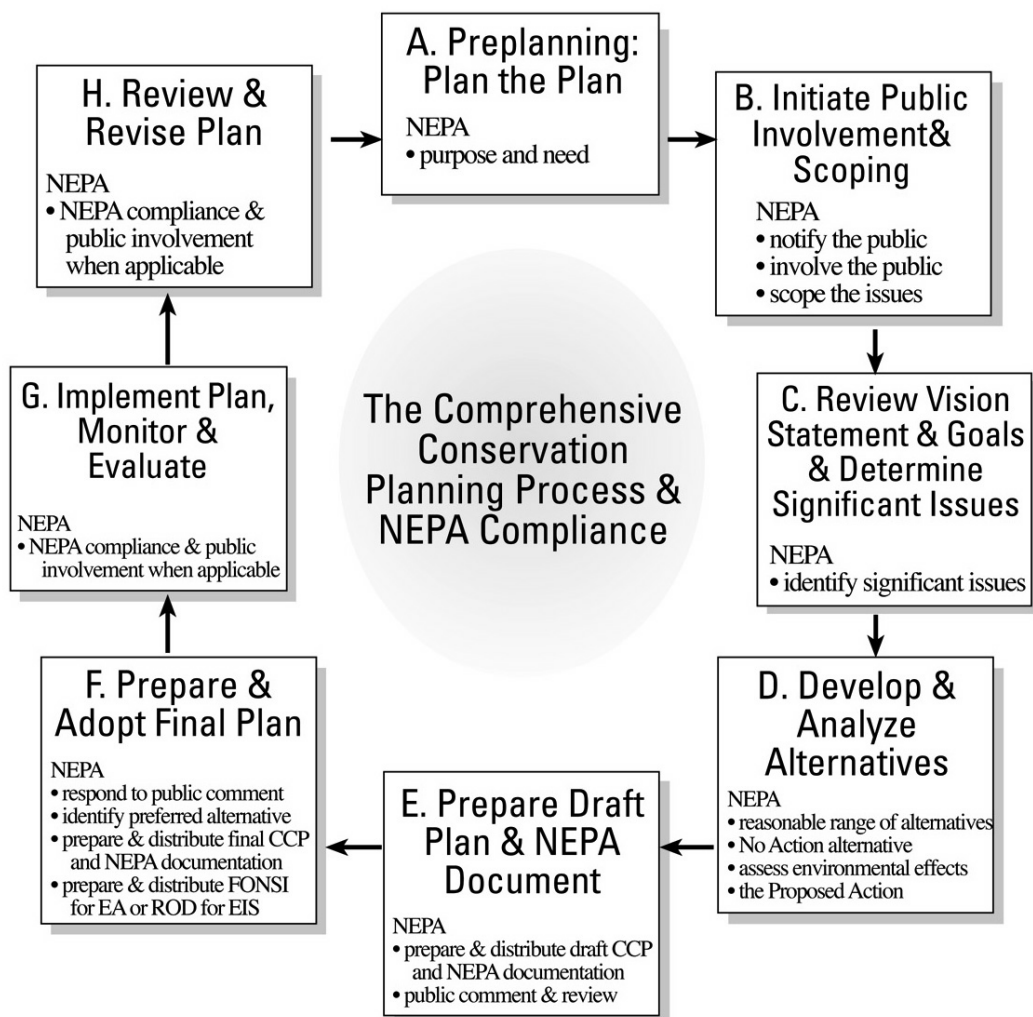
Service policy establishes an eight-step planning process for development of a CCP. This planning process also facilitates compliance with the National Environmental Policy Act (NEPA, Figure 2-1). Each individual step of the planning process is described in detail in the Planning Policy and CCP training materials (602 FWS 3, “The Comprehensive Conservation Planning Process”). The Planning Policy can be accessed at: <http://policy.fws.gov/602fw3.html>.

The key to effective conservation begins with community involvement. To ensure future management of the refuge takes into consideration the issues, concerns, and opportunities expressed by the public, multiple public involvement techniques were used: In the spring of 2008, staff at Iroquois Refuge sought public input on all aspects of refuge management as part of the planning process. An introductory newsletter was mailed to over 360 refuge neighbors, sporting groups, local politicians, conservation groups, and State agencies to inform them of the CCP development process. Copies of the newsletter were also available at the refuge visitor contact station, through the refuge Web site, and at community outreach events. Iroquois Refuge staff hosted public meetings on April 8, 9 and 10, 2008 in Batavia, Albion and the refuge headquarters in Alabama, respectively. Each day the public could attend either an open house style meeting in the afternoon or a more structured meeting in the evening. Approximately 20 people attended over the 3 days. A written public comment period was also open from February 26, 2008 through April 30, 2008 during which time people could mail, email, or drop off comments. Personalized written comments were received from 41 individuals and several stakeholder groups. Participants were encouraged to actively express their opinions and suggestions. The public meetings allowed us to gather information and ideas from local residents, adjacent landowners, and various organizations and agencies. Updates regarding the progress of the CCP were provided via newsletters, Web site updates, and at outreach events.

A Notice of Availability (NOA) was published in the *Federal Register* announcing the release of the draft CCP/EA and it was distributed for public comment. During that 30 day period of public review, we held 2 public meetings to obtain comments. We received comments by regular mail, electronic mail, and as testimony in those public meetings. After the public review of the draft CCP/EA, we reviewed and analyzed all written and oral comments to help inform development of this final CCP. A summary of public comments and our responses to them are presented in appendix H of this CCP.

This CCP identifies the Service-preferred alternative. A Finding of No Significant Impact (FONSI) was written to certify that this CCP has met all Service requirements, that it achieves refuge purposes and fulfills the mission of the Refuge System. The CCP and FONSI were then submitted to the Service Regional Director for final review and approval. Implementation begins with the approval of this final CCP. The CCP may be modified following the procedures in Service policy (602 FW 1, 3, and 4) and NEPA requirements as part of “Step H: Review and Revise Plan.” Minor revisions that meet the criteria for categorical exclusions (550 FW 3.3C) will require only an Environmental Action Memorandum. We must fully revise CCPs every 15 years.

**Figure 2-1 Steps in the Comprehensive Conservation Planning Process and its Relationship to the National Environmental Policy Act of 1969**



### Issues, Concerns, and Opportunities

As part of the CCP planning process we developed a list of key issues, other issues, and opportunities from our scoping, public, focus group, and planning team meetings.

Key issues are public, partner, or Service concerns that do not have obvious solutions and warrant further consideration and investigation. Along with the refuge goals stated above, these key issues helped guide our development and analysis of the Service preferred alternatives presented in chapter 4 of this CCP, “Management Direction and Implementation.” Key issues include the following:

*Habitat management* - Habitat management strategies utilized by the refuge are often interpreted by the public as mismanagement or lack of management. Currently, refuge staff must analyze and determine whether isolated habitats surrounded by a different habitat (i.e., small grassland surrounded by shrublands) are as beneficial as one continuous, connected habitat. Determining what type of habitat will provide the best nesting and breeding grounds for many different species, and how that management is implemented in the future, is a primary focus of this CCP.

*Drainage* - A system of dikes and water control structures regulate water levels on the refuge to mimic the historic flood and drought cycle in a natural, undisturbed marsh. Homeowners within the floodplain to the east and north of the refuge have expressed concerns with the refuge's system of holding and releasing water, stating that they can be unnecessarily flooded during peak runoff periods.

*Development* - Potential industrial development around the refuge (e.g., windfarm, quarry, industrial park, roads, and bridges) may result in adverse impacts to wildlife and wildlife habitat. The refuge must understand and evaluate these potential development threats and determine the best way to counter, mitigate, or adapt to changes in land use around the refuge.

*Increased visitor access for recreation* - Area residents have requested that the refuge increase opportunities and access for recreational activities. These activities include boating, hunting, and wildlife photography. Additionally, some people would also like to see more trails, more youth activities, and more access for persons with disabilities. The Service recognizes the importance of visitors to National Wildlife Refuges. Furthermore, the Improvement Act mandates providing wildlife-dependent recreation opportunities for the public if they do not conflict with wildlife and habitat management activities, and if they are consistent with public safety.

*Hunting conflicts* - Some waterfowl hunters have expressed a desire to lengthen the waterfowl hunting season (usually late October to mid-November) into the deer hunting season (usually beginning mid-November). The potential conflict between different types of hunting and between hunting and wildlife habitat needs was evaluated.

*Staffing* - The refuge currently is operating with a staff of 6 full-time employees, which is a 50 percent reduction from its historic staffing level. The refuge also administratively oversees and manages Erie Refuge in northwestern Pennsylvania, providing administrative and supervisory support to that station.

*Facilities* - The visitor services area is outdated and unable to fully meet the current and anticipated future needs of visitors. Co-locating with other Service offices (e.g., Lower Great Lakes Fish and Wildlife Conservation Office in Amherst, NY) is being considered as a way to reduce government expenditures. The existing refuge headquarters would need to be updated and expanded to accommodate visitor needs and to provide enough office space for both refuge staff and staff associated with the Lower Great Lakes Fish and Wildlife Conservation Office.

*Invasive Species* - Non-native invasive plant, fish and wildlife species threaten valuable refuge habitat and species populations. These non-native species out-compete native species, resulting in reduced biodiversity and decreased critical food sources and quality breeding habitat. Once invasive species are established, eliminating them can be expensive and labor-intensive. Unfortunately, they establish easily, reproduce prolifically, and disperse readily, making eradication difficult. The most common non-native invasive plant species found on the refuge are common reed, autumn olive, purple loosestrife, honeysuckle, garlic mustard, bittersweet, and multi-flora rose. The common carp is the most prevalent non-native invasive fish species and European starling and house sparrow are the two most common non-native bird species found on the refuge.

*Law enforcement* - Law enforcement capability has been greatly reduced on the refuge. There is only one officer splitting duties among five refuges across three states. Some current problems on the refuge include trespassing, vandalism, poaching, illegal drugs, and littering/dumping. Thus, there is a need for increased enforcement and outreach for resource management issues associated with public access and public effects.

*Partnerships* - The refuge relies on partnerships with several organizations and individuals for helping with refuge programs and other efforts. These existing partnerships include, but are not limited to, volunteers, the Friends of Iroquois Refuge, Buffalo Audubon Society, other NGOs, the Iroquois Job Corps Center, local waterfowl associations, and colleges/universities. Establishing new, or improving existing partnerships, will help achieve the goals of the CCP.

**Other Issues to Address:** Some issues and management concerns are also presented and discussed in chapter 4, but not in as great detail as the key issues. Many of these types of issues are resolved in a similar manner in chapter 4. Additionally, some issues fall outside the scope of this document. More specifically, they fall outside the purpose of and need for action as we describe in this CCP. These issues include, but are not limited to, global warming, development, and non-point source runoff. These issues may be discussed in the document, but cannot be resolved solely by the Service in the 15-year timeframe of the plan.

### **Final Decision**

The Service's Region 5 Director has made the final determination of a preferred alternative to serve as the CCP for Iroquois Refuge. This final determination is based on the Service and Refuge System missions, the purposes for which the refuge was established, other legal mandates, and public and partner responses to the draft CCP. The final decision identifies the desired combination of species protection, habitat management, public use and access, and administration for the refuge.

A FONSI was prepared that briefly describes why the proposed action will not have a significant effect on the human environment. The FONSI also certifies that we have met agency compliance requirements and that the CCP, when implemented, will achieve the purposes of the refuge and help fulfill the Refuge System mission. With the Regional Director signature of the FONSI we have completed the CCP for the refuge and implementation can begin.



## Chapter 3



*Iroquois National Wildlife Refuge*

### Refuge Resources

- Physical Environment
- Biological Environment
- Socioeconomic Environment
- Historical Picture
- Refuge Administration
- Refuge Public Use
- Finding of Appropriateness of a Refuge Use
- Compatibility Determinations

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## Chapter 3 Refuge Resources

### Physical Environment

Iroquois Refuge was established in 1958 and encompasses 10,828 acres of open water, emergent marsh, forested wetland, upland forest, grassland, and shrubland. The refuge lies within the rural towns of Alabama (Genesee County) and Shelby (Orleans County) of western New York.

The physical environment, expressed through climate, geology, topography, and soils, explains much about the patterns and distribution of biological diversity. These patterns describe natural divisions, called biophysical regions or ecoregions. Organizing the physical environment into ecoregions helps us understand, conserve, and manage wildlife and biodiversity. Ecoregions are relatively large geographic areas of land and water defined by common climate, geology, and vegetation patterns. The Nature Conservancy (TNC) classified New York into seven ecoregions. Iroquois Refuge is in the Great Lakes Ecoregion (map 3-1), a region formed during the last glacial advance 14,000 years ago and characterized by gently rolling, low level landscapes and flat lake plains (NYSDEC 2005).

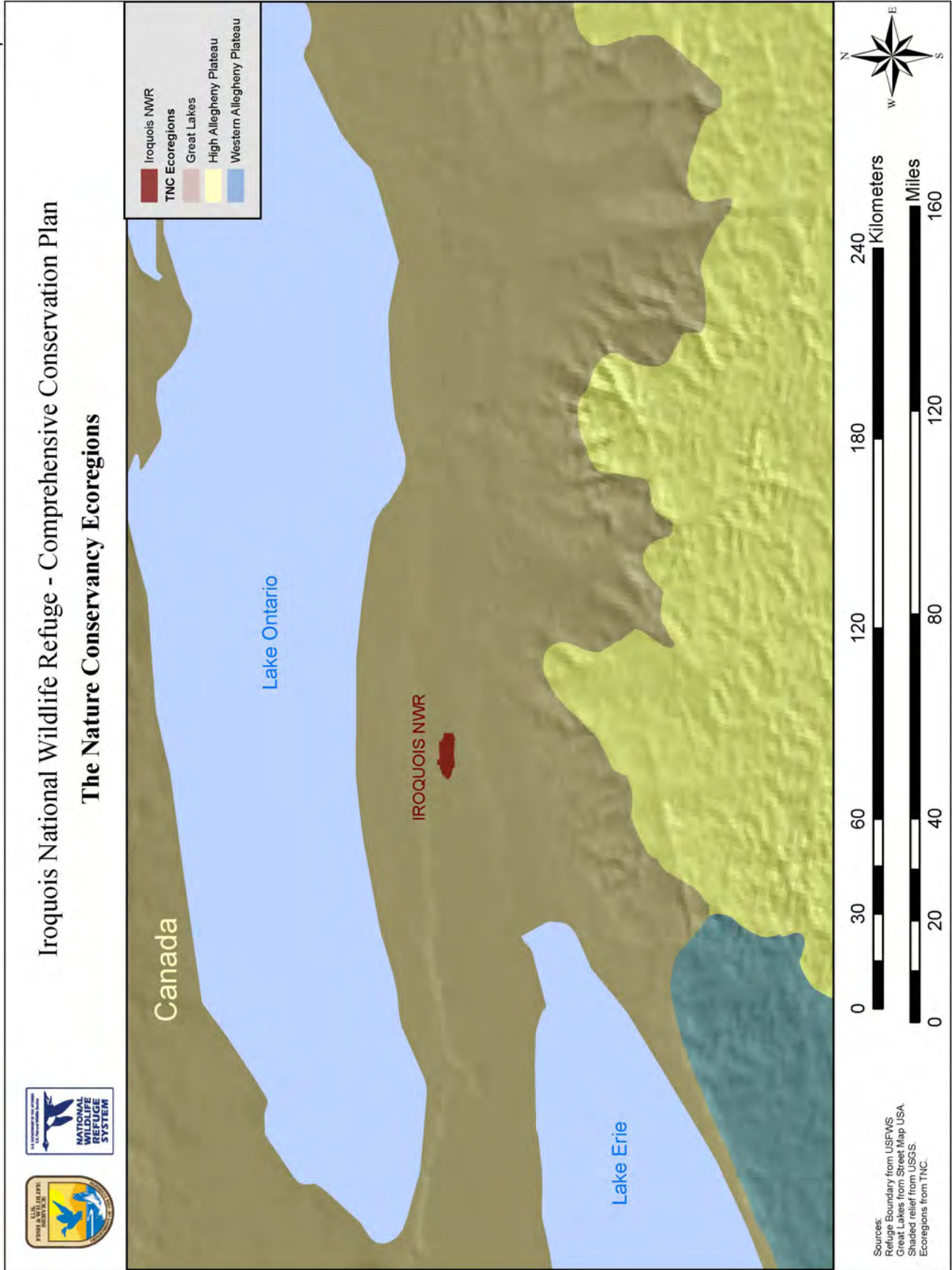


*Blue Jay*

The refuge lies within the 173,975-acre Oak Orchard watershed which is within the Southwest Lake Ontario (SWLO) Basin, a subwatershed of the Great Lakes watershed (map 1-2 and 1-7).

Iroquois Refuge, Oak Orchard WMA, and Tonawanda WMA together form the 19,000-acre Tonawanda-Iroquois-Oak Orchard Wetland Complex (map 1-3). The Complex is primarily wetland habitat consisting of emergent marsh, forested wetland, wet meadow, and shrub wetland, interspersed with areas of grassland and upland hardwood forest. The Complex is an Audubon designated Important Bird Area (IBA) and a New York State designated Bird Conservation Area (BCA), providing nesting and migration

Map 3-1



habitat for a large number of birds including waterfowl, marsh birds, grassland birds, bald eagle, cerulean warbler, and prothonotary warbler (NYSDEC 2005).

### ***Bird Conservation Region***

Iroquois Refuge lies within BCR 13, the Lower Great Lakes/St. Lawrence Plain (map 1-5). BCR 13 encompasses the vast, low-lying lake plain region surrounding Lake Erie and Lake Ontario, the St. Lawrence River Valley, low-lying regions between the Adirondack Mountains and the Laurentian Highlands, and upper regions of the Hudson River Valley. In addition to providing important lakeshore habitats and associated wetlands, this region was originally dominated by a mixture of oak-hickory, northern hardwood, and mixed-coniferous forests. Nearly 95 percent of the original habitat types have been lost and the landscape is now dominated by agriculture with interspersed wetlands and remnant forest stands. The BCR plays a critical role in providing important staging and migrating habitat for birds during the spring and fall migration (Hartley 2007).

### ***Regional Conservation Lands and Land Use Patterns***

Iroquois Refuge lies within Partners in Flight (PIF) Physiographic Area 15 (map 1-6). Unlike most other physiographic areas in the northeast U.S., roughly 74 percent of the land area in Area 15 is in agricultural production (Dettmers and Rosenberg 2003). According to the U.S. Environmental Protection Agency (EPA) land classification, the land cover in the SWLO Basin is 64 percent agricultural, 26 percent deciduous forest, 12 percent mixed forest, 4 percent developed, and 3 percent other (NYSDEC 2005) (table 3-1 and map 3-2). Agricultural crops in the vicinity of Iroquois Refuge are dominated by soybeans, corn, and wheat; onions are grown in the low lying muck soils. As described above, Iroquois Refuge joins with Oak Orchard and Tonawanda WMAs to create the Tonawanda-Iroquois-Oak Orchard Complex encompassing 19,000 acres of State and Federal conserved lands. The Tonawanda Indian Reservation covering approximately 7,000 acres lies adjacent to Tonawanda WMA and southwest of Iroquois Refuge (map 1-3).

**Table 3-1 Land Cover within the Southwest Lake Ontario Basin of New York**

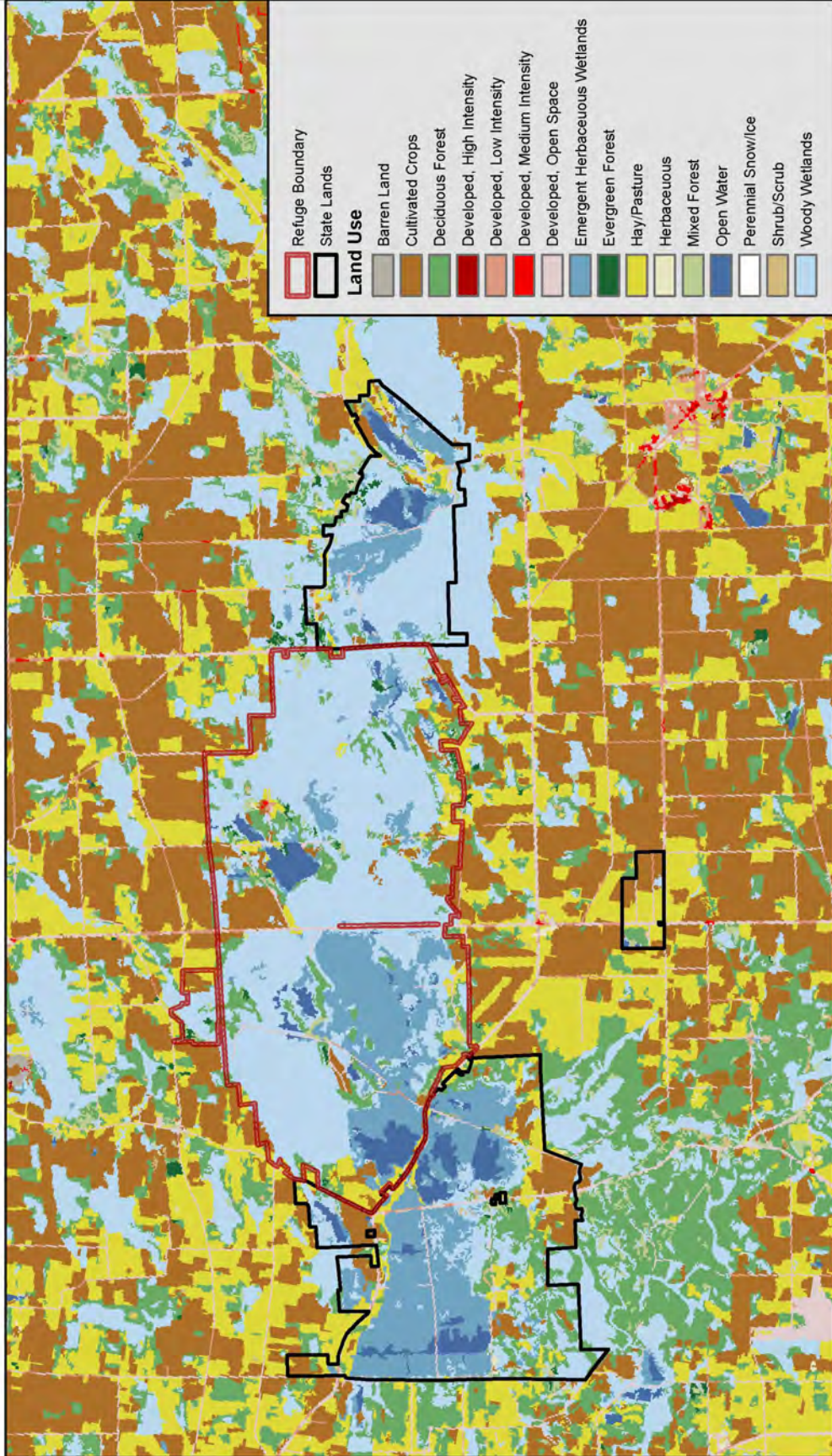
<b>Land Use Classification</b>	<b>Percent Cover</b>
Row Crops	39.02
Deciduous Forest	26.31
Pasture/Hay	16.08
Mixed Forest	12.38
Low Intensity Residential	1.96
Parks, Lawns, Golf Courses	1.03
Water	0.83
High Intensity Commercial/Industrial	0.64
Evergreen Forest	0.60
Wooded Wetlands	0.49
High Intensity Residential	0.39
Emergent Wetlands	0.14
Barren; Quarries, Strip Mines, Gravel Pits	0.12

### ***Climate***

The weather in the Great Lakes watershed is influenced by the location and size of each lake, air masses from other regions, and the location within a large continental landmass. Each lake acts as a heat sink, absorbing heat when the air is warm and releasing it when the air is cold. This results in more moderate

Map 3-2

# Iroquois National Wildlife Refuge - Comprehensive Conservation Plan Regional Land Use



Sources:  
Land Use from USGS.  
Iroquois NWR Boundary from USFWS  
State lands from State of NY.

0 2.5 5 10 15 20

Kilometers

0 1.25 2.5 5 7.5 10

Miles

temperatures at nearshore areas than other locations at similar latitudes. The influence of external air masses varies seasonally. In the summer, the region is influenced mainly by warm humid air from the Gulf of Mexico, whereas in winter the weather is influenced more by Arctic and Pacific air masses (USEPA and Government of Canada 1995).



*Bird habitat on the refuge*

The weather around Iroquois Refuge is relatively cool and wet. High temperatures range from an average of 28.6°C (83.4°F) in August to -1.2°C (29.9°F) in February. Average annual precipitation is 94.0 cm (37.0 in). Snowfall is moderately high with an annual average of 168.4 cm (66.3 in). Much of this snow is provided by moisture absorbed into the atmosphere as cool westerly winds travel across the warmer water of Lake Erie. Winds are moderate to high due to the flat, open character of this part of New York (USFWS 2002).

### **Climate Change**

Climate change is defined as a change in the state of the climate characterized by changes in the mean and/or the variability of its properties persisting for an extended period, typically decades or longer (IPCC 2007a). The change in climate has been attributed to the increase in carbon dioxide (CO<sub>2</sub>) and other greenhouse gases in the Earth's atmosphere, due in large part to human activities such as fossil fuel burning, agriculture, and land use change. In January 2001, the U.S. Department of the Interior issued

Secretarial Order No. 3226 requiring Federal agencies under its direction that have land management responsibilities to consider potential climate change impacts in long range planning endeavors. In September 2009, Secretarial Order No. 3289 updated the earlier order with organizational changes to enable fulfillment of planning requirements.

There is consensus among the scientific community that global climate change will lead to significant impacts across the U.S. These impacts include sea-level rise adding stress to coastal communities and ecosystems (Wigley 2004). The effect of climate change on wildlife and habitats is expected to be variable and species specific, with a predicted general trend of ranges shifting northward. Uncertainty about the future effects of climate change requires refuge managers to use adaptive management (e.g., adjusting regulations, shifts in active habitat management, or changing management objectives) to maintain healthy ecosystems in light of unpredictability (Inkley et al. 2004). Refuge managers can plan and respond to changing climate conditions. A few recommendations include managing for diverse and extreme weather conditions (e.g., drought and flood); maintaining healthy, connected, genetically diverse wildlife populations; and protecting coastal wetlands to accommodate sea level rise (see Inkley et al. 2004 for more recommendations). Well maintained coastal wetlands help to keep inland wetlands healthy.

In western New York climate change is predicted to have a large impact on all facets of life. From agricultural and rural communities to industry and the economy, climate change will shape the way that people live and ecosystems change far into the future. Annual average temperatures, heavy rainstorms and winter and spring precipitation are all predicted to increase. Temperatures may increase by 5 to 12 °F in winter and by 5 to 20 °F in the summer, but will affect the nighttime temperatures more than the daytime temperatures. Although the amount of precipitation may not change, the time of year in which the precipitation will occur will change with an increase in the winter and a decrease in the summer. This will occur in part as the duration of the Great Lake's ice cover will decrease. All of these predicted changes will contribute to major climate changes in western New York by the end of the century (Kling, et al. 2003).

## ***Hydrology***

### **Watershed Level Hydrology**

The refuge lies entirely within the 173,975-acre Oak Orchard watershed. The region encompassing Iroquois Refuge is characterized by gently rolling land with 0 to 6 percent slopes. Refuge elevations range from 185 to 198 m (610 to 650 ft) above sea level. Oak Orchard Creek is the largest river in Orleans County, and is one of ten major tributaries in the Great Lakes Ecoregion of New York. Oak Orchard Creek enters the refuge from the east, meanders northwest, and exits to the north, eventually emptying into Lake Ontario (USFWS 2002, map 1-2). The Creek begins north of Batavia in Genesee County at an elevation of 850 feet. It flows northeast through Elba, then turns and runs west through Oakfield and Alabama. The Creek then runs north through the towns of Shelby, Ridgeway, and Carlton in Orleans County before entering Lake Ontario at Point Breeze at an elevation of 245 feet (Zollweg et al. 2005). Oak Orchard Creek also serves as the main outlet channel for waters that drain from the Elba mucklands: a highly productive agricultural region.

A Dolomite limestone outcrop in Shelby Center forms a natural restriction in the Creek approximately in the center of the watershed. Upstream of this restriction Oak Orchard Creek drops only 30 feet in 25 miles forming the shallow flooded basin that is now the Tonawanda-Iroquois-Oak Orchard Wetland Complex. Lewiston Road runs along a height of land that separates Oak Orchard watershed from the Tonawanda watershed (Carroll 2001).

Oak Orchard Creek is within the SWLO Basin which covers 2.2 million acres in western and central New York (map 1-7). The basin stretches across the State from north to south and includes three major sub-watersheds: West Lake Ontario, Lower Genesee, and Upper Genesee. The basin has a highly diverse landscape covering several ecological zones and includes a wide variety of vegetative cover, wildlife habitat, and land use. Although grasslands were historically found in the basin, there are no lands in the basin currently classified by the EPA as natural grasslands. The northern portion of the Basin is primarily an agricultural region with scattered forest stands, diverse and extensive wetlands, and is generally flat. The largest river in the basin is the Genesee River, which originates in Pennsylvania and drains into Lake Ontario near Rochester, New York. Mt. Morris Dam was built in 1952 by the U.S. Army Corp of Engineers to provide flood control; this splits the Genesee into two major sub-watersheds (Upper and Lower Genesee). The Erie Canal passes through the northern part of the basin, in turn affecting water quality and quantity (NYSDEC 2005).

The SWLO Basin is part of the 290,000 square-mile Great Lakes watershed (map 1-7), the largest freshwater ecosystem in the world. Iroquois Refuge is in the southeastern corner. The watershed includes all tributary streams and inland lakes that are hydrologically connected to the five Great Lakes: Superior, Michigan, Huron, Erie, and Ontario. Together these lakes hold 20 percent of the world's supply of surface freshwater and 95 percent of the U.S. supply. The climate and hydrology of the Great Lakes create unique environmental conditions that support a diversity of species and communities. The glacial and cultural histories have also had significant influence on the presence and distribution of biodiversity in this region (TNC 2000).

### **Local Level Hydrology**

At a local scale, the refuge is supported by an important hydrological system comprised of natural and man-made waterways in which materials and energy are transferred. Some of these waterways, such as the Oak Orchard Creek, constitute an important ecological component to the refuge by connecting biologically diverse food webs that provide important habitat features for wildlife (map 3-3).

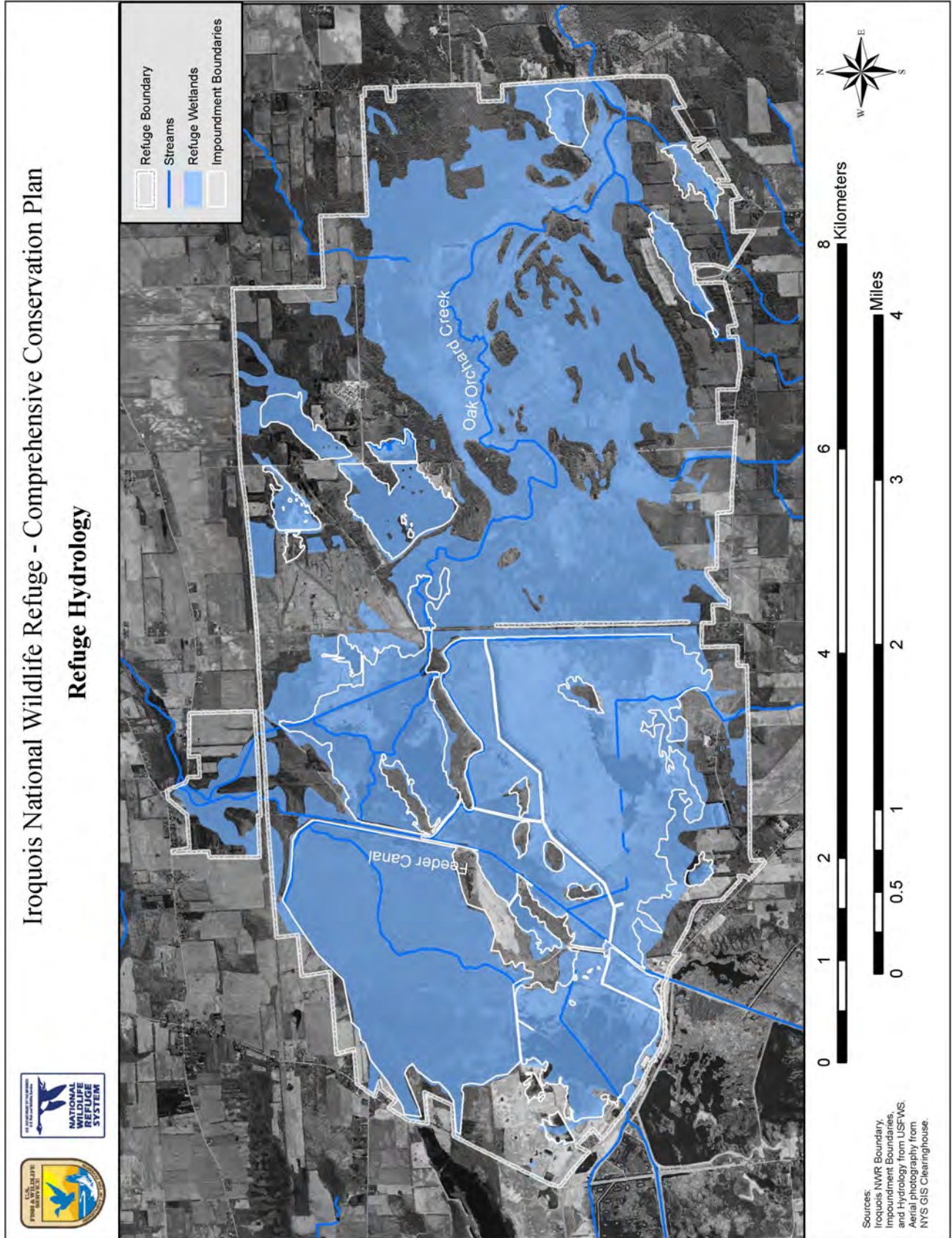
Prior to European settlement, the refuge area contained several thousand acres of emergent marsh and forested wetland that were flooded continuously or periodically throughout the year. After agricultural development, the refuge area contained approximately 5,000 acres that normally were inundated in the spring, but mostly dry by fall, making all but the wettest areas suitable for farming. Impoundments were developed after the refuge was established and this allowed some degree of water level management which resulted in nearly 4,000 acres of manageable wetlands. Manipulating water levels mimics natural wetland dynamics, rejuvenates wetland substrate, controls undesirable vegetation as well as flooding on neighboring lands, and maintains a continuous flow in Oak Orchard Creek (USFWS 2002).

### ***Geology***

The Earth has experienced several glacial periods; the last, known as the Pleistocene Ice Age, began about 2 million years ago. Glaciers advanced and retreated over time as temperatures fluctuated. The most recent period to affect portions of New York was the Wisconsin Glaciation. A one-mile thick sheet of ice, known as the Laurentide Ice Sheet, covered the region until its retreat northward. This ice sheet was gone from northern New York by about 10,000 years ago (Smith 1985). As the glacier retreated it left behind piles or layers of sediments, rocks, and other debris, known as glacial drift. These surficial deposits over bedrock include two types: glacial till and glacio-fluvial. Glacial till is a mixture of sand, silt, clay, and rock ground up by the glacier and dropped as it retreated. It covers most of this region. Glacio-fluvial drift develops from the transport, sorting, and deposit of material by flowing glacial meltwater. Larger gravels and stones settle out at higher gradients, while finer silts, sands, and clays settle out as the waters slow at valley bottoms (Sperduto and Nichols 2004).



Map 3-3





*Center Marsh at Iroquois National Wildlife Refuge*

After glacial ice retreated from the Oak Orchard watershed, lake deposits, mucklands, and stream alluvium filled-in some of the low-lying areas (Zollweg et al. 2005).

At the end of the last glacial period much of western New York was under glacial Lake Tonawanda. Genesee and Orleans Counties were completely covered by the last glacial advance. This Lake extended from the Niagara River east 50 miles to the current town of Holley and was in a shallow basin bounded to the north by the Niagara escarpment and to south by the Onondaga escarpment. These escarpments are limestone cliffs that rise a few hundred feet above the Huron Plain. Lake Tonawanda waters drained north spilling through several notches in the Niagara escarpment. These outlet streams formed waterfalls and over time, eroded deep gorges. The erosion continually lowered the level of the Lake so that eventually the only remaining outlet was the Niagara River that created Niagara Falls. Shallow pools and swamps were left behind in the poorly drained areas of the plain as the lake level receded, creating the wetland conditions visible on Iroquois Refuge and the surrounding WMAs (Carroll 2001).

South of Iroquois Refuge, Route 77 (Lewiston Road) follows a ridge of glacial till that is likely the remains of a glacial moraine. A moraine is accumulations of glacial debris left behind when the glacier “halted” before continuing to recede. Sand hills in the area were originally formed as sandbars in Lake Tonawanda or by wind deposits on the beaches as the lake receded (Carroll 2001).

The majority of the soils on the refuge came from one or more combinations of four lake sources including glacial till, silt deposits in glacial lakes, decaying vegetation, and erosion (USFWS 2000c). The Natural Resources Conservation Service (NRCS; formerly the Soil Conservation Service) prepared a Soil and Water Conservation Plan for Iroquois Refuge in 1964 that classified 74 soil types in 9 general associations. The NRCS also prepared soil surveys of Genesee and Orleans Counties in 1969 and 1977, respectively. By 1977 the soil classification system and some soil names had changed, so the description

of soils on Iroquois Refuge relies mostly on the Orleans County soil survey. Only broad soil types are shown (table 3-2 and map 3-4).

**Table 3-2 Soils Mapped for Iroquois Refuge**

Soil Association	Origin	Habitats
Excessively Well Drained	Glacial till plains	Upland forests, shrublands, and grasslands
Well Drained	Sandy deltaic and glaciolacustrine sediments	Upland forests, shrublands, and grasslands
Moderately Well Drained	Glacial till plains, mainly on drumlins and recessional moraines	Upland forests, shrublands, and grasslands
Somewhat Poorly Drained	Silty or clayey glaciolacustrine sediments and glacial lake modified till plains	Forested wetlands and wet meadows
Poorly Drained	Silty or clayey lacustrine sediments and sandy deltaic and glaciolacustrine sediments	Forested wetlands
Very Poorly Drained	Organic deposits	Emergent marsh, forested wetlands, and bogs

From the United States Department of Agriculture (USDA) Soil Conservation Service 1969 (Genesee County) and 1977 (Orleans County) Soil Surveys.

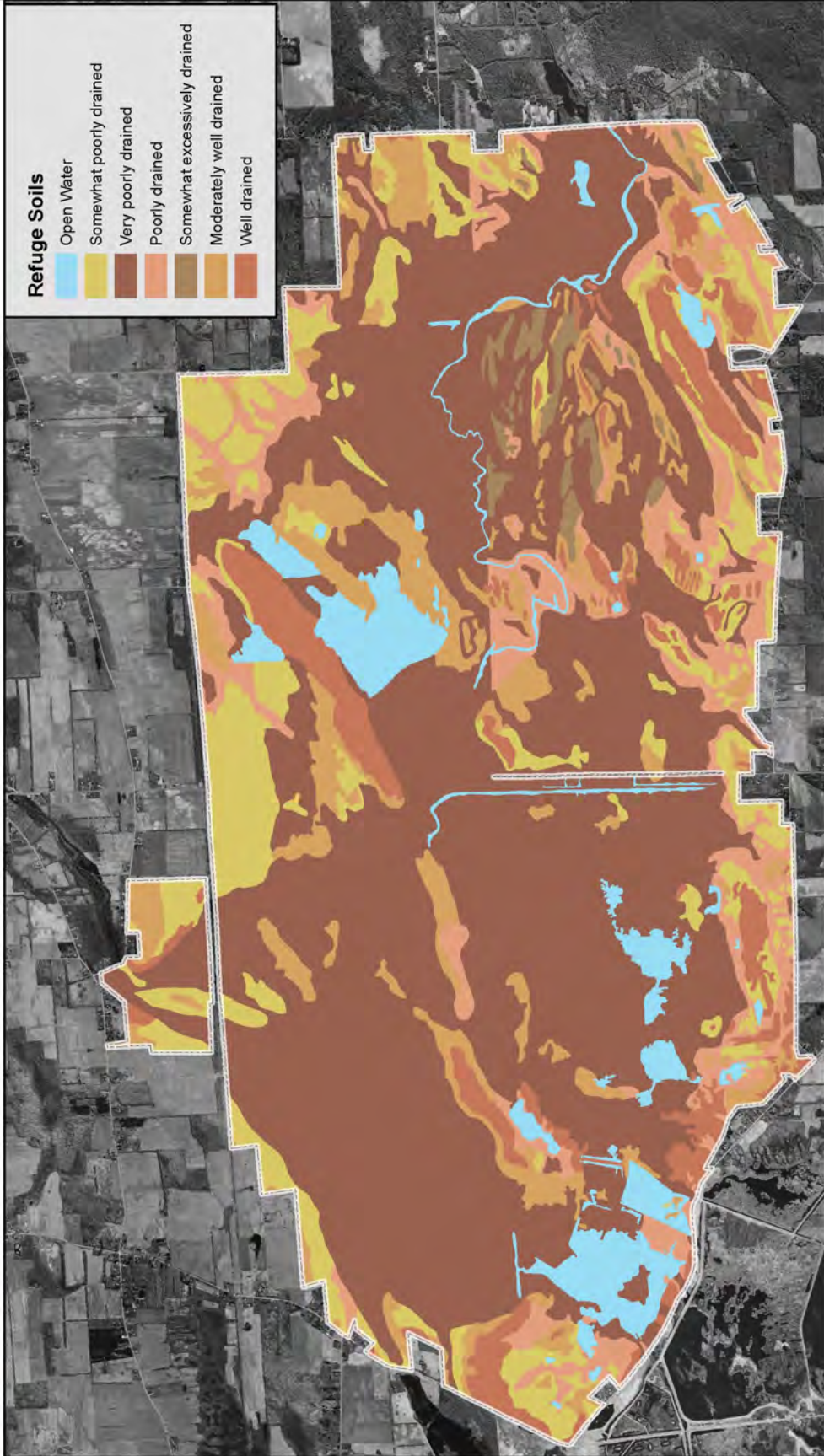


*Swallow Hollow Trail within the forested area on refuge.*

Map 3-4

# Iroquois National Wildlife Refuge - Comprehensive Conservation Plan

## Refuge Soils



Sources:  
Soils from NRCS  
Aerial Photo from NYS  
GIS Clearinghouse  
Refuge Boundary  
from USFWS

### ***Air Quality***

There are several primary sources of pollution that come from Genesee County that could have an impact on the refuge. Sources for air, land, and water pollution come from the U.S. Gypsum Company Plant in Oakfield, the Batavia Power Plant, and Lapp Insulator. Pollution includes excess of carbon monoxide, nitrogen oxide, sulfur dioxide, volatile organic compound emissions, and diesel soot from highway traffic and off-road heavy equipment being used for construction and agriculture. Other contamination sites on the National Priority list are the Batavia Landfill, Lehigh Valley Railroad, and Byron Barrel & Drum (Epodunk 2008a, <http://www.epodunk.com/cgi-bin/genInfo.php?locIndex=22474>).

There are several primary sources of pollution that come from Orleans County that could have an impact on the refuge. Sources for air, land, and water pollution come from New York State Albion and Orleans Correctional Facilities, Bayex Inc., F&H Metal Finishing Company, and the Western New York Energy Ethanol Plant. Pollution includes excess of carbon monoxide, nitrogen oxide, sulfur dioxide, volatile organic compound emissions, as well as diesel soot from highway traffic and off-road heavy equipment being used for construction and agriculture. Other contamination sites on the National Priority list are Diaz Chemical Corporation and FMC Corporation (Dublin Road Landfill) (Epodunk 2008b, <http://www.epodunk.com/cgi-bin/genInfo.php?locIndex=22492>). Table 3-3 provides NYS and Federal standards for air quality.

### ***Water Quality***

Under the 1972 Clean Water Act, waters designated as 303(d) do not meet water quality standards that states, territories, and authorized Tribes have set for them. Oak Orchard Creek has been listed as a 303(d) impaired water body. Sampling in Oak Orchard Creek since 1997 has shown that valuable soil and excess nutrients are eroding and being transported through the watershed and deposited in the nearshore regions of Lake Ontario. Water samples have been analyzed for total phosphorus (TP), soluble reactive phosphorus (SRP), nitrate + nitrite ( $\text{NO}_3 + \text{NO}_2$ ), total Kjeldahl nitrogen (TKN), total suspended solids (TSS), and sodium from deicing (Na). During 2008, the annual discharge of soil and nutrients from Oak Orchard Creek averaged 827,608  $\text{m}^3/\text{day}$  and was within 10 percent of the levels documented in 1997/98 and 1998/99. Peak discharge occurred in the spring and secondarily in July. This level of discharge into Lake Ontario creates a plume of sediments and nutrients that can extend up to 10 km out into the lake from the mouth of Oak Orchard Creek. To manage nutrient and soil losses from the watershed, a total maximum daily loading (TMDL) may be required for Oak Orchard Creek in the future to meet the water quality standards of the Clean Water Act (Makarewicz and Lewis 2009).

A significant contribution to water quality issues in both Genesee and Orleans County is animal waste from farm animals. Variables associated with animal waste include the total number of animals, the volume and weight of waste being generated, nutrient levels (nitrogen and phosphorus) in the waste, and the amount of nitrogen that escapes into the atmosphere. Inorganic nitrogen predominately occurs as either ammonia ( $\text{NH}_3$ ) or nitrate ( $\text{NO}_3$ ) and is usually the limiting nutrient in marine ecosystems. A limiting nutrient is one which "limits" or controls the growth of primary producers (i.e., algae and other plants). Under conditions of nitrogen limitation, increases in nitrogen from any source can result in rapid and excessive increases in algal growth. When these algae die the bacteria responsible for decomposition consume dissolved oxygen in the water column. A massive "bloom" of algae can cause a severe drop in the level of dissolved oxygen, the result being that not enough oxygen is left for fish, crabs, and other animals to breathe. The nitrogen in animal waste goes through many conversions and much of it can be volatilized or lost to the air, as ammonia ( $\text{NH}_3$ ). Ammonia volatilization occurs while the waste is still in the barn and the fans used for ventilation pump the nitrogen-laden air to the external atmosphere. Further volatilization occurs from the lagoon, or other holding surfaces, once the waste is transported. Finally, the process of spraying onto a field also causes loss of ammonia to the atmosphere. Animal waste also

contains a significant amount of phosphorus, a nutrient which often limits algal growth in freshwater systems and has the same effects as increased levels of nitrogen.

**Table 3-3 Ambient Air Quality Standards New York State and Federal Standards**

Pollutant	Avg. Period	Federal Air Quality Standards				New York State Standards <sup>1</sup>	
		Primary Standard		Secondary Standard		Level	Statistic
		Level <sup>3</sup>	Statistic <sup>2</sup>	Level	Statistic		
Carbon Monoxide	8-hour	9 ppm	Maximum	None		9 ppm	Maximum
	1-hour	35 ppm	Maximum			35 ppm	Maximum
Lead <sup>4</sup>	Quarterly Average	1.5 µg/m <sup>3</sup>	Maximum	Same as Primary		None	
Nitrogen Dioxide	Annual	0.053 ppm	Arithmetic Mean	Same as Primary		0.05 ppm	Arithmetic Mean
Total Suspended Particulates (TSP) <sup>5</sup>	12 consecutive months	None		None		75 µg/m <sup>3</sup>	Geometric Mean
	24-hours	260 µg/m <sup>3</sup>	Maximum	150 µg/m <sup>3</sup>	Maximum	250 µg/m <sup>3</sup>	Maximum
Particulate Matter (PM <sub>10</sub> ) <sup>6</sup>	24-hour	150 µg/m <sup>3</sup>	Maximum	Same as Primary		None	
Particulate Matter (PM <sub>2.5</sub> )	Annual	15 µg/m <sup>3</sup>	Arithmetic Mean	Same as Primary		None	
	24-hour	35 µg/m <sup>3</sup> <sup>7</sup>	3 year avg	Same as Primary			
Ozone <sup>8</sup>	8-hour (2008 std)	0.075 ppm	3 year avg	Same as Primary		None	
	8-hour (1997 std)	0.08 ppm	3 year avg	Same as Primary		0.08 ppm	Maximum
	1-hour	0.12 ppm	Not Applicable in NYS	Same as Primary		0.12 ppm	Maximum
Sulfur Dioxide	Annual	0.03 ppm	Arithmetic Mean	None		0.03 ppm	Arithmetic Mean
	24-hour	0.14 ppm	Maximum			0.14 ppm	Maximum
	3-hour	None		0.5 ppm	Maximum	0.50 ppm	Maximum
Hydrocarbons (non-methane)	3-hour (6-9 am)	None		None		0.24 ppm	Maximum

Footnotes (source: NYSDEC 2008a, <http://www.dec.ny.gov/chemical/8542.html>)

1. New York State also has standards for beryllium, fluorides, hydrogen sulfide, and settleable particulates (dustfall). Ambient monitoring for these pollutants is not currently conducted.
2. All maximum values are air concentrations not to be exceeded more than once per calendar year. (Federal 1 Hour Ozone Standard not to be exceeded more than 3 days in 3 calendar years).
3. Gaseous concentrations for Federal standards are corrected to a reference temperature of 25°C and to a reference pressure of 760 millimeters of mercury.

4. Federal standard for lead not yet officially adopted by New York State, but is currently being applied to determine compliance status.
5. New York State also has 30, 60, and 90-day standards as well as geometric mean standards of 45, 55, and 65  $\mu\text{g}/\text{m}^3$  in Part 257 of NYCRR. While these TSP standards have been superseded by the above  $\text{PM}_{10}$  standards, TSP measurements may still serve as surrogates to  $\text{PM}_{10}$  measurements in the determination of compliance status.
6. Federal standard for  $\text{PM}_{10}$  not yet officially adopted by NYS, but is currently being applied to determine compliance status.
7. Federal standard was changed from 65 to 35  $\mu\text{g}/\text{m}^3$  on December 17, 2006. Compliance with the Federal standard is determined by using the average of 98th percentile 24 hour value during the past 3 years, which cannot exceed 35  $\mu\text{g}/\text{m}^3$ .
8. Former NYS standard for ozone of 0.08 PPM was not officially revised via regulatory process to coincide with the Federal standard of 0.12 PPM which is currently being applied by NYS to determine compliance status. Compliance with the Federal 8 hour standards is determined by using the average of the 4th highest daily value during the past 3 years - which cannot exceed 0.084 PPM or 0.075 PPM, effective May 27, 2008.

### **Noise**

Ambient noise levels on and around the refuge are generally similar to other rural locations in western New York. The presence of high and low-speed roadways scattered throughout the refuge results in some traffic noise being within hearing distance of many refuge areas. Off-refuge noise such as farm machinery also adds to noise levels on the refuge. Noise generated from refuge operations, such as heavy equipment used for habitat management, adds to noise levels but is usually of short duration (one to a few days) and for a short time on those days (1 to 8 hours). Noise levels at any time in any area are influenced by the type of noise being generated, wind speed and direction, and the type of habitat and topography separating the listener from the source of the noise. There are still some areas on the refuge (e.g., along Oak Orchard Creek east of Sour Springs Road) that are sufficiently buffered from most noise sources to allow the visitor to remain relatively undisturbed.

### **Visual Resources**

The refuge and neighboring State lands represent the largest contiguous land area in northwestern New York that is nearly free of agricultural and urban development. For many western New Yorkers seeking an aesthetically pleasing landscape to visit, the refuge offers their best opportunity within a days drive. The interspersed of forested wetlands and uplands, shrublands, grasslands and marshes provides a picturesque backdrop for outdoor recreation activities. The abundance and diversity of wildlife associated with these habitats significantly enhances the outdoor experience. When visited in the fall of the year, the pallet of natural color provided by a variety of tree species makes this area one of the most aesthetically pleasing spots to visit in western New York.

Some refuge activities may detract from the aesthetics in the short term. Maintenance of roads, water management infrastructure (e.g., culverts, dikes, water control structures), and recreational infrastructure (e.g., kiosks) often causes a short-term disturbance to some areas. These areas are generally along roadways and parking areas, which are already of a disturbed nature. Habitat management activities (e.g., mowing grasslands and shrublands) may reduce aesthetics for a slightly longer period, but are usually no longer noticeable after one growing season.

## Biological Environment

### *Habitat Types*

The relatively flat terrain of Iroquois Refuge supports open water, emergent marsh, forested wetlands, upland forests, shrublands, and grasslands (map 3-5 and table 3-4). Wetlands are the dominant habitat type on the refuge.

**Table 3-4 Habitat Types on Iroquois Refuge**

Habitat Type	Acres
Emergent Marsh	2,582
Open Water	823
Forest (upland and wetland)	4,817
Shrubland	971
Grassland	1,186
Plantations	203
Developed Area	248
<b>TOTAL</b>	<b>10,828</b>

### Wetlands

In the mid-1990s New York was estimated to have approximately 2.4 million acres of wetlands. The Lake Plains and the Adirondack regions of New York have the greatest percentage of the State's wetlands. Approximately 75 percent of wetlands in the Lake Plains region are forested. The remaining wetlands include 14 percent shrub, 8 percent emergent marsh and 3 percent open water (NYSDEC 2008b, <http://www.dec.state.ny.us/website/dfwmr/habitat/fwwprog3.html>, <http://www.dec.state.ny.us/website/dfwmr/habitat/fwwprog3.html>). Historically the area surrounding Iroquois Refuge had more extensive wetlands than what currently exist. Wetland loss and degradation have occurred through draining, channelization, and other manipulations, primarily for agriculture.

*Impounded Wetlands* - The refuge has 19 freshwater impoundments encompassing about 4,000 acres of wetland habitat (table 3-5). The goal of the refuge's water management program is to provide high quality wetlands that provide optimal stopover and breeding habitat for waterfowl, waterbirds, and bald eagles. This program requires the manipulation of water levels to provide high-energy plant and invertebrate foods and structural habitat diversity for feeding, resting, and breeding waterfowl and other migratory birds (USFWS 2005b).

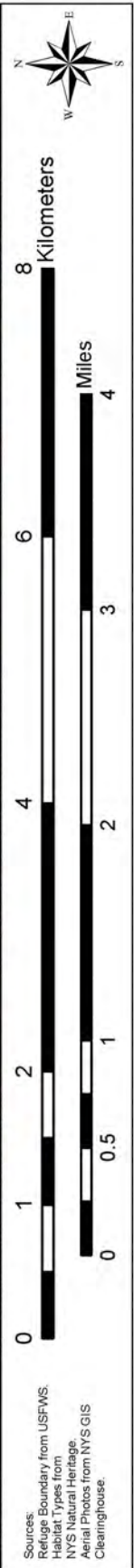
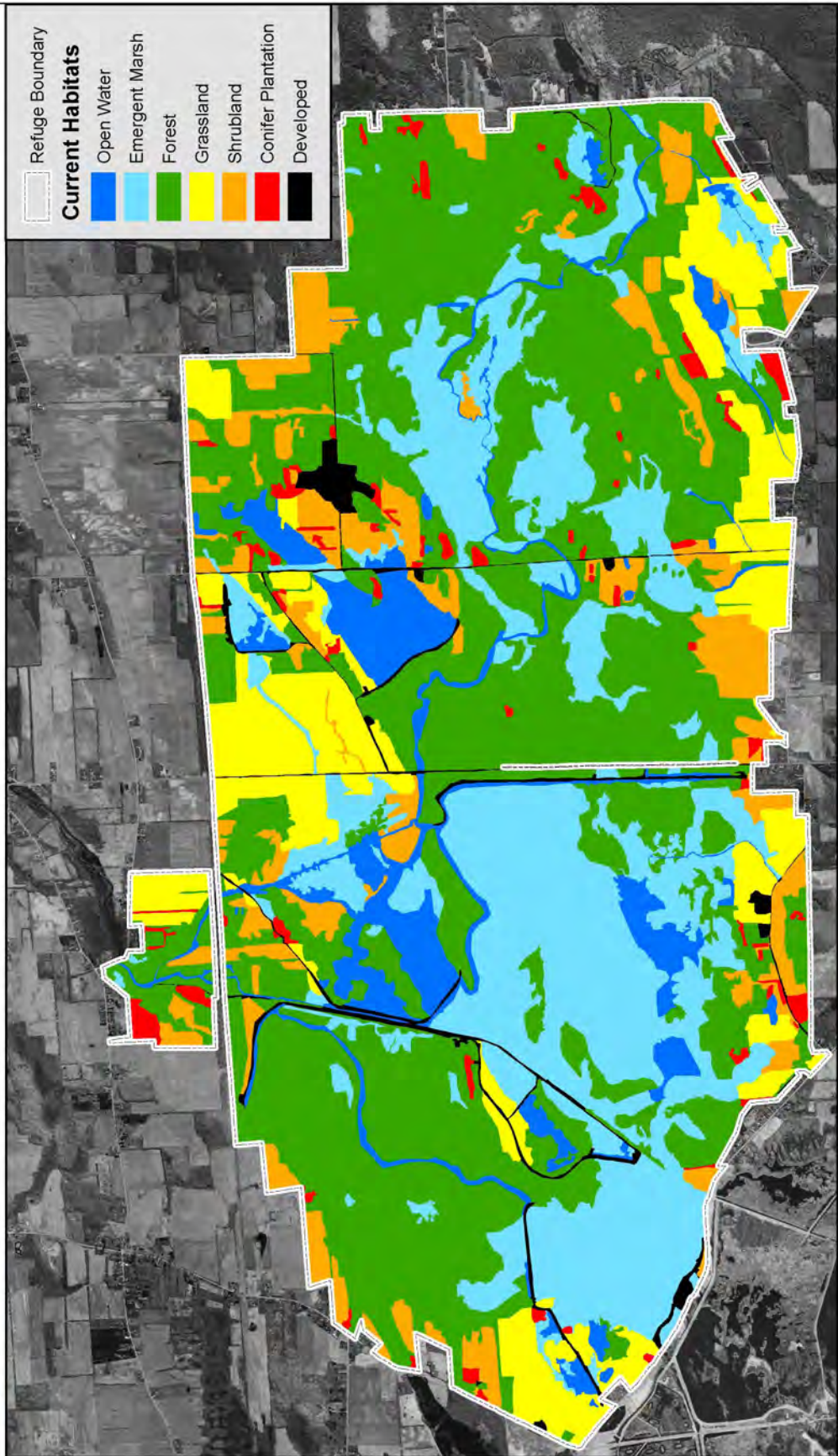
Impoundments are drawn down approximately every 5 years on a rotation that ensures only a few pools are drained each year. This periodic draining of the marsh mimics a drought in a natural marsh and allows the re-growth of vegetation. Drawdowns also give refuge staff a chance to make needed repairs to dikes and water control structures.

*Natural Emergent Marsh* - Most natural (unimpounded) emergent marsh habitat on the refuge is located along Oak Orchard Creek, east of Sour Springs Road. There are no control structures regulating the water level of the Creek in this area; the only constriction is Sour Springs Road itself and transient beaver dams. During flood events and as a result of beaver activity the water in the Creek will back up beyond the existing emergent marsh and a small distance further into the floodplain.



Map 3-5

# Iroquois National Wildlife Refuge - Comprehensive Conservation Plan Current Habitat Conditions



Sources:  
Refuge Boundary from USFWS.  
Habitat Types from  
NYS Natural Heritage  
Aerial Photos from NYS GIS  
Clearinghouse.

**Table 3-5 Impoundments on Iroquois Refuge**

<b>Impoundment</b>	<b>Year Impounded</b>	<b>Acres</b>
Mohawk Pool South*	2006	939
Mohawk Pool North*	2006	190
Mohawk Pool West*	2006	235
Seneca Pool	1968	935
Oneida Pool	1977	770
Cayuga Pool	1969	365
Cayuga Sub-Impoundment	1986	45
Ringneck Marsh	1969	172
Center Marsh	1969	84
Long Marsh	1965	69
Swallow Hollow Marsh	prior to refuge establishment	54
Knowlesville Marsh	1966	46
Schoolhouse Marsh	1967	40
O'Brien Marsh	2003	18
Olsen South	1991-92	15
Olsen North	1991-92	10
Galaxy Marsh	1965	10
Schoolhouse Moist Soil Unit	1991	10
Sutton's Marsh	1965	23
<b>TOTAL</b>		<b>4,030</b>

\*Mohawk Pool was originally created in 1974 and encompassed 1,370 acres. In 2006 it was split into three sub-impoundments to facilitate habitat management and water manipulation.

*Forested Wetland* - Red and silver maple and green ash are the primary tree species in the 3,297 acres of forested wetlands (bottomland hardwoods) on the refuge. Second growth mature trees more than 75 years old dominate most of this habitat. About 1,000 of these acres are contained in Seneca Pool; an impoundment originally built and managed as a green tree impoundment. This pool is a red maple/green ash swamp that, when still managed as a green tree impoundment, was routinely flooded to provide deeper water habitat at different times of the year to coincide with the needs of certain wildlife species. Long periods of managed flooding stressed and killed mature trees and prevented germination and survival of seeds and seedlings. Due to this negative effect on the forested wetland habitat, the pool level is now allowed to fluctuate with the level of Oak Orchard Creek. Fluctuating with the creek level reduces the amount of water in this pool and limits the amount of water stress put on the trees, while still providing wetland habitat throughout spring migration. This pool provides a large contiguous tract of forested wetland habitat managed for species such as the wood duck and cerulean warbler.

*Oak Orchard Creek Marsh National Natural Landmark* - The refuge contains the 523-acre Oak Orchard Creek Marsh NNL (map 1-4). The marsh encompasses a pristine stretch of the sluggish and meandering creek that varies in width from 20 to 150 feet. The surrounding terrain is low and flat and shows the effects of annual flooding. Broad-leaved cattail grows in marshy areas at the bends in the creek. Buttonbush and water willow are common shrubs along the creek edges, accompanied by a diversity of other plant species including red osier dogwood, white dogwood, swamp rose, purple nightshade, watercress, water hemlock, swamp milkweed, lizards tail, cardinal flower, broad-fruited bur reed, and forget-me-nots. A forested swamp dominated by silver maple with some green ash, swamp white oak and slippery elm with a dense understory of sensitive fern borders the creek channel (Vogelmann 1972).

When this landmark was established in 1974 it also included the 15-acre Milford Posson Research Natural Area (see Uplands Section below).

### **Uplands**

Approximately 56 percent of the upland habitat on the refuge is maintained in an early succession stage either as grassland or shrubland. These units are maintained through a variety of techniques including mowing, haying, burning, disking, planting, hydro-axing, and chemical treatment. Burning of grassland fields typically occurs between April 1 and May 31. Fall burns are also possible, but are generally avoided as they do not adequately control undesirable vegetation. Mowing and haying are conducted after mid July to allow for completion of nesting cycles while still putting stress on undesirable vegetation during the active growing season. Hydro-axing of shrub units occurs in summer or winter depending on habitat objectives, ground conditions, and availability of machinery.

*Grasslands* - Refuge grasslands are a mix of managed warm and cool season fields and unmanaged forbdominated fields. Switchgrass, smooth brome, and goldenrod dominate the grasslands. Grasslands are currently managed using a combination of mowing, chemical spraying, and prescribed burns to control unwanted vegetation and to maintain nesting habitat for grassland nesting birds like sedge wren, Henslow's sparrow, grasshopper and vesper sparrow, mallard and blue-winged teal. Haying, conducted through a cooperative farming program, is also used as a grassland management tool (USFWS 2002). Approximately 450 acres of upland habitat have been planted to warm season grasses (primarily switchgrass, big bluestem, and indiagrass) and succession is suppressed to maintain these units (USFWS 2000c).

*Shrublands* - The refuge shrublands are very diverse from location to location with the most common species present being dogwoods (red paniced, red osier, and silky). Other species include honeysuckle (Tartarian and Bella), buckthorn, Russian olive, multifora rose, and viburnum. Many of the shrublands on the refuge have matured to a stage where they are moving from shrubland to forest habitat. Shrublands provide important habitat for many wildlife species and add diversity to the landscape. The refuge is identifying those shrubland areas that would be best kept as shrubland management units and those areas that would be better left to revert to forests.

*Forest* - Northern hardwoods (beech, sugar maple, yellow birch, and hemlock) and Allegheny hardwoods (black cherry, tulip poplar, and white ash) comprise the 1,520 acres of upland forest found on the refuge. These types are rarely distinct from one another and tend to blend together with other species such as hickories, butternuts, and red or white oak. Much of the upland forest on the refuge is in second growth. Current forest management includes creation of early succession habitat and maintenance of mature forest through natural processes. Most management will favor the development of old growth stands to provide essential wildlife habitat for many species of wildlife.

Conifers are not a large component of the forest types on the refuge. Found in association with other northern hardwoods, the Eastern hemlock and white pine are the only native conifers on the refuge. Other conifers found on the refuge where planted during the 1960s and 1970s. Species planted include white and Norway spruce and red, Austrian, and Scotch pines. These conifers are found in small scattered stands ranging from less than 1 acre to as much as 20 acres in size and include roughly 200 acres total.

*Research Natural Areas* - The Service cooperates with many other agencies and organizations to establish and preserve a diverse, representative network of plant and animal communities of different ecological types, managing each in a natural state for research purposes. Research Natural Areas are intended to represent the full array of North American ecosystems including biological communities, habitats and

phenomena, and geological and hydrological formation and conditions. They are areas where natural processes are allowed to predominate with little or no human intervention (USFWS 2009b, <http://www.fws.gov/Refuges/whm/wilderness.html>).

Iroquois Refuge has a single RNA: the Milford Posson. This RNA is a small 15 acre upland forest near the Oak Orchard Creek Marsh (map 1-4). This site supports a good example of an old age stand of northern hardwoods and eastern hemlock growing on a narrow ridge that rises 6 to 8 feet above the surrounding wetland. Eastern hemlock, beech, yellow birch, and sugar maple are the dominant trees. The larger hemlocks and beeches have trunk diameters greater than 30 inches and heights greater than 70 feet. These trees are 150 to 200 years old. Hop hornbeam, ironwood, red oak, and red elm also grow in the overstory; witchhazel and maple-leaved viburnum are typical in the understory along with spicebush in the wetter areas. A diverse groundcover includes spinulose wood fern, New York fern, Jack-in-the-pulpit, Canada mayflower, bellworts, foamflower, wild sarsaparilla, Indian cucumber root, partridgeberry, and goldthread.

### ***Fish and Wildlife***

Iroquois Refuge was established as a nesting, resting, and migration area for migratory birds and resident wildlife, particularly waterfowl. Management of refuge habitats is designed to provide the best possible habitat for migratory waterfowl and waterbirds, while also benefitting several other wetland wildlife species. Following is a brief discussion of the different groups of wildlife that occur on the refuge. For a more detailed list of species that inhabit the refuge see appendix D.

### **Birds**

Iroquois Refuge has a great variety of avian species that range from small, ruby-throated hummingbirds to our national symbol, the bald eagle. For centuries, birds have used the refuge area for resting and feeding during their annual migrations between Central and South America and the northern U.S., Canadian and arctic breeding grounds. Over 266 different species of birds have been observed on the refuge since its inception, with 122 of these known to nest on the refuge. The refuge has long been considered an important migratory stopover area for mallard, blue-winged teal, ring-necked duck, and wood duck. Other migrant species that utilize the refuge during spring, summer, or fall include American bittern, least bittern, great blue heron, egrets, black-crowned night heron, swans, geese (Canada, snow, and white-fronted), red-tailed hawk, sora, sandhill crane, American woodcock, common snipe, brown thrasher, warblers, sparrows, eastern meadowlark, and bobolink, just to name a few. Waterfowl are most abundant in the spring with counts of ducks and geese averaging more than 120,000. There are several resident bird species (species that do not migrate) on the refuge including bald eagle, ring-necked pheasant, ruffed grouse, wild turkey, woodpeckers, and nuthatches.

Iroquois Refuge provides important waterfowl nesting and brood rearing habitat; in some years over 6,000 ducklings and 1,500 goslings have been produced on the refuge. This productivity has declined in recent years as the habitats have matured. The most common waterfowl nesting species are wood duck, resident Canada geese, mallard, and blue-winged teal (USFWS 2002).

Seven species of wading birds (bitterns, herons and egrets) use the refuge. Great blue heron is the most common; a heron rookery on the refuge supports nearly 400 nests. American and least bitterns also nest on the refuge. Bitterns are relatively common on the refuge but are inconspicuous (USFWS 2002). The least bittern is State-listed as threatened and both species are identified as “species of greatest conservation need” by the NYSDEC (NYSDEC 2005). The American and least bitterns were the focus of two research projects on the refuge (Lor 2000, Bogner 2001). Lor (2000) found nesting densities of least bitterns to be 1 nest per 18 acres of emergent marsh, which was much higher than was previously

recorded for the area. Both studies found hemi-marsh to be the preferred habitat for nest site selection (USFWS 2002). Other nesting species on refuge wetlands that are also on the “greatest need” list include black tern and pied-billed grebe.

Iroquois Refuge is one of four sites in New York with exceptional numbers of cerulean warblers recorded during the Cerulean Warbler Atlas Project conducted from 1997 to 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 (-4.2 percent per year since 1966) in the Breeding Bird Survey trend throughout its range (Rosenberg et al. 2000). The cerulean warbler occurs in riparian, forested wetlands, and Iroquois Refuge has the third highest concentration of these birds in New York.

Prior to the 1950s more than 70 pairs of bald eagles nested in New York State and by the 1960s only one active nest remained. This decline was caused by habitat loss and the bio-accumulation of organochlorine pesticides (DDT and dieldrin) in fish, the primary food source for eagles. The use of pesticides which contained DDT or dieldrin were banned in 1972, and shortly thereafter the number of successful eagle nests started to increase steadily. In the 1970s New York led the national recovery of the bald eagle by ‘hacking’ young wild birds into new artificial nest sites. From 1976 to 1980, 23 young eagles were hacked at Montezuma Refuge, 90 miles to the east of Iroquois Refuge. After two released birds successfully nested in 1980, the hacking program expanded to three more sites including Oak Orchard WMA, adjacent to Iroquois Refuge. A pair of bald eagles has nested on Iroquois Refuge each year since 1986 and a second pair started nesting in 2001. The hacking program ended in 1985 as statewide eagle numbers continued to increase. In 1998, bald eagle numbers across the U.S. were high enough to allow them to be upgraded from the Federal endangered species list to the Federal threatened species list. On August 9, 2007 bald eagles were removed from the Federal list of threatened and endangered species and no longer require protection under the Endangered Species Act. Bald eagles remain protected under the Bald and Golden Eagle Protection Act (Eagle Act) and the Migratory Bird Treaty Act. The Eagle Act prohibits anyone from “taking” bald eagles. Among other actions, “take” includes disturbance of bald eagles (USFWS 2007b).

### **Mammals**

The refuge supports a diversity of mammal species that contribute to the ecological, economic, and aesthetic value of western New York. The white-tailed deer is the largest mammal that resides on the refuge and can be observed year round. Eastern cottontail rabbit, gray, red and flying squirrel, woodchuck, raccoon, skunk, red and gray fox, coyote, muskrat, mink, otter, opossum, weasel, and beaver are mid-sized mammals that serve as both predators and prey in refuge plant and animal communities. Small mammalian residents include meadow vole, white-footed and deer mouse, shrews, and moles. These small animals are a primary food source for many larger animals. The refuge provides habitat for little brown, big brown, and red bats which serve as an important natural control of insects.

### **Reptiles and Amphibians**

Reptiles and amphibians are important species in the ecological communities of Iroquois Refuge. The refuge has not conducted a systematic inventory of all reptiles and amphibians. However, studies focusing on different suites of species were conducted and anecdotal information regarding the presence of various species has been recorded. From these sources, 23 amphibian and reptile species were identified to occur on the refuge and another six species were found adjacent to the refuge and are likely to occur here as well. Snake species include northern brown snake, eastern garter snake, smooth green snake, northern water snake, northern redbelly, black rat, and eastern milk snake. Painted, softshell, and snapping turtles inhabit wetland environments. Frog and toad species include leopard frog, green frog, wood frog, grey

tree frog, northern spring peeper, and American toad. Several salamander species are fairly common and can be found in dark moist environments, such as under decaying logs or thick leaf litter.

### **Invertebrates**

Invertebrates are abundant on the refuge and play an integral role in maintaining the ecological balance of several refuge ecosystems. The refuge has not yet conducted a systematic inventory of all invertebrate species.

### **Fish**

Fishery resource assessments were conducted on selected areas of the refuge in 1993 and again in 1997, documenting 16 species of fish (USFWS 2002). Fish species include northern pike, largemouth bass, yellow perch, black crappie, pumpkinseed, and brown bullhead. During July to October 2009, staff from the Lower Great Lakes Fish and Wildlife Conservation Office completed a qualitative assessment of the fish communities occurring on the refuge. This was to support the development of a long-term management plan for the fisheries resources at the refuge. Eighteen species of fish were collected during the survey with bluegill and pumpkinseed being the most common collected species. Other common species included brown bullhead, black crappie, and common carp. Species found in at least two waterbodies were golden shiner, green sunfish, northern pike, white crappie, white sucker, and yellow perch. Banded killifish, brook stickleback, goldfish, johnny darter, largemouth bass, central mudminnow, and a hybrid sunfish were only collected in one single waterbody. A comparison of species collected in 2009 versus 1993 is found in table 3-6.

**Table 3-6 Fish Species Collected at Iroquois Refuge During 2009 and 1993 Assessments  
(Species Listed in Order of 2009 Abundance)**

<b>Common Name</b>	<b>Scientific Name</b>	<b>2009</b>	<b>1993</b>
Bluegill	<i>Lepomis macrochirus</i>	336	X
Pumpkinseed	<i>Lepomis gibbosus</i>	118	X
Common carp	<i>Cyprinus carpio carpio</i>	36	X
Goldfish	<i>Carassius auratus</i>	32	X
Brown bullhead	<i>Ictalurus melas</i>	31	X
Largemouth bass	<i>Micropterus salmoides</i>	30	X
Brook stickleback	<i>Culaea inconstans</i>	30	
Central mudminnow	<i>Umbra limi</i>	29	X
Green sunfish	<i>Lepomis cyanellus</i>	22	
Northern pike	<i>Esox lucius</i>	9	X
White crappie	<i>Pomoxis annularis</i>	8	
Black crappie	<i>Pomoxis nigromaculatus</i>	6	X
Yellow perch	<i>Perca flavescens</i>	3	X
White sucker	<i>Catostomus commersoni</i>	2	X
Golden shiner	<i>Notemigonus cyssoleucas</i>	2	X
Banded killifish	<i>Fundulus diaphanous</i>	1	X
Johnny darter	<i>Etheostoma nigrum</i>	1	
Sunfish (hybrid)	<i>Lepomis (cyanellus x gibbosus)</i>	1	
Grass pickerel	<i>Esox americanus</i>	0	X
Bluntnose minnow	<i>Pimephales notatus</i>	0	X
Tadpole madtom	<i>Noturus gyrinus</i>	0	X

### **Invasive Species**

Several invasive plant and animal species inhabit the refuge. Plants include purple loosestrife, several honeysuckle species, multiflora rose, garlic mustard, common reed, buckthorn, black swallowwort, autumn olive, oriental bittersweet, and Eurasian milfoil. The most invasive animal species on the refuge is the common carp which destroys wetland vegetation and causes high turbidity in refuge wetlands. European starling, house sparrow, and rock pigeon all nest on the refuge and compete with native species for nest sites. Other invasive wildlife species occurring on the refuge include feral ducks, mute swan, feral and free-roaming cats, and Norway rat.

### **Threatened and Endangered Species**

No Federal-listed endangered species are known to occur on the refuge. For many years the bald eagle was the primary endangered species upon which the refuge focused its efforts. Due to successful conservation efforts the bald eagle is now listed in the least concern category. Two active eagle nests currently occur on the refuge and two other active nests are on the nearby State WMAs; one each on Oak Orchard and Tonawanda.

The Karner blue butterfly was listed as federally endangered in 1992. Its historical range included savanna/barren ecosystems in 12 states from Minnesota to Maine and in the province of Ontario. The lupine flower is a critical component for Karner blue habitat. Lupines grow primarily on sandy soils within oak and pine savanna/barrens communities. In New York, the Karner blue butterfly was once common. The Tonawanda Potential Recovery Unit is one of two units that could form a geographic connection between eastern and western populations (USFWS 2003). Iroquois Refuge and Tonawanda WMA are also being considered for Karner blue reintroduction if a minimum of 100 acres of suitable habitat can be developed. Planting of lupines on the refuge and Oak Orchard began in 1995-96.

Other federally threatened or endangered species that once occurred in western New York and that could again occur on the refuge given current or potential habitats include bog turtle, Hine's emerald dragonfly, and eastern Massasauga rattlesnake (candidate species). Table 3-7 identifies species that are listed as endangered or threatened at the State level.

**Table 3-7 State Listed Species Occurring on Iroquois Refuge**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>
Golden Eagle	<i>Aquila chrysaetos</i>	S-E
Peregrine Falcon	<i>Falco peregrinus</i>	S-E
Black Tern	<i>Chlidonias niger</i>	S-E
Short-eared Owl	<i>Asio flammeus</i>	S-E
Loggerhead Shrike	<i>Lanius ludovicianus</i>	S-E
Pied-billed Grebe	<i>Podilymbus podiceps</i>	S-T
Least Bittern	<i>Ixobrychus exilis</i>	S-T
Bald Eagle	<i>Haliaeetus leucocephalus</i>	S-T
Northern Harrier	<i>Circus cyaneus</i>	S-T
King Rail	<i>Rallus elegans</i>	S-T
Upland Sandpiper	<i>Bartramia longicauda</i>	S-T
Common Tern	<i>Sterna hirundo</i>	S-T
Sedge Wren	<i>Cistothorus platensis</i>	S-T
Henslow's Sparrow	<i>Ammodramus henslowii</i>	S-T

S-E = State Endangered, S-T = State Threatened

Based on the information compiled and analyzed in the fish and wildlife section above we are able to identify and list resources of concern and the habitats that support these resources. Table 3-8 provides a summary of these resources of concern for Iroquois Refuge.

**Table 3-8 Iroquois Resources of Concern Based on Priority Habitats**

<b>High Priority Habitat Types</b>	<b>Resources of Concern</b>	<b>Other Benefiting Species</b>
Freshwater Impoundments: emergent marsh and open water  Streams and associated emergent marsh (un-impounded)	American and least bitterns, black tern, pied-billed grebe, Virginia rail, American black duck, blue-winged teal, mallard, Northern pintail, Atlantic-Southern James Bay Canada goose, least sandpiper, pectoral sandpiper, semipalmated sandpiper, Wilson’s snipe, and bald eagle	Sora, black-crowned night heron, king rail, common tern, osprey, canvasback, and greater yellowlegs
Forested Wetlands	Wood duck and cerulean warbler	Prothonotary warbler, Baltimore oriole, rusty blackbird, northern flicker, bats, and river otter
<b>Moderate Priority Habitat Types</b>	<b>Resources of Concern</b>	<b>Other Benefiting Species</b>
Vernal pools	Wood frog, blue-spotted and Jefferson salamanders	Other obligate amphibian species
Grasslands	Bobolink, grasshopper sparrow, and Henslow’s sparrow	Eastern meadowlark, horned lark, and sedge wren
Shrublands	Field sparrow, blue-winged warbler, and golden-winged warbler	Brown thrasher, song sparrow, willow flycatcher, black-billed cuckoo, and American woodcock
Upland Forest	Wood thrush, black-billed cuckoo, cerulean warbler, and American woodcock	Rose-breasted grosbeak and scarlet tanager

**Rare Plants and Significant Ecological Communities**

The New York Natural Heritage Program tracks rare species and significant ecological communities in the State. The program provided a list of the rare plants and significant ecological communities known to occur on or near the refuge (appendix D). Two rare plants and three ecological communities have been documented on the refuge in recent history: smooth bur-marigold (State threatened), Georgian bulrush (State endangered), deep emergent marsh, hemlock-northern hardwood forest, and beech-maple mesic forest.



## Socioeconomic Environment

### *Population Demographics*

While the population in New York has grown slightly, the region surrounding Iroquois Refuge has actually declined from 2000 to 2009. Table 3-9 provides census information reflecting population trends in New York, Genesee and Orleans County, and the towns of Alabama and Shelby (US Census 2009, [www.census.gov](http://www.census.gov)).

**Table 3-9 Population Demographics 2000-2009**

Area	2000 Population	2009 Population
State of New York	18,976,457	19,541,453
Genesee County	60,370	57,868
Orleans County	44,171	42,051
Town of Alabama	1,881	1,823
Town of Shelby	5,420	5,169

### *Economics of Genesee County*

The median household income in Genesee County in 2008 was \$49,133. Genesee County's economy is based on agriculture, tourism, recreation, and industry. Many businesses cater to recreational interests and tourists including campgrounds, businesses that support fishing and other outdoor sporting and recreation activities, and motels. Federal and State lands that support outdoor recreation and other public uses include Darien Lakes State Park, Oak Orchard and Tonawanda WMA, John White WMA, Carleton Hill WMA and Iroquois Refuge. Commercial industrial parks are slowly but steadily growing.

Agriculture is the primary land use. Genesee County covers 495 square miles; of this, water covers 1 square mile. High quality land is considered Genesee County's greatest asset. The diversity of soils and climate conditions attracted the early settlers who carved out homes and farms, developing Genesee County into one of the richest agricultural regions in New York State. Genesee County has the highest percentage of classified farmland in the State and 3 of the top 100 vegetable farms in the country. Genesee County is fourth in agriculture sales within New York State. Crops include corn (22,215 acres), wheat (10,689 acres), soybeans (4,507 acres), vegetables (25,381 acres), and orchards (116 acres). The fertile muck soil in Elba has made Genesee one of the principal counties in the nation for growing beets and onions. Genesee County also ranks fifth in snap bean production. Dairy farming is the leading commodity in the county. Fifty percent of all cattle on farms are devoted to milk production. There are many farm stands and farmer's markets providing fresh vegetables, fruits, and flowers. The average revenue generated each year from agricultural produce in Genesee County is \$215,410 per farm; the average annual expense is \$168,571 per farm (Epodunk 2008a, <http://www.epodunk.com/cgi-bin/genInfo.php?locIndex=22474>).

The Genesee County Agricultural and Farmland Protection Board developed a Protection Plan in concert with the County Departments of Planning and Real Property Tax Services, the Genesee County Soil and Water Conservation District, Cornell Cooperative Extension of Genesee County, the Agricultural Development Associates, the American Farmland Trust, and Peter J. Smith and Company. The plan is intended to preserve the agricultural land resource, direct development away from farming areas, and to support the economic contributions of agriculture and related businesses. The project was initiated to maintain and protect agriculture as Genesee County's largest industry and predominant land use. The primary objective of the project was to develop a plan that would focus on agricultural land preservation techniques and, perhaps most importantly, on the long-term economic viability of the agricultural industry in Genesee County. The plan development process was based on the premise that farm profitability is the

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fundamental element of agricultural protection. The Genesee County Agricultural and Farmland Protection Plan was officially adopted by the Genesee County legislature on November 14, 2001 and approved by the NYS Department of Agriculture and Markets on April 8, 2002 (Genesee County 2008, <http://www.co.genesee.ny.us/dpt/planning/agfarmboard.html>).

### ***Economics of Orleans County***

The median household income for Orleans County in 2008 was \$46,220. Like Genesee County, the economy of Orleans County is based on agriculture, tourism, recreation, and industry. Many businesses cater to recreational interests and tourists including campgrounds, fishing and other sporting goods and services, motels, and bed and breakfast establishments. Federal and State lands that support outdoor recreation and other public use include Oak Orchard State Marine Park, Oak Orchard and Tonawanda WMA, Lakeside Beach State Park, and Iroquois Refuge. Commercial industry is slowly but steadily growing.

Orleans County covers approximately 817 square miles; land covers 391 square miles and water covers 426 square miles. The high proportion of water is due to the extension of the Orleans County line north into Lake Ontario. Orleans County is on the southern shore of Lake Ontario and the Erie Canal passes from east to west through the center. Agriculture is the primary land use. In 2005, 87 percent of farms were in operation. Milk production is lower in Orleans County compared to Genesee County; only 34 percent of all cattle on farms are milk cattle. Crops include corn (23,175 acres), wheat (11,387 acres), soybeans (16,393 acres), vegetables (18,443 acres), and orchards (5,928 acres). Land is Orleans County's greatest asset. The area was once fitted to agriculture, and when the fever of land speculation had abated and the timber of the section had been removed enough to open wide areas, farming became the leading industry. Grains, particularly wheat, were the main crops and were very profitable until the Erie Canal opened import of wheat from other states. This required farmers to explore other crops; potatoes, coarse grains, and livestock were explored as options to replace wheat. Then, in 1845, a concerted effort was made to capitalize on the climate and soil of Orleans County that makes it particularly adapted to growing fruit. Apple orchards became successful with increased experience in cultivation, grafting, and improved varieties of apples. The apple crop is now one of the most important in the County. The average revenue generated each year from agricultural produce in Orleans County is \$136,739 per farm; the average annual expense is \$110,505 per farm (Epodunk 2008b, <http://www.epodunk.com/cgi-bin/genInfo.php?locIndex=22492>).

The Empire Zone Program was created to stimulate economic growth through a variety of tax incentives, helping to attract new businesses and enable existing businesses to expand and create more jobs. Since Orleans County was designated as an Empire Zone in 2002, there have been 11 zone-certified businesses established employing 1,762 people. These businesses have invested over \$12.5 million. The Western New York Energy Ethanol Plant opened in 2008 in Orleans County. It created 58 new jobs and is projected to purchase approximately six million bushels of corn each year from local upstate farmers. In addition to ethanol, the facility will produce two byproducts that will be marketed for sale: carbon dioxide, which is used for beverage carbonation and freeze drying, and distiller's dried grains, a high-protein livestock feed that is well-suited for New York's dairy industry (WNY Energy 2008, <http://www.wnyenergy.com/show/?id=97>).

### ***Contributions to Local Economy***

The contribution of Iroquois Refuge to the local economy is multifaceted. The refuge contributes directly to the local economy through shared revenue payments. The Federal Government does not pay property tax on refuge lands; instead it makes annual payments to respective municipalities based on a maximum of 0.75 percent of the fair market value of refuge lands as determined by an appraisal every 5 years. The

actual amount distributed each year varies based on Congressional appropriations, land acquisition, and the annual sale of refuge goods and products (hay) and Special Use Permits that contribute directly to the revenue sharing account.

The refuge contributes to the local economy by providing valuable recreational opportunities for local residents and attracting tourists and travelers into the area. Public ownership requires little in the way of services from municipalities, yet provides valuable recreational opportunities for local residents. A 2006 national survey of hunting, fishing, and wildlife watching showed that 87.5 million people age 16 and older participated in outdoor recreational activities and spent over \$122 billion per year. Within the State of New York (total population of 19,306,183) 4 million people spent over \$3,570,000 on wildlife-related recreation (USDOJ 2006). These statistics represent a significant contribution to New York's economy and highlight the strong connection New York residents and non-residents have to the land and wildlife.

The refuge is popular for big and small game hunting, waterfowl and turkey hunting, fishing, and wildlife observation. Increasing numbers of birdwatchers, photographers, naturalists, hunters, and anglers are drawn to the refuge each year. Refuge visitors contribute to the local economy through the purchase of goods and services such as gas, food, hunting and fishing related gear, equipment repair services, clothing, and lodging. The refuge budget provides to the local economy through staff salaries and the purchase of goods, supplies, and services from local businesses.

Trapping is a very small factor in the local economic picture and is pursued on a limited basis at the refuge. Trapping is focused on those animals that are causing infrastructure or management problems related to wildlife management activities. Raccoons, muskrats, and beavers are some of the mammals trapped. Trappers are typically local and purchase food, gas, and other supplies to conduct their work. The pelts are usually sold to large fur houses and their profits directly benefit the trappers who in turn spend it in the local economy. Other economic uses on the refuge include haying. In an effort to economically maintain an average of 160 acres per year of grassland as open herbaceous habitat for migratory birds and other animals, the refuge has cooperative haying agreements with local farmers. The farmers pay the refuge a fee to harvest native grasses and forbs from refuge grasslands each year.

## **Historical Picture**

### ***Native People***

Native people have lived along the shores of the Great Lakes for over 10,000 years, fishing, raising crops, and using rivers for transportation (USEPA 1998). The Seneca Indians, one of the five tribes of the Haudenosaunee Confederation, meaning "people of the Longhouse," commonly called Iroquois, thrived on the region's bounty of fish and wildlife. The other Confederation Tribes were the Mohawk, Oneida, Onondaga, and Cayuga. Until the early 1700s, the Iroquois lived and traveled from New England to the Mississippi River as far south as Tennessee. By the mid-1700s their main territory was centered on New York State. Centuries after Lake Tonawanda drained leaving behind swamps and pools, the Seneca began to drain the swamp and clear some of the forests for farming and garden plots near their villages (USFWS 2008b, <http://www.fws.gov/northeast/iroquois/>). The Iroquois Nation lost rights to most of their lands during the Revolutionary War. Today, there are two Seneca Reservations in New York and one reservation of the Seneca – Cayuga in Oklahoma (Holland Land Office 2009, <http://www2.pcom.net/cinjod/historian/index.html>).

### ***European Settlement***

Europeans did not settle northwestern New York extensively until after the American Revolution in the late 1700s. Rivers and lakes offered transportation routes and the mixed hardwood forest supported a logging industry. To the first European settlers in the early 19th century the remaining clusters of oak trees were reminiscent of an orchard so they named the area "Oak Orchard Swamp." Settlers expanded artificial drainage of the swamp to improve logging and farming operations. Much of the virgin swamp timber was logged. The rich black soils of the swamp enticed settlers to implement many drainage attempts as early as 1828. Plagued by high costs and a cycle of muck fires and floods, the outcome was marginal at best. By the 1930s, residents noticed a sharp decline in the once plentiful wildlife and made plans to protect the dwindling swamp from further development (USFWS 2002).

In 1958, Oak Orchard Refuge was established within the historic Oak Orchard Swamp, locally referred to as "the Alabama Swamp." The refuge was renamed Iroquois Refuge in 1964 to avoid confusion with the neighboring Oak Orchard State WMA.

### ***The Erie Canal***

Iroquois Refuge is located seven miles south of the Erie Canal and bears the mark of early canal development. The Erie Canal, first proposed in 1808, was completed in 1825 linking the Hudson River in the east to Lake Erie in the west. The Erie Canal was enlarged between 1836 and 1862 to 70 feet wide and seven feet deep to handle larger boats (up to 240 tons) and more traffic. In 1903, the Erie Canal was enlarged again with the construction of the "Barge Canal", consisting of the Erie Canal and three main branches -- the Champlain, the Oswego, and the Cayuga and Seneca Canals (Sadowski 2008, [www.eriecanal.org](http://www.eriecanal.org)).

### ***The Feeder Canal***

The Feeder Canal was dug during the period from 1823 to 1825 to divert water from Tonawanda Creek to Oak Orchard Creek to supply more water to the Erie Canal. The Feeder Canal was abandoned around 1910 and was later plugged at Tonawanda Creek. Until that time, various changes were made to the Feeder Canal including rebuilding of dams, widening, deepening, and installing higher gates. The Feeder Canal was lower in elevation than the surrounding wetlands and it acted as a drainage ditch dramatically lowering the water level in the "Alabama Swamps" (Carroll 2001). The Feeder Canal, now defunct, runs between two large pools on Iroquois Refuge and is mostly flooded and incorporated into Mohawk Pool (map 3-4).

### ***The 1900s to Present***

By the end of the 19th century, less than 20 percent of the original forest remained in the region and today the forest cover still remains low (less than 25 percent) with agriculture dominating the landscape (Dettmers and Rosenberg 2003). Over time the agricultural lands have changed in composition and declined in diversity with a shift toward row crop monoculture and a consolidation of smaller farms into larger monocultures. This led to a loss of grassland, woodland, hedgerow, and other edge habitats across the agricultural landscape (NYSDEC 2005).

Approximately 50 percent of the SWLO Basin pre-colonial wetlands are thought to be gone (USEPA 1998). That loss may be as high as 60 percent to 90 percent in the intensely urban shoreline areas of Lake Ontario. Emergent marsh along the lakeshore declined significantly since the early 1900s. While the amount of open water and forested wetlands increased in the 1980s, the acreage of shrub swamp, and emergent marsh declined during the same period. Perhaps as a result of declining emergent marsh habitat, marsh-nesting birds in the SWLO Basin appear to be declining. Of 34 fish species that occur in the

SWLO Basin and use emergent marsh as a critical habitat, 12 are in decline, three are extirpated from the basin, and 13 are of unknown status (NYSDEC 2005).

The major environmental stressors in the SWLO Basin are related to human land use including changes in agricultural practices and increases in residential, industrial, and commercial development. While the human population in the basin has not increased significantly in the last 50 years, an increasing percentage of the basin is being developed creating “sprawl” and fragmenting once contiguous blocks of habitat. Improved treatment of municipal and industrial waste has resulted in improved water quality in aquatic habitats. However, non-point source pollution including toxic contaminants and sediment, invasive species, altered hydrology, and degradation of riparian areas continue to degrade aquatic systems (NYSDEC 2005).

Since the 1800s, more than 140 exotic aquatic organisms of all types including plants, fish, algae, and mollusks have become established in the Great Lakes (NYSDEC 2005). More than one-third of the organisms were introduced in the past 30 years, coinciding with the opening of the St. Lawrence Seaway. Exotic/invasive species and diseases in the SWLO Basin that pose a significant threat to fish and wildlife species of concern include:

- Exotic zooplankton: spiny waterflea and fish hook waterflea
- Rusty crayfish
- Common carp
- Ruffe
- Sea lamprey
- Alewife
- Round gobies
- Zebra mussels/quagga mussels
- Purple loosestrife
- Common reed
- Eurasian water milfoil
- Curly-leaf pondweed
- Flowering rush
- Mute swan
- Type E botulism

### ***Refuge Cultural and Historical Resources***

Cultural resources are archaeological sites, sacred sites, historic structures, and museum property such as art, archaeological artifacts, and scientific collections. As previously discussed, the refuge was Seneca territory until the late 1700’s and early 1800’s when Europeans began settling here. The land was actively farmed for over 100 years before becoming a refuge, but little disturbance has occurred to archaeological sites other than from plowing. There are no significant historic period structures on the refuge. However, its rich history can be explored through the museum collection housed at refuge headquarters which contains more than 2,800 objects. Within the museum, nearly 2,000 objects are classified as archaeology; the remaining objects are categorized between art, history, documents, botany, zoology, paleontology, and environmental samples.

In 1992 the Service contracted with SJS Archaeological Service, Inc. to conduct an overview survey of the entire refuge to determine the archaeological sensitivity of various landforms. This effort included a geomorphologic study and limited archaeological sampling in a variety of locations. The refuge currently contains 101 recorded archaeological sites: 24 pre-Contact Native American sites and 77 historic period

ones. The overview survey identified 20 pre-Contact Native American sites and 21 historic period sites. The remaining pre-Contact and historic period sites were found through a combination of archival research and a number of smaller scale archaeological surveys performed for various habitat restoration projects. Pre-Contact sites recorded on the refuge have generally not had enough research to determine their dates of occupation. The few that can be dated by the style of artifacts discovered or carbon testing of charcoal appear to date from the Late Archaic (3,500 to 5,000 years ago) to just prior to European contact, but earlier sites and 17<sup>th</sup> and 18<sup>th</sup> century ones may exist. Pre-Contact stone artifacts are principally of local chert. Chert is a coarse type of siliceous rock (similar to flint or chalcedony) and the primary raw material used for the manufacture of tools including projectile points (spear and arrowheads), drills, knives, and scrapers.

Historic period sites are generally 19<sup>th</sup> century farmsteads, but one is more unusual: the Alabama Sour Springs Hotel or Spring House, made famous by the “Acid Water.” Eight springs were discovered in the early 1800’s. Three of these springs were acid, one was sulphur, one magnesia, one iron, and one gas (used to light gas burners). The principal spring was called Sour Springs. It was believed by doctors and professors that drinking the acid water was useful for chronic diseases, especially those of the digestive organs, weakness, and debility. Bottles manufactured by Lockport Glassworks in Lockport, New York, were filled with acid water and transported all over the U.S. The hotel was constructed in 1848 by J. C. Colton and Thomas W. Olcott. It included 37 rooms for guests, a large ballroom on the third floor and verandas on three sides. In 1849, approximately 25,000 bottles of acid water were sold for 25 cents each. The hotel closed shortly after the start of the Civil War (1865) and converted into a farmstead home. In 1912 it was struck by lightning and burned to the ground. The Sour Springs site was mapped and excavated in 1974 to 1975 by the Youth Conservation Corps. Nothing remains of the hotel today.

Two sets of rare eastern elk antlers were unexpectedly recovered from the refuge during the construction of wetland subimpoundments in 2004. One set of antlers was attached to a partial skull which had split down the middle; the associated lower mandibles were also recovered. The second pair is smaller and lacks the mandibles. Survey maps from the mid-1800s as well as early refuge planning maps show the area in which the remains were found to have standing water. Locals confirmed that that particular area had never been drained or farmed. Thus, the remains were well preserved in the thick muck-soil layer. Analyses of radiocarbon, sediment, and DNA samples indicate a 95 percent probability that the antlers are between 9,130 and 9,500 years old. No archaeological material was found with them. The refuge is saving DNA and sediment samples for future analysis. The larger set of antlers was sent to the Buffalo Museum of Science for preservation to display at a future date.

## **Refuge Administration**

### ***Step-down Management Plans***

Step-down management plans are an important component of refuge management. These detailed plans serve as guiding documents for the daily operation of the refuge. Step-down management plans differ from CCPs in that they provide more detail relative to refuge management subjects (e.g., habitat management, public use, fire, safety) or groups of related subjects. In many cases, step-down management plans will serve as an implementation tool that describes specific strategies and schedules for meeting CCP goals and objectives. In some cases, step-down plans provided the general framework for developing the CCP. The referenced plans in table 1-3 are currently utilized or will be developed in support of the goals and objectives set forth in this document.

### ***General Administration***

Many administrative functions support the operation and maintenance of the refuge. These include payroll, accounting, budgeting, procurement, acquisition, contracting, and planning. With the downsizing of both regional office and refuge staff, many duties have shifted from the regional office to the field, and Erie Refuge is now administratively joined with Iroquois Refuge.

Refuge infrastructure includes buildings, water control structures, dikes and roadways; these require regular maintenance and repair. There are also overlooks, trails, signs, parking areas and boundaries that are maintained. Maintenance of some of these facilities has fallen behind due to an inadequate level of staffing and funding.

### ***Work Force and Budget***

The ultimate success of the refuge in carrying out its mission depends on staffing patterns (table 3-10) and funding levels.

**Table 3-10 Current Staffing at Iroquois Refuge**

<b>Position</b>	<b>Status</b>
Refuge Manager	1.0 FTE
Wildlife Refuge Specialist	1.0 FTE
Wildlife Biologist	1.0 FTE
Visitor Services Manager	1.0 FTE
Automotive Mechanic	1.0 FTE
Administrative Support Assistant	1.0 FTE

FTE – Full Time Equivalent

Annual budget appropriations vary from year to year, depending on the Service's overall budget and how the refuge's needs and requests rank regionally and nationally with other refuges. Table 3-11 summarizes budget levels from 2004 to 2010, with an average annual budget of approximately \$800,000.

**Table 3-11 Refuge Budgets 2004-2010**

<b>Fiscal Year</b>	<b>Salaries/Operations</b>	<b>One-Time Project Funds</b>	<b>Fees</b>	<b>Fire</b>	<b>Total</b>
2004	\$628,775	\$357,580	\$284	\$7,500	<b>\$985,105</b>
2005	\$523,849	\$42,112	\$1,760	\$7,400	<b>\$575,121</b>
2006	\$597,425	\$332,649	\$1,578	\$0	<b>\$931,652</b>
2007	\$673,879	\$82,684	\$839	\$2,847	<b>\$760,249</b>
2008	\$618,660	\$96,388	\$1,026	\$13,069	<b>\$729,134</b>
2009	\$645,384	\$87,804	\$8,126	\$3,401	<b>\$744,715</b>
2010	\$671,199	\$202,684	\$9,675	\$0	<b>\$883,558</b>

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

Iroquois Refuge facilities include the refuge headquarters and adjoining visitor contact station, maintenance shop, hunter check station and three cold storage buildings that include the Williams Barn, Building #17, and a divided shed for storage of flammable liquids and grain. There are also three houses owned and maintained by the refuge; one refuge house is scheduled for demolition. There are above ground, uncovered fuel tanks as well. The maintenance staff is responsible for the upkeep of all these facilities.

The refuge staff and volunteers maintain informational kiosks, gravel parking areas, trails, overlooks, hunting and fishing access points, the Feeder Canal road, and a paved parking area for the visitor contact station. Refuge personnel, with help from volunteers, are responsible for four nature trails; refuge signage including informational, interpretational, and regulatory signs; lawn maintenance at the headquarters and shop; and lawn and garbage maintenance at overlooks and refuge houses. Maintaining gravel parking lots and roads often requires significant time and effort, especially after spring floods.

The staff manages 19 water impoundments as shown in table 3-5. These impoundments are enclosed by 18 different dike systems and 30 water control structures to manipulate and control water levels. Maintaining these impoundments, dikes, and water control structures are handled by the maintenance staff and volunteers.

### ***Volunteers***

The refuge is fortunate to have a dedicated group of individuals who voluntarily assist the refuge in various ways. Eighty six volunteers provided over 7,000 hours of volunteer time to refuge activities in 2008 (table 3-12). These volunteers assisted with environmental education programs and outreach events, conducted wildlife and habitat surveys, provided visitor services, banded birds, managed habitats and species, and carried out general maintenance tasks. In addition to helping the refuge achieve its objectives and strategies, this group of volunteers serves as an important link with the community at large, promoting refuge messages and garnering support for the Refuge System.

**Table 3-12 Volunteer Hours 2003-2008**

	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Number of Volunteers	27	30	30	30	30	86
Hours Contributed	3,498	3,035.5	3,381	4,756	4,349.5	7,086

## **Refuge Public Use**

### ***Visitor Services***

Providing recreational opportunities and educating and interpreting the unique natural features of the refuge for visitors are important elements of the Service's mission and the goals and objectives of the refuge. In the Improvement Act of 1997, six wildlife-dependent recreational uses were designated as priority public uses on national wildlife refuges. These are hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation. These six uses, when compatible with the refuge purpose, are the focus of the refuge's public use activities. All six recreational uses are offered at Iroquois Refuge. In 2006, Region 5 identified hunting and interpretation as two "Areas of Emphasis" for Iroquois Refuge to help direct staff time and budget dollars.

Iroquois Refuge receives a moderate and increasing level of public use with an average of 43,000 visits per year (FY 2008). Visitors are welcomed year-round to the visitor contact station located at refuge headquarters. The visitor contact station provides brochures and fact sheets about the refuge, birds, mammals, trails and overlooks, hunting and fishing. There are wildlife exhibits and a live feeds from the American kestrel and the pond camera. Volunteers and staff are available to answer questions, record reports of unique sightings, and operate the Flyway Nature Store.

### ***Hunting***

Hunting is a popular form of wildlife recreation in New York State; over 500,000 State residents and more than 50,000 nonresidents purchase hunting licenses on an annual basis. According to the NYSDEC,



about 85 percent of the State is private property and where most hunting occurs. While most private property is posted against trespass, many landowners will give permission for access. New York also provides abundant opportunities to hunt on public lands such as WMA's, State forests, and refuges. Whether on private or public land, hunting is closely regulated by the NYSDEC and hunters must complete a mandatory hunter education course to obtain a hunting license.

Hunting is permitted on portions of the refuge in accordance with State and Federal seasons and regulations. Special arrangements to accommodate persons with disabilities can be made by contacting the refuge manager. The refuge provides opportunities for hunting big game, upland game, waterfowl, and other migratory game birds. Informational fact sheets about hunting and trapping on Iroquois Refuge are updated to reflect periodic changes to the program.

Hunting programs on the refuge promote understanding and appreciation of natural and cultural resources and their management; hunters have been the primary supporters of the refuge since its creation in 1958. Hunting is also an integral part of a comprehensive wildlife management program. Hunting programs on the refuge are administered in consultation and in cooperation with New York State and with State regulations. The Service has several objectives for refuge hunting programs:

- promote public understanding of, and increase public appreciation for, America's natural resources;
- manage wildlife populations at optimum levels; and
- provide opportunities for quality recreational and educational experiences.

The Service defines a quality hunting experience on a national wildlife refuge as one that

- maximizes safety for hunters, trappers, and other visitors;
- encourages the highest standards of ethical behavior in taking or attempting to take wildlife;
- is available to a broad spectrum of the hunting public;
- contributes positively to, or has no adverse affect on, population management of resident or migratory species;
- reflects positively on the individual refuge, the Refuge System, and the Service;
- provides hunters un-crowded conditions by minimizing conflicts and competition among hunters;
- provides reasonable challenges and opportunities for taking targeted species under the described harvest objective established by the hunting and trapping program;
- minimizes the reliance on motorized vehicles and technology designed to increase the advantage of the hunter over wildlife;
- minimizes habitat impacts;
- creates minimal conflict with other priority wildlife-dependent recreational uses or refuge operations; and
- incorporates a message of stewardship and conservation in hunting opportunities.

Refuge visitors participate in hunting big and small game, waterfowl, and other migratory birds in designated areas. Dogs can be used when hunting small game and migratory birds. While the refuge currently does not hold any special hunts, opportunities are provided to hunters with disabilities. There are "no hunting zones" associated with trails, overlooks, and all buildings and facilities on the refuge.

**Waterfowl Hunting**

Mallard, wood duck, northern pintail, Canada goose, green-winged teal, and American wigeon are the most common waterfowl harvested on the refuge. Waterfowl hunting is permitted in Mohawk, Oneida, and Cayuga Pools as well as other areas from designated hunt stands. Hunt stands are generally accessed on foot from associated parking areas. Hunters must stay within 100 feet of their assigned hunt stand marker unless actively pursuing a crippled bird. The refuge maintains one accessible hunt stand for use by persons with disabilities. Approximately 35 hunt stands may be available each year although the actual number is occasionally lower due to the water conditions in the waterfowl hunt areas. Waterfowl hunting is permitted on Tuesdays, Thursdays, and Saturdays during the first split of New York State’s regular waterfowl season. The season ends when the first split closes or when gun deer season starts (the third Saturday in November), whichever comes first. The refuge holds a youth only hunt day on the first Sunday of the State’s waterfowl season. The hunt is limited to 25 youth hunters who must attend an orientation prior to hunting.

Hunt times are legal start (one half hour before sunrise) to 12:00 P.M.(noon). Hunters must check out no later than 1:00 P.M. Permits are issued through a random drawing at 5:00 A.M. at the permit station. Hunters for opening day and the first two Saturdays are selected in a pre-season, random drawing. On all other hunt days any eligible hunter may participate in the drawing. Permit fees are \$10.00 on Saturdays and \$5.00 on Tuesdays and Thursdays. Up to three hunters may share a permit. Holders of a Golden Age Passport or America the Beautiful Senior Pass receive 50 percent off. Waterfowl hunters must possess and use at least 6 decoys and are limited to possessing no more than 20 approved non toxic shells while afield. All persons hunting waterfowl on the refuge must hold a valid Federal Migratory Bird Conservation Stamp, a New York State hunting license, Waterfowl Identification Certificate of Completion, and be registered with the Federal Harvest Information Program (HIP). Waterfowl hunting seasons and bag limits are determined by the NYSDEC within Federal guidelines following a series of task force meetings. Dates are generally set by August. The refuge receives between 300 and 400 waterfowl hunter visits per year with total harvest varying based on the number of stands available (table 3-13). Duck harvest in New York State for the years spanning 1999-2007 was approximately 204,900 birds/year. Goose harvest in New York State for the years spanning 1999-2007 was approximately 117,500 birds/year (table 3-14). Refuge harvest for ducks during the same time span was 768 birds/year. Refuge harvest for geese during the same time span was 33 birds/year (table 3-15).

**Table 3-13 Waterfowl Hunters on Iroquois Refuge During Years 2003-2007**

Type	2003	2004	2005	2006	2007	Fees		
Waterfowl Hunt	473	467	517	211	322	Tuesday/Thursday	\$5*	
						Saturday	\$10*	
							*Fee is halved for people with Golden Age/Senior/Access Pass	
Youth Waterfowl Hunt	21	20	22	18	16	No fee		

**Table 3-14 Historical Waterfowl Harvest 2003-2007, New York State Totals**

<b>Duck Species</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Mallard	88,900	85,379	79,593	83,448	92,049
Domestic Mallard	853	870	704	738	714
Black Duck	19,985	15,438	23,714	20,973	22,656
Mallard x Black Duck Hybrid	1,280	2,174	2,426	1,699	1,249
Mottled Duck	0	0	0	0	0
Gadwall	2,062	1,522	2,113	2,215	1,606
Wigeon	3,272	2,609	2,896	6,572	4,817
Green-winged Teal	14,153	10,654	11,583	14,327	17,215
Blue-winged/ Cinnamon Teal	996	1,087	2,035	443	1,160
Northern Shoveler	711	290	1,017	369	892
Northern Pintail	2,631	1,884	2,191	2,954	2,587
Wood Duck	21,265	20,439	21,444	16,468	25,510
Redhead	356	870	1,800	665	3,211
Canvasback	569	580	313	148	446
Greater Scaup	6,330	2,392	2,896	3,766	4,192
Lesser Scaup	4,267	1,957	2,348	3,397	4,014
Ring-necked Duck	4,338	4,856	3,365	4,579	2,943
Goldeneyes	9,743	5,581	8,531	6,277	7,849
Bufflehead	13,442	8,118	9,079	7,606	13,468
Ruddy Duck	71	145	391	74	357
Long-tailed Duck	3,157	6,195	4,638	5,531	10,646
Eiders	585	0	497	357	0
Scoters	3,858	4,905	3,065	3,212	4,154
Hooded Merganser	3,129	2,029	2,974	2,068	2,497
Other Mergansers	5,547	5,726	5,009	3,914	4,371
Other Ducks	0	0	78	0	0
<b>Total Duck Harvest</b>	<b>211,500±11%</b>	<b>185,700 ± 8%</b>	<b>194,700±10%</b>	<b>191,800±10%</b>	<b>228,600±14%</b>
<b>Goose Species</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Canada Goose	96,750	109,305	119,980	113,856	138,122
Snow Goose	3,712	4,460	8,821	6,799	10,078
Blue Goose	237	0	0	164	0
Ross's Goose	0	0	0	82	0
White-fronted Goose	0	0	0	0	0
Brant	10,400	5,834	4,700	3,400	4,800
Other Geese	0	0	0	0	0
<b>Total Goose Harvest</b>	<b>111,100±10%</b>	<b>119,600±11%</b>	<b>133,500±10%</b>	<b>124,300±11%</b>	<b>153,000±17%</b>

From Service waterfowl harvest estimates by year

<http://www.fws.gov/migratorybirds/reports/HuntingStatistics/Migratory%20bird%20hunting%20activity%20and%20harvest%20during%20the%202006%20and%202007%20hunting%20seasons%20-%20Preliminary%20Estimates.pdf> (Service 2008c)

**Table 3-15 Iroquois Refuge Waterfowl Harvest 2003-2007**

<b>Duck Species Composition</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Mallard	257	295	326	64	235
Black Duck	26	13	20	3	44
Mallard x Black Duck Hybrid	1	1	0	0	0
Northern Pintail	51	45	61	17	16
American Wigeon	60	51	61	79	17
Green-winged Teal	215	115	304	19	191
Blue-Winged Teal	7	12	4	2	1
Wood Duck	24	22	71	4	132
Northern Shoveler	11	2	6	7	2
Hooded Merganser	2	9	6	2	1
Gadwall	11	4	11	19	3
Bufflehead	1	0	1	2	0
Ringneck Duck	7	2	16	3	1
Scaup sp.	0	0	1	5	0
Canvasback	0	0	0	1	0
Ruddy Duck	1	0	1	0	1
Merganser sp.	3	4	0	0	0
American Coot	0	0	0	1	0
<b>Total Duck Harvest</b>	<b>677</b>	<b>575</b>	<b>889</b>	<b>228</b>	<b>644</b>
<b>Goose Species Composition</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
Canada Goose	20	62	66	13	6
<b>Total Goose Harvest</b>	<b>20</b>	<b>62</b>	<b>66</b>	<b>13</b>	<b>6</b>

### **Small Game Hunting**

The refuge receives approximately 370 small game hunter visits per year (table 3-16). Refuge small game species may be taken from October 1 through the end of February and include squirrel, fox, opossum, raccoon, weasel, ruffed grouse, and coyote during their respective seasons. Hunting is in accordance with New York State hunting laws. The NYSDEC sets the season dates annually. From 2004 to 2008, all hunters were required to obtain a free daily permit from one of five self-service kiosks before hunting on the refuge. At the end of the hunt day hunters must return the harvest report section of the permit. That changed in 2009 with the implementation of standardized hunting forms for the entire Refuge System. Hunters were then just required to obtain a hunting permit which they were able to maintain for the entire hunting season. All hunters using a shotgun must use approved non-toxic shot. For added safety during New York State's regular firearms deer season and muzzleloader deer season, all hunters must wear a minimum of 400 square inches of solid-colored hunter orange clothing or material in a conspicuous manner on head, chest, and back.

**Table 3-16 Permits Issued for Upland Small Game Hunting on Iroquois Refuge During Years 2003-2008**

<b>Type</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>Fees</b>
Small Game	339	408	382	352	287	No Fee; daily permit required

Grouse harvest for hunters participating in New York's statewide Grouse Hunting Log program steadily increased from 597 to 909 between 2004 and 2007. This program records grouse harvest and flush rates from a sample of grouse hunters across the State. In the refuge's ecozone (the Lake Plains) grouse harvest was 13 in 2004, 14 in 2005, 28 in 2006, and 23 in 2007. Compared to the six other State ecozones, the Lake Plains region had the lowest grouse harvest in all 4 years. Refuge grouse harvest between 2003 and 2007 totaled seven birds (table 3-17).

**Table 3-17 Grouse Harvest 2004-2007, New York State**

Region	Number Grouse Harvested				
	2003	2004	2005	2006	2007
Iroquois Refuge	1	1	3	0	2
Lake Plains Ecozone	No data	13	14	28	23
New York State	No data	597	725	870	909

From NYSDEC Grouse Hunting Log Results: <http://www.dec.ny.gov/animals/45727.html> (NYSDEC 2009a)

### **Migratory Bird Hunting (Non-Waterfowl)**

Migratory bird hunting activity on the refuge is light. The refuge receives approximately 12 migratory bird hunter visits per year. Game birds including woodcock, snipe, and rail may be taken within their respective seasons, and are managed as part of the small game hunt on Iroquois Refuge. Hunting is in accordance with New York State hunting laws. The NYSDEC sets the season dates annually. From 2004 to 2008, all hunters were required to obtain a free daily permit from one of five self-service kiosks before hunting on the refuge. At the end of the hunt day hunters must return the harvest report section of the permit. That changed in 2009 with the implementation of standardized hunting forms for the entire Refuge System. Hunters were then just required to obtain a hunting permit which they were able to maintain for the entire hunting season.

All hunters using a shotgun must use approved non-toxic shot. For added safety during New York State's regular firearms deer season and muzzleloader deer season, all hunters must wear a minimum of 400 square inches of solid-colored hunter orange clothing or material in a conspicuous manner on head, chest, and back. All areas east of Sour Springs Road, except for no hunting zones, are open for woodcock, snipe, and rail hunting. All persons hunting migratory birds on the refuge must hold a valid New York State hunting license and be registered with the Federal Harvest Information Program (HIP).

The Eastern United States average American woodcock harvest for 1999 through 2007 was 87,600 birds. American woodcock harvest in New York State averaged 9,400 birds between 1999 and 2007. Refuge woodcock harvest average for 2002-2008 was 2.9 birds per year.

Rail harvest in New York State was relatively low between 1999 and 2007. The highest harvest year was 2005 with approximately 700 birds taken. In 2000 and 2003, zero birds were taken. Less than 50 birds were harvested in 2001, 2002, and 2004 annually. In 1999, 2006, and 2007, approximately 500 total birds were harvested. Rail harvest on the refuge between 2002 and 2007 was zero.

### **Big Game Hunting**

White-tailed deer and wild turkey are the only big game species legally hunted on the refuge. In the State of New York wild turkey are considered a small game species. The refuge is open to hunting of white-tailed deer during the State's bow, muzzleloader, and gun (regular) seasons. Hunting is in accordance with New York State hunting laws. The NYSDEC sets the season dates annually. From 2004 to 2008, all hunters were required to obtain a free daily permit from one of five self-service kiosks before hunting on the refuge. At the end of the hunt day hunters must return the harvest report section of the permit. That

changed in 2009 with the implementation of standardized hunting forms for the entire Refuge System. Hunters were then just required to obtain a hunting permit which they were able to maintain for the entire hunting season.

For added safety during New York State’s regular firearms deer season and muzzleloader deer season, all hunters must wear a minimum of 400 square inches of solid-colored hunter orange clothing or material in a conspicuous manner on head, chest, and back. Permanent tree stands are prohibited. Temporary, portable tree stands in accordance with State regulations are acceptable and must be removed at the end of the day. Hunters with disabilities may obtain a refuge access pass to park off road in one of two designated parking areas. Once hunters have the pass, use of the parking areas is on a first come, first served basis.

The refuge receives over 3,000 deer hunter visits per year (table 3-18). Total deer harvested from the refuge each year between 2003 and 2007 ranged from 150 to 223 animals annually (table 3-19).

**Table 3-18 Permits Issued for Deer Hunting on Iroquois Refuge During Years 2003-2008**

Type	2003	2004	2005	2006	2007	Fees
Deer	2,928	2,984	2,983	3,533	4,063	No Fee; daily permit required

**Table 3-19 Historic Deer Harvest, State of New York (NY) and Iroquois Refuge**

Year	Adult Male		Fawn Male		Adult Female		Fawn Female		Unknown	Total	
	NY	Refuge	NY	Refuge	NY	Refuge	NY	Refuge	Refuge	NY	Refuge
2007	104,451	86	21,096	26	76,367	64	17,227	21	25	219,141	222
2006	96,569	46	18,336	28	60,102	67	14,101	23	6	189,108	150
2005	89,015	47	16,373	31	61,179	78	13,647	18	11	180,214	185
2004	88,733	47	21,022	27	80,196	55	18,455	12	14	208,406	155
2003	107,533	57	26,883	28	94,376	90	24,296	27	21	253,088	223

State data from NYSDEC historic deer harvest (<http://www.dec.ny.gov/outdoor/42246.html>) (NYSDEC 2009b)

Currently, turkey hunting is permitted in the spring only. Hunters must submit an application and a \$5.00 processing fee to be entered into a random drawing for 50 available permits. The permits are good for the entire month of May, except for the first Sunday, which is reserved for the Youth Hunt. The entire refuge, except no hunting zones, is open to turkey hunting. Turkey hunters must turn in a harvest report, whether they hunted or not, by June 7. Failure to do so will deny them the opportunity to enter the drawing the following year. The refuge holds a Youth Hunt Day on the first Sunday in May. The hunt is limited to 25 youth hunters who must attend an orientation prior to hunting (table 3-20). Hunting is in accordance with New York State hunting laws. The NYSDEC sets the bag limits and other regulations annually.

The refuge receives approximately 150 turkey hunter visits per year. Statewide spring turkey harvest numbers between 2003 and 2007 averaged approximately 30,000 turkeys. Orleans County harvested a total of 1,058 turkeys between 2003 and 2007. Genesee County harvested a total of 1,483 turkeys between 2003 and 2007. The refuge’s total turkey harvest for the same time span was 22 birds (table 3-21).

**Table 3-20 Permits Issued for Turkey Hunting on Iroquois Refuge, 2003-2007**

Type	2003	2004	2005	2006	2007	Fees
Spring Turkey Hunt	50	50	50	50	50	Yearly entry fee: \$5
Youth Turkey Hunt	5	6	11	3	2	No fee

**Table 3-21 Spring Turkey Harvest, State of New York and Iroquois Refuge, 2003-2007**

Region	2003	2004	2005	2006	2007
Iroquois Refuge	8	4	3	1	6
Genesee County	322	372	226	286	277
Orleans County	266	212	151	198	231
State Total	36,800	26,300	24,910	27,745	35,625

State data from NYSDEC spring turkey harvest (<http://www.dec.ny.gov/outdoor/30420.html>) (NYSDEC 2009c)

### **Trapping**

Upland and marsh trapping are allowed on the refuge in accordance with New York State hunting laws. The NYSDEC sets the trapping seasons and bag limits annually. Each year, the refuge issues up to 50 trapping permits for each type of trapping (table 3-22). Upland trapping permits include raccoon, opossum, weasel, red fox, gray fox, skunk, and coyote. There is no fee for upland trapping permits. Marsh trapping permits include muskrat, beaver, and mink. There is a \$50.00 fee for marsh trapping permits. Trapping permits are issued on a first come first serve basis until trapping seasons start or all of the permits have been issued, whichever comes first. Trappers must comply with all special conditions in the permit regarding trap locations and checking traps. Trappers must turn in a monthly trapping report whether they trapped or not. Failure to do so denies them the privilege of trapping the following year. The number of trappers actively engaged in trapping in a given year is partially dependant on the fur market.

**Table 3-22 Permits Issued for Trapping on Iroquois Refuge, 2003-2008**

Type	2003-04	2004-05	2005-06	2006-07	2007-08	Fees
Marsh Trapping	13	17	10	13	21	\$50 per year
Upland Trapping	17	18	13	15	17	No fee

The refuge received anywhere from 149 to 366 marsh trapping visits and 41 to 251 upland trapping visits per year between 2003 and 2008. Table 3-23 shows the harvest of animals by year for the refuge.

**Table 3-23 Trapping Harvest by Species on Iroquois Refuge, 2003-2008**

Species	2003-04	2004-05	2005-06	2006-07	2007-08
Muskrat	837	1,568	1,494	1,908	498
Mink	24	26	30	26	20
Raccoon	38	68	61	34	11
Red Fox	22	17	18	10	8
Gray Fox	0	0	0	1	1
Opossum	85	52	24	26	0
Beaver	2	1	0	0	4
Skunk	15	20	5	2	1
Weasel	0	1	1	0	0
Coyote	4	0	0	0	1
<b>Total</b>	<b>1,027</b>	<b>1,753</b>	<b>1,633</b>	<b>2,007</b>	<b>544</b>

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## ***Fishing***

New York State has a diversity of fish species and many great fishing opportunities. Over the past 7 years close to one million fishing licenses have been sold annually (NYSDEC 2008c). The only data available for license sales in the vicinity of the refuge are from Orleans County in 1997 and between 1999 and 2001. In 1997, 13,501 licenses were sold and the number of annual sales averaged 12,625 for 1999 to 2001 (NYS Sea Grant 2009).

Fishing is a traditional outdoor pastime deeply rooted in America's natural heritage. Fishing is also a legitimate and appropriate public use on wildlife refuges. Regulations permitting fishing on refuges are, to the extent practicable, consistent with State fish and wildlife laws, regulations, and management plans. Service objectives for fishery programs on refuges are to

- effectively maintain healthy and diverse fish population resources through the use of scientific management techniques;
- promote public understanding of, and increase public appreciation for, America's natural resources and the Service's role in managing the Refuge System;
- provide opportunities for quality recreational and educational experiences; and
- minimize conflicts between anglers and other visitors.

The Service defines a quality fishing experience on a national wildlife refuge as one that

- maximizes safety for anglers and other visitors;
- causes no adverse impact on populations of resident or migratory species, native species, threatened and endangered species, or habitat;
- encourages the highest standards of ethical behavior in regard to catching, attempting to catch, and the releasing of fish;
- is available to a broad spectrum of the public that visits, or potentially would visit, the refuge;
- provides reasonable accommodations for individuals with disabilities to participate in refuge fishing activities;
- reflects positively on the Refuge System;
- provides uncrowded conditions;
- creates minimal conflict with other priority wildlife-dependent recreational uses or refuge operations;
- provides reasonable challenges and harvest opportunities; and
- increases visitor understanding and appreciation for the fisheries resource.

Fishing accounts for a moderate part of the refuge's visitor activity each year (approximately 1,900 visits), especially in the summer and early fall. The refuge strives to enhance fishing opportunities by maintaining appropriate fishing areas and habitat that supports a diverse fish population. The most sought-after fish species include northern pike, bass, bullhead, yellow perch, and crappie. Other species that are caught include pumpkinseed, carp, and bluegill. While no refuge permits are required, fishing at Iroquois Refuge requires a valid State fishing license. The NYSDEC publishes fishing seasons and limits annually.



The refuge provides a fact sheet pertaining to fishing which includes information on open and closed areas and other refuge-specific regulations. Bank fishing is permitted along Oak Orchard Creek where it passes under Route 63, Sour Springs Road, and Knowlesville Road. Anglers may access Oak Orchard Creek by canoe or other un-motorized boats between Knowlesville Road and Route 63. The most popular fishing area is Ringneck Marsh where fishing is permitted year round from the dike on the west side and from Sour Springs Road. Ice fishing is allowed December 1 through the end of February (conditions permitting) on Ringneck Marsh. Fishing areas are also open to frogging by club, hand, spear or hook during State seasons. Firearms are not allowed in the taking of frogs.

### ***Wildlife Observation and Photography***

Wildlife observation, including the observation of plants and other natural features, is the single most popular recreational use of the refuge. The refuge is a designated watchable wildlife site with numerous overlooks that include Cayuga, Schoolhouse, Ringneck, and Mallard. In addition to overlooks, Iroquois Refuge has several maintained trails including Kanyoo, Onondaga, Swallow Hollow, and Feeder Road. Refuge staff and volunteers conduct refuge tours and walks for schools and civic groups. The refuge partners with the Buffalo Audubon Society to offer public nature opportunities including bird walks, owl prowls, canoe tours, and woodcock walks.

The refuge receives more than 28,000 visits on the trails and overlooks each year. The majority of refuge visitors come during the spring, early summer and fall months to take advantage of favorable trail conditions and opportunities for viewing annual spring and fall bird migrations and enjoy the brilliance of New York's fall foliage. The refuge receives nearly half its annual visitation during the months of March and April. Refuge trails and roads are used during the winter months when snow conditions are conducive to cross-country skiing or snowshoeing.

The Service defines a quality wildlife observation experience on a national wildlife refuge as one that has the following attributes:

- Observations occur in a primitive setting, using safe facilities and provide an opportunity to view wildlife and its habitat in a natural environment.
- Observation facilities or programs maximize opportunities to view the spectrum of wildlife species and habitats of the refuge.
- Observation opportunities, in conjunction with interpretive and educational opportunities, promote public understanding of and increase public appreciation for America's natural resources and the role of the Refuge System in managing and protecting these resources.
- Viewing opportunities are tied to interpretive and educational messages related to stewardship and key resource issues.
- Facilities blend with the natural setting, station architectural style, and provide viewing opportunities for all visitors, including persons with disabilities.
- Design of observation facilities minimize disturbance to wildlife while facilitating the visitor's views of the spectrum of species found on the refuge.
- Observers understand and follow procedures that encourage the highest standards of ethical behavior.
- Viewing opportunities exist for a broad spectrum of the public.
- Observers have minimal conflict with other priority wildlife-dependent recreational uses or refuge operations.

### ***Environmental Education, Interpretation, and Outreach***

Environmental education, interpretation, and outreach are important tools that refuge staff uses to inform and remind the public about refuge issues and opportunities, such as bird migrations, seasonal habitat changes, and special events. The refuge provides slide shows, leads interpretive tours and hikes, creates educational exhibits, conducts activities and contests that offer hands-on learning opportunities, provides demonstrations and workshops, writes educational articles, and gives informational interviews. There are 6 interpretive kiosks and 16 panel/signs on the refuge to enhance visitor education and enjoyment. Over 2,700 people are reached through the refuge's environmental education and interpretation efforts annually. This includes both on and off-site, activities and does not count media or Web site hits.

Refuge education, interpretation, and outreach programs focus on assisting youth and adults with becoming more environmentally literate and action oriented. Five primary functions provide the framework for these goals: creating environmental awareness, knowledge, values, skills, and action. Environmental education is provided primarily to elementary and middle school students to augment classroom study. Through a partnership with Canisius College and the Canisius Ambassadors for Conservation, the refuge accommodated over 2,000 students in 2009. Additional students were taught offsite at school conservation field days, in classroom programs and at Earth Day celebrations.

Interpretation is a more informal method of teaching directed at casual audiences, such as individuals or families, who take part in programs on their own initiative rather than as part of a structured program. Interpretative programs often focus on awareness and knowledge in a fun and thought-provoking manner. Refuge outreach consists of communication with the public using a variety of methods. Refuge outreach goals aim to build a stronger base of public understanding, appreciation, and support of the refuge, Refuge System, and Service trust resources beyond that portion of the American public that visits the refuge. The refuge Web site ([www.fws.gov/northeast/iroquois](http://www.fws.gov/northeast/iroquois)) provides access to refuge information including visitor opportunities, special events, nature programs, wildlife, and management.

Refuge staff recognizes the critical link between public awareness of environmental issues and effective stewardship of the refuge, the Refuge System, and Service trust resources. Currently, refuge education, interpretation, and outreach programs focus on the following five audiences:

- Congress
- Conservation Organizations
- Communities surrounding the refuge, with a focus on school-age children and their educators, landowners, and local residents
- Communications media
- Corporations

The "100 by 100" campaign was developed to increase public awareness of the Refuge System by its 100<sup>th</sup> birthday which occurred on March 14, 2003.

Environmental education, interpretation, and outreach activities and tools the refuge utilizes include

- the annual Spring Into Nature celebration;
- slide shows;
- guided hikes highlighting major refuge themes and wildlife;
- National Fishing and Boating Day events;

- Earth Day activities;
- print and broadcast media, including the refuge’s web page;
- volunteer programs, including the Refuge Friend’s group;
- publications; and
- over 20 interpretative kiosks and signs.

Education, interpretation and outreach efforts at Iroquois Refuge focus on three general themes and their priority messages:

1. Iroquois Refuge
  - The refuge is a “good neighbor.”
  - The refuge is an enduring asset to the community.
  - The refuge is a Federal land base managed by the Service.
2. The Refuge System
  - Refuges are part of a national system comprising the world’s largest collection of land and water managed specifically for wildlife.
  - Refuges are national treasures.
  - Refuges are places where wildlife comes first.
3. Service Trust Resources
  - The refuge emphasizes management of threatened and endangered species.
  - The refuge is committed to providing resting, nesting, and feeding habitat for waterfowl, other migratory birds, and bird species of concern).
  - The refuge employs an ecosystem management approach with a focus on restoration and management of diverse wetlands, shrublands, grasslands, and biological diversity.

### **Finding of Appropriateness of a Refuge Use**

The six wildlife-dependent recreational uses discussed above (hunting, fishing, wildlife observation, photography, environmental education, interpretation) and the harvesting of fish and wildlife under State regulations have been administratively determined to be appropriate public uses of refuges, including Iroquois Refuge. All other existing and proposed uses must be evaluated by the refuge manager. The refuge manager must file a “Finding of Appropriateness of a Refuge Use” for each existing use that does not fall under the categories listed above, and each time a new use is proposed. When refuge managers find a use is appropriate, the use then must be determined to be compatible before it is allowed on the refuge. If it is determined that an existing use is not appropriate, the refuge manager will eliminate or modify the use as expeditiously as practicable. If it is determined that a new use is not appropriate, the refuge manager will deny the use and a compatibility determination will not be required. The Appropriate Refuge Use Policy clarifies and expands on the Compatibility Policy, which describes when refuge managers should deny a proposed use without determining compatibility. Table 3-24 shows Appropriate Determinations conducted for Iroquois Refuge. Appendix B provides additional information about the Appropriate Refuge Uses Policy.

**Table 3-24 Appropriateness Determinations**

<b>Appropriateness Determination</b>	<b>Appropriate</b>	<b>Not Appropriate</b>
Haying	X	
Jogging and Bicycling	X	
Walking and Hiking	X	
Cross-country Skiing and Snowshoeing	X	
Furbearer Management	X	
Berry, Fruit and Nut Collecting		X
Commercial Forest Management	X	

### **Compatibility Determinations**

Refuge managers must decide and determine if each public use is compatible with the purpose for which the refuge was established by writing a Compatibility Determination. Public uses on national wildlife refuges fall into two categories: priority uses and secondary uses. Priority uses, as defined by Congress, include hunting, fishing, wildlife observation, photography, environmental education and interpretation. All other public uses on the refuge are considered secondary uses. A list of Compatibility Determinations for the refuge is shown in table 3-25 and the entire written compatibility determination provided in appendix B. Priority uses are reviewed every 15 years and secondary uses are reviewed every 10 years.

**Table 3-25 List of Activities Determined Compatible on the Refuge**

<b>Compatibility Determination</b>	<b>Priority Uses</b>	<b>Secondary Uses</b>
Hunting	X	
Fishing	X	
Wildlife Observation	X	
Wildlife Photography	X	
Interpretation	X	
Environmental Education	X	
Furbearer Management		X
Walking and Hiking		X
Cross Country Skiing/Snowshoeing		X
Jogging and Bicycling		X
Commercial Forest Management		X

### **Activities not allowed on the refuge**

There are several activities that are not compatible with the purpose of the refuge and therefore are not allowed on refuge lands. These include snowmobiling, all-terrain vehicle (ATV) use, biking on trails (biking is allowed on Feeder Road), walking dogs off a leash, picking plants, camping, horseback riding, and campfires, just to list a few.



*Northern Goshawk*

## Management Direction and Implementation

- Introduction
- Background
- Refuge Goals, Objectives, and Strategies
- Goal 1. Refuge Impoundments
- Goal 2. Oak Orchard Creek
- Goal 3. Upland Habitats
- Goal 4. Visitor Services
- Goal 5. Hunting and Fishing
- Goal 6. Partnerships
- Other Management Actions

## **Chapter 4**

### **Management Direction and Implementation**

#### **Introduction**

This chapter describes an array of management objectives that work best toward achieving the refuge purposes, its vision, and the six primary conservation goals identified in chapter 1. We believe implementation of these objectives will also effectively address many conservation priorities of other Service, State, and regional conservation plans and the key issues raised during plan development as described in chapter 2.

This chapter also identifies “Other Management Activities” that do not specifically interconnect with any of the six goals developed for the CCP. For example, the strategies and actions related to cultural, archaeological and historic resources may not fit under habitat or public use goals, but are important nonetheless. Other Management Activities are described at the end of this chapter.

#### **Background**

Iroquois Refuge was one of the first Important Bird Areas (IBA) identified in New York State. This designation was prompted by the significant diversity of bird species supported by refuge habitats, especially wetlands. The wetlands of Iroquois Refuge support thousands of waterfowl during spring and fall migration. Refuge wetlands support a heron rookery and provide habitat for nesting bald eagles and for many bird species of special concern in the State of New York including the black tern. The refuge’s forested wetlands provide habitat for many songbirds of conservation concern as well.

National wildlife refuges are important for both rare and common species and generally provide habitat for high concentrations of birds. This underscores the role of refuges to provide places where wildlife comes first (NWRSIA 1997). National wildlife refuges are also models and demonstration areas for habitat management. To succeed in that mission, refuges need to engage the public in understanding and participating in the stewardship of refuge resources. Hunting, fishing, trapping, and wildlife viewing have long traditions in western New York, including in and around Iroquois Refuge. To ensure conservation and management of the resources entrusted to its care, the refuge needs to capture the interest and good will of traditional users and new visitors. With enhanced public outreach, interpretation, environmental education, and well-managed public use opportunities, traditional users and new visitors may become partners.

A refuge does not exist in isolation from its surrounding landscape. That is particularly true of Iroquois Refuge, located within the “Alabama Swamps” and in the heart of the Oak Orchard watershed. Habitats and wildlife populations are affected by land uses within the watershed including the effects of water quantity and quality. The refuge needs to expand its work with adjacent landowners, watershed residents and conservation partners within the basin to ensure a healthy, functioning refuge.

We believe this CCP provides the best approach to meet refuge challenges and opportunities. This CCP will result in an understanding of the refuge resources used by threatened and endangered species, migratory birds, and resident wildlife; the protection and enhancement of those resources; the protection of water quality; the restoration of refuge habitats; and the accessibility of the refuge to the public for compatible, wildlife-dependent public uses. The result is a set of goals, objectives and strategies related to key issues that will guide management of the refuge for the next 15 years. Students, interns, and volunteers, including Friends of Iroquois Refuge, are valuable partners in helping the refuge achieve the objectives set out in this management action.

Providing high quality migratory bird breeding, brood rearing, and migration habitat has been the primary objective of the refuge’s habitat management programs since its inception. At the same time, we have provided secondary uses through high quality recreational activities like hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation. Balancing these two principles is paramount to the refuge’s wildlife management and public use programs. Throughout this chapter we have maintained this balance by either continuing existing public recreation activities as they are currently managed or making changes that we feel will bring these activities in line with the Service’s “Wildlife First” principle.

The refuge is required to conduct written compatibility determinations for recreational and economic uses. Compatibility determinations evaluate potential impacts to refuge resources in relation to the purpose the refuge was established and the mission of the National Wildlife Refuge System. Compatibility determinations for recreational and economic uses in this CCP can be found in Appendix B. In developing compatibility determinations we considered the available research, historical interactions between refuge visitors and wildlife, and our best professional judgment. The disturbance impacts to wildlife as a result of public recreation have been documented in the scientific literature including Boyle and Sampson 1985, Burger and Gochfeld 1998, Gutzwiller et al. 1994, Kight and Swaddle 2007, to name a few. The field of animal behavior research, as related to human recreation, is relatively small and in need of further study. However, the available literature suggests that essentially all types of public recreation that have been studied may show some level of disturbance to wildlife.

Where quantitative information was lacking, we generally tried to keep potential wildlife disturbance to a minimum while still providing some level of high quality recreation. Ultimately, some level of wildlife disturbance will occur from certain public recreation activities on the refuge. However, if managed properly, this disturbance need not detract from our goal of providing high quality wildlife habitat for migratory birds and resident wildlife.

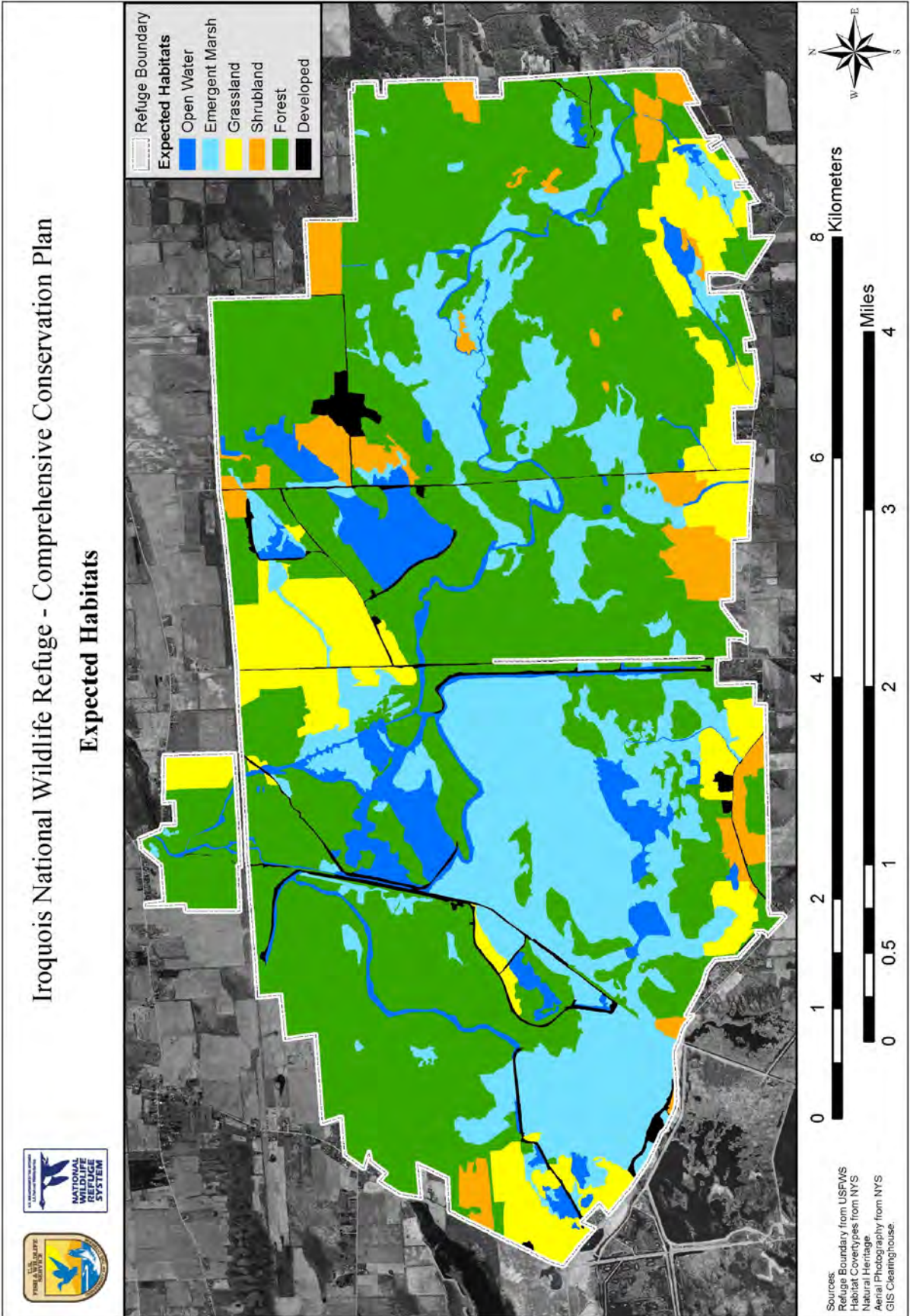
### ***Habitat Conditions***

Refuge habitat conditions will change in response to management decisions that focus on decreasing habitat fragmentation and restoring native habitats (table 4-1 and map 4-1). Refer to map 3-5 in chapter 3 for a visual comparison of expected habitats with current habitat conditions. Management of refuge impoundments will not change in respect to past management activities. Therefore, there will be no expected changes in the amount of open water and emergent marsh available to wildlife. Early successional habitat including grasslands and shrublands will increase slightly compared to the past as the refuge removes remaining hedgerows and improves connectivity between these habitats. Forest acres will increase more than any other habitat in response to the removal of 200 acres of non-native conifer plantations. Plantations will be replaced with native forest species best suited for individual sites. Some plantations that are in shrubland management areas will be converted to native shrub species as well.

**Table 4-1 Habitat Acres**

<b>Habitat Acres and Difference from Past Management</b>			
<b>Habitat</b>	<b>Past Management</b>	<b>Planned Management</b>	<b>Difference</b>
Open Water	823	823	0.00
Emergent Marsh	2,581	2,581	0.00
Grassland	1,048	1,073	25
Shrubland	526	539	13
Forest	5,402	5,570	168
Conifer Plantation	200	0.00	-200
Developed	248	242	-6
<b>Total</b>	<b>10,828</b>	<b>10,828</b>	

Map 4-1





***Public Access***

Prior to the completion of this CCP, visitors were required to stay on designated trails from March 1 through July 14 to limit disturbance during spring migration, nesting and brood rearing seasons. Visitors then were allowed to wander unrestricted from July 15 through the end of February. Recently, we have seen an increase in the number of visitors accessing off-trail areas of the refuge, particularly in the late-summer and fall. Additionally, visitors are increasingly accessing wetland areas which in the past were left relatively undisturbed.

Implementation of this CCP will change how unrestricted access is managed on the refuge. We will continue to allow unrestricted access in refuge uplands from October 1 through the end of February, excluding any sensitive areas such as bald eagle nesting sites, archeological sites, commercial facilities, construction areas, etc. Hiking and walking in and around wetland units will be restricted year round unless visitors are engaged in an authorized hunting, educational, or other special use activity. Restricting access to refuge wetlands will reduce/eliminate human disturbance when waterfowl and other migrating birds are using these wetlands to rest and feed. The refuge is a significant migration stopover area for waterfowl and other waterbirds and ongoing disturbance in impoundments directly impacts our ability to meet our wetland habitat objectives and adds to the cumulative impact of our waterfowl hunting program.

**Refuge Activity, Hunting, and Special Use Fees**

Refuge lands offer many recreational opportunities. However, the costs to maintain those activities continue to increase while revenues continue to decline. Maintaining gravel roads and other facilities and structures requires increasing staff time and financial resources. To help offset the increasing administrative costs associated with managing and overseeing recreational uses, we will continue collecting fees associated with hunting activities and special use permits. In addition, we will modify the hunting fee program. Eighty percent of revenues generated by the collection of fees for refuge programs will be retained to enhance visitor services and maintain recreation facilities at Iroquois Refuge. We use the remaining 20 percent in the Northeast Region for region-wide projects to improve and maintain visitor services, address visitor and staff health and safety, and pay for overhead associated with the recreation fee program and the Service in general.

The refuge will implement a permit system where a general permit will be available for hunting upland game, other migratory birds, and big game. An application fee will be charged for all controlled hunts that involve a lottery system which currently includes the spring turkey hunt and waterfowl hunting. The refuge will also investigate the effectiveness and feasibility of conducting a lottery draw for high use days during the deer firearm season.

Golden Age Passport holders, Golden Access Passport, and certain America the Beautiful Interagency Senior Pass Holders will still be entitled to half-price hunting fees under this management action. The refuge will continue to collect special use permit fees for haying; an activity that supports management of our grasslands. Currently, these permits are based on a minimum bid system that depends on how many acres are available for haying. We may add or adjust activity, hunting, and special use permit fees over the 15-year period of this plan to reflect changes in administrative costs, management goals, or policy.

Fees will not be charged for certain programs including Refuge Youth Hunt Programs, special events like Spring into Nature and the Youth Fishing Derby, and interpretive programs conducted by the Iroquois Observations (IO) program and refuge staff.

In addition to the fee program mentioned above, we anticipate that the Friends of Iroquois Refuge will continue to support the refuge using a portion of the funds received from membership dues, the Flyway Nature Store, fund raising activities, and grants. Visitors will be encouraged to make voluntary contributions at collection boxes at the visitor contact station and to the Friends group to support special events.

### **Visitor Contact Station and Administration Building**

The visitor contact station, located within the refuge office building has exhibits and information about the refuge including common wildlife species and wildlife-dependant recreational opportunities. The 5,000 square foot visitor contact station and administration building currently house six refuge employees and two NYSDEC employees. The visitor contact station receives approximately 6,000 visits per year; most during the months of March, April, and May. A 60-seat auditorium/multipurpose room serves as a meeting room and can accommodate school groups, civic groups, and families for interpretive and environmental education programs. The Flyway Nature Store, operated by Friends of Iroquois Refuge, is also located within the visitor contact station.

Regional Director's Orders No. 06-02 established a system to co-locate Service offices that are in close proximity to each other. It is expected that co-location will provide improved service to customers and maximize efficiencies and cost savings, while at the same time enhancing coordination and cooperation among the various Services resource programs and administrative support functions. Co-location is a clear step to minimizing space and utility costs and increasing cross-program collaboration.

We will co-locate the Lower Great Lakes Fish and Wildlife Conservation Office currently located in Amherst, New York with a new visitor contact station and administration building at Iroquois Refuge. The building will be developed in accordance with Service standard design facilities (Figures 4-1 and 4-2). The building will be approximately 10,609 square feet and include 5,484 square feet for administration and 5,125 square feet for the visitor contact area. The building will include a sales outlet for Friends of Iroquois Refuge exhibit hall, multi-purpose room, conference room, and offices to house staff from refuges, fisheries, and NYSDEC.

The new building will be created by adding on to the existing building. The existing portion will be remodeled to serve as the visitor contact section of the new building. An architectural and engineering firm will be hired to develop a conceptual design that will blend the existing building in with the new, standard design. The new portion of the building will be placed in an area that has already been disturbed when the current building was built in the 1970s. As we move forward with the design of the building we will be looking at alternative energy sources to reduce consumption of petroleum products to heat buildings as well as electricity to power the building. We will investigate the possibility of geothermal heating, a wind (small single/double) turbine, and solar energy.

**Figure 4-1 Conceptual Drawing of New Administrative Building**



**Figure 4-2 Conceptual Floor Plan for New Administrative Building Facilities**



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

The following section identifies objectives and strategies to achieve each of the six refuge goals. While most strategies are specific to each goal, a few are applicable to multiple or all refuge goals. These are listed separately below.

### **Strategies that apply to all goals in the CCP:**

- Continue to recruit, hire, and train students under the Student Career Experience Program and Student Temporary Employment Program to assist with all refuge goals, programs, and operations.
- Continue to recruit and train interns and volunteers to assist with all refuge goals, programs, and operations and provide housing where possible.
- Continue to encourage a broad-based Friends of Iroquois Refuge group that supports refuge goals, programs, and operations.
- Hire a permanent full-time Law Enforcement Officer (GS-0025-9) to provide visitor safety, protect resources, and ensure compliance with refuge regulations.
- Hire a permanent full-time Maintenance Worker (WG-4749-8).
- Annually inspect approximately 20 percent of the refuge boundary to ensure signs are visible, readable, have not been vandalized, and are in good overall condition. Annually review that non-hunting areas are properly posted.
- Reach out to local communities and schools to build awareness, understanding, and support for refuge biological and land protection programs and activities and demonstrate the role of Iroquois Refuge in the Refuge System.

### **Strategies that apply to all objectives under Goals 1, 2, and 3:**

- Continue to develop a comprehensive GIS database for the refuge and the surrounding landscape to map and analyze habitat types and conditions, rare species populations, other ecological features, land use issues, and other relevant information for long-term planning and monitoring of resources.
- Continue to monitor and control non-native invasive species using a combination of mechanical, biological, and chemical techniques to restore native plant communities and healthy ecosystems; refine the protocol for prioritizing mapping, monitoring, and control of invasive species to have the greatest impact on the highest priority habitat objectives.
- Within 5 years evaluate all data from baseline surveys of birds, amphibians, reptiles, mammals, plants, mussels and fish, and other species to identify additional baseline surveys needed to confirm presence/absence in respective habitat types and to address management questions.
- Continue current inventorying and monitoring protocols, which are listed under the strategy sections for each habitat objective. Within 2 years of the CCP's completion, develop more inventory and monitoring protocols as necessary based on recognized needs in the HMP and include in the IMP.
- Over a 15 year period, systematically remove the majority of artificial nest structures as appropriate. Wood duck nesting data should be evaluated to determine which boxes are not used and which are used by undesirable species. These boxes should be removed sooner and the remainder phased out. Monitoring of wood duck boxes should be conducted by volunteers.
- Evaluate bluebird nest boxes to determine if boxes should be moved in response to habitat changes that result from implementation of the plan. Coordinate volunteers to maintain boxes.

- Coordinate volunteers to maintain purple martin colony structures which are used as an educational/interpretive discussion point.
- Hire one permanent full-time Biological Technician (GS-7).
- Hire one permanent part-time Biological Technician (GS-5. 0.5 FTE).

**Goal 1. Provide high quality freshwater wetland migration stopover and breeding habitat for waterfowl, marsh birds, shorebirds, and bald eagles in refuge impoundments through water level control.**

***Background***

Iroquois Refuge lies within the ACJV; one of the original joint ventures formed under the NAWMP. The ACJV initially focused on protecting and restoring habitat for the American black duck and other waterfowl species in the Atlantic Coast region of the United States. Much of its support is generated through grants provided by the NAWCA. While maintaining a strong focus on waterfowl, the ACJV mission has evolved to include the conservation of habitats for all birds. At the regional scale the ACJV is working on integrated planning efforts in eight BCRs. An important part of this planning effort is the development of Focus Area Plans. Focus Areas are discrete and distinguishable habitats or habitat complexes that are regionally important for one or more priority species during one or more life history stages. The Tonawanda-Iroquois-Oak Orchard Focus Area Plan (ACJV 1991) identified the rehabilitation of Mohawk and Oneida Pools on Iroquois Refuge as a high priority project. The Service prepared an EA specifically for this project in 2002 (Service 2002). The initial phase of the project is complete; three new wetland sub-units in the Mohawk Pool provide significant improvement in wetland habitat.

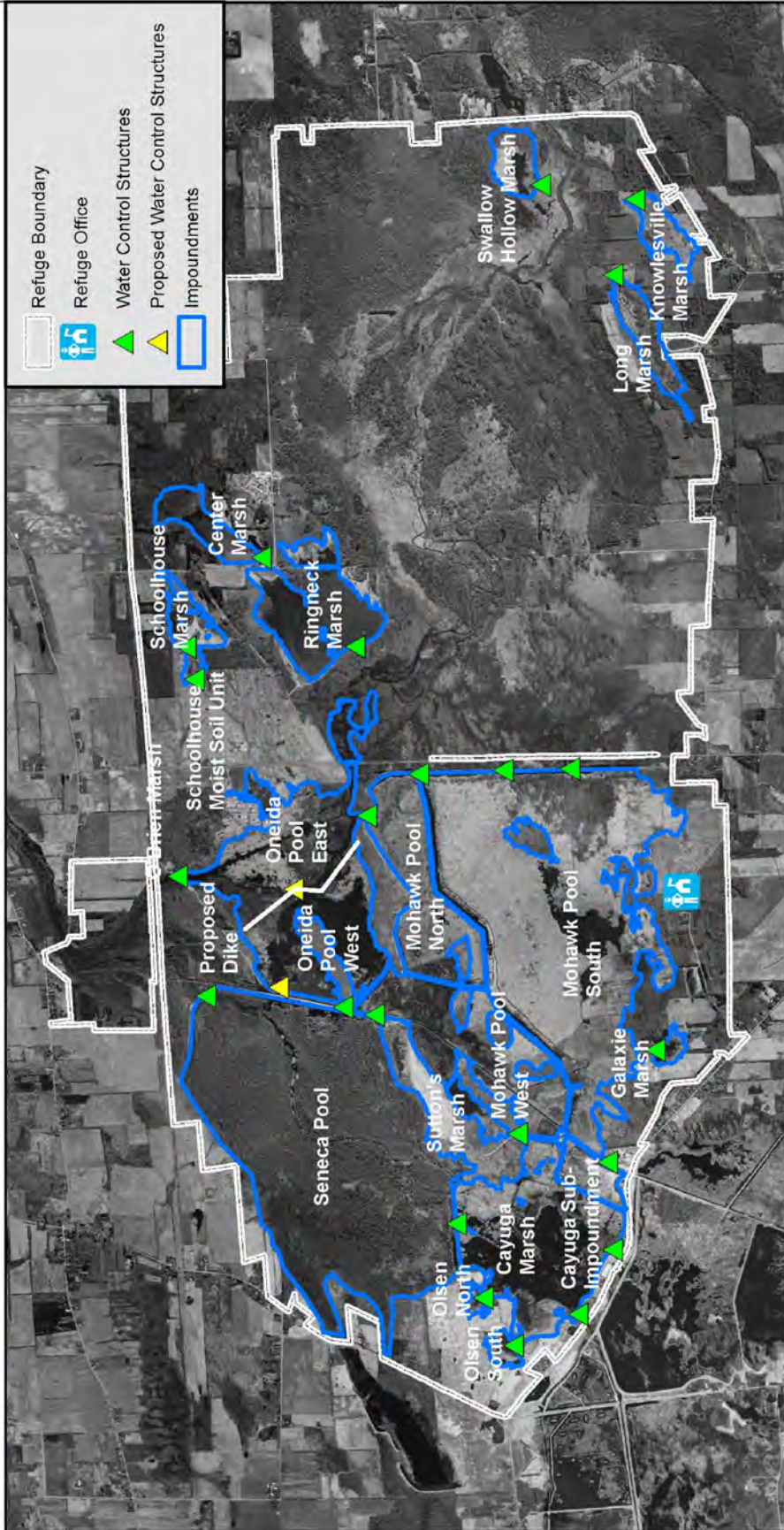
Iroquois Refuge lies within BCR 13, the Lower Great Lakes/St. Lawrence Plain (map 1-5). BCR 13 encompasses the vast, low-lying lake plain region surrounding Lake Erie and Lake Ontario, the St. Lawrence River Valley, low-lying regions between the Adirondack Mountains and the Laurentian Highlands, and upper regions of the Hudson River Valley. In addition to providing important lakeshore habitats and associated wetlands, this region was originally dominated by a mixture of oak-hickory, northern hardwood, and mixed-coniferous forests. Nearly 95 percent of the original habitat types have been lost and the landscape is now dominated by agriculture with interspersed wetlands and remnant forest stands. Bird Conservation Region 13 plays a critical role in providing important staging and migrating habitat for birds during the spring and fall migration (Hartley 2007).

Iroquois Refuge is part of the 19,000-acre Tonawanda-Iroquois-Oak Orchard Wetland Complex. The creation of the Barge Canal System, beginning in the early 1800s, and the draining of wetlands for agriculture and other uses dramatically changed the hydrology of the “Alabama Swamps,” as this area was known. The area continued to flood each spring creating thousands of acres of shallow wetlands, but the spring waters would recede quickly and only the lowest areas remained wet through the summer. Once the refuge was established, farm ditches were plugged and several impoundments were created to allow managers to control water levels. Water level management provided wetland habitat throughout the year and restored variability to the hydrology of the region.

There are currently 19 wetland impoundments on the refuge (map 4-2). Fifteen impoundments are actively managed. These impoundments encompass just over 4,000 acres of diverse wetland habitat. Because of the changes in topography within individual impoundments, often a single impoundment will help meet multiple objectives within the same year. Water levels are adjusted within and between years to mimic natural hydroperiods associated with unaltered wetlands and to provide the optimal habitat conditions for wetland dependent wildlife species.

Map 4-2

## Iroquois National Wildlife Refuge - Conservation Comprehensive Plan Impoundments and Water Control Structures



Sources:  
Aerial Photos from NYS  
GIS Clearinghouse  
Refuge Boundary, Office  
Impoundments, and Water  
Control Structures from USFWS

Each impoundment is drawn down approximately every 3 to 6 years; a few impoundments are scheduled for drawdown every year. These drawdowns mimic a drought in a natural marsh and allow the re-growth of natural vegetation in a “drawdown cycle.” In the first year of the cycle, water is drained from the impoundment after the peak of waterfowl migration (early spring). The relatively cool soils in April and May favor the germination of annual moist soil plants such as sedges, smartweed, and wild millet. The seeds of these plants provide waterfowl food when the impoundment is re-flooded in the fall. Organic material comprised of dead marsh vegetation accumulating over several years is exposed to oxygen during the drawdown and thus oxidizes (breaks down) and becomes nutrients for the growth of new marsh plants. As more of the water evaporates the bottom “firms up” and provides a rich bed for the new plant roots. Some perennials, such as cattail and bur-reed, germinate and grow. These plants usually will remain in the understory beneath the annual plant species. These perennials play an important role in future years of the cycle. If the water is drained off later in the year when the soil is warmer (June to August) it is likely that purple loosestrife will germinate. Purple loosestrife has become less of a problem due to expanding populations of *Galerucella* beetles, but the refuge still tries to keep loosestrife germination to a minimum.



*Eastern Box Turtle*

USFWS

The second year of the cycle is a year of growth and re-colonization. Residual seeds from the annuals provide a rich carbohydrate food source for the northward migrating waterfowl in the spring. The dead and partially decomposing stalks of the first year plants become a food source for many kinds of invertebrates. Invertebrates provide a critical protein source for migrating birds, particularly female ducks that will soon lay eggs. The cattails and bur-reed grow vigorously in the second year and the impoundment quickly becomes colonized by muskrats which utilize the perennials as both a food source and a material for construction of their houses. Habitat cover provided by perennial vegetation interspersed with new open water areas created by increased muskrat activity provides ideal conditions for waterfowl broods and migrating waterfowl.

In subsequent years of the cycle the interspersed small, irregular open water areas becomes greater as the perennials are used by muskrats and are stressed by higher, more constant water levels. Greater

interspersed open water results in habitat conditions suitable to marsh-nesting birds. Initially, the dense vegetation is ideal for rails. As it becomes more open, it becomes ideal for least bitterns and as the impoundment continues to open, black terns may begin to nest. The terns seem to favor old, sunken muskrat houses as nesting platforms. Eventually conditions become too open and the habitat value is greatly reduced for waterfowl and most marsh nesting species. The drawdown cycle starts over when refuge managers determine that habitat value is relatively low. A typical cycle may last three to six years.

Furbearer management will be conducted first and foremost as a tool to maintain habitat and keep the predator-prey balance. The implementation of a regulated furbearer management program on the refuge also affords a potential mechanism to collect survey and monitoring information, or contribute to research on furbearer (and other wildlife) occurrence, activity, movement, population status, and ecology. The section titled "Furbearer Management Compatibility Determination" in Appendix B provides additional information on how this program will be administered. By maintaining a trained and experienced group of trappers, the Service can utilize their skills and local knowledge to perform or assist with valuable management or research functions. Trappers that participate in the refuge program would provide assistance with the implementation of structured management objectives, such as alleviation or reduction of wildlife damage conflicts, negative species interactions, and habitat modifications. Refuge trappers typically have a stake in proper habitat and wildlife conservation and protection of the ecological integrity of the refuge so that their activity can continue. Accordingly, trappers are often valuable assets to the refuge manager in terms of providing onsite reports concerning the fundamental status of habitat, wildlife, and refuge conditions.

Removal of harvestable furbearers will have a beneficial effect by protecting refuge infrastructure (e.g., dikes and water control structures) from damage, thus ensuring management capabilities over wetlands.

#### **Strategies that apply to all objectives under Goal 1:**

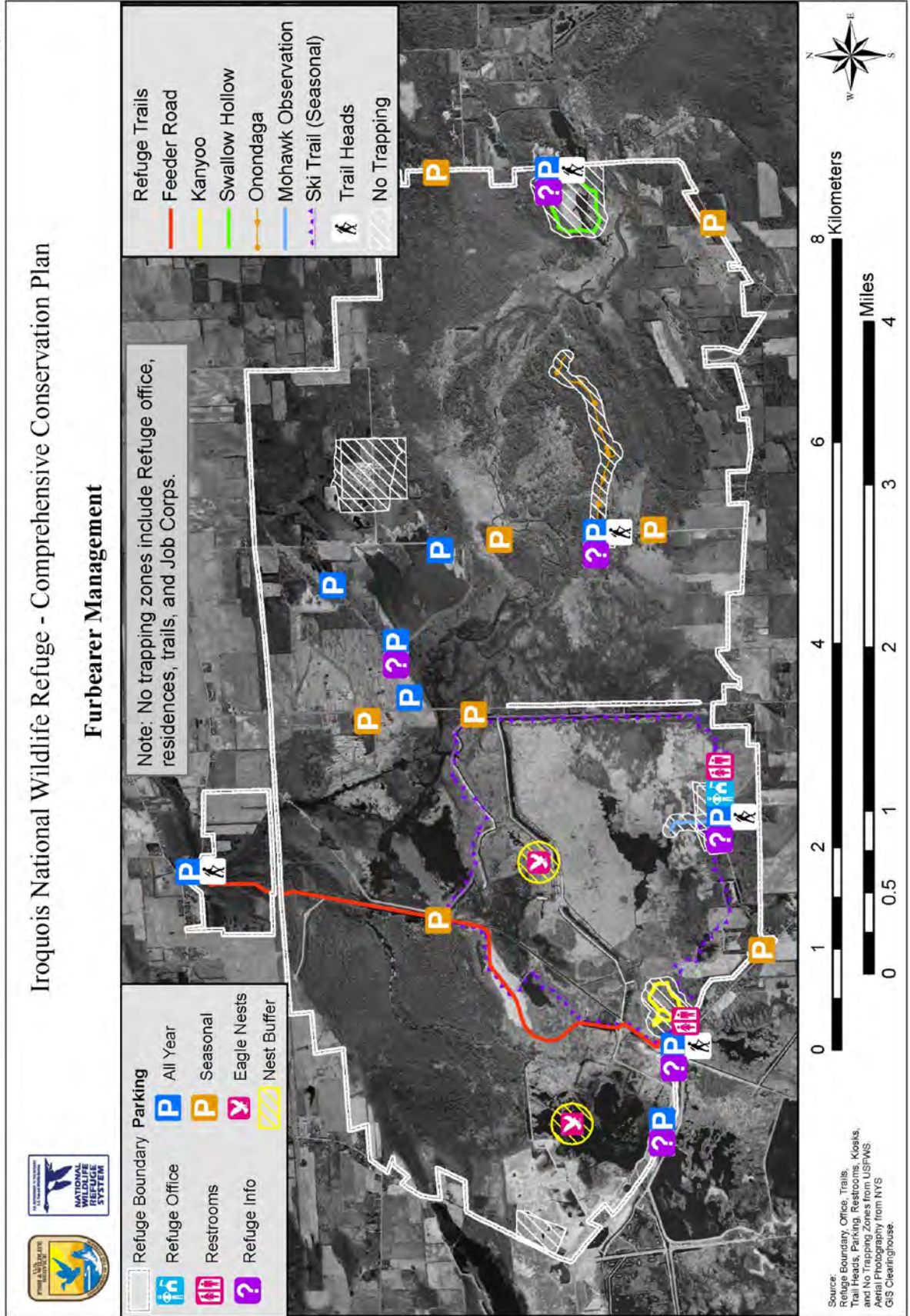
- Remove and prevent mute swans from becoming established on, or becoming regular inhabitants of, the refuge.
- Continue to allow management of marsh furbearers throughout the entire refuge and restrict muskrat trapping to marshes that have a large percentage of cattail coverage (map 4-3).
- Continue to conduct furbearer management in marshes at the completion of the refuge's waterfowl hunt season by allowing up to 50 permits issued annually.
- Continue to charge \$50.00 for the marsh furbearer management permit.
- Limit trappers to 25 traps each to reduce trapper competition while still maintaining furbearer populations at desired levels.
- Conduct annual counts of muskrat houses to ensure sustainable populations are retained for refuge needs and base removal of animals on annual numbers. After annual evaluation, determine which marsh(s) to open.
- Complete bathymetry mapping of refuge impoundments to better understand what the elevation changes are to ensure that the refuge is achieving appropriate water depths to meet its objectives.

#### ***Objective 1.1 Emergent Marsh – Migrating Waterfowl***

Each year, provide a minimum of 800 acres of waterfowl stopover habitat in mid-March through early May (spring migration) and again in late September to early November (fall migration) consisting of shallow flooded wetlands (less than 18") dominated by annual moist soil vegetation such as sedges, *Bidens spp.*, smartweed, and wild millet.



Map 4-3



### **Rationale**

Objective 1.1 will benefit many of the 20,000 ducks that pass through the refuge during migration including several waterfowl species listed as priorities (highest, high, or medium) in the BCR 13 Plan: American black duck (highest), northern pintail (high), blue-winged teal (medium), and mallard (medium). The black duck and northern pintail are species of management concern for the Service in the northeast region and are also listed in the New York Wildlife Action Plan (NYWAP) as species of greatest conservation concern. The New York IBA program listed a large concentration of migrating waterfowl as important criteria in designating Iroquois Refuge as an IBA.

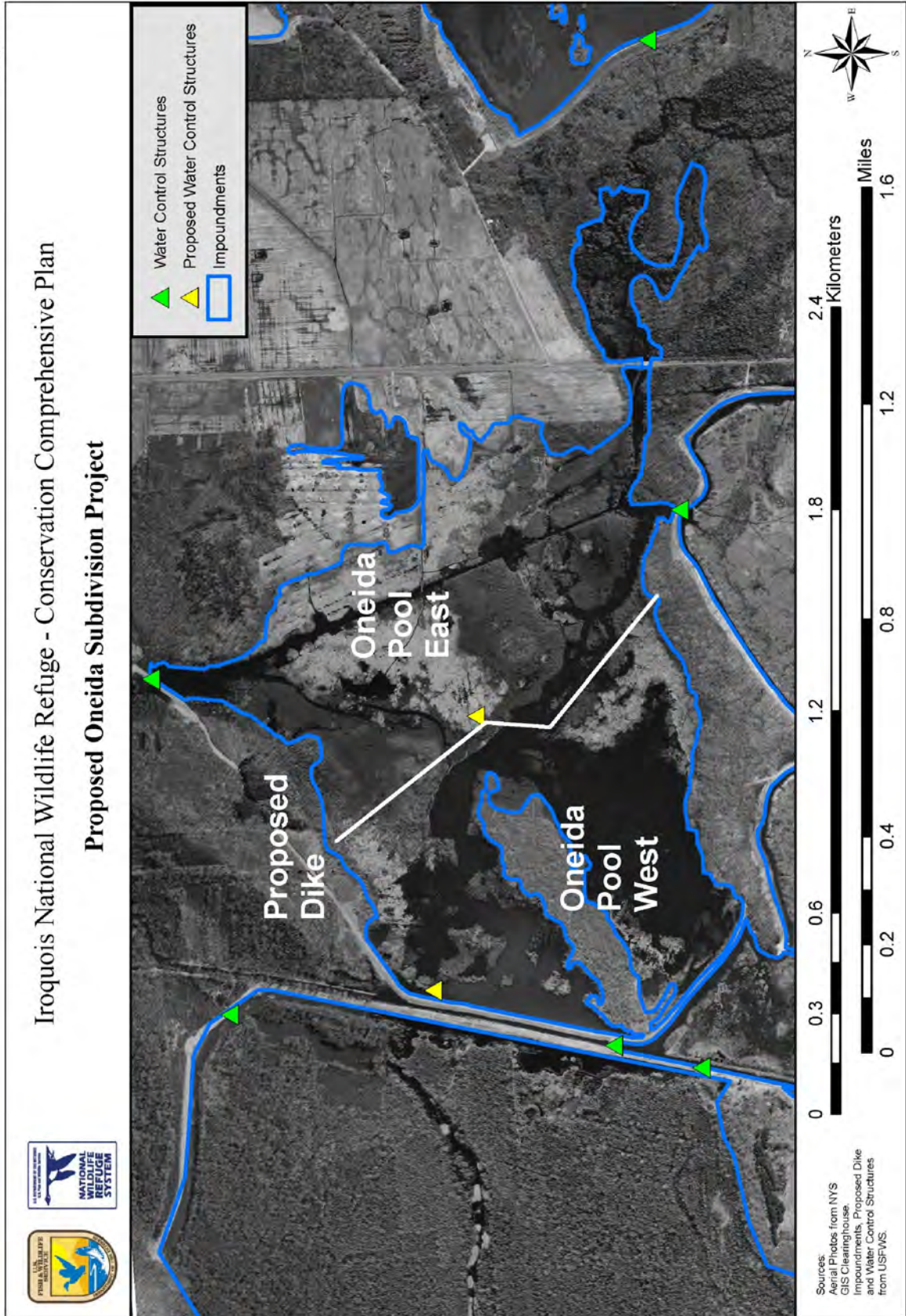
Fall migrant waterfowl require large amounts of carbohydrate rich foods to prepare them for their migration to the wintering grounds and also to replace the large amounts of energy needed to sustain them as cooler fall temperatures drain their energy reserves. Moist soil annual seeds produced as a result of wetland drawdowns provide a readily available source of carbohydrates. At Iroquois Refuge, these drawdowns are conducted in the spring of the year to ensure the greatest amount of annual vegetation and highest species diversity will result. Most annual species need a minimum of 60 days growing period to produce seeds. Prior to fall migration, wetlands that have been drawn down are shallowly re-flooded in preparation for the arrival of fall migrant waterfowl. Water levels are kept to 18" or less as this depth has been found to provide the best foraging habitat for most waterfowl species. Waterfowl will forage on these areas until they leave to continue their fall migration or until ice conditions force them to move to open water elsewhere. In some cases, water is not available in the fall to allow flooding of drawn down wetlands. When this happens, these areas are shallowly re-flooded over the winter and early spring as melt waters become available. These shallow wetlands provide habitat for migrating waterfowl in the spring of the year.

Spring migrant waterfowl, particularly females, require large amounts of protein rich foods to prepare them for the remainder of their northward migration and to provide them with the nutrition necessary to successfully nest. Hens gather this protein by feeding heavily on aquatic invertebrates on the wintering grounds and on feeding areas along their migration corridors. Invertebrate populations thrive on the residual annual vegetation left over from the previous year's drawdown and invertebrates emerge as soon as temperatures rise enough to melt the ice. Additionally, seeds produced by these annual plants during the drawdown year are often still available the following spring to northward migrating waterfowl and provide a carbohydrate-rich food source that supplements the protein being gathered while feeding on invertebrates.

Iroquois Refuge is an important spring migratory stopover area for many species of waterfowl in the Atlantic Flyway as it contains a variety of wetland types and sizes. Active wetland management, including drawdowns and subsequent shallow flooding, allows the refuge to provide the best possible migration habitat for spring migrant waterfowl. Wetlands that have undergone a drawdown in the previous year and are shallowly flooded (less than 18") in the spring are of particular importance to waterfowl during spring migration.

The goal of the refuge water management program is to provide high quality functioning wetlands that supply optimal stopover and breeding habitat for waterbirds and bald eagles. This program requires the manipulation of wetland water levels to provide high-energy plant and invertebrate foods and structural habitat diversity for feeding, resting, and breeding waterfowl and other migratory birds (Service 2005b). Waterfowl need appropriate nesting cover and substrate, as well as quality foraging areas. We will subdivide Oneida Pool into two smaller, more manageable impoundments (map 4-4) and also add an additional water control structure to increase the capacity to transfer water out of the impoundment during periods of high water.

Map 4-4



Oneida Pool is the second largest emergent marsh impoundment on the refuge. This impoundment contains uneven topography resulting in both large areas of open water and large areas of dense, monotypic cattail (*Typha* spp.). Neither of these habitat types is desirable for refuge objectives. We currently manage for lower water levels to reduce the areas of open water area but under the current conditions this also increases the area of dense, monotypic cattail. Managing water levels higher has the opposite effect. Neither management strategy provides overall improved wildlife habitat conditions. Over time, the areas of dense cattail are built up by sedimentation and decay of organic matter. This eutrophication further reduces the quality of the marsh for objective wildlife.



Oneida Pool

USFWS

Generally, dense stands of monotypic cattail are managed by increasing water levels and allowing water stress and muskrat foraging to reduce the amount of cattail. Additionally, mechanical means such as mowing, disking, burning, and chemical spraying can be used to control cattail. Past efforts to control the dense cattail stands in the higher elevation areas of Oneida Pool through increased water levels and burning have been unsuccessful. Mowing and disking in Oneida Pool can only be done in a small, previously farmed area due to the extensive tree stump and log debris covering the remaining areas. Chemical control has not been attempted because Oneida Pool is extremely large and a management strategy to control cattail stands that requires spraying such a large area makes chemical control undesirable.

To subdivide Oneida Pool, an approximately 4,000-foot dike will be built in a generally north-south alignment which will essentially divide the area in half along an existing elevation/vegetation contour. The area to the west of this dike is generally lower with more open water and will be managed with lower water levels. The area to the east of the dike, which is dominated by dense cattail, will be managed with slightly higher water levels to allow muskrats and water stress to thin out the cattail stands. Care will be taken to not increase the frequency of flooding to the east of the impoundment. The new dike will be built

to a height that is lower than the current emergency spillway in Oneida to allow high water to spill over the new dike from east to west. A new water control structure will be added to Oneida Pool to allow greater transfer of water from Oneida to the Feeder Ditch. This will help to alleviate problems with flooding during high water events.

**Strategies:**

- In impoundments where robust perennial emergent vegetation makes up less than 40 percent of the total wetland acres, conduct early spring drawdowns and subsequent water level manipulations to promote the growth of annual wetland plants and minimize germination of perennial emergent vegetation. Percentage of emergent vegetation should be determined in the late fall/early winter with consideration given to expected impoundment conditions the following spring.
- Re-flood drawn down impoundments to coincide with waterfowl migration chronology.
- If necessary, induce physical/chemical disturbance to set back succession and promote growth of annual moist soil vegetation.
- Continue to implement the 3 to 6 year drawdown cycle through water level controls.
- Complete Mohawk/Oneida Marsh Restoration project with construction of Oneida dike.
- Incorporate all suggestions below into the IMP and Strategic Habitat Conservation Model.
- Continue to record and maintain logs of the proposed and actual water levels for each impoundment (e.g., 2005 proposed, 2005 actual, 2006 proposed).
- Continue to collect bathymetry data on impoundments.
- Continue to monitor the response of annual moist soil vegetation after each drawdown.
- Create and implement a protocol to monitor waterfowl trends during spring and fall migration.
- Work with conservation partners to monitor waterfowl use of refuge impoundment habitats and enter the data into [www.ebird.org](http://www.ebird.org).
- Monitor the response of purple loosestrife to herbivory by *Galerucella* beetles.

***Objective 1.2 Emergent Marsh – Spring Migrating Geese***

Each spring, provide a minimum of four patches of roosting habitat at least 50 acres in size, totaling at least 300 acres, for 75,000 or more migrating Canada geese from mid-March to May. Roosting habitat should consist of wetlands where open water makes up 50 percent or more of the wetland area.

**Rationale**

Over half of the refuge is wetland (6,200 acres) with 4,000 of these wetland acres contained in 19 managed freshwater impoundments. Water levels are adjusted within and between years to mimic natural hydroperiods associated with unaltered wetlands to provide a variety of feeding, nesting, brood rearing, and resting habitats for migratory birds and resident wildlife. The interspersed open water and aquatic and emergent plant communities provides resting and feeding habitat for over 120,000 waterfowl annually. The thousands of geese that migrate through the area each spring spend their day feeding in cornfields in the extensive agricultural lands surrounding the wetlands. The geese feed on waste corn left from the previous year's harvest before a new crop is planted later in the spring. At night the refuge serves as a secure roosting area away from predators. The flocks of geese using the refuge include birds from the Atlantic and Southern James Bay populations as well as geese from the resident population. Large numbers of resident geese are perceived to cause substantial resource and socioeconomic problems across

the region, necessitating control programs. However, the Atlantic and Southern James Bay populations are of conservation concern because of significant population declines and are listed as highest priority in the BCR 13 Plan.

Large wetlands with substantial amounts of open water provide ideal roosting areas for Canada geese. The geese roost in these areas where they are safe from terrestrial predators. Additionally, these wetland areas provide the birds with another food source to compliment the high carbohydrate waste grains that they are feeding on in fields near the refuge. Iroquois Refuge was created in part for its value as a spring migration stopover area for Canada geese. To this day, tens of thousands of geese roost and feed on the refuge during spring migration. Smaller numbers use the refuge during fall migration and a few hundred geese spend the summer months breeding on the refuge.

**Strategies:**

- Manipulate/maintain impoundment water levels greater than 18" to control the germination or expansion of perennial emergent vegetation.
- Continue to provide a 50:50 mix of water and vegetation.
- Continue to record and maintain logs of the proposed and actual water levels for each impoundment (e.g., 2005 proposed, 2005 actual, 2006 proposed).
- Continue to collect bathymetry data on impoundments.
- Establish a monitoring protocol to evaluate changes in wetland vegetation composition.
- Limit visitor access near roosting areas to minimize disturbance.
- Continue to provide spring roosting habitat with an emphasis on the Atlantic and Southern James Bay Canada goose populations.

***Objective 1.3 Emergent Marsh – Deep Water Breeding Marsh Birds***

Each year, provide a minimum of 800 acres of habitat for breeding marsh birds that use deeper water areas with specific emphasis on black tern, pied-billed grebe, and least bittern. Target a 50:50 mix of vegetation and open water (hemi-marsh) with an average water depth of 18 to 20" and at least three muskrat lodges per acre. Additionally, this habitat should be provided in a minimum of three patches at least 100 acres each.

**Rationale**

Weller and Spatcher (1965) found the maximum number and diversity of marsh birds occurred in wetlands with a well interspersed vegetation cover to water ratio of 50:50. This habitat type is usually referred to as a "hemi-marsh". At Iroquois Refuge hemi-marsh habitat has been found to support robust populations of breeding marsh birds. This habitat usually occurs during the middle 2 or 3 years of an average drawdown cycle. Wetland management on most refuge impoundments is designed to provide this habitat type.

Black tern, pied-billed grebe, and least bittern are all priority species (medium) in the BCR 13 Plan and are species of greatest conservation concern in the NYWAP. The black tern is listed as an endangered species and pied-billed grebe and least bittern are listed as threatened in New York. The abundance of these three breeding species was included as important criteria in designating the Iroquois Wetlands Complex as an IBA in New York. The New York Natural Heritage Program describes the Iroquois deep emergent marsh as a significant ecological community.

Pied-billed grebe, least bittern, and black tern are generally found in the deeper areas of hemi-marsh habitat with slightly more open vegetation. This habitat type allows these species more access to their preferred food resources and the optimal conditions for foraging. These species swim (pied-billed grebe), fly, and dive (black tern), or grasp vegetation along the edge of open water (least bittern) to forage, thus allowing them to use deeper water areas of the marsh. Conversely, species such as American bittern and Virginia rail are usually associated with shallower water areas supporting a slightly more robust vegetation component with less open water. These species stand in water to forage, thus restricting them to areas where water levels are only a few inches deep.

**Strategies:**

- Continue to maintain flooded conditions with an average water depth of 18 to 20” where the coverage of perennial emergent vegetation is greater than 60 percent of the unit.
- Continue to implement the 3 to 6 year drawdown cycle through water level control.
- Continue to record and maintain logs of the proposed and actual water levels for each impoundment (e.g., 2005 proposed, 2005 actual, 2006 proposed).
- Continue to survey and inventory muskrat houses.
- Continue to collect bathymetry data on impoundments.
- Continue to conduct marsh bird surveys in cooperation with NYSDEC.
- If necessary, induce physical/chemical disturbance to create additional openings when water manipulation and muskrat activity are not providing these openings.

***Objective 1.4 Emergent Marsh – Shallow Water Breeding Marsh Birds***

Each year, provide a minimum of 400 acres of habitat for breeding marsh birds that use shallow water areas with an emphasis on American bittern and Virginia rail. Target a 70:30 mix of vegetation and open water with an average water depth of 10 to 12". Additionally, this habitat should be provided in a minimum of two patches at least 50 acres each.

**Rationale**

The American bittern is a high priority species in the BCR 13 Plan, the NYWAP, and the NAWMP. The Virginia rail is a medium priority in BCR 13. See the rationale under Objective 1.3 for habitat requirements of selected marsh bird species.

**Strategies:**

- Continue to maintain flooded conditions with an average water depth of 18 to 20” where the coverage of perennial emergent vegetation is between 80 percent and 100 percent.
- Continue to implement the 3 to 6 year drawdown cycle through water level control.
- Continue to record and maintain logs of the proposed and actual water levels for each impoundment (e.g., 2005 proposed, 2005 actual, 2006 proposed).
- Continue to survey and inventory muskrat houses.
- Continue to collect bathymetry data on impoundments.
- Continue to conduct marsh bird surveys in cooperation with NYSDEC.

### ***Objective 1.5 Emergent Marsh – Waterfowl Brood Rearing***

Each year, provide a minimum of 400 acres of waterfowl (mallard, blue-winged teal, and wood duck) brood rearing habitat consisting of 40 percent to 80 percent vegetative cover with an average water depth of 10 to 20". This habitat should be provided in a least four patches 50 acres or greater each.

#### **Rationale**

Breeding (brood-rearing) habitat for mallard, blue-winged teal, and wood duck is a high priority in the BCR 13 Plan and in the NAWMP. Waterfowl broods require habitat that provides an abundance of food (primarily protein) and safety from predators. At Iroquois Refuge these needs can be met within impoundments in a hemi-marsh stage. Hemi-marsh habitat provides needed cover through the interspersed of robust perennial vegetation and open water allowing ducklings to forage on aquatic invertebrates while never being very far from adequate cover. The presence of both emergent and submergent vegetation in these wetlands provides the necessary substrate for invertebrate reproduction and subsequently provides ducklings with the protein-rich food resources necessary for their growth and survival.

Many duck species found at Iroquois Refuge nest in grasslands. Some nest sites can be a significant distance from water (> one mile). When a brood hatches the hen leads the ducklings to a wetland area where they can find food and safety. This overland trip from nest site to wetland has been found in some studies to result in a significant loss of ducklings (Dzubin and Gollop 1972). Providing brood rearing habitat adjacent to nesting grasslands should help reduce some of this duckling mortality. Impoundments used to meet Objectives 1.3 and 1.4 may also fulfill this objective, particularly if they are close to waterfowl nesting habitat.

#### **Strategies:**

- Where the coverage of perennial emergent vegetation is >80 percent, maintain flooded conditions with a minimum 18 to 20" water depth.
- When possible, locate brood rearing habitat adjacent to waterfowl nesting cover (grasslands).
- If necessary, induce physical/chemical disturbance to reduce vegetation cover.

### ***Objective 1.6 Open Water***

Each year, provide bald eagle feeding habitat on a minimum of 250 acres, consisting of at least two patches greater 100 acres each of open water wetland for foraging bald eagles to coincide with their hatching and fledging period (April - June).

#### **Rationale**

The bald eagle is a New York State threatened species and a bird of management concern for the Service. The presence of three breeding pairs contributed to the designation of the Iroquois Wetland Complex as an IBA.

The Service National Bald Eagle Management Guidelines from 2007 state new recommendations for land management practices as well as how to avoid disturbance to the eagles. In general, activities should be kept as far away from nest trees as possible, loud and disruptive activities should be conducted when eagles are not nesting, and activity between the nest and the nearest foraging area should be minimized. Some disturbance categories listed in the guidelines that are relevant to Iroquois Refuge are timber operations and forestry practices, off-road vehicle use, and non-motorized recreation and human entry.



The previous mentioned categories are taken from the Service's National Bald Eagle Management Guidelines and although off-road vehicle use is indicated, Iroquois Refuge does not allow off-road vehicle use on the refuge. This category would cover vehicle use by researchers, volunteers, refuge staff, etc. in conducting official duties.

**Strategies:**

- Continue to implement Service 2007 National Bald Eagle Management Guidelines including:
  - Category C – Timber Operations and Forestry Practices. Avoid timber harvesting operations, including road construction and chain saw and yarding operations, during the breeding season within 660 feet of the nest. Selective thinning and other silviculture management practices designed to conserve habitat, including prescribed burning close to the nest tree, should be undertaken outside the breeding season. If it is determined that a burn during the breeding season would be beneficial, then, to ensure that no take or disturbance will occur, these activities should be conducted only when neither adult eagles nor young are present at the nest tree. Appropriate Federal and State biologists should be consulted before any prescribed burning is conducted during the breeding season.
  - Category D – Off-road vehicle use. No buffer is necessary around nest sites outside the breeding season. During the breeding season, do not operate off-road vehicles within 330 feet of the nest. In open areas, where there is increased visibility and exposure to noise, this distance should be extended to 660 feet.
  - Category F – Non-motorized recreation and human entry (e.g., hiking, camping, fishing, hunting, bird watching, kayaking, canoeing). No buffer is necessary around nest sites outside the breeding season. If the activity will be visible or highly audible from the nest, maintain a 330-foot buffer during the breeding season, particularly where eagles are unaccustomed to such activity (Service 2007b). Continue to conduct mid-winter bald eagle surveys.
- Continue to restrict public access to eagle nesting areas during the breeding season by implementing National Bald Eagle Management Guidelines.
- Continue to coordinate with the NYSDEC on the protection, monitoring, and management of the Iroquois Wetland Complex nesting eagles.
- Conduct spring/summer drawdowns to concentrate forage fish and make them more available to feeding bald eagles.
- Do not conduct complete drawdowns on Ringneck Marsh in years when drawdowns are conducted in impoundments containing eagle nests.

***Objective 1.7 Mudflats***

Provide up to 40 acres of mudflats with shallow water (less than 3"), sparse (less than 25 percent) vegetation and high invertebrate biomass annually during fall (August - September) to benefit migrating shorebirds including least, pectoral, semipalmated and solitary sandpipers, and Wilson's snipe.

**Rationale**

Most shorebirds using the Great Lakes region are long-distance migrants that require stopover sites to replenish their fat reserves and meet the high energy demands of migration. These "staging" areas require shallow water and/or mudflat habitats with sparse vegetation, undisturbed roosting areas, and abundant

invertebrate food resources. In this region these conditions can occur in various habitats including natural and managed wetlands, lakeshore, sand and gravel bars, reservoirs, and flooded agricultural fields.

Researchers are just beginning to understand the importance of habitats in the interior U.S. to shorebirds. However, variable climatic conditions common to inland areas make shorebird habitat unpredictable compared to coastal regions. Precipitation and hydrology patterns are highly variable from year to year and in different locations. In addition, loss of wetlands from urban development, hydrological disturbance, and agriculture has reduced the amount of habitat in the region. With the ability to manage water levels, Iroquois Refuge can contribute to providing habitat for migrating shorebirds.

Many shorebirds species are listed as a conservation concern in the Upper Mississippi Valley/Great Lakes (UMVGL) Shorebird Plan. The populations of these species are known or believed to be small and/or declining, and they are experiencing other known or potential threats (de Szalay et al. 2000). More information on the regional abundance, distribution, chronology, and population trends of shorebirds; responses of shorebirds and their invertebrate food base to management activities; wetland distribution and habitat conditions during a variety of climatic patterns; and effects of human disturbance on shorebirds is needed to guide shorebird habitat management on Iroquois Refuge.

### **Strategies:**

- Conduct early drawdowns, mechanical manipulation (when needed to reduce vegetation cover), and subsequent flooding of impoundments at least 4 weeks prior to peak shorebird migration to allow aquatic invertebrates to develop.
- Maintain high water levels, near full pool levels, through early summer and slowly lower levels during late summer to expose mudflats.
- Continue to manage the 41-acre Cayuga sub-impoundment and the 10-acre Schoolhouse sub-impoundment for fall migrating shorebirds using water level controls to create mudflats with shallow water areas less than three inches deep.
- Work with conservation partners to monitor shorebird use of refuge mudflat habitats and enter the data into *www.ebird.org*.

### ***Objective 1.8 Seneca Pool Forested Wetland***

Maintain the 935-acre Seneca Pool as a forested wetland dominated by red and silver maples, green ash, American elm, swamp white oak, and willow species to provide breeding habitat for cavity nesting waterfowl (primarily wood duck) and migratory songbirds (especially cerulean warbler).

### **Rationale**

Red and silver maple and green ash dominate the 3,300 acres of forested wetland habitat on the refuge. Second growth mature trees approximately 75 years old dominate most of this habitat. More than 900 acres of forested wetland habitat are contained in Seneca Pool, an impoundment that was originally built and managed as a green tree impoundment. This pool is a red maple/green ash swamp, which has been purposely flooded in the past. Long periods of flooding have stressed and killed mature trees and prevented germination and survival of seeds and seedlings. Due to this negative effect on the forested wetland habitat, the pool level is now allowed to fluctuate with the level of Oak Orchard Creek. Fluctuating with the creek level reduces the amount of water in this pool and limits the amount of water stress put on the trees, while still providing wetland habitat during spring migration. This pool provides a large contiguous tract of forested wetland habitat managed for species such as the wood duck and cerulean warbler.

The floodplain forest and forested wetlands associated with Oak Orchard Creek support migrating and nesting species of conservation concern within BCR 13 including cerulean warbler, prothonotary warbler, Baltimore oriole, rusty blackbird, northern flicker, and wood duck. The Cerulean Warbler Atlas Project identified Iroquois as an important area for ceruleans. The NYWAP identifies several species of bats (eastern red, eastern small-footed, and hoary bats) and the river otter as priority species; all of which use the floodplain forest habitat within the Oak Orchard watershed.

Typically riparian or floodplain forests support a high diversity of plant species and food resources that are particularly important to migrating songbirds. An abundance of dead and dying trees of various sizes in floodplain forested wetlands are critical to cavity nesting ducks including wood duck and hooded merganser. Some songbird species (e.g., prothonotary warbler) require natural cavities as well. The Service is shifting away from artificial cavity nesting structures to a greater reliance on natural cavities.

### **Strategies:**

- Allow water levels in Seneca Pool to fluctuate with the level of Oak Orchard Creek.
- Monitor Seneca Pool's water control structure to ensure that debris does not obstruct the flow of water into or out of the impoundment.
- Continue to monitor avian species of conservation concern through land bird surveys.
- Create an annual inventory and monitoring plan to guide management and increase nesting success of migratory waterfowl and other wildlife.
- Complete vegetative inventory of Seneca Pool.
- Within 5 years, remove the northeast dike to restore natural hydrology to the greatest extent possible.

## **Goal 2. Maintain the environmental health and integrity of Oak Orchard Creek and associated forested wetlands as a natural free-flowing habitat with a diverse assemblage of native plants and animals.**

### ***Background***

The refuge contains the 523-acre Oak Orchard Creek Marsh National Natural Landmark (NNL, map 1-4). This marsh encompasses a pristine stretch of the sluggish and meandering creek that varies in width from 20 to 150 feet. The surrounding terrain is low and flat and floods annually. Broad-leaved cattail grows in marshy areas at the bends in the creek. Buttonbush and water willow are common shrubs along the creek edges, accompanied by a diversity of other plant species including red osier dogwood, flowering dogwood, swamp rose, purple nightshade, watercress, water hemlock, swamp milkweed, lizard tail, cardinal flower, broad-fruited bur reed, and forget-me-nots. A forested swamp dominated by silver maple with some green ash, swamp white oak and slippery elm with a dense understory of sensitive fern borders the creek channel (Vogelmann 1972). When this landmark was established in 1974 it also included the 15-acre Milford Posson Research Natural Area.

Furbearer management will be conducted first and foremost as a tool to maintain habitat and keep the predator prey balance. The implementation of a regulated furbearer management program on the refuge also affords a potential mechanism to collect survey and monitoring information, or contribute to research on furbearer (and other wildlife) occurrence, activity, movement, population status, and ecology. By maintaining a trained and experienced group of trappers, the Service can utilize their skills and local knowledge to perform or assist with valuable management or research functions. The Furbearer

Management Compatibility Determination in Appendix B provides additional information on how this program will be administered. Trappers that participate in the refuge program would provide assistance with the implementation of structured management objectives, such as alleviation or reduction of wildlife damage conflicts, negative species interactions, and habitat modifications. Refuge trappers typically have a stake in proper habitat and wildlife conservation, and protection of the ecological integrity of the refuge so that their activity can continue. Accordingly, they are valuable assets to the refuge manager in terms of providing onsite reports concerning the fundamental status of habitat, wildlife, and refuge conditions.

Removal of harvestable furbearers will have a beneficial effect by protecting refuge infrastructure (e.g., dikes and water control structures) from damage, thus ensuring management capabilities over wetlands. Decreasing predators will decrease the potential for predation on nesting migratory birds. In addition, reducing predator densities can reduce the spread of some density dependent diseases such as distemper, parvo, and rabies.

**Strategies that apply to all objectives under this goal:**

- Continue management of furbearers in marshes at the completion of the waterfowl season to help sustain desired ratio of vegetation and open water in each impoundment.
- Allow management of marsh furbearers throughout the entire refuge, with restrictions on muskrat trapping in marshes that have a large percentage of cattail coverage (map 4-2).
- Conduct furbearer management in marshes at the completion of the refuge's waterfowl hunt season, by allowing up to 50 permits issued annually.
- Continue to charge \$50.00 for the marsh furbearer management permit.
- Limit trappers to 25 traps each to promote recruitment and retention of new trappers by reducing trapper competition while still maintaining furbearer populations at desired levels.

***Objective 2.1 Oak Orchard Creek and Associated Emergent Marsh and Forested Wetlands***

Maintain, and restore as necessary, the water quality, natural flow regimes, and biological integrity of Oak Orchard Creek in the eastern portion of the refuge, relying on natural processes when possible.

**Rationale**

Oak Orchard Creek enters the refuge from the east and meanders sluggishly and unimpeded through the refuge east of Route 63. This area includes the Oak Orchard Creek Marsh NNL and supports many of the native plants and animals found in this region. While this section of the Creek is impacted by invasive species and upstream land use practices that degrade water quality, it offers some semblance of the watershed's historic condition before ditching and diking.

Most of the natural emergent marsh habitat on the refuge is located along Oak Orchard Creek, east of Sour Springs Road. In this area the creek is essentially uncontrolled. The only constrictions are Sour Springs Road itself, which may back water up during flood events, and transient beaver dams. These dams alter hydrology and ultimately change the vegetative characteristics of the creek.

A healthy riparian ecosystem provides migration, breeding and wintering habitat for many migratory birds and resident fish and wildlife species. Very few unmanaged, unaltered wetland systems still exist in western New York. While this section of Oak Orchard Creek is not wholly unaltered, it is essentially unmanaged. It is also in a condition where water management control is not critical to maintaining the quality of the wetland habitat. Preserving this section of the Creek in this "natural" condition allows the

refuge to provide a significant amount of riparian habitat for fish and wildlife with a minimum expenditure of resources.

**Strategies:**

- Monitor the condition of the Oak Orchard Creek Marsh NNL every 5 years to record the representative native plant species and condition (e.g., presence of invasive species).
- Continue to monitor colonial nesting bird rookery along Route 63.
- Work with partners to improve upstream land use practices to enhance water quality within Oak Orchard Creek as it enters the refuge.
- Work with local road agents to prevent runoff (salt, sand, and pollutants) into Oak Orchard Creek.
- Develop an index of biological integrity for the Oak Orchard Creek to be used by the refuge to monitor restoration and maintenance of this ecosystem.
- Conduct water quality, invertebrate and fish surveys to gather baseline data and then every 5 years to detect trends over time.
- Within the un-impounded floodplain forest in the Oak Orchard watershed, rely on natural tree cavities for nest sites for wood duck, hooded merganser, and other cavity nesters; remove any artificial nest structures in this area.
- Identify the locations of invasive species within the floodplain.
- Remove invasive species using mechanical methods wherever possible.
- Identify and map the vernal pools within the floodplain forest.
- Monitor and inventory vernal pools across the entire refuge for species of conservation concern.

***Objective 2.2 Natural Forested Wetlands***

Maintain a minimum of 2,300 acres of mature forested wetland dominated by red and silver maples, green ash, American elm, swamp white oak, and willow species by allowing natural processes and controlling non-native invasive species to provide breeding habitat for cavity nesting birds (e.g. wood duck and prothonotary warbler) and other migratory songbirds (especially cerulean warbler).

**Rationale**

The floodplain forest and forested wetlands associated with Oak Orchard Creek support migrating and nesting species of conservation concern within BCR 13 including cerulean warbler, prothonotary warbler, Baltimore oriole, rusty blackbird, northern flicker, and wood duck. The Cerulean Warbler Atlas Project identified Iroquois as an important area for ceruleans. The NYWAP identifies several species of bats (eastern red, eastern small-footed, and hoary bats) and the river otter as priority species; all of which use the floodplain forest habitat within the Oak Orchard watershed.

Typically riparian or floodplain forests support a high diversity of plant species and food resources that are particularly important to migrating songbirds. An abundance of dead and dying trees of various sizes in floodplain forested wetlands are critical to cavity nesting ducks including wood duck and hooded merganser. Some songbird species (e.g., prothonotary warbler) require natural cavities as well. The Service is shifting away from artificial cavity nesting structures to a greater reliance on natural cavities.

**Strategies:**

- Identify and map forested wetlands for rare plant species and natural communities to document their occurrence.
- Conduct an inventory of fauna.
- Develop and conduct a refuge wide forest inventory and establish permanent vegetation monitoring plots.
- Evaluate implications for management based on the habitat requirements of species of conservation concern.
- Conduct annual surveys of exotic invasive plants and control as necessary.
- Consult with the NY Natural Heritage Program on suitable management strategies to maintain natural forested wetland communities.
- Maintain and conserve vernal pools to sustain populations of species of conservation concern including obligate amphibians.

**Goal 3. Provide a diverse mix of grassland, shrubland and forested upland habitats arranged to reduce fragmentation and edge effects, and enhance habitat quality for priority species of conservation concern.*****Background***

Iroquois Refuge lies within BCR 13, the Lower Great Lakes/St. Lawrence Plain (map 1-5). In addition to providing important lakeshore habitats and associated wetlands, this region was originally dominated by a mixture of oak-hickory, northern hardwood, and mixed-coniferous forests. Nearly 95 percent of the original habitat types have been lost and the landscape is now dominated by agriculture with interspersed wetlands and remnant forest stands. The BCR 13 plan highlights specific sites or areas that are considered important for bird conservation. Iroquois Refuge together with Oak Orchard WMA is highlighted as an important area for landbirds including: bobolink, Henslow's sparrow, sedge wren, cerulean warbler, and Northern harrier. This focus area is one of the most important areas for migratory land bird habitats including grassland, shrubland and forest in western New York.

Approximately half of the 4,000 acres of upland habitat at Iroquois Refuge is currently maintained in an early successional stage as grassland or shrubland through active management. Grasslands are mowed or burned according to a multi-year rotation schedule to suppress encroachment of broadleaf forbs and woody plants. Shrubland management consists of vegetation manipulation through the use of mechanical or chemical treatment. The remaining acres of upland habitat are comprised of forest including Northern hardwoods (beech, sugar maple, yellow birch and hemlock) and Allegheny hardwoods (black cherry, tulip poplar and white ash). These types are rarely distinct from one another and tend to blend together with other species such as hickories, butternuts, and red or white oak. Much of the forest on the refuge is in second growth with a few isolated older stands.

Furbearer management will be conducted first and foremost as a tool to maintain habitat and keep the predator prey balance. The implementation of a regulated furbearer management program on the refuge also affords a potential mechanism to collect survey and monitoring information, or contribute to research on furbearer (and other wildlife) occurrence, activity, movement, population status, and ecology. By maintaining a trained and experienced group of trappers, the Service can utilize their skills and local knowledge to perform or assist with valuable management or research functions. Trappers that participate in the refuge program would provide assistance with the implementation of structured management

objectives, such as alleviation or reduction of wildlife damage conflicts, negative species interactions, and habitat modifications. Refuge trappers typically have a stake in proper habitat and wildlife conservation, and protection of the ecological integrity of the refuge so that their activity can continue. Accordingly, they are valuable assets to the refuge manager in terms of providing onsite reports concerning the fundamental status of habitat, wildlife, and refuge conditions.

Removal of harvestable furbearers will have a beneficial effect by protecting refuge infrastructure – dikes, water control structure – from damage, thus ensuring management capabilities over wetlands. Decreasing predators will decrease the potential for predation on nesting migratory birds. In addition, reducing predator densities can reduce the spread of some density dependent diseases such as distemper, parvo, and rabies.

### ***Objective 3.1 Grasslands***

Provide a minimum of 800 acres of grassland habitat in patches greater than 20 acres including two grassland areas greater than 100 acres. Maintain a diverse mix of grass and forb species with less than 2 percent shrub cover and no greater than 30 percent forb cover to provide breeding and nesting habitat for grassland nesting birds such as bobolink, Henslow's sparrow, grasshopper sparrow, sedge wren, and waterfowl, and to benefit other native wildlife including pollinating bees, butterflies, and other insects.

#### **Rationale**

Grasslands provide breeding habitat for a variety of migratory birds. Many grassland-nesting songbirds are area-sensitive and each species prefers a slightly different mix of grass, forb and bare ground. The Henslow's sparrow is one of the highest priority species in BCR 13; bobolink and grasshopper sparrow are also priorities (medium). Larger grasslands (e.g., greater than 100 acres) will generally provide habitat for a larger suite of grassland bird species than will smaller (e.g., less than 20 acres), isolated grassland patches (Sample and Mossman 1989).

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

Refuge grasslands are a mix of managed warm and cool season fields and unmanaged forb dominated fields. Switchgrass, smooth brome, and goldenrod dominate the grasslands. Grasslands are currently managed using a combination of mowing, chemical spraying and prescribed burns to control unwanted vegetation and to maintain nesting habitat for waterfowl and other grassland nesting birds. Haying, conducted through a cooperative farming program is also used as a grassland management tool (Service 2002). Approximately 450 acres of upland habitat have been planted to warm season grasses (primarily switchgrass, big bluestem and indiagrass) and succession is suppressed in these units (Service 2000c).

Refuge grassland units range in size from 1 to 250 acres. Patch size is often the most important factor limiting use and nest success of grassland nesting birds. Generally, the larger the grassland, the more it will be used and the higher the nest success. The goal of the refuge's grassland management program is to provide a few large grassland units and eliminate the smaller fragmented grasslands that are providing very little habitat to targeted wildlife species.

**Strategies:**

- Continue to use mowing, haying, prescribed fire, and herbicide application as tools to maintain grassland conditions. Schedule mowing every 1 to 3 years to occur between July 15 and October 15 depending on the desired vegetation structure. Mowing later in the season will provide added benefits to pollinators.
- Schedule prescribed fires between April 1 and June 15 to take advantage of adequate site conditions for burning to achieve the desired vegetation results.
- Conduct herbicide applications to provide maximum control of undesirable vegetation.
- Evaluate and determine the feasibility of using refuge grasslands for Karner blue butterfly reintroduction.
- Evaluate and refine bird and vegetation monitoring program for grassland units.
- Remove hedgerows within grassland areas to increase the size of grassland patches.
- Optimize the configuration (size and shape) of designated grassland units.

***Objective 3.2 Shrublands***

Provide 538 acres of mesic to dry shrubland habitat throughout the refuge to provide breeding, nesting, and migrating habitat for American woodcock, golden and blue-winged warblers, field sparrow, and black-billed cuckoo and to provide food sources for migrating songbirds. These shrublands should be dominated by native shrubs including willows, dogwoods, viburnums, and alders with less than 5 percent non-native invasive species.

**Rationale**

A range of habitat types are included under shrubland habitat ranging from brushy old field conditions to regenerating forests to more naturally maintained, relatively stable shrublands associated with wetlands. Shrublands support many high priority bird species in the BCR 13 Plan including blue and golden-winged warblers and field sparrow. Managing small areas (less than 20 acres) of shrubland habitat can be effective for many shrubland-dependent birds. Consolidating and clustering patches and maintaining some large patches of shrubland habitat will provide habitat for a range of wildlife associated with these habitats.

Many of the shrublands on the refuge have matured to a stage where they are moving from shrubland to forest habitat. The refuge is identifying those shrubland areas that would be best kept as shrubland management units and those areas that would be better left to revert to forest. A more active shrubland management program is necessary to maintain a significant quantity of shrubland habitat.

**Strategies:**

- Increase shrubland acres managed annually to 20 to 30 acres via hydroaxing in the winter on frozen ground or in mid-summer on dry ground.
- Treat shrubland units that have become dominated by non-native invasive species.
- Treat shrubland units that have become dominated by trees as necessary to retard succession into young forest.
- Develop a shrubland management treatment rotation schedule.



- Evaluate results of ongoing study on wildlife use of different shrubland types including native dogwood, non-native honeysuckle, and seedling green ash.
- Work with partners to develop cost-efficient methods for managing and maintaining shrublands dominated by native shrub species with few or no invasive species.
- Monitor avian composition annually for priority BCR species.

### ***Objective 3.3 Upland Forests (Early, Mid, and Late Successional)***

Provide 2,100 acres of early, mid and late (greater than 150 years old) successional upland forest in blocks greater than 75 acres dominated by hemlock, sugar maple, black cherry, hickory, and oaks to benefit migratory breeding birds including wood thrush, cerulean warbler, and black-billed cuckoo.

#### **Rationale**

Although once dominated by a mix of oak-hickory, northern hardwood, and hemlock-northern hardwood forests, the upland areas adjacent to Iroquois Refuge are now dominated by agricultural land interspersed with wetlands and remnant forest stands. Thus, Iroquois Refuge offers some of the best, remaining blocks of upland forest in this region. Currently, the late successional forest habitats on the refuge are not actively managed. The upland forests are relatively intact with a diversity of canopy tree species and some midstory and understory plant associates and light impact from invasive species. These forests support BCR 13 priority bird species including wood thrush and cerulean warbler (highest), and black-billed cuckoo (high). These three species are also birds of management concern for the Service in the Northeast Region and are noted as species of greatest conservation concern need in the NYWAP.

Over 46 percent of the refuge is covered by forest, 66 percent of which is forested wetland. Species composition of the forest varies across the refuge with mixed hardwood stands predominated by elm, maple, aspen, and upland species such as beech, hickory, and oak. Most conifers occur in plantations and include white pine, white spruce, Norway spruce, Scotch pine, red pine, Austrian pine, and Douglas fir. Several natural hemlock stands are found in small pockets.

Large blocks of upland forests and forested wetland habitats are unique to the present day landscape of the Western Lake Plain. Landuse or landcover data for northwestern New York was developed by the U.S. Geological Survey (USGS) as part of the Geographic Information Retrieval Analysis System (GIRAS) during the 1970s. Of the entire area displayed (1,469,706 acres), 1.6 percent of the land cover (23,709 acres) is mapped as forested wetlands and 6 percent (8,417 acres) as upland forest. Sizes of these forested areas vary, but the largest block of forested wetlands (20 percent of the total forested wetland cover) is within the Iroquois Refuge boundary.

During the 1960s and 1970s logging was conducted on the refuge for both production of wood products and firewood. Habitat degradation due to cutting outside specified areas and lack of staff time to monitor these areas caused an end to cutting in 1978. Currently, there is little to no management within the forested areas. Many species such as woodcock, grouse, turkey, wood duck, and hooded mergansers use the forested areas on the refuge.

Past history shows no evidence of widespread insect or disease outbreaks on the refuge. Concerns in the past have been with gypsy moth, Dutch elm disease, chestnut blight, and beech bark disease. The variety of tree species, coupled with the mosaic of upland and bottomland communities provides some protection from widespread insect or disease outbreaks. However, new threats are emerging all the time. In the summer of 2010, the Emerald Ash Borer was detected approximately 15 miles south of the refuge. This species could devastate the refuge forested wetlands. The refuge is currently working with the USDA

Forest Service to conduct a forest health assessment of the refuge. This assessment will guide the refuge in determining current and future threats and how to manage the refuge forests to combat these threats. A more detailed description of future management direction will be addressed in the Habitat Management Plan as well as the Integrated Pest Management Plan.

***Strategies:***

- Continue to monitor avian species of conservation concern through land bird surveys and woodcock surveys.
- Continue to conduct vernal pool surveys and amphibian surveys.
- Continue to limit any new trails into undisturbed upland forest to avoid providing pathways for invasive species.
- Continue to conduct annual surveys of exotic invasive plants, and control as necessary.
- Continue to rely on natural tree fall gaps within conifer plantations to create a multi-layered forest structure with a variety of dead and downed woody debris.
- Develop and conduct a refuge wide forest inventory and establish permanent vegetation monitoring plots.
- Develop forest management techniques for forested uplands for species of conservation concern.
- Implement a commercial forest management program to assist in maintaining early successional forest habitat in accessible areas using existing protocols for hiring contractors.
- Maintain a no-cut buffer of at least 100 feet along each side of perennial streams, rivers and extensive forested wetlands.
- Develop a protocol for monitoring and control of invasive plant species including garlic mustard and honeysuckle along woodland trails.
- Develop a protocol for monitoring invasive forest pests including gypsy moth, emerald ash borer, Asian longhorn beetle, beech bark disease and any new threat to refuge forests and work with partners to determine best methods for treatment and control.
- Evaluate the juxtaposition of early successional openings and upland forests to determine if restoration is needed and feasible to promote reforestation of artificial forest openings, areas surrounding forest peninsulas, gaps between isolated forest tracks, and riparian corridors to create more forest interior for area-sensitive species.
- Give restoration and management priority to those areas currently adjacent to large tracts of mature forest, thus increasing the overall size of the forest patch.
- Restore selected grasslands to forest by either natural regeneration or planting.

***Objective 3.4 Plantations***

Restore 200 acres of conifer plantations from the highest priority areas of the refuge to encourage development of natural forest (oak-hickory, northern hardwoods, hemlock-northern hardwoods) and/or shrubland (willows, dogwoods, viburnums, and alders), communities that are more beneficial for refuge priority resources of concern including wood thrush, cerulean warbler, and black-billed cuckoo.

### **Rationale**

Conifers are a relatively small component of the forest types on the refuge. The only naturally occurring, native conifer is the Eastern hemlock which is often found in association with sugar maple and American beech. All other conifers on the refuge are planted stock. Conifer planting peaked during the 1960's and early 1970s. Species planted include white spruce, white pine, red pine, Austrian pine, Scotch pine, Douglas fir, and Norway spruce.

The conifer plantations on the refuge are either monocultures or have only a few different species associated with them. This has caused a lack of diversity not only in the overstory and understory tree composition, but in age classes as well. The closely planted conifers restrict the amount of light that reaches the forest floor and therefore causes impoverished flora and fauna. The acidity from the conifer foliage also limits growth on the forest floor.

Plantations cause unnatural edges in the forest where naturally there would be transition zones between two different forest types. While edges can in general increase wildlife species richness and abundance, edges can have a negative effect on species which the refuge is managing for including nesting migratory songbirds. Negative effects include but are not limited to: nest predation and parasitism, decrease in forest interior nesting birds, and an absence of shade tolerant plant species (Hunter 1990).

Plantation areas will be prioritized for removal. Depending on location and outcome, different techniques maybe used as described in the Commercial Forest Harvest Compatibility Determination (Appendix B) or through girdling and nature regeneration. Restoring these non-native conifer plantations will result in more diverse forest communities and reduce the edge effect which will result in better habitats for refuge species of conservation concern.

### **Strategies:**

- Conduct annual surveys of exotic invasive plants and control as necessary.
- Evaluate current bird survey transects in conifer plantations and establish new surveys as needed to monitor for species of conservation concern as plantations convert to a more natural state.
- Prioritize plantations for removal.
- Implement a commercial forest management program to remove conifer plantations in accessible areas using existing protocols for hiring contractors.
- Determine if reforestation is needed or if natural seeding is sufficient in areas where conifer plantations have been removed.
- Incorporate survey results, habitat treatments, treatment responses, and future prescriptions into the Geographical Information Systems (GIS) database.

### **Goal 4. Refuge visitors will understand and appreciate fish and wildlife conservation through high quality recreation, education and interpretive programs.**

#### ***Background***

The Improvement Act identifies six priority public uses for refuges: hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation. Interpretation and hunting have regionally been identified as the top two priority Areas of Emphasis at the Iroquois Refuge. These two activities will be given highest priority to ensure wise use of staff and funding resources and enable the refuge to provide fewer, but higher quality, visitor opportunities. Public use opportunities will be

provided to the extent that they are compatible with the Refuge System mission and the purposes of Iroquois Refuge. Goal 4 addresses wildlife observation, wildlife photography, environmental education, and interpretation. Goal 5 addresses hunting and fishing recreation.

We develop our wildlife-dependent recreation programs in consultation with State fish and wildlife agencies and stakeholders. Refuge recreation programs must

- promote safety of participants, other visitors, and facilities;
- promote compliance with applicable laws and regulations and responsible behavior;
- minimize or eliminate conflict with fish and wildlife population or habitat goals or objectives in an approved plan;
- minimize or eliminate conflicts with other compatible wildlife-dependent recreation;
- minimize conflicts with neighboring landowners;
- promote accessibility and availability to a broad spectrum of the public;
- promote resource stewardship and conservation;
- promote public understanding and increase public appreciation of America's natural resources and our role in managing and conserving these resources;
- provide reliable/reasonable opportunities to experience wildlife;
- use facilities that are accessible to people and blend into the natural setting; and
- use visitor satisfaction to help define and evaluate programs.

A Visitor Services Assessment and Review was completed in March 2009 (Service 2009a). This review was completed by visitor services managers in Region 5 to provide an objective view about refuge resources and visitor services programs. Their recommendations included example themes and key messages the refuge could integrate into interpretation, outreach, and education activities. The themes and key messages are listed below and will be used to help form our messages to the public.

#### *Biodiversity*

Biodiversity was as crucial to the survival of the Native Americans who historically inhabited this area as it is to the people, wildlife, and wildlands inhabiting it today.

#### *Wildlife*

The refuge is a significant stop-over point for migrating waterfowl and other birds and has been key in the recovery of the bald eagle and the comeback of nesting black terns while also providing critical habitat for other wildlife (mammals, reptiles, amphibians, fish).

#### *Habitat*

Iroquois Refuge and the adjacent State wildlife management areas provide the largest contiguous block of wildlife habitat between the Allegheny Plateau and Lake Ontario. The size and diversity of this natural area provides a variety of habitats to benefit wildlife and for enjoyment and appreciation by people. The management of such habitat diversity provides a wildlife oasis within a landscape fragmented by development and farming.

#### *People*

Iroquois Refuge is not only a refuge for wildlife, but also a refuge for people; a place where people connect with nature, rest, restore, and build health before continuing on the day's or life's, journey. A program called Connecting Children with Nature is part of the Service's Connecting People with Nature:

Ensuring a Conservation Legacy Strategy. It was established to address the American public's declining interaction with nature and the threat this decline poses to the mission of the Service. Connecting Children with Nature addresses the fact that children today spend less time playing outdoors than any previous generation. Today, kids reportedly spend an average of 6.5 hours per day with television, computers, and video games. This lack of connection with nature has been linked to a number of health problems, both physical and emotional (Children and Nature 2009). In order to accomplish the Service Directorate priority to connect people with nature, Northeast Region personnel have established the following goals:

- Educate ourselves and others about the benefits of connecting people, particularly children, with nature.
- Identify and share existing or new Service success stories.
- Facilitate new, and refine existing, opportunities.
- Network with other staff, partners, and other organizations to optimize opportunities.
- Identify, reduce, and remove barriers to connect people with nature.
- Identify and implement tools for accountability.
- Seek new funding and leverage existing funding for projects.
- Demonstrate Federal leadership in connecting people with nature.

The Service has also adopted the slogan "Let's Go Outside" to promote events, programs, and activities for the Connecting People/Children with Nature initiative. Each service unit can modify the slogan to suit the event or activity they have planned. For example, "Let's Go Birding" or "Let's Go Fishing" or "Let's Go Outside to Restore Habitat for Wildlife." Many of the refuge programs are designed to connect with kids to continue the conservation initiatives.

**Strategies that apply to all objectives under this goal:**

- Continue to replace outdated and faded signs (e.g. boundary, hunt zones, closed areas, primary entrance, secondary entrance) using current standard Service signs.
- Maintain consistency when posting "no hunting" signs along the refuge boundary.
- Continue to restrict public access to seasonally sensitive wildlife areas as needed.
- Restrict access to the refuge from March 1 through September 30 except in designated public use areas (trails, overlooks, photo blinds, and fishing locations).
- Restrict access to designated public use areas and refuge uplands from October 1 to the end of February.
- Hire one permanent full-time Park Ranger (GS-0025-5).

***Objective 4.1 Interpretive Programs***

Provide high quality, compatible interpretive programs with a focus on the Refuge System mission and the purpose of the refuge.

**Rationale**

Interpretation is one of the six priority public uses required by the Improvement Act of 1997 to receive enhanced consideration on refuges. Individuals, families, or small groups have the option to attend scheduled weekend programs presented in partnership with the Buffalo Audubon Society. Interpretive

messages are also presented through special events and non-personal interpretation including printed refuge brochures, stationary interpretive panels in kiosks, wayside panels at Cayuga Overlook, and interpretive signs and materials at Kanyoo, Onondaga, and Swallow Hollow Nature Trails. Interpretation is one of the two Areas of Emphasis for the refuge.

Refuge visitors include students from pre-K to college, area tourists, local conservation groups, wildlife photographers and observers, and hunters and fishermen. Annual visitation ranges from 35,000 to 45,000 people. To help address a shortage of refuge staff, the refuge partners with Buffalo Audubon Society to conduct interpretive programs on the refuge mostly during the spring and fall. These programs include a “scope watch” on the eagle nest from Cayuga Overlook, birding tours, nature walks to identify plants, butterflies and trees, bat programs, “owl prowls,” and canoe trips down Oak Orchard Creek. These programs are attended by 1,000 to 1,800 people each year. Participation in these programs has been increasing over the years and we expect that trend to continue.

Refuge staff conducts interpretive programs both on and off site. Onsite interpretive programs presented by refuge staff and volunteers include formal programs and presentation and guided trail walks. In fiscal year 2009 the refuge received eight requests from local schools, scouts, and church groups for guided visits which totaled 172 visitors. The refuge conducts two major interpretive events: Spring into Nature and the Youth Fishing Derby. Spring into Nature is a one day event hosted at the refuge visitor contact station and is usually attended by over 1,000 people. This event provides interpretive programs, kid’s activities and provides additional information on wildlife, habitats, conservation, and stewardship. The Youth Fishing Derby is held at Ringneck Marsh and incorporates interpretive information into a fishing contest for kids under the age of 16 years. In addition to these two events, the Buffalo Audubon Society presents interpretive programs called Iroquois Observations. In fiscal year 2009, Iroquois Observations documented 829 visits for programs including eagle watches, birding field trips, guest speakers, woodcock walks, owl prowls, canoe treks, and themed nature walks.

Offsite programs include Conservation Field Days in three counties (Orleans, Niagara and Monroe) as well as local festivals and other events. At Conservation Field Days the refuge provides one of many learning stations for over 200 students in each of the counties. Local festivals and other events include Plantaisia in Buffalo, Earth Day at Beaver Meadow Nature Center, the University of Buffalo Enviro Fair, EcoFest in Batavia, Ducks Unlimited Green Wing events, and interpretive programs at local schools. These programs record nearly 800 contacts.

The refuge will continue existing interpretive programs and add new opportunities. Providing high-quality interpretation programs on the refuge promotes visitor appreciation and support for refuge programs. The guiding principles for our interpretation programs include the following:

- Promote visitor understanding of, and increase appreciation for, America’s natural and cultural resources and conservation history by providing safe, informative, enjoyable, and accessible interpretive opportunities, products, and facilities.
- Develop a sense of stewardship leading to actions and attitudes that reflect interest and respect for wildlife resources and the environment.
- Provide quality interpretive experiences that help people understand and appreciate Iroquois Refuge and its role in the Refuge System.
- Provide opportunities for quality recreation and interpretive experiences consistent with criteria describing quality found in 605 FW 1.6 (*Service Manual*).
- Assist refuge staff, volunteers, and community in attaining knowledge, skills, and abilities in support of interpretation.

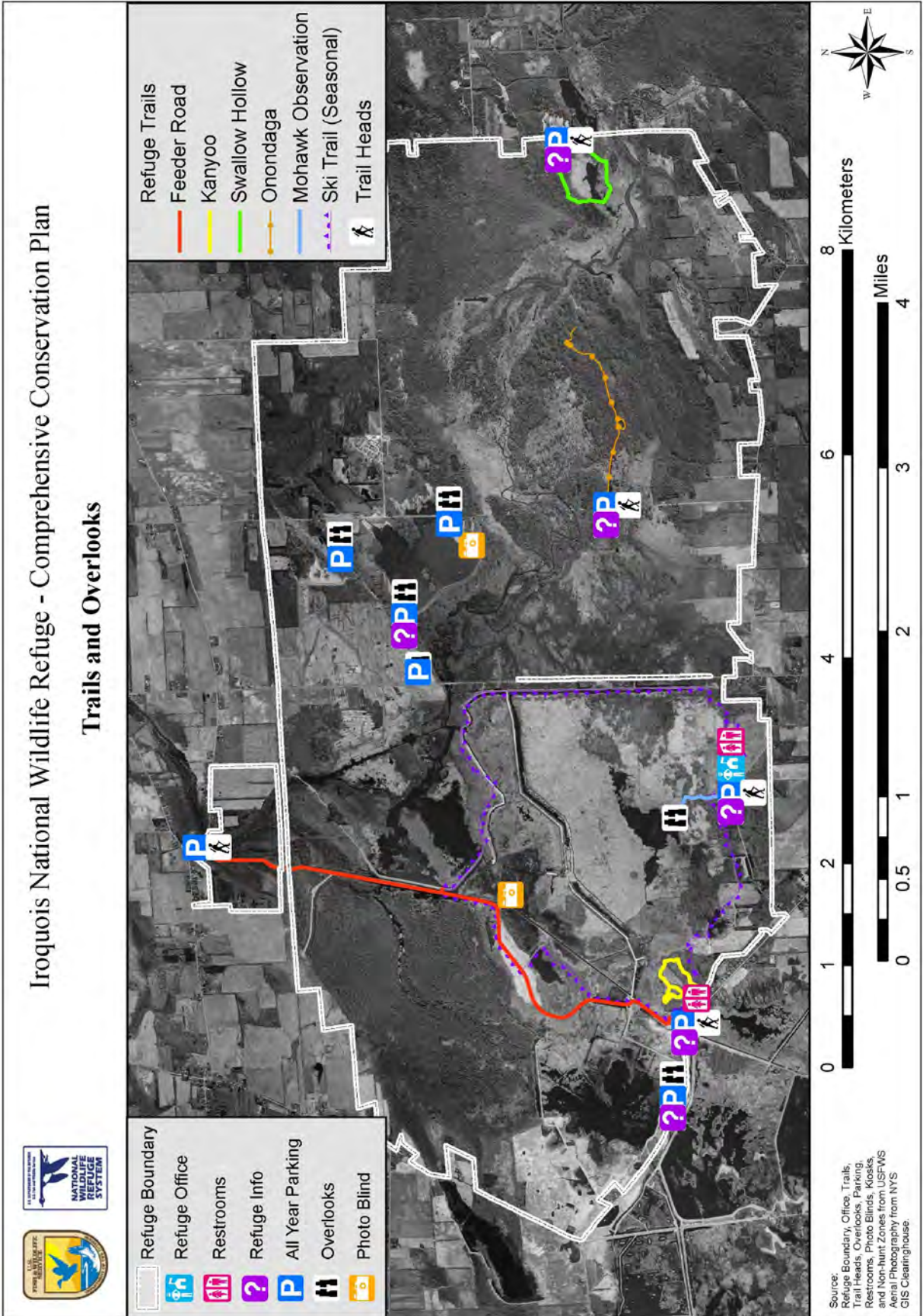
- Minimize conflicts with visitors participating in other compatible wildlife-dependent recreational activities.

The refuge maintains a series of nature trails open to the public year-round, including Kanyoo, Onondaga, and Swallow Hollow (map 4-5). Kanyoo and Swallow Hollow Nature trails are used extensively for school groups for field trips to experience nature and wildlife. Over the past couple of years these trails have been enhanced to ensure adequate access and to provide interpretative panels. We will continue to ensure that the trails are maintained and free from obstruction to allow easy access to the trails. The refuge will plan and develop a new trail that will begin at the refuge headquarters (map 4-5).

**Strategies:**

- Continue to host two special events during the year: Spring into Nature on the last Saturday in April and the Annual Youth Fishing Derby on the first Saturday in June to coincide with National Fishing and Boating Week.
- Continue to offer programs to assist Boy Scouts and Girl Scouts to obtain badges on request for a minimum of 10 children in the target audience.
- Continue to have the visitor contact station open Monday through Friday, except holidays, from 7:30 a.m. to 4 p.m. with extended hours on weekends in the spring and fall from 9 a.m. to 5 p.m.
- Continue to offer slide programs and/or guided trail walks as requested and presented by staff or volunteers with a minimum of 10 people in the target audience and no more than 60.
- Continue to partner with Buffalo Audubon Society to provide weekend nature programs in the spring and fall.
- Continue to distribute interpretive brochures including the Kanyoo Trail Guide.
- Continue to maintain interpretive displays in the visitor contact station and interpretive panels in kiosks at Cayuga Overlook, Onondaga, Kanyoo, and Swallow Hollow Nature Trails, and at the visitor contact station.
- Develop three to five power point programs that focus on different themes associated with refuge goals and objectives such as habitat wildlife and visitor services.
- Develop thematic programs for guided trail walks using the method described in the Certified Interpretive Guide Course to develop outlines which have theme, target audience, goals, mission-based behavioral objectives, introduction, sub-themes, and conclusion.
- Conduct two to four outdoor-related workshops such as Orienteering and Map Reading, Women in the Outdoors, and New Hunters to Iroquois Refuge.
- Rewrite the Kanyoo Nature Trail guide and install six interpretive panels on the blue loop of Kanyoo Trail.
- Standardize the six refuge kiosks and the messages they provide regarding refuge goals, objectives, and management.
- In locations where there are more than one kiosk for interpretation and hunting, determine if they can be combined into one kiosk.
- Conduct research on the demographics of refuge visitors and their activities.
- Renovate interpretive displays in the visitor contact station to integrate CCP goals and objectives.
- Revise refuge publications to current Service design standards and to reflect the updated rules and regulations.

Map 4-5





- Investigate new technologies that can be incorporated into interpretive programs such as podcasts, virtual technologies, and [www.ebird.com](http://www.ebird.com).
- Update cultural resource interpretive displays to incorporate the history of the eastern elk and displays the antlers recently discovered on the refuge.
- Utilize the National Association of Interpreters Standards and Practices for Interpretive Methods, Interpretive Organizations, and Planning.

### ***Objective 4.2 Outreach***

Provide at least 10 opportunities annually for the local communities and visitors to learn about Iroquois Refuge and the role of the Refuge System in protecting and managing our natural resources.

#### **Rationale**

The Service is America's voice for wildlife, speaking for the wild creatures that cannot speak for themselves. To be effective, we must do so in a way that facilitates public understanding and inspires support (Service National Outreach Strategy). Outreach is two-way communication between the Service and the public to establish mutual understanding promote involvement, and influence attitudes and actions to improve joint stewardship of our natural resources. Communication is essential to the refuge mission. Frequent communication facilitates understanding and helps the public make informed decisions about the future of fish and wildlife resources. Marketing research shows a clear correlation between positive awareness and a willingness to act on behalf of a particular product or service.

Objective 4.2 focuses on achieving positive awareness for the refuge through better communications. Although the refuge must manage many controversial issues, it also enjoys significant strengths including dedicated staff and volunteers, and strong public interest in fish and wildlife. To meet refuge challenges and take advantage of its strengths, the strategies under this objective recommend a more unified and strategic communications program that will help the refuge carry out its resource conservation mission. Our approach is to make the most effective use of staff time and resources by focusing our messages into something people can easily understand and making sure it delivers that message to concerned people in a timely way.

The refuge is located between two major cities, Buffalo and Rochester, with a number of small towns and hamlets in between. The refuge is also only an hour away from Niagara Falls, which receives many visitors from across the nation as well as other countries. The location of the refuge provides an ideal place to reach local, national and international visitors and educate them about the refuge and the Refuge System.

#### **Strategies:**

- Continue current outreach activities which include news releases prior to major events and maintenance of a refuge Web site.
- Continue participating in Conservation Field Days in Orleans, Niagara, and Monroe Counties and in festivals or special events offsite.
- Continue to work with the Chambers of Commerce to reach visitors through the tourism industry.
- Continue to develop and distribute news releases to local papers, television, radio, schools, and local tourism about the refuge and wildlife activity.

- Continue to use social media, including twitter and facebook, to reach new audiences and distribute news and events going on at the refuge.
- Develop targeted outreach based on research findings conducted under Objective 4.1 and connect outreach goals to refuge messages and key resource needs.
- Develop an introductory video about the refuge.
- Update the refuge Web site to provide interactive management and natural resources games and ensure consistency with new Web site standards.
- Develop outreach program with Iroquois Job Corps Center (interpretation, environmental education, and partnerships).
- Develop a comprehensive outreach strategy.
- Within 5 years of completion of the CCP, conduct an evaluation of the effectiveness of current outreach techniques and identify at least two specific audiences for outreach goals that have thus been unexplored.
- Explore opportunities to work with the Buffalo and Rochester zoos to partner on outreach programs.
- Obtain training in tourism and eco-tourism and explore opportunities to connect with Niagara Falls tourism organizations.
- Update the refuge Web site to provide more information on the refuge's history, biological resources, recreational opportunities, regulations and policies, and the mission of the Service and the refuge.

### ***Objective 4.3 Environmental Education***

Reach 2,000 school-age (K-12) students annually with environmental education programs that coincide with NYS standards of learning. These programs should be conducted by staff, volunteers, partners, and members of Friends of Iroquois Refuge on or off refuge property and integrate refuge outreach and interpretive objectives and messages.

#### **Rationale**

Environmental Education is one of the six priority public uses required by the Improvement Act of 1997 and is one of the most important ways we can raise visibility, convey refuge messages, and communicate the significant contribution the refuge makes to natural resource conservation. Objective 4.3 focuses on creating curriculums or other structured programs on and off the refuge in association with local schools and teachers and other educational programs.

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

Providing high-quality environmental education on the refuge promotes visitor appreciation and support for refuge programs. The guiding principles for environmental education include:

- Teach awareness, understanding, and appreciation of our natural and cultural resources and conservation history.

- Allow program participants to demonstrate learning through refuge-specific stewardship tasks and projects that they can carry over into their everyday lives.
- Establish partnerships to support environmental education both on-and off-site.
- Support local, State, and national education standards through environmental education on refuges.
- Assist refuge staff, volunteers, and other partners in obtaining the knowledge, skills, and abilities to support environmental education.
- Provide appropriate materials, equipment, facilities, and study locations to support environmental education.
- Give refuges a way to serve as role models in the community for environmental stewardship.
- Minimize conflicts with visitors participating in other compatible wildlife-dependent recreation activities.

We currently partner with Canisius College to provide educational programs on the refuge. The Canisius Ambassadors for Conservation (CAC) is a program that has been operating at the refuge since 2005 teaching intermediate-grade students about the mission of the Service and the natural resources of Iroquois Refuge emphasizing wetlands and migratory birds. Between 700 and 2,000 students participate in this program each year. The programs are developed to ensure that specific elements are delivered and retained by the students.

**Strategies:**

- Continue the CAC education program ensuring that the program ties into the New York State Standard of Learning requirements.
- Continue to work with teachers to develop their own environmental education programs.
- Work with Friends of Iroquois Refuge and Canisius College to find secure funding for the CAC program.
- Continue to provide annual busing assistance to the CAC program.
- Develop three to five key environmental education curricula/messages for CAC teachers to evaluate their pre- and post-visit knowledge of refuge resources and management actions.
- Develop a program that provides environmental education options for the New York State School for the Blind focusing on non-visual teaching methods.
- In conjunction with the CAC program, conduct a conservation camp or after school camp such as the Junior Refuge Manager Program.
- Look for opportunities to incorporate the Shorebird Sister Schools Program, Junior Duck Stamp education materials, and Project Webfoot into environmental education activities.

***Objective 4.4 Wildlife Observation and Photography***

Provide access to unique and unusual habitats on the refuge for wildlife observation and photography compatible with wildlife habitat management needs. Encourage wildlife photographers to use the refuge by providing at least two well-placed photography blinds.

## **Rationale**

Wildlife observation and photography are two of the six priority public uses required by the Improvement Act of 1997 to receive enhanced consideration on refuges. The refuge provides opportunities to view and photograph wildlife in natural settings at nature trails and overlooks. Historically the refuge has been a popular birding site and has been recognized as an IBA by the National Audubon Society. The refuge is a stopover point for migratory waterfowl and attracts hundreds of thousands of birds during migration. The refuge's diverse habitat also attracts songbirds, shorebirds, raptors, marsh birds, reptiles, amphibians, and over forty species of mammals.

The 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation indicates that over 3.8 million people participated in wildlife-watching activities in the State of New York during 2006 and spent more than \$1.5 billion on activities and equipment related to wildlife watching (Service 2006b).

Providing a high-quality wildlife observation and photography on the refuge promotes visitor appreciation and support for refuge programs. The guiding principles for these two programs include:

- Provide safe, enjoyable, and accessible wildlife viewing opportunities and facilities.
- Promote visitor understanding of, and increase visitor appreciation for, America's natural resources.
- Provide opportunities for quality recreational and educational experiences consistent with criteria describing quality found in 605 FW 1.6.
- Minimize conflict with visitors participating in other compatible wildlife-dependent recreation activities.

The refuge facilitates opportunities for wildlife observations and photography at nature trails including Kanyoo, Onondaga, and Swallow Hollow, and at Cayuga, Ringneck, Mallard, and Schoolhouse Overlooks (map 4-5). Wildlife observation is the most common visitor activity at Iroquois Refuge.

The new office building, housing several divisions in the Service, will increase visitation to the headquarters area. Due to the anticipated increase in use and the desire by visitors to have access to a nature trail from the Headquarters location, we will plan and develop a trail using an existing waterfowl hunt trail as a wildlife observation trail as well as access to a new observation platform. This platform will be similar to the existing one at Cayuga Overlook and will allow visitors to observe wetland-dependent wildlife in Mohawk Pool. This area may be restricted to public access during the waterfowl hunt season.

Several non-wildlife dependent activities facilitate wildlife observations and are considered acceptable methods for visitors to experience wildlife. These include the following:

- **Cross-country Skiing/Snowshoeing** - Although not a priority public use, skiing and snowshoeing are often used by refuge visitors to enjoy the solitude of the refuge's natural areas and to view winter wildlife. Many skiers and snowshoers stop at the visitor contact station to obtain refuge and wildlife viewing information. The light amount of use that is received by the refuge for these activities will not interfere with the refuge purpose since very few species of birds are present during the winter season. Cross-country skiing/snow shoeing are permitted on Onondaga and Kanyoo Nature Trails and the Mohawk Ski Trail. The Mohawk Ski Trail closes on March 1 to limit disturbance during spring migration, nesting, and brood rearing seasons.
- **Hiking and Walking** - Hiking and walking are permitted on the refuge's designated trail system which includes Kanyoo, Onondaga, and Swallow Hollow Trails, the Feeder Road, along public

roads adjacent to the refuge, and refuge uplands from October 1 to the end of February. Hiking and walking allow visitors to enjoy the solitude of the refuge and view and photograph wildlife. The refuge will continue to restrict public access for hiking and walking to designated trails from March 1 to September 30. Access to wetland areas for hiking or walking will be prohibited year round.

- **Jogging and Bicycling** - Jogging and bicycling will be permitted but not encouraged on the refuge. Jogging and bicycling are not priority public uses but they can facilitate priority public uses on the refuge. Although jogging and bicycling are classified as non-wildlife activities, most participants use the refuge for the “wildlands” experience it provides. Jogging and bicycling generally occur between March and September. Some bicyclist stop at the visitor contact station to obtain refuge or wildlife viewing information. Most visitors bike on Feeder Road which is open for a variety of public use activities and is the main service road used by refuge staff for management functions. Bicycling is also permitted on other public roads that go around and through the refuge. Bikes are not permitted on nature trails due to damage they may cause to the trail surface.

The refuge is used by amateur photographers, family members taking photos, and tourists documenting their travels. Providing high quality opportunities for the public to engage in nature photography promotes visitor appreciation and support for refuge programs. Approximately 400 visitors participate in photography-related activities each year. We will replace the two existing photo blinds with new blinds in different locations to provide a greater opportunity for the public to view and photograph wildlife (map 4-5). One photo blind will be placed on the south side of Ringneck Marsh near Mallard Overlook and the second will be a combination photo/hunting blind that will be located in our waterfowl hunting area and used for both activities.

**Strategies:**

- Continue to maintain Kanyoo, Onondaga, and Swallow Hollow Nature Trails and Feeder Road to provide opportunities for wildlife observation and photography.
- Continue to maintain Cayuga, Mallard, Ringneck, and Schoolhouse Overlooks.
- Continue to promote Oak Orchard Creek as a canoe/kayak route to provide additional unique opportunities for wildlife viewing and photography.
- Continue to loan binoculars which can be checked out at the visitor contact station.
- Continue to operate the live kestrel cam to provide a unique opportunity to view an active kestrel nest. The live feed can be viewed via a monitor in the visitor contact station and on the web.
- Continue to permit cross-country skiing on the Mohawk Ski Trail from December 1 until the last day in February.
- Continue to allow biking on Feeder Road.
- Continue to allow jogging on nature trails and Feeder Road.
- Allow hiking and walking the refuge uplands (off designated nature trails) from October 1 to the end of February.
- Continue to update refuge publications and brochures regarding wildlife observation and photography opportunities every 3 years (e.g., fact sheets, wildlife lists, general brochure).
- Open existing trail used for waterfowl hunting access behind headquarters and create an overlook platform.

- Provide one designated photo blind and one combination photo/waterfowl hunt blind.
- Provide one canoe launch for accessing Oak Orchard Creek.
- Develop a refuge rack card for distribution at key tourism and highway information sites.
- Partner with Friends of Iroquois Refuge and others to offer an annual or a regular wildlife photography contest.
- Encourage and promote the use of [www.ebird.org](http://www.ebird.org) by publicizing it and adding an internet-linked kiosk on station so that birders can consult previous sightings and add their own sightings.
- Incorporate the Mohawk Ski Trail into other refuge maps and create a fact sheet about the trail.
- On Feeder Road, where biking is allowed, ensure trail is properly posted showing bike access.
- Reestablish an eagle camera when technology and an appropriate nesting tree are available.

#### ***Objective 4.5 Other Recreation***

Discontinue berry picking, a non-wildlife dependent recreational activity.

#### **Rational**

Berry picking is an example of a visitor activity on the refuge that is not a priority public use and may also result in disturbance to wildlife. In accordance with 605 FW1, General Guidance and 603 FW 1, Appropriate Refuge Uses, we will only permit non-priority uses when we determine that they are legally mandated, provide a benefit to the Service, occur due to special circumstances, or facilitate one of the priority wildlife-dependent recreational uses.

The majority of edible berry species on the refuge ripen in early summer when birds are still in the sensitive nesting and brood rearing season (March 1 – July 15). There are only a few berry species that carry their fruits into the late summer. We will close the refuge to berry picking to protect birds during nesting and brood rearing and to be consistent with the change in public access described in the beginning of this chapter which includes allowing public access only in designated areas from March 1 through the end of September.

#### **Strategies:**

- Close the refuge to berry picking.

### **Goal 5. Hunters and anglers will enjoy and support programs designed to provide high quality hunting and fishing experiences.**

#### ***Background***

The Improvement Act identifies six priority public uses for refuges: hunting, fishing, wildlife observations, wildlife photography, environmental education, and interpretation. Hunting and interpretation have regionally been identified as the top two priority Areas of Emphasis at the refuge. These two activities will be given highest priority to ensure wise use of staff and funding resources and enable the refuge to provide fewer, but higher quality, visitor opportunities. Iroquois Refuge is popular among all hunting groups, but most notably deer and waterfowl hunters. The refuge is becoming increasingly popular for these hunting activities and we are experiencing greater law enforcement challenges such as illegal deer stands, access into closed areas, littering, conflicts among user groups, and failure to abide by permit regulations.

We develop our wildlife-dependent recreation programs, including hunting, in consultation with State fish and wildlife agencies and stakeholders. Refuge recreation programs must

- promote safety of participants, other visitors, and facilities;
- promote compliance with applicable laws and regulations and responsible behavior;
- minimize or eliminate conflict with fish and wildlife population or habitat goals or objectives in an approved plan;
- minimize or eliminate conflicts with other compatible wildlife-dependent recreation;
- minimize conflicts with neighboring landowners;
- promote accessibility and availability to a broad spectrum of the public;
- promote resource stewardship and conservation;
- promote public understanding and increase public appreciation of America's natural resources and our role in managing and conserving these resources;
- provide reliable/reasonable opportunities to experience wildlife;
- use facilities that are accessible to people and blend into the natural setting; and
- use visitor satisfaction to help define and evaluate programs.

### ***Objective 5.1 Hunting***

Allow access for hunting of small game, deer, turkey, waterfowl, and other migratory birds in accordance with New York State regulations and consistent with sound biological principles to provide participants with reasonable harvest opportunities, un-crowded conditions, and minimal conflicts with other users.

#### **Rationale**

Hunting is one of the six priority public uses required by the Improvement Act of 1997 to receive enhanced consideration on refuges. Hunting is a popular and traditional activity in the area and a management tool to keep wildlife populations at healthy numbers to maintain healthy habitats. When managed appropriately, hunting can instill a unique understanding and appreciation of wildlife, their behavior, and their habitat needs.

According to the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation approximately 566,000 residents and non-residents participated in hunting in New York in 2006. That group spent more than \$715 million on activities and equipment related to hunting (Service 2006b).

Current hunting activities and methods permitted on the refuge were established in the Refuge Hunting Plan. This plan was approved in the mid-1980's and has had few modifications. In 2008 the refuge received approximately six visits for migratory bird hunting (non waterfowl), 432 visits for waterfowl hunting, 453 for upland game, and 4,656 for deer hunting. The refuge provides information regarding annual hunt programs through refuge brochures, hunting maps, fact sheets, and Web sites.

The refuge is open to hunting during most New York State hunting seasons and in accordance with New York State Hunting laws and refuge specific regulations. All hunting requires a refuge permit. Except for the spring turkey season which is open during the month of May, hunting is restricted on the refuge from March 1 through September 30.

As part of the refuge's commitment to young hunters, we accommodate two youth orientation programs and two youth-only hunt days each year. These youth events are coordinated with the National Wild Turkey Federation and Lake Plains Waterfowl Association and are limited to 25 junior hunters. Providing a high-quality hunt on the refuge promotes visitor appreciation and support for refuge programs. The guiding principles for the refuge hunt program include the following:

- Manage wildlife populations consistent with the Refuge System, specific management plans approved after 1997, to the extent practicable, State fish and wildlife conservation plans.
- Promote visitor understanding of, and increase visitor appreciation for, America's natural resources.
- Provide opportunities for quality recreation and interpretive experiences consistent with criteria describing quality found in 605 FW 1.6 (*Service Manual*).
- Encourage participation in hunting to help preserve it as a tradition deeply rooted in America's natural heritage and conservation history.
- Minimize conflicts with visitors participating in other compatible wildlife-dependent recreational activities.

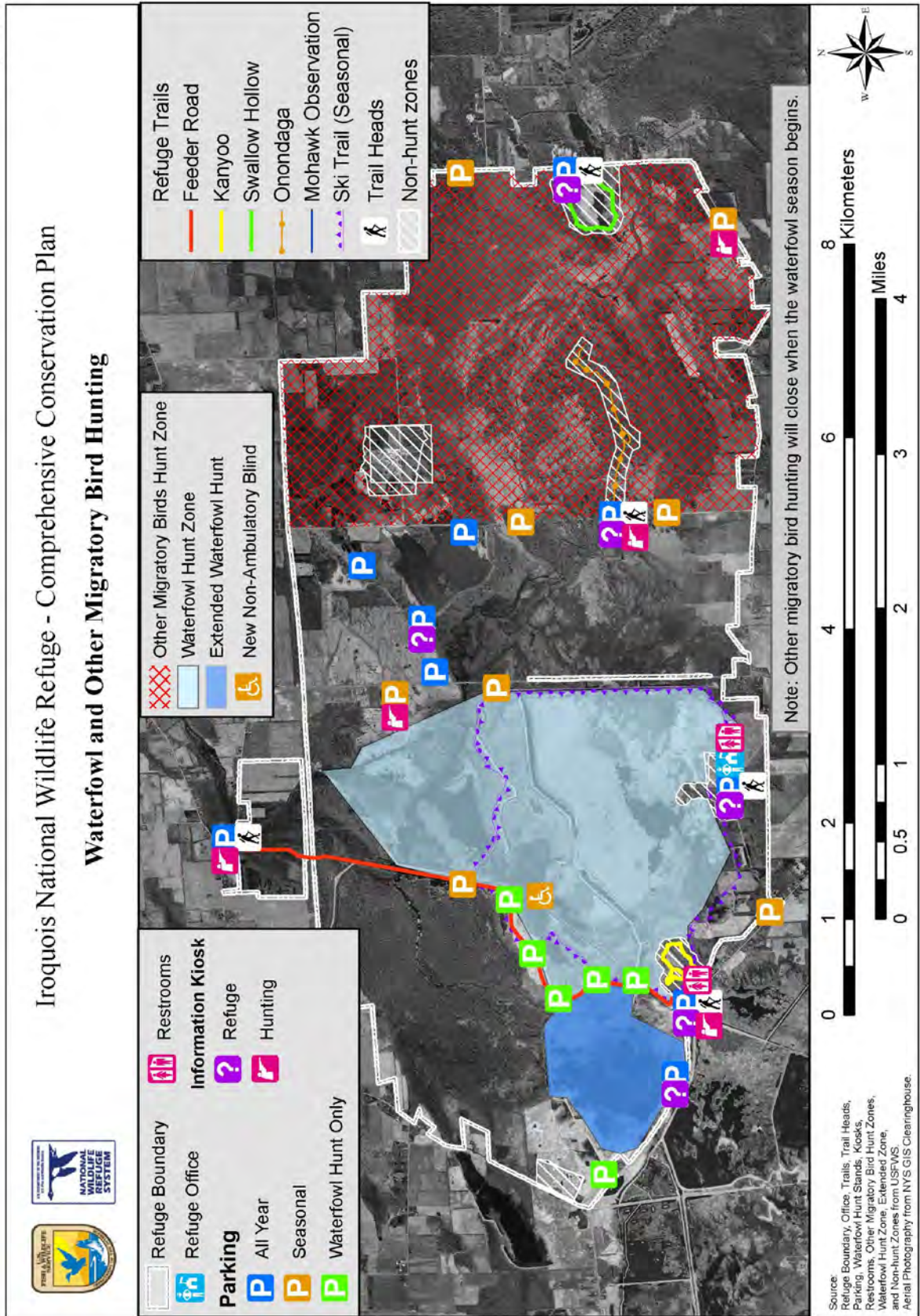
Deer hunting is the most common form of hunting pressure on the refuge. More than 400 hunters use the refuge on opening day of the regular deer season and on Thanksgiving Day, and 100-200 people hunt the refuge on other days during the season. This level of hunting pressure creates potentially unsafe, overcrowded hunting conditions. The number of reported deer hunter visits increased significantly from 2007 (3,227 hunters) to 2008 (4,500 hunters). The refuge will continue to operate the deer hunting programs on the refuge as status quo until we can further investigate whether there is a need to limit the number of hunters during high use days. This may require us to look at hunting pressure and harvest data for several years to reestablish refuge use and trend data for the deer hunt programs.

The refuge receives more turkey hunt lottery applications than it has permits available. We will continue to manage permits with a pre-season lottery draw; however, the refuge season will be split into two sessions to provide additional permits available per year. This would allow individuals to hunt for either 15 or 16 days depending on the session for which they are drawn. This lottery draw will allow hunters to rank their sessions in their order of preference. The first session will run from May 1 to May 15 and the second session will run from May 16 to May 31. There will be 50 permits for Session 1 and 25 permits for Session 2. This new system would allow 50 percent more permits to be issued to refuge turkey hunters per year, thus allowing more hunters to participate. The refuge's Youth Turkey Hunt which has been conducted on the first Sunday after the opening of the spring turkey season will be moved to align with New York State's designated Youth Hunting Days in late April. The refuge will open a fall turkey hunt aligned with the New York State season. Hunting will be allowed in the same areas where upland/small game hunting is allowed, which is most of the refuge minus the emergent marshes.

The lands and waters of Iroquois Refuge were purchased through the sale of Duck Stamps under the Migratory Bird Hunting and Conservation Stamp Act as an "inviolable sanctuary for migratory birds and other wildlife uses." In 1958 an amendment to the Migratory Bird Hunting and Conservation Stamp Act increased the total area of a refuge that could be opened for hunting migratory game birds from 25 percent up to 40 percent. Because the refuge was acquired as an inviolable sanctuary, only 40 percent of the refuge area may be opened at one time for hunting waterfowl and other migratory birds (woodcock, snipe and rail). After reevaluating the areas which are open to waterfowl and other migratory bird hunting we found that we exceed the 40 percent limit when the New York State seasons for hunting waterfowl and other migratory birds overlap (map 4-6). Waterfowl hunting is the second most popular hunt on the refuge with an average of 400 hunt visits per year over the past five years. Hunting of other migratory birds



Map 4-6



reports an average of 17 hunt visits per year over the past five years. Based on our evaluation of the current hunting program several strategies will be implemented in the waterfowl and other migratory bird hunting programs to bring the refuge into compliance.

Traditionally, refuge waterfowl hunting has been closed on the Thursday prior to the opening of the deer firearm season. Since the refuge hunts waterfowl only Tuesday, Thursday, and Saturday, this has limited the number of hunt days to about nine waterfowl hunting days each year. The waterfowl hunting season will be extended in Cayuga Pool only until December 1. This will provide additional hunting days for waterfowl hunters. The structure of Cayuga Pool and its surrounding areas will maintain separation between waterfowl hunters and deer hunters while maintaining the quality waterfowl hunt Iroquois Refuge is known to have. Youth waterfowl hunting usually takes place the Sunday after the opening of the season. The New York State Youth Hunting Days are almost two weeks earlier. The refuge is changing its Youth Waterfowl Hunt Program to coincide with New York State Youth Hunting Days to align these two programs and allow young hunters the first opportunity to harvest birds.

The refuge will implement a refuge permit system where a general permit will be available for hunting of upland game, other migratory birds, and big game. An application fee will be charged for all controlled hunts that are determined through a lottery system; this will include the spring turkey hunt and waterfowl hunting.



*Cayuga Pool*

USFWS

**Strategies – All Hunting:**

- Create a general permit for the refuge hunting program. Under a general permit, hunters may choose to apply for hunts that require a lottery system and submit the required fee.
- All lottery hunts will require an application fee.

**Strategies – Deer Hunting:**

- Continue current management of refuge deer hunting programs and evaluate each year.

- Develop survey/permitting protocol to look at hunting pressure and harvest data for firearms season. Evaluate to determine if hunting pressure restriction is needed.
- Post Onondaga Trail as a “no hunting zone” to restrict hunting and hunter access. This will make it consistent with the other nature trails on the refuge and allow use by other visitors during the regular (gun) deer hunting season (map 4-7).
- Improve big game hunting brochure to cover all aspects of frequently asked questions to better inform our hunters.
- Continue to provide two locations for deer hunters with disabilities and make improvements including providing ground blinds.
- Develop parameters/protocol for hunting and reserving non-ambulatory hunting blinds.

**Strategies – Spring Turkey Hunting:**

- Issue turkey permits through a pre-season lottery draw. The lottery draw would allow hunters to be considered for two separate sessions that they will rank by preference. The first session will run from May 1 to May 15 and the second session will run from May 16 to May 31.
- Increase hunting permits up to 75 permits, divided into the two different hunt sessions. There will be 50 permits in Session 1 and 25 permits in Session 2.
- Reschedule the Youth Turkey Hunt Program to align with the New York State Youth Hunting Weekend.
- Continue to require and provide a youth only orientation in cooperation with the local chapter of the National Wild Turkey Federation prior to the youth hunt weekend.

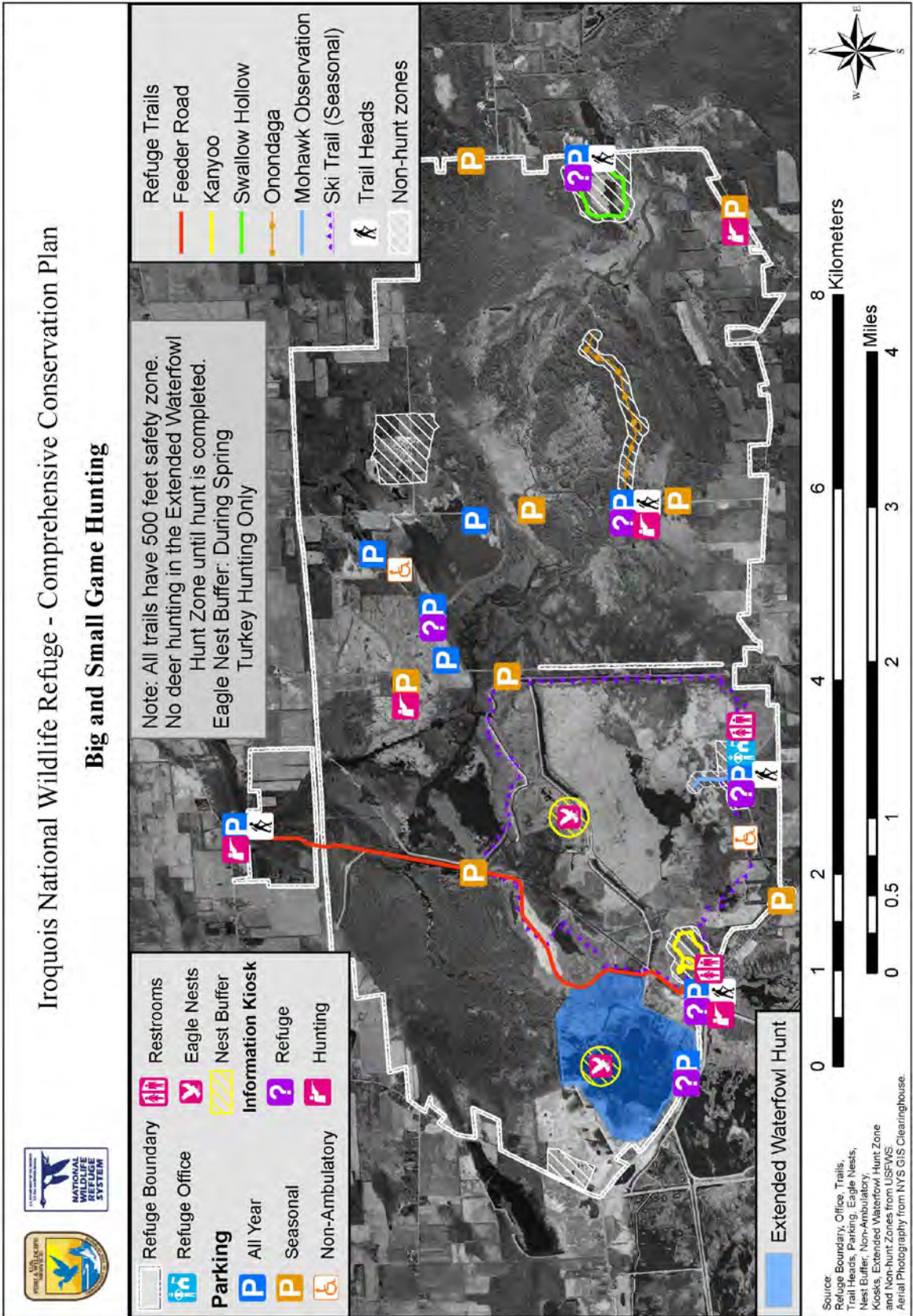
**Strategies – Fall Turkey Hunting:**

- Allow fall turkey hunting in accordance with State seasons and regulations under general permits.

**Strategies – Waterfowl Hunting:**

- Establish a lottery permit fee that is the same for weekdays and Saturdays.
- Continue to hunt in the same marshes that are currently open to hunting (map 4-6).
- Continue to provide hunt stands and add an opportunity to hunt in “free roam” areas. Use habitat conditions to determine the exact locations of stands and free roam areas. Selection for free roam areas will take place at the check station during the draw.
- Allow canoeing for both free roam areas as well as stand areas as appropriate.
- Continue to allow waterfowl hunting on Tuesdays, Thursdays and Saturdays from one-half hour before legal sunrise until noon. Check out will be at the Waterfowl Permit Station no later than 1:00 p.m.
- Extend waterfowl hunting season no later than December 1 in Cayuga Pool only, however, there will be no hunting on Thanksgiving Day.
- Develop parameters and guidelines to allow scouting.
- Continue to host the Youth Waterfowl Hunt Program with a youth only hunt day. Reschedule Youth Waterfowl Hunt Program to align with the New York State Youth Hunting days.
- Hold a pre-season lottery drawing for expected high use waterfowl hunt days prior to the hunt season. Allow stand-by hunters for no shows as long as the hunter has a refuge permit and other required documents.

Map 4-7



- Continue to require and host waterfowl identification courses in cooperation with the NYSDEC and the Finger Lakes and Western New York Waterfowl Association.
- Create a permanent, accessible hunt blind and develop parameters for hunting and reserving this blind.
- Continue to provide a 50 percent discount on permit fees for Golden Age and America the Beautiful – Interagency Senior Pass Holders.

**Strategies - Other Migratory Bird Hunting:**

- Continue to hunt under general permits with no associated fees.
- Allow hunting of woodcock, snipe, and rail prior to the opening of waterfowl season. Discontinue during waterfowl season to maintain the 40 percent acreage requirement discussed above (map 4-6).

**Strategies – Small/Upland Game:**

- Continue to hunt small/upland game (ring neck pheasant, ruffed grouse, cottontail rabbit, gray squirrel, coyote, raccoon, skunk, opossum, and fox) under general permits.

***Objective 5.2 Fishing***

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

**Rationale**

Fishing is one of the six priority public uses required by the Improvement Act of 1997 to receive enhanced consideration on refuges. Fishing is also a popular and traditional activity in the area. Fishing on the refuge is permitted in accordance with Federal and State regulations. The refuge received 1,073 visits in 2008 for recreational fishing.

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

Providing high-quality fishing opportunities on the refuge promotes visitor appreciation and support for refuge programs. The guiding principles for our fishing program include the following:

- Maximize safety for anglers and other visitors.
- Cause no adverse impact on populations of resident or migratory species, native species, threatened and endangered species, or habitat.
- Encourage the highest standards of ethical behavior in regard to catching, attempting to catch, and releasing fish.
- Provide opportunities to a broad spectrum of the public that visits, or potentially would visit, the refuge.
- Provide reasonable accommodations for individuals with disabilities to participate in refuge fishing activities.

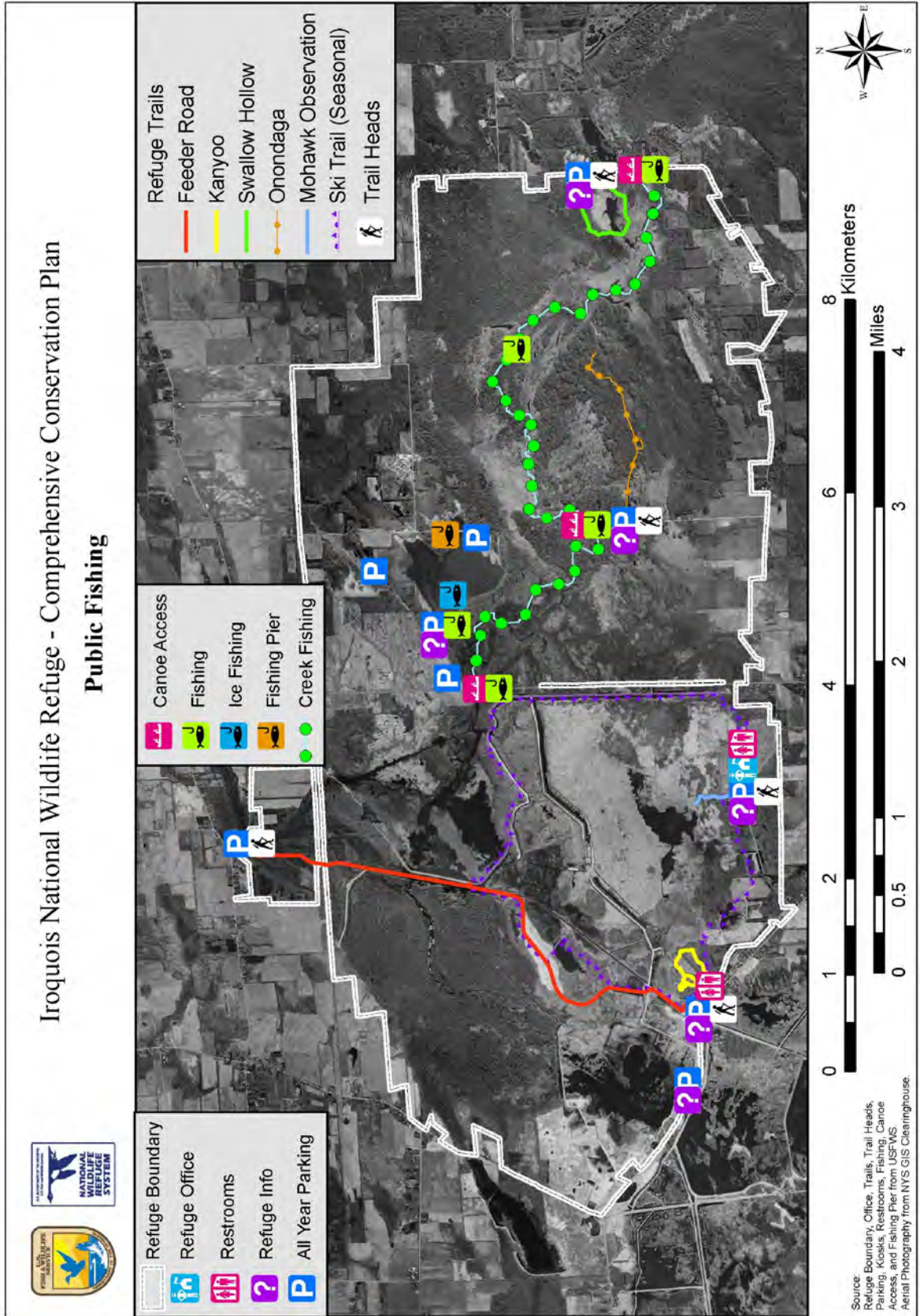
- Reflect positively on the Refuge System.
- Provide uncrowded conditions.
- Create minimal conflict with other priority, wildlife-dependent recreational uses or refuge operations.
- Provide reasonable challenges and harvest opportunities.
- Increase visitor understanding and appreciation for the fishery resource.

Fishing is currently permitted year-round from sunrise to sunset from the shore of Ringneck Marsh and in Oak Orchard Creek from the shore at Route 63, Sour Springs Road and Knowlesville Road or by non-motorized boat between Route 63 and Knowlesville Road (map 4-8). Frogging will be continued on the refuge for bullfrogs only per State fishing regulations.

**Strategies:**

- Continue to allow access for fishing in accordance with New York State regulations in designated areas providing participants with reasonable harvest opportunities, uncrowded conditions, and minimal conflicts with other users.
- Continue frogging for bullfrogs only on the refuge using a spear, club, hand, or hook under State fishing regulations.
- Continue to allow fishing at Ringneck Marsh and Oak Orchard Creek year-round.
- Continue to host the Youth Fishing Derby on the first Saturday in June as part of National Fishing and Boating Week.
- Partner with the Service Fisheries Office to conduct a fisheries inventory on the refuge.
- Evaluate the quality of fishing opportunities at Ringneck Marsh.
- Develop an accessible fishing pier at Ringneck Marsh or in Oak Orchard Creek along Sour Springs Road.
- Prohibit the use of lead sinkers and other lead tackle to prevent their ingestion by wildlife and possible lead poisoning.
- Develop an outreach program to minimize conflicts among user groups, help control aquatic invasive plants and lead in the environment, reduce the introduction of nonnative fish species, and minimize the disturbance to wildlife and habitat.

Map 4-8



**Goal 6. Enhance partnerships with local communities and various organizations to garner support and promote refuge programs and resources.**

***Objective 6.1 Landscape-Scale Conservation***

Enhance the conservation and management of fish and wildlife resources in western New York through partnerships with public and private conservation groups, private landowners, State, and local entities including Oak Orchard Watershed Protection Alliance, NYSDEC, and other Service offices.

**Rationale**

The refuge has benefited from existing partnerships in a variety of ways. These include sharing of technical expertise to support wildlife and public resources, collaborative land conservation planning to ensure that important wildlife habitat is conserved throughout western New York, and cooperative outreach and enforcement of refuge regulations. We conduct biological and environmental research and monitoring through partnerships with colleges, local schools, Ducks Unlimited (DU), other NGO's, and NYSDEC. The lack of refuge staffing and funding is the limiting factor in developing and maintaining partners and partner programs.

The refuge and the NYSDEC have been in partnership for management of the Iroquois Wetland Complex which includes Iroquois Refuge, Oak Orchard WMA, and Tonawanda WMA since the refuge was established. The refuge and the NYSDEC work together to manage the wetlands and other habitats and cooperate on shared projects and activities. In addition, NYSDEC Environmental Conservation Officers provide law enforcement coverage on the refuge and NYSDEC trains and provides instructors for the waterfowl identification classes held at Iroquois Refuge.

Iroquois Refuge will work closely with other agency, NGO, and private partners to initiate a private lands habitat restoration program in the Oak Orchard Creek watershed. Water flowing into Oak Orchard Creek upstream of the refuge has a direct effect on refuge water quality. Additionally, wildlife habitat on private lands near the refuge can complement the habitats provided on the refuge and improve the quality of the watershed as a whole. Much of the property adjacent to the refuge and State WMAs has been developed for agriculture or residential and commercial uses. Any restoration activities on these private lands will increase the natural buffer around the refuge and directly improve the refuge's water and habitat quality.

We intend to work within existing Service or Natural Resource Conservation Service (NRCS) private lands programs to help facilitate private land projects on land near the refuge. Currently, most government sponsored private land habitat improvement programs have many more applicants than can be accommodated by existing resources. The additional assistance the refuge can provide by facilitating these programs on our neighbor's lands will help the private landowners, the agency overseeing the program, and the refuge itself.

Additionally, the refuge currently oversees 23 conservation easements on lands throughout western New York. These easements were transferred to the refuge from the U.S. Department of Agriculture (USDA) through the Farm and Home Administration (FMHA) loans. Generally, these easements protect relatively small wetlands located on agricultural lands. The refuge will visit and catalogue the biological resources on these easements and determine any restoration and enhancement opportunities that may exist on these lands as well as determining compliance with easement requirements. While visiting, refuge staff will also record any potential wetland restoration or habitat/water quality improvement opportunities that exist on the adjacent lands not currently covered under the easement and contact landowners to determine their interest in private lands programs.



**Strategies:**

- Continue to partner with the Service Partners for Fish and Wildlife Program to provide technical assistance for habitat restoration projects in western New York.
- Continue to cooperate with the Service New York Field Office in Cortland, NY to manage trust resources on and off refuge lands.
- Continue to work with the Service Lower Great Lakes Fisheries Resources Office on habitat restoration projects, fisheries inventory, and outreach.
- Continue to partner with NYSDEC on law enforcement, habitat restoration and management, outreach events, etc.
- Increase communication and collaboration with local communities including the Town of Alabama, the Town of Shelby, and Orleans and Genesee Counties.
- Enhance partnership with the Oak Orchard Watershed Alliance which was established in August of 2004 to guide the development of the State of the Basin Report for the Oak Orchard watershed. The State of the Basin Report is the first step in the development of a comprehensive watershed management plan. The Orleans and Genesee County Soil and Water Conservation Districts sponsor this watershed planning effort.
- Co-locate with the Lower Great Lakes Fish and Wildlife Conservation Office currently located in Amherst, New York into a new refuge visitor contact station and administration building (as discussed in the beginning of this chapter).

***Objective 6.2 Support for Refuge Programs***

Enhance refuge programs and increase awareness and stewardship for the refuge through support from partners that contribute to the Service mission, the refuge purpose, and refuge habitat, wildlife, and recreation programs.

**Rationale**

Due to our limited staff and funding, many refuge programs would not be possible without partners. Partners help with public use, special events, outreach, and research.

Friends of Iroquois Refuge is a not-for-profit organization dedicated to increasing public awareness of Iroquois Refuge and to helping the community understand the refuge's mission and goals.

The Friends of Iroquois Refuge has several priorities to achieve their mission:

- Conserve, protect, and enhance fish and wildlife and their habitats for the continuing benefit of the American people.
- Support the stewardship of the National Wildlife Refuge System.
- Improve awareness, appreciation, conservation, and responsible utilization of the refuge.
- Provide assistance to refuge programs by entering into agreements with the Service.
- Produce and make available to refuge visitors, by sales or free distribution, suitable interpretive and educational materials to increase visitor understanding of the refuge, wildlife, and the environment.
- Produce and make available to refuge visitors, by sales or free distribution, special materials,

memorabilia, and events that will enhance visitor enjoyment.

- Acquire materials, supplies, equipment, and labor which may be retained by the Corporation, or donated to the Service or refuge to support operational, educational, or maintenance projects.

Friends of Iroquois Refuge have secured funding from the Margaret L. Wendt Foundation, the National Fish and Wildlife Foundation Centennial Legacy Fund, the Wild Birds Unlimited Pathways to Nature Program, the Service, the Iroquois Job Corp, and Friends of Iroquois Refuge members. Friends of Iroquois Refuge are able to raise funds to be allocated for specific, much-needed projects on the refuge. Examples of such projects and activities include the Youth Fishing Derby and the Spring into Nature Celebration, purchase of camera equipment for live views of the eagle and kestrel nests, rehabilitation of Swallow Hollow Nature Trail, purchase of trail benches, support for outreach and educational programs such as the CAC program, and the purchase and installation of a water control structure.

The refuge is fortunate to have a dedicated group of individuals who voluntarily assist the refuge in various ways. Thirty volunteers contributed over 5,000 hours in 2007 and 86 volunteers provided over 7,000 hours of volunteer time to refuge activities in 2008 (Table 3-23). These volunteers assisted with environmental education programs and outreach events, conducted wildlife and habitat surveys, provided visitor services, banded birds, managed habitats and species, and carried out general maintenance tasks. In addition to helping the refuge achieve its objectives and strategies, this group of volunteers serves as an important link with the community at large, promoting refuge messages and garnering support for the Refuge System.

Iroquois Job Corps Center has contributed significantly to projects and events on the refuge. Carpentry students helped rebuild the 250-foot boardwalk on Kanyoo Nature Trail, participated in the rebuilding of Swallow Hollow Nature Trail, including 2,000 feet of boardwalk, and put a new roof and siding on Building 17 (a storage building located at refuge headquarters). These activities saved the refuge more than \$75,000. Students from Iroquois Job Corps Center have also assisted with the refuge Spring into Nature Celebration helping visitors build bird houses, paint bird silhouettes, and conduct face painting.

The refuge works with many non-profit organizations to help facilitate refuge programs to meet the demand of the public, to utilize their expertise, or to complete projects that would otherwise be delayed. Such refuge programs include the Young Waterfowler's Orientation, the New York State Waterfowl Identification Course, the waterfowl hunt program, and summer internships.

**Strategies:**

- Increase support for activities of Friends of Iroquois Refuge to promote refuge programs and act as a local grassroots organization through interpretation and education programs.
- Enhance the refuge volunteer program to assist with the completion of refuge projects.
- Enhance partnership with the Iroquois Job Corps Center by engaging in at least one cooperative project per year with the center.
- Continue to partner with other non-profit organizations like Buffalo Audubon Society, Western New York and Finger Lakes Waterfowl Association, Lake Plains Waterfowl Association, Canisius College, and University of Buffalo.
- Develop a recreational vehicle (RV) pad with hookups on the refuge to accommodate seasonal volunteers.

### ***Objective 6.3 Research***

Conduct research activities using non-Service personnel from colleges, universities, Federal, State, and local agencies, NGOs, and qualified members of the public to enhance our understanding of species requirements, habitat changes, and effectiveness of management techniques.

#### **Rationale**

Some research activities on the refuge are currently conducted by non-Service personnel including colleges, universities, Federal, State, and local agencies, NGOs, and qualified members of the public. Such research furthers our understanding of the natural environment and improves the management of the refuge's natural resources. The information research generates applies to management on and near the refuge. Past research projects have studied species including neotropical migrants, marsh birds, and waterfowl. Habitat management techniques like mowing and prescribed fire have been examined to determine their effects on flora and fauna. Other projects have been broader in scale such as the surface-water/ground-water interaction study being conducted by USGS to understand how water flows through the entire refuge.

The Service encourages and supports research and management studies on refuge lands that will improve our understanding of and strengthen decisions on managing natural resources. The refuge manager encourages and seeks research that clearly relates to approved refuge objectives, improves habitat management, and promotes adaptive management. Priority research addresses the need for better managing the nation's biological resources. These resources are important to the Department of Interior, the Refuge System, and State fish and wildlife agencies. Such research identifies important management issues or demonstrates techniques for managing species or habitats.

We also consider research for other purposes that may not relate directly to refuge-specific objectives, but contribute to the broader enhancement, protection, use, preservation, or management of native populations of fish, wildlife, and plants, and their natural diversity in the region or the Atlantic Flyway. All proposals must comply with Service policy on compatibility.

#### **Strategies:**

- Continue to encourage local college research projects on the refuge to further obtain information regarding the success of management strategies.
- Continue to work with State and other Federal agencies on research projects conducted on the refuge.
- Develop a database of research needs that is updated each year to allow the refuge to respond quickly to funding opportunities.

### **Other Management Actions**

These actions are not specific to any goal or objective but will be completed with the 15-year comprehensive planning timeframe.

### ***Funding Considerations***

We developed an estimate of staffing and funding requirements for implementation of the CCP management activities (Appendix F). An assumption is made that projects proposed will be implemented as such funds become available.

### ***Federal Regulations***

We developed and assessed the Service management actions based on the assumption that all applicable Federal laws and regulations will be complied with when the management actions are implemented.

### ***Protecting Historical and Cultural Resources***

We will comply with all regulations and employ existing methods for protecting historical and cultural resources across the refuge. Implementation of individual projects will be reviewed for their potential effect on cultural resources to comply with the National Historic Preservation Act. The New York State Preservation Officer and Native American Tribal governments will be engaged for consultation as appropriate. Our regional cultural resources staff will evaluate certain management actions which have the potential to negatively affect cultural resources. These include new facilities such as hunt blinds, non-motorized boat access, boardwalks, and dike extensions.

### ***Adaptive Management***

We acknowledge that our current information on species and ecosystems is incomplete or provisional, and subject to change as our knowledge base improves. We will use an adaptive management approach to keep the CCP relevant and current. Through this approach we will incorporate the most recent scientific research, experience from past management actions, and the knowledge of staff and other partners to make the most informed future management decisions.

### ***Control of Invasive Plant Species***

The Refuge System has identified invasive species control as a national priority. Fortunately the threat of invasive species at Iroquois Refuge is currently low. Our objective is to prevent new invasive plant species from becoming established as we continue to manage and control the spread of the few invasive species that already exist. To the extent possible, we will physically remove invasive species whenever they are encountered. Service-approved herbicides may be used to control invasive species when considered necessary by the refuge manager and upon regional office review and approval. Invasive species of concern on the refuge include purple loosestrife, common reed, black swallow wart, non-native honeysuckles, autumn olive, oriental bittersweet, and multiflora rose.

### ***Control of Resident Canada Geese***

The refuge currently supports a population of resident Canada geese that appears to be stable and in balance with desired vegetation conditions and other wildlife populations. If the refuge population of resident Canada geese becomes large enough to have a negative effect on refuge vegetation and consequently on other wildlife that are dependent on that vegetation, we will consider opening a controlled goose hunt during the New York State's September Canada goose season.

Resident geese that use the refuge as a roosting area in September are currently exposed to hunting pressure as they leave the refuge each day to feed in nearby agricultural fields. Currently, this hunting pressure appears to be adequate to keep the refuge resident Canada goose population at a sustainable level.

### ***Hydrological Constraints***

The refuge lies near the center of the Oak Orchard Creek watershed in a section of floodplain that is relatively flat over a large geographic area. High water events, especially in the spring, occasionally cause flooding of roadways and uplands within and around the refuge. Water restrictions (e.g., natural rock restriction in Shelby) exist downstream of the refuge within the creek which slow water movement and prolong flood events. The refuge has minimal control over the flow of Oak Orchard Creek. Some refuge impoundments are lowered in anticipation of flood events to reduce the chances of flooding State Route 63. However, the water holding capacity of refuge impoundments is only a small fraction of the overall

size of the upstream watershed and runoff quickly fills impoundments to capacity. When this happens the only relief from flooding comes when downstream water levels begin to recede. The refuge will continue to function under the hydrological constraints imposed upon it due to its location within the Oak Orchard Creek watershed.

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

Service planning policy (602 FW 4) identifies 25 step-down plans that may be applicable on any given refuge. We have identified nine plans listed below in priority order as the most relevant to this planning process and necessary to achieve all six refuge goals stated in this CCP. Sections of the refuge HMP which require public review are presented within this document and will be incorporated into the final version of the HMP immediately upon CCP approval. Step-down plans will be modified and updated as new information is obtained. The schedule for the completion of the following step-down management plans is shown below and also in Table 1-3:

- Habitat Management Plan (HMP) - immediately following CCP approval
- Inventory and Monitoring Plan (IMP) - within one year of CCP approval
- Visitor Services Plan (includes hunting and fishing) - within one year of CCP approval
- Law Enforcement Plan - within two years of CCP approval
- Furbearer Management Plan - within three years of CCP approval
- Fire Management Plan – within three years of CCP approval
- Integrated Pest Management Plan - within four years of CCP approval
- Cultural Resources Management - within four years of CCP approval
- Fishery Resources Management – within five years of CCP approval

The HMP along with IMP will be developed as the highest priority step-down plans after approval of the CCP. These, along with the Visitor Services Plan, are described in greater detail below.

### **Habitat Management Plan**

The refuge HMP is the requisite first step to achieving the objectives of Goals 1 through 3. The HMP will incorporate the habitat objectives developed herein, and will also identify “what, which, how, and when” actions and strategies will be implemented over the 15-year time frame to achieve those objectives. Specifically, the HMP will define management areas, treatment areas, identify type or method of treatment, establish the timing for management actions, and define how we will measure success over the next 15 years. In this CCP, the goals, objectives, and list of strategies under each objective identify how we intend to manage habitats on the refuge. Both the CCP and HMP are based on current resource information, published research, and our own field experiences. Our methods, timing, and techniques will be updated as additional information becomes available. To facilitate our management, we will regularly maintain our GIS database, documenting any major vegetation changes at least every five years.

### **Inventory and Monitoring Plan**

The refuge IMP is vital for implementing habitat management actions and measuring our success in meeting the objectives. The IMP will outline the methodology to assess whether our original assumptions and implemented management actions are supporting our habitat and species objectives. Inventory and monitoring needs will be prioritized in the IMP. The results of inventories and monitoring activities will provide us with more information on the status of our natural resources and allow us to make informed management decisions.

**Visitor Services Plan**

The refuge visitor services plan is the requisite first step to achieving the objectives of Goals 4 and 5. The visitor services plan will incorporate the public use and recreation objectives developed herein and will incorporate and further define implementation of strategies to achieve the objectives.

## Chapter 5



*Swallow Hollow Ribbon Cutting*

## Consultation and Coordination

- Public Involvement Summary
- List of Preparers

## Chapter 5

### Consultation and Coordination

#### Public Involvement Summary

Effective conservation usually begins with effective community involvement. To ensure that future management of the refuge considers the issues, concerns, and opportunities expressed by the public, we used a variety of public involvement techniques in our planning process.

Public Scoping: In the spring of 2008, staff at Iroquois Refuge sought public input on all aspects of refuge management as part of the CCP process. In April 2008, an introductory newsletter was mailed to over 360 refuge neighbors, sporting groups, local politicians, conservation groups, and State agencies to inform them of the planning process. Copies of the newsletter were also available at the refuge visitor contact station, through the refuge Web site, and at community outreach events. Iroquois Refuge hosted public meetings on April 8, 9 and 10, 2008 in Batavia, Albion, and the refuge headquarters in Alabama, respectively. Each day the public could attend either an open house style meeting in the afternoon, or a more structured meeting in the evening. Approximately 20 people attended over the three days. Participants were encouraged to actively express their opinions and suggestions. The public meetings allowed us to gather information and ideas from local residents, adjacent landowners, and various organizations and agencies. A written public comment period was also open from February 26 through April 30, 2008 during which time people could mail, email, or drop off comments.

Newsletters: In addition to the introductory newsletter described above, we distributed planning newsletter updates in September 2008 and January 2009. In these newsletters, we shared the refuge vision statement and goals, summarized the comments received in scoping, and described our progress through the process. In October 2010 we distributed a newsletter for the release of the draft CCP for public review and comment.

Federal Register Notice: We published our Notice of Intent (NOI) in the *Federal Register* on February 26, 2008 stating we intended to prepare “a comprehensive conservation plan (CCP) and an associated National Environmental Policy Act (NEPA) document for Iroquois National Wildlife Refuge (Refuge).” We subsequently published our Notice of Availability (NOA) for the draft CCP on October 4, 2010.

Workshops: The rationale of our workshops was to generate a range of possible solutions that would address issues of resource management and public use at the refuge. In 2008 and 2009, we held workshops with various biological and public use experts from governmental and other organizations in discussing the vision, goals, objectives, strategies, and consequences at the heart of this plan.

The input we obtained from our public meetings, newsletters, and workshops has been used to prepare this CCP, which was released for 30 days of public review and comment between October 4, 2010 and November 3, 2010. During that period, we held an additional public meeting on October 20, 2010 to give the public opportunity to comment. We received a total of 37 written, oral, and email comments that were reviewed and considered for the final CCP.

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## List of Preparers

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Experience: USFWS, Region 5 Refuge Planner 1998-present  
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California Department of Parks and Recreation  
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#### **Thomas Roster, Refuge Manager**

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Education: B.S. Wildlife Management  
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#### **Dawn Washington, Supervisory Wildlife Refuge Specialist**

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#### **Paul Hess, Wildlife Biologist**

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#### **Tuneeshaw Jepsen, Biological Science Technician**

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Education: B.A. in Environmental Science  
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## Glossary and Acronyms



Cindy Kreticos/USFWS

*Spotted salamander*

## Glossary and Acronyms

- Glossary
- Acronyms

## Glossary

<b>accessibility</b>	the state or quality of being easily approached or entered, particularly as it relates to complying with the Americans With Disabilities Act.
<b>accessible facilities</b>	structures accessible for most people with disabilities without assistance; facilities that meet UFAS standards; ADA-accessible [E.g., parking lots, trails, pathways, ramps, picnic and camping areas, restrooms, boating facilities (docks, piers, gangways), fishing facilities, playgrounds, amphitheaters, exhibits, audiovisual programs, and wayside sites.].
<b>adaptive management</b>	the process of treating the work of managing natural resources as an experiment, making observations and recording them, so the manager can learn from the experience.
<b>alluvium</b>	clay, silt, sand, gravel, or similar detrital material deposited by running water.
<b>alternative</b>	a reasonable way to fix an identified problem or satisfy a stated need [40 CFR1500.2 (cf. “management alternative”)].
<b>amphibian</b>	a class of carnivorous, ectotherms (body temperature regulated by outside heat sources) whose living members have a moist, glandular skin that is permeable to water and gases. Most amphibians have a well-defined aquatic, larval stage in their life cycle and then undergo metamorphosis into adults. Depending on the species, adults may occupy aquatic or terrestrial habitats. Frogs, toads, and salamanders are examples.
<b>appropriate use</b>	a proposed or existing use on a refuge that meets at least one of the following three conditions: <ol style="list-style-type: none"><li>1. the use is a wildlife-dependent one;</li><li>2. the use contributes to fulfilling the refuge purpose(s), the System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the National Wildlife Refuge System Improvement Act was signed into law; or</li><li>3. the use has been determined appropriate as specified in section 1.11 of that act.</li></ol>
<b>approved acquisition boundary</b>	a project boundary that the Director of the U.S. Fish and Wildlife Service approves upon completion of the planning and environmental compliance process. An approved acquisition boundary only designates those lands which the Service has authority to acquire or manage through various agreements. The approval of an acquisition boundary does not grant the Service jurisdiction or control over lands within the boundary, and it does not make lands within the refuge boundary part of the National Wildlife Refuge System. Lands do not become part of the System until the Service buys them or they are placed under an agreement that provides for their management as part of the System.
<b>aquatic</b>	growing in, living in, or dependent upon water.
<b>avian</b>	of or having to do with birds.

<b>bathymetry</b>	the measurement of water depth at various places in a body of water; <i>also</i> : the information derived from such measurements
<b>basin</b>	the land surrounding and draining into a water body (cf. “watershed”).
<b>best management practices</b>	land management practices that produce desired results [N.b. Usually describing forestry or agricultural practices effective in reducing non-point source pollution, like reseeding skidder trails or not storing manure in a flood plain. In their broader sense, practices that benefit target species.].
<b>biological diversity or biodiversity</b>	the variety of life and its processes and includes the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.
<b>bird conservation region</b>	ecologically distinct regions in North America with similar bird communities, habitats, and resource management issues.
<b>breeding habitat</b>	habitat used by migratory birds or other animals during the breeding season.
<b>community</b>	the locality in which a group of people resides and shares the same government.
<b>compatible use</b>	“The term ‘compatible use’ means a wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge.”—National Wildlife Refuge System Improvement Act of 1997 [Public Law 105-57; 111 Stat. 1253].
<b>compatibility determination</b>	a required determination for wildlife-dependent recreational uses or any other public uses of a refuge.
<b>comprehensive conservation plan</b>	mandated by the 1997 Refuge Improvement Act, a document that provides a description of the desired future conditions and long-range guidance for the project leader to accomplish purposes of the refuge system and the refuge. CCPs establish management direction to achieve refuge purposes. [P.L. 105-57; FWS Manual 602 FW 1.4].
<b>conifer</b>	a tree or shrub in the phylum Gymnospermae whose seeds are borne in woody cones. There are 500–600 species of living conifers (Norse 1990).
<b>conservation</b>	managing natural resources to prevent loss or waste [N.b. Management actions may include preservation, restoration, and enhancement.].
<b>conservation easement</b>	a non-possessory interest in real property owned by another imposing limitations or affirmative obligations with the purpose of returning or protecting the property’s conservation values.
<b>conservation status</b>	assessment of the status of ecological processes and of the viability of species or populations in an ecoregion.

<b>cool-season grass</b>	introduced grass for crop and pastureland that grows in spring and fall and is dormant during hot summer months.
<b>cooperative agreement</b>	a usually long-term habitat protection action, which can be modified by either party, in which no property rights are acquired. Lands under a cooperative agreement do not necessarily become part of the National Wildlife Refuge System.
<b>cover-type</b>	the current vegetation of an area.
<b>critical habitat</b>	according to U.S. Federal law, the ecosystems upon which endangered and threatened species depend.
<b>disturbance</b>	any relatively discrete event in time that disrupts ecosystem, community, or population structure and changes resources, substrate availability, or the physical environment.
<b>drainage basin</b>	an area mostly bound by ridges or other similar topographic features, encompassing part, most, or all of a watershed.
<b>early successional habitat</b>	succession is the gradual replacement of one plant community by another. In a forested ecosystem, tree cover can be temporarily displaced by natural or human disturbance (e.g., flooding by beaver, or logging). The open environments created by removal of tree cover are referred to as 'early-successional' habitats because as time passes, trees will return. The open conditions occur 'early' in the sequence of plant communities that follow disturbance.
<b>easement</b>	a non-possessory interest in real property owned by another imposing limitations or affirmative obligations with the purpose of returning or protecting the property's conservation values. An agreement by which landowners give up or sell one of the rights on their property [E.g., landowners may donate rights-of-way across their properties to allow community members access to a river (cf. "conservation easement").].
<b>ecology</b>	the study of the relations between organisms and the totality of the biological and physical factors affecting them or influenced by them.
<b>ecoregion</b>	a territory defined by a combination of biological, social, and geographic criteria, rather than geopolitical considerations; generally, a system of related, interconnected ecosystems.
<b>ecosystem</b>	a natural community of organisms interacting with its physical environment, regarded as a unit.
<b>edge effect</b>	the phenomenon whereby edge-sensitive species are negatively affected near edges by factors that include edge-generalist species, human influences, and abiotic factors associated with habitat edges. Edge effects are site-specific and factor-specific and have variable depth effects into habitat fragments.
<b>effects</b>	effects, impacts, and consequences, as used in the environmental assessment, are synonymous. Effects may be direct, indirect, or cumulative.

<b>emergent wetlands</b>	wetlands dominated by erect, rooted, herbaceous plants.
<b>endangered species</b>	any species of plant or animal defined through the Endangered Species Act as being in danger of extinction throughout all or a significant portion of its range, and published in the <i>Federal Register</i> .
<b>environment</b>	the sum total of all biological, chemical and physical factors to which organisms are exposed.
<b>environmental analysis</b>	an analysis of alternative actions and their predictable short-term and long-term environmental effects, incorporating physical, biological, economic, and social considerations.
<b>environmental assessment</b>	a systematic analysis of site-specific or programmatic activities used to determine whether such activities have a significant effect on the quality of the physical, biological, and human environment and whether a formal environmental impact statement is required; and to aid an agency's compliance with the National Environmental Policy Act when no environmental impact statement is necessary.
<b>environmental education</b>	curriculum-based education aimed at producing a citizenry that is knowledgeable about the biophysical environment and its associated problems, aware of how to help solve those problems, and motivated to work toward solving them.
<b>environmental impact statement</b>	(EIS) a detailed, written analysis of the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources [cf. 40 CFR 1508.11].
<b>evaluation</b>	examination of how an organization's plans and actions have turned out — and adjusting them for the future.
<b>exotic species</b>	a species that is not native to an area and has been introduced intentionally or unintentionally by humans; not all exotics become successfully established.
<b>fauna</b>	all animal life associated with a given habitat, country, area or period.
<b>Federal land</b>	public land owned by the Federal Government, including national forests, national parks, and national wildlife refuges.
<b>Federal-listed species</b>	a species listed either as endangered, threatened, or a species at risk (formerly, a "candidate species") under the Endangered Species Act of 1973, as amended.
<b>finding of no significant impact</b>	(FONSI) supported by an environmental assessment, a document that briefly presents why a Federal action will have no significant effect on the human environment, and for which an environmental impact statement, therefore, will not be prepared [40 CFR 1508.13].



<b>flora</b>	all the plants found in a particular place.
<b>floodplain</b>	flat or nearly flat land that may be submerged by floodwaters; a plain built up or in the process of being built up by stream deposition.
<b>flyway</b>	any one of several established migration routes of birds.
<b>focal species</b>	a species that is indicative of particular conditions in a system (ranging from natural to degraded) and used as a surrogate measure for other species of particular conditions. An element of biodiversity selected as a focus for conservation planning or action. The two principal types of targets in Conservancy planning projects are species and ecological communities.
<b>forested land</b>	land dominated by trees [For impacts analysis in CCP's, we assume all forested land has the potential for occasional harvesting.
<b>forested wetlands</b>	wetlands dominated by trees.
<b>fragmentation</b>	the disruption of extensive habitats into isolated and small patches. Fragmentation has two negative components for biota: the loss of total habitat area; and, the creation of smaller, more isolated patches of habitat remaining.
<b>geographic information system</b>	(GIS) a computerized system to compile, store, analyze and display geographically referenced information [E.g., GIS can overlay multiple sets of information on the distribution of a variety of biological and physical features.].
<b>glacial drift</b>	a load of rock material transported and deposited by a glacier. Glacial drift is usually deposited when the glacier begins to melt.
<b>glacial moraine</b>	consists of soils formed over sandy glacial till and generally of the steeper soils formed over water-sorted sand and gravel.
<b>glacial till</b>	drift that is deposited directly from glacial ice and therefore not sorted.
<b>glacio-fluvial</b>	geomorphic feature whose origin is related to the processes associated with glacial meltwater.
<b>goals</b>	broad statements of direction; end results or positions to be achieved.
<b>grasslands</b>	land on which the natural dominant plant forms are grasses and forbs; an ecological community in which the characteristic plants are grasses.
<b>green tree reservoir (impoundment)</b>	consist of bottomland hardwood forest land which is shallowly flooded in the fall and winter.
<b>habitat conservation</b>	protecting an animal or plant habitat to ensure that the use of that habitat by the animal or plant is not altered or reduced.
<b>habitat</b>	the place or type of site where species and species assemblages are typically found and/or successfully reproduce. [N.b. An organism's

	habitat must provide all of the basic requirements for life, and should be free of harmful contaminants.].
<b>historic conditions</b>	the composition, structure and functioning of ecosystems resulting from natural processes that we believe, based on sound professional judgement, were present prior to substantial human-related changes to the landscape.
<b>hydrology</b>	the science of waters of the earth: their occurrences, distributions, and circulations; their physical and chemical properties; and their reactions with the environment, including living beings.
<b>hydroperiod</b>	the cyclical changes in the amount or stage of water in a wetland habitat
<b>Important Bird Area</b>	an international bird conservation initiative to identify the most important places for birds, and to conserve them
<b>impoundment</b>	a body of water, such as a pond, confined by a dam, dike, floodgate, or other barrier, which is used to collect and store water for future use.
<b>invasive species</b>	an alien species whose introduction causes or is likely to cause economic or environmental harm or harm to human health.
<b>inventory</b>	a list of all the assets and liabilities of an organization, including physical, financial, personnel, and procedural aspects.
<b>invertebrate</b>	any animal lacking a backbone or bony segment that encloses the central nerve cord.
<b>issue</b>	any unsettled matter that requires a management decision [E.g., a Service initiative, an opportunity, a management problem, a threat to the resources of the unit, a conflict in uses, a public concern, or the presence of an undesirable resource condition.] [N.b. A CCP should document, describe, and analyze issues even if they cannot be resolved during the planning process (FWS Manual 602 FW 1.4).].
<b>lake</b>	an inland body of fresh or salt water of considerable size occupying a basin or hollow on the earth's surface, and which may or may not have a current or single direction of flow.
<b>land protection plan (LPP)</b>	a document that identifies and prioritizes lands for potential Service acquisition from a willing seller, and also describes other methods of providing protection. Landowners within project boundaries will find this document, which is released with environmental assessments, most useful.
<b>land trusts</b>	organizations dedicated to conserving land by purchase, donation, or conservation easement from landowners.
<b>landscape</b>	a heterogeneous land area composed of a cluster of interacting ecosystems that are repeated in similar form throughout.

<b>late-successional</b>	species, assemblages, structures, and processes associated with mature natural communities that have not experienced significant disturbance for a long time.
<b>local agencies</b>	generally, municipal governments, regional planning commissions, or conservation groups.
<b>management plan</b>	a plan that guides future land management practices on a tract [N.b. In the context of an environmental impact statement, management plans may be designed to produce additional wildlife habitat along with primary products like timber or agricultural crops (cf. “cooperative agreement”).].
<b>management strategy</b>	a general approach to meeting unit objectives [N.b. A strategy may be broad, or it may be detailed enough to guide implementation through specific actions, tasks, and projects (FWS Manual 602 FW 1.4).].
<b>marshlands</b>	areas interspersed with open water, emergent vegetation (hydrophytes), and terrestrial vegetation (phreatophytes).
<b>mission statement</b>	a succinct statement of the purpose for which the unit was established; its reason for being.
<b>monitoring</b>	a process of collecting information to evaluate if an objective and/or anticipated or assumed results of a management plan are being realized (effectiveness monitoring) or if implementation is proceeding as planned( implementation monitoring).
<b>national environmental policy act of 1969</b>	(NEPA) requires all Federal agencies to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in planning and implementing environmental actions [Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision-making(cf. 40 CFR 1500).].
<b>national wildlife refuge system</b>	(Refuge System) all lands and waters and interests therein administered by the Service as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas for the protection and conservation of fish and wildlife, including those that are threatened with extinction.
<b>native</b>	a species that, other than as a result of an introduction, historically occurred or currently occurs in a particular ecosystem.
<b>native plant</b>	a plant that has grown in the region since the last glaciation, and occurred before European settlement.
<b>natural conditions</b>	conditions thought to exist from the end of the Medieval Warm Period to the advent of the industrial ear (app. 950AD to 1800AD) based upon scientific study and sound professional judgment.
<b>neotropical migrant bird</b>	a bird species that breeds north of the U.S./Mexico border migrate and winters primarily south of the U.S. border in Mexico, the West Indies, or Central or South America.

<b>non-consumptive, wildlife-oriented recreation</b>	wildlife observation and photography and environmental education and interpretation (cf. “wildlife-oriented recreation”).
<b>non-native species</b>	see “exotic species”.
<b>nuisance species</b>	plants and animals (sometimes called nonnatives or exotics) that threaten the native fish, wildlife, and plants and impede recreational activities.
<b>objective</b>	cf. “unit objective”.
<b>Obligate</b>	able to exist or survive only in a particular environment or by assuming a particular role
<b>partnership</b>	a contract or agreement among two or more individuals, groups of individuals, organizations, or agencies, in which each agrees to furnish a part of the capital or some service in kind (e.g., labor) for a mutually beneficial enterprise.
<b>physiographic area</b>	a bird conservation planning unit with relatively uniform vegetative communities, bird populations, and species assemblages, as well as land use and conservation issues, developed by Partners in Flight.
<b>population</b>	an interbreeding group of plants or animals. The entire group of organisms of one species.
<b>population monitoring</b>	assessing the characteristics of populations to ascertain their status and establish trends on their abundance, condition, distribution, or other characteristics.
<b>preferred alternative</b>	the Service’s selected alternative identified in the Draft Comprehensive Conservation Plan.
<b>prescribed fire</b>	the application of fire to wildland fuels, either by natural or intentional ignition, to achieve identified land use objectives [FWS Manual 621 FW 1.7].
<b>priority general public use</b>	a compatible wildlife-dependent recreational use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation.
<b>private land</b>	land owned by a private individual or group or non-government organization.
<b>protection</b>	mechanisms like fee title acquisition, conservation easements, or binding agreements with landowners that ensure land use and land management practices will remain compatible with maintaining species populations at a site (cf. “long-term ”).
<b>public</b>	individuals, organizations, and non-government groups; officials of Federal, State, and local government agencies; Native American Tribes, and foreign nations—includes anyone outside the core planning team, those who may or may not have indicated an interest in the issues, and those who do or do not realize that our decisions may affect them.

<b>public land</b>	land owned by the local, State, or Federal Government.
<b>rare community types</b>	plant community types classified as rare by any State program; includes exemplary community types.
<b>refuge goals</b>	“descriptive, open-ended, and often broad statements of desired future conditions that convey a purpose but do not define measurable units.” (Writing Refuge Management Goals and Objectives: A Handbook, FWS January 2004).
<b>refuge purposes</b>	“the terms ‘purposes of the refuge’ and ‘purposes of each refuge’ mean the purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge subunit.” (National Wildlife Refuge System Improvement Act of 1997).
<b>refuge lands</b>	lands in which the Service holds full interest in fee title or partial interest like an easement.
<b>reptile</b>	a class of vertebrates whose skin is dry, lacking inglands, and covered with scales. Claws are present and skull, limb bones, vertebrae, muscles, and so forth are stronger and more advanced than those of amphibians. Egg fertilization is internal, there is no larval stage, and eggs have a protective, hard shell.
<b>restoration</b>	management of a disturbed or degraded habitat that results in the recovery of its original state [E.g., restoration may involve planting native grasses and forbs, removing shrubs, prescribed burning, or reestablishing habitat for native plants and animals on degraded grassland.].
<b>scoping</b>	a process for determining the scope of issues to be addressed by a comprehensive conservation plan and for identifying the significant issues. Involved in the scoping process are Federal, state and local agencies; private organizations; and individuals.
<b>shrublands</b>	habitats dominated by various species of shrubs, often with many grasses and forbs.
<b>species</b>	the basic category of biological classification intended to designate a single kind of animal or plant. Any variation among the individuals may be regarded as not affecting the essential sameness which distinguishes them from all other organisms.
<b>species of concern</b>	species not Federal-listed as threatened or endangered, but about which we or our partners are concerned.
<b>state land</b>	State-owned public land.
<b>state-listed species</b>	cf. “Federal-listed species”.
<b>step-down management plan</b>	a plan for dealing with specific refuge management subjects, strategies, and schedules, e.g., cropland, wilderness, and fire [FWS Manual 602 FW 1.4].

<b>stopover habitat</b>	habitat where birds rest and feed during migration.
<b>strategy</b>	a specific action, tool, technique, or combination of actions, tools, and techniques for meeting unit objectives.
<b>succession</b>	the natural, sequential change of species composition of a community in a given area.
<b>terrestrial</b>	living on land.
<b>threatened species</b>	a Federal-listed, protected species that is likely to become an endangered species in all or a significant portion of its range.
<b>trust resource</b>	a resource that the Government holds in trust for the people through law or administrative act [N.b. A Federal trust resource is one for which responsibility is given wholly or in part to the Federal Government by law or administrative act. Generally, Federal trust resources are nationally or internationally important no matter where they occur, like endangered species or migratory birds and fish that regularly move across state lines. They also include cultural resources protected by Federal historic preservation laws, and nationally important or threatened habitats, notably wetlands, navigable waters, and public lands like state parks and national wildlife refuges.].
<b>understory</b>	the lower layer of vegetation in a stand, which may include short trees, shrubs, and herbaceous plants.
<b>unit objective</b>	desired conditions that must be accomplished to achieve a desired outcome [N.b. Objectives are the basis for determining management strategies, monitoring refuge accomplishments, and measuring their success. Objectives should be attainable, time-specific, and stated quantitatively or qualitatively (FWS Manual 602 FW 1.4).].
<b>upland</b>	dry ground (i.e., other than wetlands).
<b>vernal pool</b>	depressions holding water for a temporary period in the spring, and in which various amphibians lay eggs.
<b>vision statement</b>	a concise statement of what the unit could achieve in the next 10 to 15 years.
<b>warm season grass</b>	a grass that grows most during the warmest seasons of the year.
<b>watershed</b>	the geographic area within which water drains into a particular river, stream, or body of water. A watershed includes both the land and the body of water into which the land drains.
<b>wetlands</b>	lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. These areas are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted to life in saturated soil conditions. “Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water.”—Cowardin et al 1979.

<b>wilderness</b>	cf. “designated wilderness”.
<b>wildfire</b>	a free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs on wildlands [FWS Manual 621 FW 1.7].
<b>wildland fire</b>	every wildland fire is either a wildfire or a prescribed fire [FWS Manual 621 FW 1.3].
<b>wildlife-dependent recreational use</b>	a use of a national wildlife refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation (National Wildlife Refuge System Administration Act of 1966).
<b>wildlife management</b>	manipulating wildlife populations, either directly by regulating the numbers, ages, and sex ratios harvested, or indirectly by providing favorable habitat conditions and alleviating limiting factors.
<b>wildlife-oriented recreation</b>	recreational activities in which wildlife is the focus of the experience [“The terms ‘wildlife-dependent recreation’ and ‘wildlife-dependent recreational use’ mean a use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation.”—National Wildlife Refuge System Improvement Act of 1997].

## Acronyms

<u>ACRONYM</u>	<u>FULL NAME</u>
ac	acre
ACJV	Atlantic Coast Joint Venture
ADA	Americans with Disabilities Act
AHMP	Annual Habitat Management Plan
ATV	All-terrain vehicle
BCA	Bird Conservation Area
BCR	Bird Conservation Region
BBS	Breeding Bird Survey
CAA	Clean Air Act
CAC	Canisus Ambassadors for Conservation
CCP	Comprehensive Conservation Plan
CCSP	Climate Change Science Program
CEQ	Council of Environmental Quality
CFR	Code of Federal Regulations
CH4	Methane
CO	Carbon monoxide
CO2	Carbon dioxide
CWCS	Comprehensive Wildlife Conservation Strategy
CWS	Canadian Wildlife Service
DDT	dichloro-diphenyl-trichloroethane
DU	Ducks Unlimited
EA	Environmental Assessment
Eagle Act	Bald and Golden Eagle Protection Act
EE	Environmental Education
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FINWR	Friends of Iroquois National Wildlife Refuge, Inc
FONSI	Finding of No Significant Impact
FTE	Full Time Equivalent
FWS	Fish and Wildlife Service
GHG	Greenhouse Gas
GIRAS	Geographic Information Retrieval Analysis System
GIS	Geographic Information System
ha	hectare
HFCs	Hydrofluorocarbons
HIP	Harvest Information Program
HMP	Habitat Management Plan
IBA	Important Bird Area
Improvement Act	National Wildlife Refuge System Improvement Act of 1997
IMP	Inventory and Monitorin Plan
Iroquois NWR	Iroquois National Wildlife Refuge
IO	Iroquois Observation
LEED	Leadership in Energy and Environmental Design
µg/m <sup>3</sup>	micrograms per square meter
MOU	Memorandum Of Understanding
NABCI	North American Bird Conservation Initiative
NAI	National Association of Intepretors
NAWCP	North American Waterbird Conservation Plan
NAWMP	North American Waterfowl Management Plan
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization



NNL	National Natural Landmark
NOAA	National Oceanic and Atmospheric Administration
NO <sub>2</sub>	Nitrogen Dioxide
N <sub>2</sub> O	Nitrous Oxide
NRCS	Natural Resources Conservation Service
NWR	National Wildlife Refuge
NWRS	National Wildlife Refuge System
NYCRR	New York Code of Rules and Regulations
NYNHP	New York Natural Heritage Program
NYSDEC	New York State Department of Environmental Conservation
O <sub>3</sub>	Ozone
PFCs	Perfluorocarbons
PIF	Partners In Flight
pm	particulate matter
ppm	parts per million
Refuge System	National Wildlife Refuge System
REA	Recreation Enhancement Act
RFB	Riparian Forest Buffer
RNA	Research Natural Areas
ROD	Record of Decision
Service	US Fish and Wildlife Service
SF <sub>6</sub>	Sulfur Hexafluoride
SGNC	Species in Greatest Need of Conservation
SO <sub>2</sub>	Sulfur Dioxide
std	Standard
SWG	State Wildlife Grant program
SWLO	Southwest Lake Ontario Basin
TNC	The Nature Conservancy
TSP	Total Suspended Particulates
UMVGL	Upper Mississippi Valley/Great Lakes
US	United States
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGBC	United States Green Building Council
USSCP	United States Shorebird Conservation Plan
VA	Veterans Affairs
VCS	Visitor Contact Station
VSP	Visitor Services Professional
WMA	Wildlife Management Area

## Bibliography



*American Tree Sparrow*

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## Appendix A



USFWS

*Cooper's Hawk*

## Wilderness Review

- Introduction
- Inventory Criteria
- Inventory Conclusions

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## Introduction

The purpose of a wilderness review is to identify and recommend to Congress the lands and waters of the National Wildlife Refuge System that merit inclusion in the National Wilderness Preservation System (NWPS). Wilderness reviews are required elements of CCPs, are conducted in accordance with the refuge planning process outlined in the Fish and Wildlife Service Manual (602 FW 1 and 3), and include compliance with the National Environmental Policy Act (NEPA) and regulations on public involvement.

Wilderness Study Areas (WSAs) are areas that meet the criteria for wilderness identified in the Wilderness Act. Section 2(c) of the act gives the following definition:

*A wilderness, in contrast with those areas where man and his works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this Act an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions, and which 1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; 2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; 3) has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and 4) may also contain ecological, geological or other features of scientific, educational, scenic, or historical value.*

The wilderness review process has three phases: inventory, study, and recommendation. In the inventory phase, we identify lands and waters that meet the minimum criteria for wilderness as WSAs. In the study phase, we evaluate a range of management alternatives to determine whether a WSA is suitable for wilderness designation or management under an alternative set of goals and objectives that do not involve wilderness designation. In the recommendation phase, we forward a wilderness study report with recommendations on wilderness designation from the Director through the Secretary and the President to Congress. We prepare that report after our Regional Director has signed the record of decision for the final CCP.

We manage any areas recommended for designation to maintain their wilderness character in accordance with the management goals, objectives and strategies in the final CCP, until Congress makes a decision or we amend the CCP to modify or remove the wilderness proposal. If the inventory does not identify any areas that meet the WSA criteria, we document our findings in the administrative record for the CCP and end the study process. We will manage non-wilderness areas following the management direction outlined in the CCP.

## Inventory Criteria

The wilderness inventory is a broad look at the planning area to identify WSAs. A WSA is a roadless area of undeveloped Federal land and water that meets the minimum criteria for wilderness as identified in Section 2(c) of the Wilderness Act.

### *Minimum Wilderness Criteria*

A WSA is required to be a roadless area or an island of any size, meet the size criteria, appear natural, and provide for solitude or primitive recreation.

*Roadless* — Roadless refers to the absence of improved roads suitable and maintained for public travel by means of motorized vehicles primarily intended for highway use. A route maintained solely by the passage of vehicles does not constitute a road.

The following factors were the primary considerations in evaluating the roadless criteria.

- A. The area does not contain improved roads suitable and maintained for public travel by means of motorized vehicles primarily intended for highway use.
- B. The area is an island, or contains an island that does not have improved roads suitable and maintained for public travel by means of motorized vehicles primarily intended for highway use.
- C. The area is in federal fee title ownership.

*Size* — The size criteria can be satisfied if an area has at least 5,000 acres of contiguous, roadless, public land, or is sufficiently large that its preservation and use in an unimpaired condition is practicable.

The following factors were the primary considerations in evaluating the size criteria.

- A. An area of more than 5,000 contiguous acres. State and private lands are not included in making this acreage determination.
- B. A roadless island of any size. A roadless island is defined as an area surrounded by permanent waters or that is markedly distinguished from the surrounding lands by topographical or ecological features.
- C. An area of less than 5,000 contiguous federal acres that is of sufficient size as to make practicable its preservation and use in an unimpaired condition, and of a size suitable for wilderness management.
- D. An area of less than 5,000 contiguous acres that is contiguous with a designated wilderness, recommended wilderness, or area under wilderness review by another federal wilderness-managing agency such as the Forest Service, National Park Service, or Bureau of Land Management.

*Naturalness* — The Wilderness Act, section 2(c) defines wilderness as an area that “generally appears to have been affected primarily by the forces of nature with the imprint of human work substantially unnoticeable.” The area must appear natural to the average visitor, rather than “pristine.” The presence of historic landscape conditions is not required.

An area may include some human impacts provided they are substantially unnoticeable in the unit as a whole. In evaluating the naturalness criteria, we also consider significant hazards caused by humans, such as the presence of unexploded ordnance from military activity and the physical impacts of refuge management facilities and activities. An area may not be considered unnatural in appearance solely on the basis of the sights and sounds of human impacts and activities outside the boundary of the unit. We considered the cumulative effects of those factors, in conjunction with the size of the land base and its physiographic and vegetative characteristics in our evaluation of naturalness.

The following factors were the primary considerations in evaluating naturalness.

- A. The area appears to have been affected primarily by the forces of nature with the imprint of human work substantially unnoticeable.

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- B. The area may include some human impacts provided they are substantially unnoticeable in the unit as a whole.
  - C. The presence of unexploded ordnance from military activity or the existence of other significant hazards caused by humans.
  - D. The presence of physical impacts of refuge management facilities and activities.

*Solitude or Primitive and Unconfined Recreation* — A WSA must provide outstanding opportunities for solitude or primitive and unconfined recreation. The area does not have to possess outstanding opportunities for both elements, and does not need to have outstanding opportunities on every acre. Further, an area does not have to be open to public use and access to qualify under this criteria; Congress has designated a number of wilderness areas in the Refuge System that are closed to public access to protect resource values.

Opportunities for solitude refer to the ability of a visitor to be alone and secluded from other visitors in the area. Primitive and unconfined recreation means non-motorized, dispersed outdoor recreation activities that are compatible and do not require developed facilities or mechanical transport. These primitive recreation activities may provide opportunities to experience challenge and risk, self-reliance, and adventure.

These two elements are not well defined by the Wilderness Act, but can be expected to occur together in most cases. However, an outstanding opportunity for solitude may be present in an area offering only limited primitive recreation potential. Conversely, an area may be so attractive for recreation use that experiencing solitude is not an option.

The following factors were the primary considerations in evaluating outstanding opportunities for solitude or primitive unconfined recreation.

- A. The area offers the opportunity to avoid the sights, sounds and evidence of other people. A visitor to the area should be able to feel alone or isolated.
- B. The area offers non-motorized, dispersed outdoor recreation activities that are compatible and do not require developed facilities or mechanical transport.

*Supplemental Values* — The Wilderness Act states that an area of wilderness may contain ecological, geological, or other features of scientific, educational, scenic or historical value. Supplemental values of the area are optional, but the degree to which their presence enhances the area's suitability for wilderness designation should be considered. The evaluation should be based on an assessment of the estimated abundance or importance of each of the features.

## **Inventory Conclusions**

### ***Evaluating Roadless Criteria***

The refuge landscape is interlaced and bordered with a number of roads. A major vehicle paved road (Route 63) bisects the refuge north-south, essentially splitting the refuge into two areas. Two other north-south roads that cut through the refuge are Feeder Road and Sour Springs Road. There are a number of other paved roads that also run throughout the refuge. The southwestern border of the refuge is Route 77.

***Evaluating Size Criteria***

The 10,828-acre Iroquois Refuge does meet the size criteria for a WSA. It is greater than 5,000 acres and its size is sufficient to preserve natural ecological processes. No lands within the refuge are contiguous to other agency-owned lands under review for wilderness areas.

***Evaluating Naturalness Criteria***

The refuge contains a number of features that preclude it from the Naturalness criteria. Numerous signs of human impact are obvious reminders of the refuge's past uses, including agriculture. European settlers expanded artificial drainage of the area to improve logging and farming operations, but, plagued by high costs, and a cycle of muck fires and floods, the outcome was marginal at best. By the 1950s, landowners were looking to further develop and convert the lands to other uses. Today, Iroquois National Wildlife Refuge is actively managed to provide the best possible habitat for the widest variety of wildlife. Over one half of the refuge is wetlands including marshes, shrub-scrub wetlands and forested wetlands. The remaining habitats are upland and include grasslands, shrublands and forests.

After agricultural development, the refuge area contained approximately 2,000 ha (5,000 acres) that normally was inundated in the spring, but mostly dry by fall, making all but the wettest areas suitable for farming. After refuge establishment, the development of impoundments allowed some degree of management to provide nearly 1,600 ha (4,000 acres) of manageable wetlands. Refuge staff manages 19 water impoundments. These impoundments are enclosed by 18 different dike systems and 30 operating water control structures to manipulate and control water levels.

In addition to water control structures and dikes, refuge infrastructure includes buildings and roadways that require regular maintenance. There are also overlooks, trails, signs, parking areas, and boundaries that are maintained. Facilities currently include the refuge headquarters and adjoining visitor contact station, a divided shed for storage of flammable liquids and grain, a shop/maintenance building, and a hunting check station. There are also three houses owned and maintained by the refuge, one of those houses is due for demolition. Along with storage for flammable liquids, there are above ground, uncovered fuel tanks.

***Evaluating Solitude or Primitive and Unconfined Recreation Criteria***

To protect nesting wildlife, all areas of the refuge, except overlooks and nature trails, are closed to the public between March 1 and July 15. The majority of refuge visitors come during the spring, early summer and fall months to take advantage of favorable trail conditions and opportunities for viewing annual spring and fall bird migrations as well as the brilliance of New York fall foliage. March and April are the most popular months during which time the refuge receives nearly half of its annual visitation. Refuge trails and roads are used some during the winter when snow conditions are conducive to cross-country skiing or snowshoeing. The refuge receives more than 28,000 visits on the trails and overlooks each year.

***Conclusion***

Iroquois Refuge does not meet the criteria for a WSA and should not be recommended for further evaluation of wilderness potential. An inventory of the refuge concluded that while it does meet the size criteria, it does not meet the minimum requirements for wilderness with regard to roads, naturalness, and solitude or primitive and unconfined recreation. We will reevaluate this determination in 15 years with the revision of this CCP, or sooner if significant new information warrants a reevaluation. In summary, at this time additional study is not warranted.

## Compatibility Determinations and Findings of Appropriateness

- Wildlife Observation, Photography, Environmental Education, and Interpretation
- Migratory Game Bird Hunting
- Big Game Hunting
- Small/Upland Game Hunting
- Sport Fishing
- Walking and Hiking\*
- Jogging and Bicycling\*
- Cross Country Skiing and Snoeshowing\*
- Haying\*
- Commercial Forest Management\*
- Furbearer Management

\* includes a Finding of Appropriateness



## **COMPATIBILITY DETERMINATION**

**USE:** Wildlife Observation, Photography, Environmental Education, and Interpretation

**REFUGE NAME:** Iroquois National Wildlife Refuge

**DATE ESTABLISHED:** May 19, 1958

**ESTABLISHING AUTHORITY:** Migratory Bird Conservation Act (16 U.S.C. 715d)

### **PURPOSE(S) FOR WHICH ESTABLISHED:**

...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...  
16 U.S.C. § 715d (Migratory Bird Conservation Act)

### **MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:**

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

### **DESCRIPTION OF USE:**

#### **(a) What is the use? Is the use a priority public use?**

The uses are wildlife observation, wildlife photography, environmental education, and interpretation. Wildlife observation, wildlife photography, environmental education, and interpretation are priority public uses of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), and the Improvement Act of 1997 (Public Law 105-57).

#### **(b) Where would the use be conducted?**

Wildlife observation, wildlife photography, environmental education, and interpretation will occur on designated roads, trails, overlooks, and visitor contact facilities throughout the refuge. Access on the refuge will be restricted from March 1 through September 30 except in designated public use areas (trails, overlooks, photo blinds, and fishing locations). Refuge visitors will be able to go off trail in upland areas only during the fall and winter from October 1 to the end of February.

Self-conducted wildlife observations and interpretation activities should take place at Feeder Road, Kanyoo, Onondaga, and Swallow Hollow Nature Trails, and Cayuga, Mallard, Ringneck, and Schoolhouse Overlooks. Slide show presentations, program introductions, and exhibits will be conducted at the refuge visitor contact station or the refuge waterfowl check station. Excellent opportunities for wildlife observation, interpretation and photography will also occur along Oak Orchard Creek (from Knowlesville Road to Route 63), which can be accessed via non-motorized boats. Two photo blinds will be available one located on the south side of Ringneck Marsh and the other will be a combination photo / accessible waterfowl hunting blind located in Mohawk Pool West. Annual refuge events include the Spring into Nature celebration and Youth Fishing Derby. Iroquois Observations is a series of weekly programs offered at the refuge during spring and fall of each year. Sponsored by Buffalo Audubon Society (BAS), this program is entirely organized and operated by BAS volunteers. Many of the programs focus on birding, but the programs cover many other nature topics and there's something for all age groups and skill levels. Interpretive programs for the public are offered throughout the year, in conjunction with Iroquois Observations, in the refuge visitor contact station and at trails and overlooks.

Other programs held at the refuge include waterfowl identification classes and youth hunt orientations, which are in cooperation with refuge partners such as the Finger Lakes and Western New York Waterfowl Association, the Wild Turkey Federation, and the Buffalo Audubon Society.

A new nature trail beginning at the refuge office will provide access to an observation tower that will overlook the wetlands that are just north of the refuge office. The observation tower will be an elevated platform to allow visitors to see over the tall wetland vegetation. It will be located off of an existing refuge trail that is used seasonally for other refuge recreation, mostly waterfowl hunting access.

Environmental education and interpretation provided directly by the refuge may be conducted at sites that are not located within the existing trails systems. Most of these will be associated with conducting environmental education of specific wildlife management actions and taking students into the field to discuss and show specific techniques (e.g., wetland management via water control structures).

**(c) When would the use be conducted?**

Self-directed wildlife observation, wildlife photography, environmental education, and interpretation will be allowed on the refuge daily, year-round, sunrise to sunset unless a conflict with a management activity or an extenuating circumstance necessitates deviating from these procedures. Closures for events affecting human safety, or for the nesting season and other sensitive times of the year are examples that will require these uses to be temporarily suspended.

Access on the refuge will be restricted from March 1 through September 30 to designated public use areas (trails, overlooks, photo blinds, and fishing locations). Refuge visitors will be able to go off trail in upland areas only during the fall and winter from October 1 to the end of February. Some programs may be conducted before sunrise or after sunset (e.g., night interpretive programs on bats, bugs or owls). These will be conducted by refuge staff or in cooperation with a refuge partner.

**(d) How would the use be conducted?**

Wildlife observation, photography, environmental education, and interpretation will be allowed to occur on the refuge. As an integral part of these programs, we will incorporate the strategies found in Goal 4 of the proposed action of the final Comprehensive Conservation Plan (CCP) for Iroquois National Wildlife Refuge. Refuge staff will be responsible for:

- on-site evaluations to resolve public use issues;
- monitoring and evaluating impacts;
- maintaining boundaries and signs;
- meeting with adjacent landowners and interested public;
- recruiting volunteers;
- preparing and presenting interpretive programs;
- maintaining existing trails and overlooks;
- revising leaflets and developing new ones;
- installing kiosks and continually updating kiosk information;
- developing needed signage;
- organizing and conducting refuge events;
- conducting regularly scheduled programs for the public;
- displaying off-site exhibits at local events;
- developing relationships with media; and
- providing law enforcement and responding immediately to public inquiries.

Rehabilitation of the existing visitor contact station/refuge office will provide approximately 5,000 square feet of area for conducting on-site interpretive programs, exhibits, Friends of Iroquois Refuge book store,

and a potential classroom area. This area will be rehabilitated after a new office wing is added. The new office wing will house the refuge staff, Fisheries staff and the NYS Department of Environmental Conservation.

Adding access to a new observation tower that will be located to the north of the visitor contact station will require a new structure to be built as well as allowing access to this site during times of year when visitors have not been allowed before.

Wildlife observation, wildlife photography, environmental education, and interpretation can occur via a non-motorized boat or canoe along Oak Orchard Creek from Knowlesville Road to Route 63. Canoes and non-motorized boats may be launched from any one of three road intersections on the refuge (Knowlesville Road, Sour Springs Road, and Route 63).

**(e) Why is this use being proposed?**

Wildlife observation, wildlife photography, environmental education, and interpretation are Priority Public Uses as defined by The National Wildlife Refuge System Administration Act of 1966, as amended by the Improvement Act of 1997 (Public Law 105-57), and, if compatible, are to receive enhanced consideration over other general public uses. These uses will be conducted to provide compatible educational and recreational opportunities for visitors to enjoy the refuge's natural resource and to gain understanding and appreciation for fish and wildlife, ecology, and wildlife management. These uses will enhance the public's knowledge of natural resource management programs and ecological concepts which will facilitate a better understanding of the problems facing our natural resources, what effect the public has on wildlife resources, and to learn about the U.S. Fish and Wildlife Service's (Service) role in conservation. Additionally, the public will be aware of biological facts upon which Service management programs are based, and these uses will foster an appreciation as to why wildlife and wildlands are important to them. The authorization of these uses will produce a more informed public and increased support for Service programs. Likewise, these uses will provide opportunities for visitors to observe and learn about wildlife and wildlands at their own pace, in an unstructured environment, and to observe wildlife habitats firsthand.

Professional and amateur photographers will also be provided opportunities to photograph wildlife in their natural habitats. Photographic opportunities will result in increased publicity and advocacy for Service programs. These uses will also provide wholesome, safe, outdoor recreation in a scenic setting, with the realization that those who come strictly for recreational enjoyment will be enticed to participate in the more educational facets of the public use program, and can then become advocates for the refuge and the Service.

**AVAILABILITY OF RESOURCES:**

The refuge has trail system in place maintained to support priority public uses. Allowing wildlife observation, wildlife photography, environmental education, and interpretation on these trails will not increase the maintenance or operational needs. Feeder Road is the main service road used by refuge employees and also provides access to the refuge for a variety of public uses, thus maintenance of this facility is on-going and no additional needs will be required.

The following breakdown shows the estimated amount of funds needed to administer the program.

**Annual costs to support wildlife observation, photography, environmental education and interpretation:**

Identifier	Cost
Trail/road maintenance*	\$10,000
Maintain kiosks	\$5,000
News releases, brochures, fact sheets	\$10,000
Program development and implementation	\$5,000
Routine maintenance and staff days	\$10,000
Hosting special events	\$10,000
Law enforcement	\$5,000
<b>Total Cost</b>	<b>\$55,000</b>

*\*Refuge trails and roads are maintained for a variety of activities. Costs shown are a percentage of total costs for trail/road maintenance on the refuge and are reflective of the percentage of trail/road use for this activity. Volunteers account for some maintenance hours and help to reduce overall cost of the program.*

There will be a onetime cost to construct an observation platform and provide trail access to it from the refuge headquarters. This cost is estimated to be about \$40,000. Routine maintenance of these facilities is already indicated in the above figures.

One photo blind and one photo / handicapped accessible waterfowl hunting blind will be constructed to replace the two photo blinds the refuge currently has. A one-time cost of approximately \$40,000 will be necessary for construction and installation of these two blinds. Annual maintenance, and management are already considered in the above figures.

**ANTICIPATED IMPACTS OF USE:**

Wildlife observation and photography, environmental education, and interpretation can produce positive or negative impacts to the wildlife resource. A positive effect of public involvement in these priority public uses will be a better appreciation and more complete understanding of the wildlife and habitats associated with Iroquois Refuge. This can translate into more widespread and stronger support for the refuge, the National Wildlife Refuge System, and the Service.

The rehabilitation and expansion of the refuge administrative building from the existing 5,000 square feet to the anticipated 10,609 square feet will impact greater surface area. However, the new facility is expected to stay within previously disturbed ground that was fill material when the current office was built. The addition of the Division of Fisheries to the expanded refuge administrative building will increase the daily traffic in the office area from Service employees and also from associated entities that the Service cooperates with. Overall, we will expect a minor increase to the refuge's overall visitation because of the new building since we will have enhanced our ability to conduct programs and handle larger crowds, as well as reaching out to other groups that are associated with the Division of Fisheries.

Constructing an observation platform, the photo blind, and the photo/hunting blind will increase traffic to these specific parts of the refuge. Also, there will be trails/paths associated with these structures that will provide access to them and outside of the removal of vegetation, soil, and temporary impacts during construction the remaining annual disturbance associated with these facilities are described below.

Wildlife observation and photography, environmental education, and interpretation have the potential to impact shorebird, waterfowl, and other migratory bird populations feeding and resting near the trails during certain times of the year.

Human disturbance to migratory birds has been documented in many studies in different locations. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). Response of wildlife to human activities includes: departure from site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increase in energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). McNeal et al. (1992) found that many waterfowl species avoid disturbance by feeding at night instead of during the day. Studying the effects of human visitation on waterbirds at J.N. "Ding" Darling Refuge, Klein (1989) found resident waterbirds to be less sensitive to disturbance than migrants; she also found that sensitivity varied according to species and individuals within species. Ardeids were quite tolerant of people but were disturbed as they took terrestrial prey; great blue herons, tricolored herons, great egrets, and little blue herons were observed to be disturbed to the point of flight more than other birds. Kushlan (1978) found that the need of these birds to move frequently while feeding may disrupt interspecific and intraspecific relationships. In addition, Batten (1977) and Burger (1981) found that wading birds were extremely sensitive to disturbance in the northeastern United States. Klein (1993), in studying waterbird response to human disturbance, found that as intensity of disturbance increased, avoidance response by the birds increased and that out-of-vehicle activity to be more disruptive than vehicular traffic; Freddy et al. (1986) and Vaske (1983) also found the latter to be true. In regards to waterfowl, Klein (1989) found migratory dabbling ducks to be the most sensitive to disturbance and migrant ducks to be more sensitive when they first arrived in the late fall, than later in winter. She also found gulls and sandpipers to be apparently insensitive to human disturbance, with Burger (1981) finding the same to be true for various gull species.

For songbirds, Gutzwiller et al. (1994) found that singing behavior of some species was altered by low levels of human intrusion. Some studies have found that some bird species habituate to repeated intrusion; frequently disturbed individuals of some species have been found to vocalize more aggressively, have higher body masses, or tend to remain in place longer (Cairns and McLaren 1980). Disturbance may affect the reproductive fitness of males by hampering territory defense, male attraction, and other reproductive functions of song (Arrese 1987). Disturbance, which leads to reduced singing activity, will make males rely more heavily on physical deterrents in defending territories which are time and energy consuming (Ewald and Carpenter 1978).

Travel routes can disturb wildlife outside the immediate trail corridor (Miller et al. 2001). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. Bird communities in this study were apparently affected by the presence of recreational trails, where "generalists" (American robins) were found near trails and "specialist" species (i.e. grasshopper sparrows) were found farther from trails. Nest predation was also found to be greater near trails (Miller et. al 1998).

Disturbance can cause shifts in habitat use, abandonment of habitat, and increased energy demands on affected wildlife (Knight and Cole, 1991). Flight in response to disturbance can lower nesting productivity and cause disease and death. Hammitt and Cole (1998) conclude that the frequent presence of humans in "wildland" areas can dramatically change the normal behavior of wildlife mostly through "unintentional harassment."

Seasonal sensitivities can compound the effect of disturbance on wildlife. Examples include regularly flushing birds during nesting or causing mammals to flee during winter months, thereby consuming large amounts of stored fat reserves. Hammitt and Cole (1998) note that females with young (such as white-tailed deer) are more likely to flee from a disturbance than those without young.

The Delaware Natural Heritage Program, Division of Fish & Wildlife and the Department of Natural Resources and Environmental Control prepared a document on the “The Effects of Recreation on Birds: A literature Review” which was completed in April of 1999. The following information is in reference to this document:

Several studies have examined the effects of recreationists on birds using shallow-water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981; Burger 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1995, 1997; Burger & Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreation activities always have at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1997; Burger & Gochfeld 1998). The findings that were reported in these studies are summarized as follows in terms of visitor activity and avian response to disturbance.

*Presence:* Birds avoided places where people were present and when visitor activity was high (Burger 1981; Klein et al. 1995; Burger & Gochfeld 1998).

*Distance:* Disturbance increased with decreased distance between visitors and species (Burger 1986), though exact measurements were not reported.

*Approach Angle:* Visitors directly approaching birds on foot caused more disturbance than visitors driving by in vehicles, stopping vehicles near birds, and stopping vehicles and getting out without approaching birds (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger & Gochfeld 1981; Burger et al. 1995; Knight & Cole 1995a; Rodgers & Smith 1995, 1997).

*Type and Speed of Activity:* Joggers and landscapers caused birds to flush more than fishermen, clambers, sunbathers, and some pedestrians, possibly because the former groups move quickly (joggers) or create more noise (landscapers). The latter groups tend to move more slowly or stay in one place for longer periods, and thus birds likely perceive these activities as less threatening (Burger 1981, 1986; Burger et al. 1995; Knight and Cole 1995a). Alternatively, birds may tolerate passing by with unabated speed whereas if the activity stops or slacks birds may flush (Burger et al. 1995).

*Noise:* Noise caused by visitors resulted in increased levels of disturbance (Burger 1986; Klein 1993; Burger & Gochfeld 1998), though noise was not correlated with visitor group size (Burger & Gochfeld 1998).

In determining compatibility, the cumulative effects of all public use on trails are considered. Due to the limitations put on these activities and that historical records show low use, wildlife observers, photographers, and those partaking in environmental education and interpretation are not expected to greatly increase the disturbance to wildlife.

**PUBLIC REVIEW AND COMMENT:**

As part of the CCP process for Iroquois Refuge, this compatibility determination underwent a comment period of 30 days concurrent with the release of our draft CCP.

**DETERMINATION (check one below):**

THIS USE IS COMPATIBLE   X  

THIS USE IS NOT COMPATIBLE       

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

Bald eagle nesting zones will be managed according to the *National Bald Eagle Management Guidelines*.

Almost all non-staff environmental education and interpretive activities will be limited to the headquarters area and/or designated nature trails to minimize habitat destruction or disturbance to wildlife during the nesting season.

Special Use Permits may be issued for environmental education and interpretation programs that are not conducted by refuge staff and require access outside of designated nature trails areas so long as these programs are compatible with the goal to maintain minimal wildlife disturbance.

**JUSTIFICATION:**

Wildlife observation and photography, environmental education, and interpretation are priority wildlife dependent uses for the National Wildlife Refuge System through which the public can develop an appreciation for fish and wildlife (Executive Order 12996, March 25, 1996 and The National Wildlife Refuge System Administration Act of 1966, as amended by the Improvement Act of 1997 (Public Law 105-57)).

The Service's policy is to provide expanded opportunities for these uses when compatible and consistent with sound fish and wildlife management and ensure that they receive enhanced attention during planning and management. Allowing wildlife observation, wildlife photography, environmental education, and interpretation on Iroquois Refuge will not materially interfere with or detract from the mission of the National Wildlife Refuge System or the purposes for which the refuge was established as evidenced by the impact analysis that shows this use will not compromise our ability to achieve the goals and objectives set forth under the Iroquois Refuge CCP. In fact, allowing these uses supports those goals and objectives and the Service's Mission.

**CONSULTATION WITH THE REFUGE SUPERVISOR:**

The refuge supervisor was consulted on January 2010; changes were made as needed.

**Signature:** Refuge Manager: Sharon M. A. 8/29/2011  
(Signature/Date)

**Concurrence:** Regional Chief: Scott B. Ken 9/1/2011  
(Signature/Date)

**Mandatory 15 - year Reevaluation Date:** 9/1/2026

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## **COMPATIBILITY DETERMINATION**

**USE:** Migratory Game Bird Hunting

**REFUGE NAME:** Iroquois National Wildlife Refuge

**DATE ESTABLISHED:** May 19, 1958

**ESTABLISHING AUTHORITY:** Migratory Bird Conservation Act (16 U.S.C. 715d)

**PURPOSE(S) FOR WHICH ESTABLISHED:**

...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...  
16 U.S.C. § 715d (Migratory Bird Conservation Act)

**MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:**

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

**DESCRIPTION OF USE:**

**(a) What is the use? Is the use a priority public use?**

The use is migratory game bird hunting which includes waterfowl (geese and ducks), coots and other migratory game birds (woodcock, snipe, and rail). Hunting is a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the Improvement Act of 1997.

**(b) Where would the use be conducted?**

*Waterfowl and Coots:* Waterfowl and coot hunting will be permitted in Cayuga, Mohawk and Oneida Pools, and Sutton's Marsh. Hunting will be from designated stand markers and/or on a "free-roam" type system. The number of available hunting permits will be limited for both stand and free-roam hunting systems. The refuge hosts a Young Waterfowler's Program for junior hunters between 12-15 years of age. This includes an orientation program, held at the refuge office, and a youth only waterfowl hunt. Youth waterfowl hunting will be permitted in the same areas of the refuge open to the regular waterfowl hunt. The number of participants in this program may vary from year to year, and are limited.

*Other Migratory Game Birds:* The hunting of other migratory birds will be permitted on refuge areas east of Sour Springs Road only.

**(c) When would the use be conducted?**

*All Migratory Game Bird Hunts:* Hunting will be conducted during the New York State waterfowl and other migratory bird hunting seasons, in accordance with federal and state regulations. All hunting hours will follow New York State regulations including woodcock hunting from sunrise to sunset and snipe and rails one-half hour before sunrise to sunset. Refuge regulations on specific hunt seasons are as follows:

*Waterfowl and Coots:* Waterfowl and coot hunting will begin on the refuge opening day and end at the conclusion of the first split of the New York State waterfowl season or when regular deer season begins, which typically starts in mid-November, whichever comes first. The exception to this will be that

waterfowl and coot hunting will continue in Cayuga Pool after the start of the regular (shotgun) deer season until December 1.

We will allow hunting on Tuesdays, Thursdays and Saturdays from one-half hour before legal sunrise until 12:00 P.M. Check out will be at the Waterfowl Permit Station no later than 1:00 P.M. We will not hunt Thanksgiving Day.

The Youth Waterfowl Hunt Program orientation will be held in late September or early October, before the youth designated hunt day. A youth waterfowl and coot hunt will be held during the New York State designated Youth Days, usually two weeks prior to the regular duck season. Hunting will occur from one-half hour before legal sunrise until 12:00 P.M. Check out will be at the Waterfowl Permit Station no later than 1:00 P.M.

*Other migratory game birds:* Other migratory game bird hunting season is typically early October to early November. The refuge will suspend other migratory game bird hunting once the waterfowl hunt season begins. Laws directly linked to refuge establishment require us to balance the amount of refuge acres open to migratory game bird hunting to 40 percent of the total refuge area. Therefore, other migratory game bird hunting will take place on the refuge from early October to mid-late October, depending on the start of the waterfowl hunt season.

**(d) How would the use be conducted?**

We will continue to conduct the use according to state and federal regulations. Federal regulations in 50 CFR pertaining to the National Wildlife Refuge System Administration Act, as well as existing, specific refuge regulations will apply. However, the refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations up to the limits of state regulations. We will restrict hunting if it becomes inconsistent with other, higher priority refuge programs or endangers refuge resources or public safety.

*All Migratory Game Bird Hunts:* All persons hunting on the refuge must first hold a valid state hunting license and must then obtain a refuge hunting permit. One general refuge hunting permit will be used for all refuge hunt programs. Hunters may then choose to apply for specific hunts and submit the required fees depending on their preferences. Permits must be applied for in person or via mail.

Individuals hunting on the refuge are subject to the inspection of permits, licenses, hunting equipment, game bagged, boats, vehicles, and their contents by federal or state officers. Hunters may use only approved non-toxic shot for the shotgun hunting. Unarmed hunters may scout areas that will be open to waterfowl and coot hunting with parameters that will be set annually. Dogs are allowed for hunting of migratory birds during designated seasons. Dogs are prohibited during scouting.

Hunters with disabilities possessing, or who qualify for, a New York State disabled hunting license, Golden Access, or America the Beautiful Access Pass may qualify for special accommodations. We issue a non-ambulatory hunt permit for waterfowl hunting at a specified location. Hunters may contact the refuge office for locations and more information. Hunters must apply in person and show proof of permanent disability.

No hunting zones include, but are not limited to: the immediate areas around the refuge office; around refuge residences; the vicinity of the Iroquois Job Corps Center; Swallow Hollow, Kanyoo and Onondaga Nature Trails; and safety zones around private residences adjacent to the refuge. Permission must be obtained from refuge personnel to enter a “No Hunting Zone” or “Closed Area” for the purpose of tracking and/or retrieving legally taken game animals.

Waterfowl hunters are required to wear 400 square inches of solid-colored hunter orange clothing or material that is visible 360 degrees in a conspicuous manner on their head, chest, and back while walking from their vehicle to their stand and back during the firearms deer season.

Vehicles are only allowed on established roads marked open for vehicular travel. Vehicles must be parked off the lane of travel and clear of gates.

Canoes and other non-motorized boats may only be used on Oak Orchard Creek, from Knowlesville Road to Route 63. Hunters may launch boats from Route 63, Sour Springs Road and Knowlesville Road. Canoes and non-motorized boats are also allowed for canoe designated waterfowl and coot hunting stands. Hunting from canoes and non-motorized boats is permitted per state law. Temporary ground blinds are acceptable and must be removed daily.

*Waterfowl:* Waterfowl (geese, ducks) and coots may be hunted with shotguns only. All waterfowl hunters are required to have taken and passed the New York State Waterfowl Identification Course. There will be an application fee per hunter per year for participating in the refuge waterfowl hunt program. We will continue to provide a 50 percent discount on permit fees for Golden Age and America the Beautiful – Interagency Senior Pass Holders.

A pre-season lottery to select hunters for high volume hunt days will be conducted. The number of days selected for the pre-season lottery will be determined annually based on trend data, as well as when waterfowl hunting opens in the refuge's region. Hunters will complete the Waterfowl Lottery Application and drop it off or send it via mail to refuge office with a predetermined application fee prior to established deadline. We will not accept faxed or electronic application forms. Hunters will receive notification of selection and the date for which they were selected.

On waterfowl hunt days the refuge will hold a daily drawing for hunt stands and "free roam" areas at the Waterfowl Permit Station on Route 77 at 5:00 A.M. All hunters will be required to show their hunting license, valid duck stamp and Waterfowl Education Certification of Qualification card to enter the drawing. Hunters will then be handed a numbered disc. When their number is called, they may choose a hunt stand or "free roam" area spot. The Migratory Bird Hunt Report form will serve as the hunter's permit for the day. Up to two other hunters may accompany the permit holder. After all hunters that were preselected have chosen a stand or free roam area, if there are any remaining hunting slots open a stand-by drawing will be conducted for any additional hunters present at the check station.

Hunters hunting from designated stand markers must stay within 100 feet of their stand marker unless they are dispatching a crippled bird. Non-motorized boats and canoes are permitted in the free roam areas as well as designated stand areas where it is deemed more appropriate to access via this method and not by foot. Hunting from canoes and non-motorized boats is permitted per state law.

Vegetation may not be removed or altered in any way. No permanent structures are allowed. Hunters may not possess more than 25 shot shells in the field, and only approved nontoxic shot may be used.

A blind will be constructed in the waterfowl hunting area for non-ambulatory hunter access. At the current time the refuge is proposing putting this blind in Mohawk West Pool. This location will allow the non-ambulatory hunter to experience a quality hunting opportunity integrated with other hunters and it will also take advantage of an existing seasonal road for access. We will develop parameters for hunting and reserving this blind.

Youth that would like to participate in the Youth Waterfowl Hunt Program must pre-register by completing a waterfowl lottery application form and be 12 to 15 years old. To take part in the program, participants need their parent/guardian's permission. The application must be received by the deadline. The program is free but space is limited to 25 with preference given to first time participants; therefore pre-registration does not guarantee participation. If selected, participants must attend an orientation program held in late September or early October. The orientation covers: 1) waterfowl identification (optional for those who already have a Waterfowl Education Certificate of Qualification) and 2) hunting regulations, safety, equipment, a retriever demonstration and a trap shoot. Attendance is mandatory for everyone regardless of how many times they have been through the program.

Youth will be paired up with non-hunting guides who will coach as well as help call in birds if needed. A parent/guardian may arrange with the instructors to serve as a non-hunting guide on the hunt otherwise one will be assigned by the instructors. Guides must have a valid New York State hunting license, valid duck stamp and a Waterfowl Education Certificate of Qualification. The waterfowl youth hunt will take place during the New York State Waterfowl Youth Days, which is usually 2 weeks prior to the regular duck season. The procedures for the check station are the same as the regular waterfowl hunts (see above). Parents that act as the hunting guide will be required to attend the orientation as well.

*Other Migratory Game Birds:* Other migratory game birds (woodcock, snipe, and rail) may be hunted with shotguns during designated state and refuge seasons. The refuge will suspend other migratory game bird hunting once the waterfowl hunt season begins. Laws directly linked to refuge establishment require us to balance the amount of refuge acres open to migratory game bird hunting to a maximum of 40 percent of the total refuge area. Therefore, other migratory game bird hunting will take place on the refuge from early October to mid-late October, depending on the start of the waterfowl hunt season. The hunting of other migratory birds will be permitted on refuge areas east of Sour Springs Road only.

**(e) Why is the use being proposed?**

Hunting is one of the priority uses outlined in the Improvement Act of 1997. The Service supports and encourages priority uses when they are appropriate and compatible on National Wildlife Refuge lands. Hunting is used in some instances to manage wildlife populations. It is also a traditional form of wildlife-oriented recreation that many National Wildlife refuges can accommodate. When managed appropriately, hunting can instill a unique understanding and appreciation of wildlife, their behavior, and their habitat needs. Hunting has regionally been identified as one of the top two priority Areas of Emphasis at the refuge.

**AVAILABILITY OF RESOURCES:**

The following breakdown shows the estimated amount of funds needed to administer the program.

**Annual costs to administer migratory bird hunting:**

Identifier	Cost
Preparation of hunt areas, parking lots	\$3,000
News releases, fact sheets brochures	\$500
Lottery systems, check station	\$2,500
Signs	\$500
Enforcement	\$2,500
<b>Total Annual Cost</b>	<b>\$9,000</b>

**ANTICIPATED IMPACTS:**

The following are anticipated impacts for hunting migratory birds on the refuge. For more specific impacts including a cumulative impact analysis please refer to the CCP for Iroquois Refuge.

*All Migratory Game Bird Hunts:* The Service manages migratory birds on a flyway basis and states establish hunting regulations in each state based on flyway data and the regulations framework provided by the Service. Atlantic Flyway and New York State regulations apply to the migratory game bird hunting program at Iroquois Refuge. The refuge hunting regulations, which are more restrictive than state and other federal regulations, limit hunt days and hunting hours, and include shot shell restrictions, etc. These refuge-specific restrictions are in place to help provide a quality hunting experience for refuge hunters, and ensure that hunting remains compatible with other refuge purposes. Hunting will reduce the number of birds in the flyway, within allowable limits, as determined by state and federal agencies. Hunting and the associated hunter activities likely will cause the indirect disturbance of non-target birds, but only for the short term. There is no anticipated impact on endangered or threatened species on the refuge.

Migratory game bird hunting is a very popular, longstanding public use on the refuge. All areas of the refuge are open to some form of hunting during the hunting season except areas posted with safety zone or closed area signage. Although conflicts among user groups can arise, that does not appear to be a significant issue at the present levels of use. In the future, we may need to manage public use to minimize conflicts and insure public safety, should significant conflicts become evident. That may include public outreach or zoning to separate user groups. Conflicts between hunters can also occur. Competition among hunters for choice sites is keen and can lead to unethical behavior. This may become more evident in the future when the refuge opens impoundments to free-roam during the waterfowl hunting season.

Because the refuge has been open to hunting since it was established, and hunting occurred in the area for many years before the creation of the refuge, we expect no additional impacts. Some disturbance of non-target wildlife species and impacts on vegetation may occur. However, those impacts should be minimal because migratory game bird hunting is regulated by the refuge, occurs outside the breeding season and specific refuge regulations prohibit the use of ATVs, off-road travel, permanent stands and blinds, camping and fires, which are most likely to significantly damage vegetation.

*Waterfowl and coot:* The temporary impacts of waterfowl and coot hunting are mitigated by the presence of adjacent refuge habitat where hunting does not occur and where birds can feed and rest undisturbed. Refuge regulations ensure that areas of inviolate sanctuary remain free of disturbance throughout the season. Additionally, waterfowl and coot hunting occurs 3 days per week on the refuge which gives the birds an opportunity to feed and rest undistributed on non-hunting days in the hunting locations.

The long term average number of waterfowl harvested per hunter per day since 1975 on the refuge is 1.4. This equates to a little over 1,000 birds being harvested per year on the refuge. The waterfowl most often harvested by hunters on the refuge are mallard, widgeon, green-wing teal, wood duck, and Canada goose.

The activity of waterfowl and coot hunters has little impact on other refuge visitors, with the exception of those who wish to observe or photograph wildlife at the Cayuga overlook and areas along Feeder Road. Some users may be impacted by the presence and noise associated with waterfowl and coot hunting on the entire western portion of the refuge beginning at Route 63.

*Other Migratory Game Birds:* The temporary impacts of other migratory game bird hunting are mitigated by the presence of adjacent refuge habitat where hunting does not occur and where birds can feed and rest undisturbed. Refuge regulations ensure that areas of inviolate sanctuary remain free of disturbance throughout the season. Additionally, other migratory game bird hunting will only occur on the refuge for approximately 2-3 weeks which will give the birds an opportunity to feed and rest undistributed in designated hunting areas before and after the season.

Refuge harvest totals for other migratory game birds are low. This is a result of a low number of hunter visits for these species. Over the last 6 years, woodcock have been hunted an average of 15 visits per year, with a harvest of 3.8 birds per year. Although snipe and rail have been hunted on the refuge in the last 6 years, none have been harvested.

The activity of hunting for other migratory game birds has little impact on other refuge visitors, due to the fact that hunting for these species occurs east of Sour Springs road where there are no overlooks. Effects are minimal because of the minimal number of hunters targeting these species. Other refuge users that may be impacted will be those walking on Onondaga and Swallow Hollow Trails that may hear the noise associated with hunting. Hunters must be at least 500 feet from refuge trails.

**PUBLIC REVIEW AND COMMENT:**

As part of the CCP process for Iroquois Refuge, this compatibility determination underwent extensive public review, including a comment period of 30 days following the release of the draft CCP.

**DETERMINATION (check one below):**

THIS USE IS COMPATIBLE                      X  

THIS USE IS NOT COMPATIBLE



**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

We will manage the hunt program in accordance with federal and state regulations, and review it annually to ensure that wildlife and habitat management goals are achieved and that the program is providing a safe, high quality hunting experience for participants. Therefore, adherence to the regulations for each hunting program will ensure compatibility with the purpose for which the refuge was established.

Prohibited Activities:

- Using illuminating devices, including automobile headlights, for the purpose of spotlighting game species.
- The distribution of bait, salt, or any attractant, or hunting over a baited area.
- Under the influence or possession of alcoholic beverages while hunting.
- Possessing axes, hatchets, saws, nails, tacks, paint, or flagging for the marking of trees and shrubs.
- Using nails, wire, screws, or bolts to attach a stand to a tree.
- Commercial guiding on the refuge.
- Camping, overnight parking, open fires, and littering.

**JUSTIFICATION:**

Iroquois Refuge is located in a rural area between Buffalo and Rochester, New York. Hunting is a traditional and well established activity, and does not conflict with other types of public uses that may occur on the refuge. Hunting satisfies a recreational need, but hunting is also an important, proactive management action that can prevent over population and the deterioration of habitat.

Hunting is a wildlife-dependent priority public use with minimal impact on refuge resources. It is consistent with the purposes for which the refuge was established, the Service policy on hunting, the Improvement Act of 1997, and the broad management objectives of the National Wildlife Refuge System.

We do not expect this use to materially interfere with or detract from the mission of the Refuge System nor diminish the purposes for which the refuge was established. It will not cause an undue administrative burden. Annual adjustments can be made in the hunting program to ensure its continued compatibility.


**CONSULTATION WITH THE REFUGE SUPERVISOR:**

The refuge supervisor was consulted on January 2010; changes were made as needed.

**Signature:** Refuge Manager:

  
(Signature/Date) 8/29/2011

**Concurrence:** Regional Chief:

  
(Signature/Date) 9/1/2011

**Mandatory 15 - year Reevaluation Date:**

9/1/2026



## **COMPATIBILITY DETERMINATION**

**USE:** Big Game Hunting

**REFUGE NAME:** Iroquois National Wildlife Refuge

**DATE ESTABLISHED:** May 19, 1958

**ESTABLISHING AUTHORITY:** Migratory Bird Conservation Act (16 U.S.C. 715d)

**PURPOSE(S) FOR WHICH ESTABLISHED:**

...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...  
16 U.S.C. § 715d (Migratory Bird Conservation Act)

**MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:**

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

**DESCRIPTION OF USE:**

**(a) What is the use? Is the use a priority public use?**

The use is big game hunting, which includes deer and turkey. Hunting is a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the Improvement Act of 1997.

**(b) Where would the use be conducted?**

*Deer:* Deer hunting will be permitted throughout the entire refuge, except in areas closed to protect facilities and structures, as well as buffers around refuge trail systems. Additionally, Cayuga Pool will be closed to facilitate waterfowl hunting.

*All Turkey Hunts (Fall, Spring and Youth):* The hunting of turkey in the fall and spring will be permitted throughout the entire refuge except closed areas to protect facilities and structures, as well as buffers around refuge trail systems, bald eagle nesting areas, and emergent marsh habitat.

**(c) When would the use be conducted?**

*All Big Game Hunts:* Hunting will be conducted during New York State's big and small game hunting seasons, in accordance with federal and state regulations. While the refuge refers to turkey as a big game species, in New York State manages turkey under small game. In cooperation with the state, we may adjust hunt season dates and bag limits in the future as needed to achieve balanced wildlife population levels within habitat carrying capacities. No hunting occurs on the refuge before October 1, regardless of the start of the state seasons. No night hunting is allowed on the refuge. Refuge regulations on specific hunt seasons are as follows:

*Deer:* Deer hunting will be permitted during the New York State's archery, shotgun, and muzzleloader seasons between October 1 and the last day of February. Typically bow-hunting is open from mid-October to mid-November and then again for a week in December (after the regular shotgun season closes). The regular shotgun season is typically mid-November to mid-December. Muzzleloader season

is typically during the same time as the late bow-hunting season, one week in December. Hunting hours are sunrise to sunset.

*Spring and Youth turkey:* Spring turkey hunting will be permitted during the entire season, which is typically the month of May. Hunting hours are one-half hour before sunrise to noon. The youth spring turkey hunt will be held during the New York State Youth Hunt weekend which is usually the third or fourth weekend in April. An orientation program for youth selected to hunt will be held at the refuge prior to the youth hunt.

*Fall turkey:* Fall turkey hunting will be permitted during the typical two week long season (which is usually the last week of October and first week of November). Hunting hours are one-half hour before sunrise to noon.

**(d) How would the use be conducted?**

We will continue to conduct big game hunting according to state and federal regulations. Federal regulations in 50 CFR pertaining to the National Wildlife Refuge System Administration Act, as well as existing, refuge specific regulations will apply. However, the refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations up to the limits of state regulations. We will restrict hunting if it becomes inconsistent with other, higher priority refuge programs or endangers refuge resources or public safety.

*All Big Game Hunts:* All persons hunting on the refuge must first hold a valid state hunting license, and must then obtain a refuge hunting permit. One general refuge hunting permit will be used for all refuge hunt programs and will coincide with state hunting seasons. Hunters may then choose to apply for hunts conducted through a lottery system and submit the appropriate fee/fees. Permits must be applied for in person or via mail

Individuals hunting on the refuge are subject to the inspection of permits, licenses, hunting equipment, game bagged, boats, vehicles, and their contents by federal or state officers. An application fee will be collected for all pre-season lottery hunts, except youth programs. Unarmed hunters may scout areas that will be open to hunting before a particular season with parameters set annually. Dogs are prohibited during scouting.

Hunters with disabilities possessing, or who qualify for, a New York State disabled hunting license, Golden Access, or America the Beautiful Access Pass may qualify for special accommodations. We issue a non-ambulatory hunt permit which allows the use of two off-road parking sites for hunting deer and small game. They must apply in person and show proof of permanent disability.

No Hunting Zones include but are not limited to: the immediate areas around the refuge office; around refuge residences; the vicinity of the Iroquois Job Corps Center; Swallow Hollow, Kanyoo and Onondaga Nature Trails; and safety zones around private residences adjacent to the refuge and within the refuge. Permission must be obtained from refuge personnel to enter a “No Hunting Zone” or “Closed Area” for the purpose of tracking and/or retrieving legally taken game animals.

Weapons may not be discharged within, into or across a “No Hunting Zone” or “Closed Area”; or from on or across any refuge road. All refuge trails are open to foot traffic throughout the entire year. No trails will be closed during the hunting season including Onondaga Trail. Hunting from within 500 feet of any hiking trail or from within 500 feet of any resident or refuge building is prohibited.

All hunters are required to wear 400 square inches of solid-colored hunter orange clothing or material that is visible 360 degrees in a conspicuous manner on their head, chest, and back during the firearms deer season. Vehicles are only allowed on established roads marked open for vehicular travel. Vehicles must be parked off the lane of travel and clear of gates. ATV's and snowmobiles are not allowed. Canoes and other non-motorized boats may only be used on Oak Orchard Creek, from Knowlesville Road to Route 63. Canoes and other non-motorized boats may be launched on the refuge from Route 63, Sour Springs Road, and Knowlesville Road. Hunting from canoes and non-motorized boats is permitted per state law.

Temporary, portable tree stands and ground blinds are acceptable and must be removed daily. Permanent tree stands and ground blinds are prohibited. Hunters cannot use screw-in steps, nails, spikes, wire, or bolts as climbing or hanging devices to attach a stand to a tree.

*Deer:* Deer may be hunted with shotguns, muzzleloaders, or archery equipment during designated state and refuge seasons.

Shotgun-specific: A pre-season lottery drawing or some other form of restricting the number of hunters may be used for days/dates where the refuge receives high level of use, after further data collections are done to determine trends and impacts and the necessity to restrict the number of hunters. During the 2007 and 2008 hunt seasons, the refuge had between 400 and 450 individuals register for hunting on opening day. Quality of hunting experience as well as providing ample hunting room per hunter will be achieved by reducing the number of hunters on a given day, if necessary.

Onondaga Trail will no longer be closed to non-hunting visitors during the regular deer hunting season. Like all refuge trails, it will have a 500 foot no hunting zone associated with it. A separate lottery system for non-ambulatory hunters will be created.

*Spring and Youth Turkey:* A pre-season lottery drawing will be conducted to select hunters for the 75 slots that are available for the refuge's spring turkey season. All hunters interested in the spring turkey hunt will have to apply by close of business March 30. The lottery draw will allow hunters to be considered for two separate sessions that they will rank by preference; Session 1 runs from May 1 to May 15 with 50 permits available and Session 2 runs from May 16 to May 31 with 25 permits available. Scouting parameters will be set annually after New York State sets turkey seasons and youth hunting days. Hunters are required to turn in a harvest report.

The Youth Spring Turkey Hunt will be held on the Saturday and Sunday of the New York State Youth Hunting weekend, which is usually the third or fourth weekend in April. This hunt is for youth ages 12 to 15. Youth interested in participating in the program must complete a big game hunt application. Application deadlines will be March 15 each year. The youth must have permission from their parent or guardian to participate in this program. The program is free, but space is limited to 25 participants. Those selected must attend an orientation program that will be conducted by the refuge and possibly in cooperation with the local chapter of the National Wild Turkey Federation. The orientation will review hunter safety, turkey calling, equipment, ethics, and sportsmanship, as well as conservation and messages about the Refuge System. After the orientation we will issue a Big Game Harvest Report to all participants. All junior hunters must be accompanied by an adult both at the orientation and during the day of the hunt. Adult guides must have a valid New York State Hunting license but may not hunt.

*Fall turkey:* Fall turkey hunting will be permitted in accordance with state seasons and regulations and under refuge general permits.

**(e) Why is the use being proposed?**

Hunting is one of the priority uses outlined in the Improvement Act of 1997. The Service supports and encourages priority uses when they are appropriate and compatible on national wildlife refuge lands. Hunting is used in some instances to manage wildlife populations. It is also a traditional form of wildlife-oriented recreation that many National Wildlife Refuges can accommodate. When managed appropriately, hunting can instill a unique understanding and appreciation of wildlife, their behavior, and their habitat needs. Hunting has regionally been identified as one of the top two priority Areas of Emphasis at the refuge.

#### AVAILABILITY OF RESOURCES:

The following breakdown shows the estimated amount of funds needed to administer the program.

##### Annual costs to administer big game hunting:

Identifier	Cost
News releases, publications, fact sheets	\$1,000
Lottery drawing, hunter notification	\$1,500
Signs	\$500
Youth orientations	\$500
<b>Total Annual Cost</b>	<b>\$3,500</b>

*\* Refuge trails and roads are maintained for a variety of activities. Costs shown are a percentage of total costs for trail/road maintenance on the refuge and are reflective of the percentage of trail/road use for this activity. Volunteers account for some maintenance hours and help to reduce overall cost of the program.*

#### ANTICIPATED IMPACTS:

The following anticipated impacts are expected, for more specific impacts including a cumulative impact analysis please refer to the CCP for Iroquois Refuge.

*All Big Game Hunts:* Big game hunting is a very popular, longstanding public use on the refuge. All areas of the refuge are open to some form of hunting during hunting season except safety zones and closed areas. Although conflicts between user groups can arise, that does not appear to be a significant issue at the present levels of use. In the future, we may need to manage public use to minimize conflicts and ensure public safety, should significant conflicts become evident. That may include public outreach or zoning to separate user groups.

Conflicts between hunters can occur. In some cases, competition among hunters for choice sites is keen, and has led to unethical behavior. Hunters may only use portable tree stands that must be removed on a daily basis. However, some stands are left in place illegally for prolonged periods or are nailed directly into trees.

Because the refuge has been open to hunting since it was established and hunting occurred in the area for many years before the creation of the refuge, we expect no additional impacts. Some disturbance of non-target wildlife species and impacts on vegetation may occur. However, those impacts should be minimal, because big game hunting is regulated by the refuge and specific refuge regulations prohibit the use of ATVs, off-road travel, permanent stands and blinds, camping, and fires, which are most likely to significantly damage vegetation.

Hunting and the associated hunter activity likely will cause indirect disturbance of non-target birds, but only for the short term. There is no anticipated impact on endangered or threatened species on the refuge.

*Deer:* Since 2000, the total number of deer harvested on the refuge is 1,795. This averages out to approximately 200 deer harvested each season. The buck to doe ratio in the harvest is approximately 1:1. This ratio includes young of the year deer which are all taken with antlerless permits. On average 6 deer are harvested per day across the entire deer season. State deer density estimates for this region are approximately 30 per square mile and have shown little change in the last several years. Refuge staff believes that the refuge deer population is similar to the overall western New York population, which is intensely managed by New York State.

While many hunters use the refuge to hunt deer, more do so during the shotgun season than any other season. The heaviest usage is during the first full week of shotgun and on the weekends. Hunter visits increased from around 3,000 visits in 2006 to 4,500 in 2008. The increase in number in such a sort amount of time could be for many reasons. One in particular is that fewer hunters won their own land than in the past.

The activity of deer hunters has some impact on other refuge visitors. While the bow hunting season has little or no impact on the public, the shotgun and muzzleloader season may. Some users may be impacted by the presence and noise associated with shotgun and muzzleloader hunting which occurs on the entire refuge. Visitors will be impacted by this as they walk on refuge trails and visit refuge overlooks, or avoid the refuge completely for concerns of safety.

Deer hunting helps to keep deer populations within the carrying capacity of the habitat, thus reducing excessive damage to vegetation caused by over-browsing and maintaining understory habitat for other species. There may be temporary impacts on other species of wildlife during deer season. However, in the case of migratory waterfowl, deer hunters will cause little disturbance to them in the marshes where the birds feed and rest since most deer hunting takes place in upland habitats. Additionally, shotgun deer hunting will only occur on the refuge for approximately three weeks which will give the birds an opportunity to feed and rest undisturbed in those areas before and after the season.

*Spring Turkey:* Between 1986 and 2008, 103 turkeys were harvested on the refuge, three of which were harvested during the youth hunt. Since 1994, the refuge has given out 50 permits per season. Prior to 1994, a greater number of permits were given out annually. This number fluctuated, depending on the year. The average annual hunter success rate since 1994 has been 14.6 percent. We did not see a decrease in the success rate once the number of permits was set at 50.

The impacts of turkey hunting on non-target species on the refuge will be minimal due to the small number of permits issued, and the secretive nature of this hunting activity. Additionally, known sensitive areas, like bald eagle nesting sites, will be closed to any entry.

Turkey hunting has little impact on other refuge visitors, due to the fact that hunting only occurs during the month of May where hunters are far from other public use areas, relatively few permits are allocated, and hunting takes place from a half hour before sunrise to noon when the refuge does not have other activities going on except in designated closed areas like interpretive trails. Refuge users that may be impacted will be those walking refuge trails and those visiting overlooks. They may hear a single shotgun discharge associated with hunting. Hunters must hunt at least 500 feet from refuge trails.

*Fall Turkey:* The fall turkey season is usually for two weeks in late-October to early-November. Fall turkey hunting is typically an opportunistic hunting by hunters already afield. Since, the refuge is already opened to other activities and it is opportunistic in nature, we do not expect any additional impacts to refuge wildlife or resources.

**PUBLIC REVIEW AND COMMENT:**

As part of the CCP process for Iroquois Refuge, this compatibility determination underwent extensive public review, including a comment period of 30 days following the release of the draft CCP for Iroquois Refuge.

**DETERMINATION (check one below):**

THIS USE IS COMPATIBLE                      X  

THIS USE IS NOT COMPATIBLE                          

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

We will manage the hunt program in accordance with federal and state regulations and review it annually to ensure that wildlife and habitat management goals are achieved and that the program is providing a safe, high quality hunting experience for participants. Therefore, adherence to the regulations highlighted above for each hunting program will ensure compatibility with the purpose for which the refuge was established. Eagle nesting zones will be managed according to the *National Bald Eagle Management Guidelines*.

Prohibited Activities:

- Using illuminating devices, including automobile headlights, for the purpose of spotlighting game species.
- The distribution of bait, salt, or any attractant, or hunting over a baited area.
- Under the influence or possession of alcoholic beverages while hunting.
- Possessing axes, hatchets, saws, nails, tacks, paint, or flagging for the marking of trees and shrubs.
- Commercial guiding on the refuge.
- Camping, overnight parking, open fires, and littering.

**JUSTIFICATION:**

Iroquois Refuge is located in a rural area between Buffalo and Rochester, NY. Hunting is a traditional and well established activity on the refuge. It does not conflict with other types of public uses that may occur on the refuge. Hunting satisfies a recreational need, but hunting on National Wildlife Refuges is also an important, proactive management action that can prevent over population and the deterioration of habitat.

Hunting is a wildlife-dependent priority public use with minimal impact on refuge resources. It is consistent with the purposes for which the refuge was established, the Service policy on hunting, the Improvement Act of 1997, and the broad management objectives of the National Wildlife Refuge System.

We do not expect this use to materially interfere with or detract from the mission of the refuge



System nor diminish the purposes for which the refuge was established. It will not cause an undue administrative burden. Annual adjustments can be made in the hunting program to ensure its continued compatibility.

**CONSULTATION WITH THE REFUGE SUPERVISOR:**

The refuge supervisor was consulted on January 2010; changes were made as needed.

**Signature:**                      Refuge Manager: Thomas P. Mertz 8/29/2011  
(Signature/Date)

**Concurrence:**                Regional Chief: Scott B. Kuhn 9/1/2011  
(Signature/Date)

**Mandatory 15 - year Reevaluation Date:** 9/1/2026

## COMPATIBILITY DETERMINATION

**USE:** Small/Upland Game Hunting

**REFUGE NAME:** Iroquois National Wildlife Refuge

**DATE ESTABLISHED:** May 19, 1958

**ESTABLISHING AUTHORITY:** Migratory Bird Conservation Act (16 U.S.C. 715d)

**PURPOSE(S) FOR WHICH ESTABLISHED:**

...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...  
16 U.S.C. § 715d (Migratory Bird Conservation Act)

**MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:**

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

**DESCRIPTION OF USE:**

**(a) What is the use? Is the use a priority public use?**

The use is small/upland game hunting which includes ringneck pheasant, ruffed grouse, cottontail rabbit, gray squirrel, coyote, raccoon, skunk, opossum, and fox. Hunting is a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the Improvement Act of 1997.

**(b) Where would the use be conducted?**

Small/upland game hunting will be permitted throughout the entire refuge, with the exception of areas closed to protect refuge facilities, maintain buffers around nature trails and overlooks, and the Iroquois Job Corps Center.

**(c) When would the use be conducted?**

Hunting will be conducted during New York State upland game hunting seasons, in accordance with federal and state regulations. No small/upland game hunting occurs on the refuge before October 1, regardless of the start of the state seasons. Hunting concludes on the refuge on the last day of February.

Cottontail rabbit, gray squirrel, coyote and ruffed grouse hunting is typically open from October 1 to the last day of February. Hunting for raccoon, skunk, opossum, and fox is usually open from late October to mid- February. Pheasant hunting is typically mid-October to mid-November. No night hunting is allowed on the refuge. All upland game hunting hours are sunrise to sunset.

**(d) How would the use be conducted?**

The refuge will allow small/upland game - ringneck pheasant, ruffed grouse, cottontail rabbit, gray squirrel, coyote, raccoon, skunk, opossum, and fox - to be hunted with shotguns during designated state and refuge seasons.

We will continue to conduct the small/upland game hunting according to state and federal regulations. Federal regulations in 50 CFR pertaining to the National Wildlife Refuge System Administration Act, as

well as existing, specific refuge regulations will apply. The refuge manager may, upon annual review of the hunting program, impose further restrictions on hunting, recommend that the refuge be closed to hunting, or further liberalize hunting regulations within the limits of state law. We will restrict hunting if it becomes inconsistent with other, higher priority refuge programs or endangers refuge resources or public safety.

All persons hunting on the refuge must first hold a valid state hunting license, and must then obtain a refuge hunting permit. One general refuge hunting permit will be used for all refuge hunt programs and will coincide with state hunting seasons. Hunters may then choose to apply for different hunts that are conducted under a lottery system and submit the required fees depending on their preferences. Application must be submitted to the refuge office.

Individuals hunting on the refuge are subject to the inspection of permits, licenses, hunting equipment, game bagged, boats, vehicles, and their contents by federal or state officers. Hunters may use only approved non-toxic shot for the shotgun hunting of all species. Dogs are allowed for hunting of migratory game birds, cottontail rabbits, ringneck pheasants and ruffed grouse.

Hunters with disabilities possessing, or who qualify for, a New York State disabled hunting license, Golden Access or America the Beautiful Access Pass may qualify for special accommodations. We issue a non-ambulatory hunt permit which allows the use of two off-road parking sites for deer and upland game. You must apply in person and show proof of permanent disability.

No hunting zones include but are not limited to: the immediate areas around the refuge office; around refuge residences; the vicinity of the Iroquois Job Corps Center; Swallow Hollow, Kanyoo and Onondaga Nature Trails; and safety zones around private residences adjacent to and within the refuge. Permission must be obtained from refuge personnel to enter a “No Hunting Zone” or “Closed Area” for the purpose of tracking and/or retrieving legally taken game animals.

Weapons may not be discharged within, into or across a “No Hunting Zone” or “Closed Area”; or from on or across any refuge road. All refuge trails are open to foot traffic throughout the entire year. No trails will be closed during the hunting season including Onondaga Trail. Hunting from within 500 feet of any hiking trail or from within 500 feet of any resident or refuge building is prohibited.

All hunters during any firearms deer seasons must wear in a conspicuous manner on head, chest, and back a minimum of 400 square inches of solid-colored hunter orange clothing or material and must be visible from 360 degrees. Vehicles are only allowed on established roads marked open for vehicular travel. Vehicles must be parked off the lane of travel and clear of gates. ATV's and snowmobiles are not allowed. Canoes and other non-motorized boats may only be used on Oak Orchard Creek, from Knowlesville Road to Route 63. You may launch boats from Route 63, Sour Springs Road and Knowlesville Road. Hunting from canoes and non-motorized boats is permitted per state law. Temporary, portable tree stands and ground blinds are acceptable and must be removed daily.

**(e) Why is the use being proposed?**

Hunting is one of the priority uses outlined in the Improvement Act of 1997. The Service supports and encourages priority uses when they are appropriate and compatible on National Wildlife Refuge lands. Hunting is used in some instances to manage wildlife populations. It is also a traditional form of wildlife-oriented recreation that many National Wildlife Refuges can accommodate. When managed appropriately, hunting can instill a unique understanding and appreciation of wildlife, their behavior, and their habitat needs. Hunting has regionally been identified as one of the top two priority Areas of Emphasis at the refuge.

**AVAILABILITY OF RESOURCES:**

The following breakdown shows the estimated amount of funds needed to administer the program.

**Annual costs to administer upland game hunting:**

<b>Identifier</b>	<b>Cost</b>
Maintain roads, trails	\$350
Maintain kiosks, signs	\$500
Fact sheets, brochures, reports	\$1,000
<b>Total Annual Cost</b>	<b>\$1,850</b>

*\* Refuge trails and roads are maintained for a variety of activities. Costs shown are a percentage of total costs for trail/road maintenance on the refuge and are reflective of the percentage of trail/road use for this activity. Volunteers account for some maintenance hours and help to reduce overall cost of the program.*

**ANTICIPATED IMPACTS:**

The following anticipated impacts are expected. For more specific impacts including a cumulative impact analysis please refer to the CCP for Iroquois Refuge.

Hunting is a very popular, longstanding public use on the refuge, although upland game hunting is the not as popular as others. All areas of the refuge are open to some form of hunting during hunting season except safety zones and closed areas. Although conflicts between user groups can arise, that does not appear to be a significant issue at the present levels of use. In the future, we may need to manage public use to minimize conflicts and insure public safety, should significant conflicts become evident. That may include public outreach or zoning to separate user groups. Conflicts between hunters can also occur. Competition among hunters for choice sites is keen and can lead to unethical behavior.

Because the refuge has been open to hunting since it was established and hunting occurred in the area for many years before the creation of the refuge, we expect no additional impacts. Some disturbance of non-target wildlife species and impacts on vegetation may occur. However, those impacts should be minimal, because small/upland game hunting is regulated by the refuge, occurs outside the breeding season, and specific refuge regulations prohibit the use of ATVs, off-road travel, permanent stands and blinds, camping and fires, which are most likely to significantly damage vegetation.

Refuge harvest averages for the past 6 years (2003-2009) for small/upland game are as follows. Cottontail rabbits were hunted on average 127 times per season with approximately 40 harvested annually. Ruffed grouse were hunted on average 33 times per season with approximately 2 birds harvested yearly. Squirrels are hunted on the refuge approximately 110 times a season with 34 harvested on average per year. Pheasant hunting occurred on average 24 times a season with an average of 1.5 birds harvested. Fox have been hunted on average 34 times per season and only one fox was harvested in the last 6 years. Similarly, coyotes have been hunted on average 29 times per season and only one coyote was harvested in the last 6 years. Most small/upland game hunters are hunting multiple species each time they hunt therefore the number of times a hunter is actually on the refuge hunting during the season is lower than the numbers above suggest.

The activity of upland game hunters has little impact on other refuge visitors, with the exception of those who wish to observe or photograph wildlife at some of the overlooks and areas along Feeder Road. Some users may be impacted by the presence and noise associated with upland game hunting on the entire refuge. Hunting and the associated hunter activity likely will cause the indirect disturbance of non-target

birds, but only for the short term. There is no anticipated impact on endangered or threatened species on the refuge.

**PUBLIC REVIEW AND COMMENT:**

As part of the CCP process for the Iroquois Refuge, this compatibility determination underwent extensive public review, including a comment period of 30 days following the release of the draft CCP.

**DETERMINATION (check one below):**

THIS USE IS COMPATIBLE              X  

THIS USE IS NOT COMPATIBLE                  

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

We will manage the hunt program in accordance with federal and state regulations and review it annually to ensure that wildlife and habitat management goals are achieved and that the program is providing a safe, high quality hunting experience for participants. Therefore, adherence to the regulations highlighted above for each hunting program will ensure compatibility with the purpose for which the refuge was established. Annual review of regulations will be conducted to ensure compatibility. Eagle nesting zones will be managed according to the *National Bald Eagle Management Guidelines*.

Prohibited Activities:

- Using illuminating devices, including automobile headlights, for the purpose of spotlighting game species.
- The distribution of bait or hunting over a baited area, salt or any attractant.
- Under the influence or possession of alcoholic beverages while hunting.
- Possessing axes, hatchets, saws, nails, tacks, paint or flagging for the marking of trees and shrubs.
- Using nails wire, screws, or bolts to attach a stand to a tree.
- Commercial guiding on the refuge.
- Camping, overnight parking, open fires and littering.

**JUSTIFICATION:**

Iroquois Refuge is located in a rural area between Buffalo and Rochester, New York. Hunting is a traditional and well established activity on the refuge. It does not conflict with other types of public uses that may occur on the refuge. Hunting satisfies a recreational need, but hunting on a National Wildlife Refuge is also an important, proactive management action that can prevent overpopulation and the deterioration of habitat.

Hunting is a wildlife-dependent priority public use with minimal impact on refuge resources. It is consistent with the purposes for which the refuge was established, the Service policy on hunting, the Improvement Act of 1997, and the broad management objectives of the National Wildlife Refuge System.

We do not expect this use to materially interfere with or detract from the mission of the refuge System nor diminish the purposes for which the refuge was established. It will not cause an undue administrative burden. Annual adjustments can be made in the hunting program to ensure its continued compatibility.

**CONSULTATION WITH THE REFUGE SUPERVISOR:**

The refuge supervisor was consulted on January 2010; changes were made as needed.

**Signature:**                      Refuge Manager: *Thomas P. Katt* 8/29/2011  
(Signature/Date)

**Concurrence:**                Regional Chief: *Scott B. Kerk* 9/1/2011  
(Signature/Date)

**Mandatory 15 - year Reevaluation Date:** 9/1/2026

## **COMPATIBILITY DETERMINATION**

**USE:** Sport Fishing

**REFUGE NAME:** Iroquois National Wildlife Refuge

**DATE ESTABLISHED:** May 19, 1958

**ESTABLISHING AUTHORITY:** Migratory Bird Conservation Act (16 U.S.C. 715d)

**PURPOSE(S) FOR WHICH ESTABLISHED:**

...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...  
16 U.S.C. § 715d (Migratory Bird Conservation Act)

**MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:**

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

**DESCRIPTION OF USE:**

**(a) What is the use? Is the use a priority public use?**

The use is fishing, a priority public use of the National Wildlife Refuge System under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the Improvement Act of 1997.

**(b) Where would the use be conducted?**

The use will be conducted at Ringneck Marsh and along Oak Orchard Creek. Fishing at Ringneck Marsh will occur along Sour Springs Road, and along the dike, north of the water control structure on the western side of the marsh. Fishing along Oak Orchard Creek can occur from any one of three road intersections on the refuge (Knowlesville Road, Sour Springs Road and Route 63) and via canoe or a non-motorized boat along Oak Orchard Creek from Knowlesville Road to Route 63. Anglers fishing from the road intersections must stay on stream banks within 100 feet of the road / bridge intersections.

**(c) When would the use be conducted?**

Fishing on the refuge will be conducted during the hours and in the seasons specified in the fishing regulations of the State of New York. Therefore fishing will be permitted year around at designated areas. Ice fishing on Ringneck Marsh is typically from the beginning of December to the end of February, depending on ice conditions. On the first Saturday in June the refuge holds the Youth Fishing Derby at Ringneck Marsh.

**(d) How would the use be conducted?**

Fishing will be conducted under the State of New York fishing regulations for open water fishing and ice fishing, with some additional restrictions to protect fish, wildlife, and habitat, and reduce potential conflicts among public uses. Per New York State fishing regulations, frogging is a form of fishing. The refuge will permit frogging for bullfrogs only in accordance with state fishing regulation. A valid State of New York fishing license will be required to fish on the refuge in accordance with state regulations.

The refuge will install a floating dock or pier structure on Ringneck Marsh to provide better access to fisheries resources in this area. At the discretion of the refuge manager, we may close some areas seasonally, temporarily, or permanently to fishing if wildlife or habitat impacts or user conflicts become an issue. In cooperation with state fisheries biologists, we may manipulate the fisheries or habitat to promote or improve the fishery resource, if warranted. That may include changing fishing regulations (season dates, creel limits, and methods of take), directly manipulating the fisheries (by controlling exotic species or stocking), adjusting water levels, introducing or removing fish barriers, manipulating in-stream or stream bank habitat.

**(e) Why is the use being proposed?**

The use is being proposed to accommodate one of the priority public uses of the Refuge System. We have the opportunity to provide public fishing in a manner and location that will offer high quality, wildlife-dependent recreation, and maintain the level of current fish and wildlife values.

**AVAILABILITY OF RESOURCES:**

The following breakdown shows the estimated amount of funds needed to administer the program.

**Annual cost for sport fishing:**

Identifier	Cost
Fact sheets, brochures	\$500
Dike mowing	\$500
<b>Total Annual Cost</b>	<b>\$1000</b>

**ANTICIPATED IMPACTS OF USE:**

Accidental or deliberate introductions of non-native fish may negatively affect native fish, wildlife, or vegetation. Adding a refuge law enforcement officer will help supplement state enforcement.

Accidental introduction of invasive plants, pathogens, or exotic invertebrates as a result of being attached to non motorized boats. Some invasive aquatic plants do exist on the refuge. However, we have not carried out extensive surveys of aquatic invasive plants. We can mitigate their impacts by continuing education, outreach, and initiating an intensive monitoring program.

Negative effects on eagles, osprey, waterfowl, and other wildlife from lost fishing gear (e.g., from ingesting lead sinkers, hooks, lures, and litter or becoming entangled in fishing line or hooks): Lost fishing tackle may harm waterfowl, eagles, and other birds externally by catching and tearing skin. Fishing line may also become wrapped around body parts and hinder movement (legs, wings), impair feeding (bills), or cause a constriction with subsequent reduction of blood flow and tissue damage. An object above or below the water surface may snag and entangled animals, from which they are unable to escape. Birds may also ingest sinkers, hooks, floats, lures, and fishing line. Ingested tackle may damage or penetrate the mouth or other parts of the digestive tract, resulting in impaired function or death. Lead tackle is particularly toxic for wildlife. New York prohibits the sale and use of lead sinkers weighing one half ounce or less. The refuge will continue to provide education and outreach on the hazards of lead sinkers and discarded fishing tackle. A new refuge Officer will help in that public outreach.

Disturbance of wildlife (particularly breeding and brood-rearing waterfowl, eagles, ospreys, and wading birds). Fishing seasons in New York coincide in part with spring-early summer nesting and brood-rearing



periods for many species of aquatic dependent birds. Anglers and other non-motorized boaters may disturb nesting birds by approaching too close to nests, causing nesting birds to flush. Flushing may expose eggs to predators or cooling, resulting in egg mortality. We will close refuge areas, as needed, to fishing and boating around sensitive nest sites. We will also continue public outreach and the placement of warning signs.

Bank and trail erosion from human activity (boat launches, foot traffic), which may increase aquatic sediment loads of streams and rivers or alter riparian or lakeshore habitat or vegetation in ways harmful to fish or other wildlife. Non-motorized boat access will be restricted to designated areas only. Those areas will be 'hardened' to contain impacts in a small area. We will monitor launch sites, and may modify, restore, or close them if conditions warrant. Wetlands guard much of the refuge shoreline, making it extremely difficult to access for fishing. All new trail and access construction will follow best management practices. Therefore, at current levels of use, we do not expect trail erosion to increase because of foot traffic related to fishing.

Vegetation disturbance associated with improving boat launch and fishing access sites. Because fishing will occur from non-motorized boats, we expect minimal erosion from bank fishing or trampling of vegetation.

**PUBLIC REVIEW AND COMMENT:**

As part of the CCP process for Iroquois Refuge, this compatibility determination underwent a comment period of 30 days concurrent with the release of our draft CCP.

**DETERMINATION (check one below):**

THIS USE IS COMPATIBLE              X  

THIS USE IS NOT COMPATIBLE                  

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

We will manage the fishing program in accordance with federal and state regulations and review it annually to ensure that wildlife and habitat management goals are achieved and that the program is providing a safe, high quality fishing experience for participants. We based this on our stipulations listed below.

- We will review the fishing program annually to ensure that it contributes to refuge objectives in managing a quality fishery and protecting habitats. That may include surveys of anglers, fish, and habitats.
- We will prohibit lead sinkers and other lead tackle to prevent their ingestion by wildlife and possible lead poisoning.
- We will permit non-motorized boat launching only in designated areas to prevent the erosion and degradation of wetlands or water quality and ensure public safety.
- We will allow access to Ringneck Marsh dike via foot access only.
- We will close wildlife nesting and brood-rearing areas as needed, to all public use, to prevent the disturbance of wildlife.

- We will increase public outreach and education to minimize conflicts among user groups, help control aquatic invasive plants and lead in the environment, reduce the introduction of nonnative fish species, and minimize the disturbance of wildlife and habitat.

**Prohibited Activities:**

- The use of bows or spears to take fish
- Snagging, foul hooking or snatching fish
- Collection of bait fish
- Releasing unused bait fish and baitfish and eggs into refuge waters
- The use of lead sinkers
- Littering and discarding tackle and line

**JUSTIFICATION:**

Fishing is one of the six priority public uses of the Refuge System, and has been determined to be a compatible activity on many refuges nationwide. The Improvement Act of 1997 instructs refuge managers to seek ways to accommodate those six uses. We do not expect this use to materially interfere with or detract from the mission of the Refuge System or diminish the purposes for which the refuge was established. It will not pose significant adverse effects on refuge resources, nor interfere with public use of the refuge, nor cause an undue administrative burden. We can make annual adjustments in the fishing program to ensure its continued compatibility.

**CONSULTATION WITH THE REFUGE SUPERVISOR:**

**Signature:** Refuge Manager: *Thomas M. ...* 8/29/2011  
(Signature/Date)

**Concurrence:** Regional Chief: *Scott B. ...* 9/1/2011  
(Signature/Date)

**Mandatory 15 - year Reevaluation Date:** 9/1/2026

**BIBLIOGRAPHY**

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**Finding of Appropriateness of a Refuge Use (603 FW 1, Exhibit 1)**

Refuge Name: Iroquois National Wildlife Refuge

Use: Walking and Hiking

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

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

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

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

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

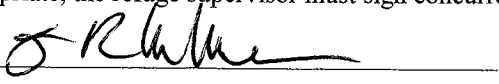
Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate      Appropriate X

Refuge Manager: 

Date: 8/29/2011

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

Refuge Supervisor: 

Date: 9/1/11

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

### **Justification for a Finding of Appropriateness of a Refuge Use**

Refuge Name: Iroquois National Wildlife Refuge

Use: Walking and Hiking

#### **Narrative**

Trail and non-trail activities consisting of walking and hiking will be used to facilitate priority public uses on Iroquois Refuge. Priority public uses of the National Wildlife Refuge System as defined by statute regulation are hunting, fishing, wildlife observation and photography, environmental education, and interpretation. 16 U.S.C. § 668ee (2); 50 C.F.R. § 25.12. Currently all priority public uses are permitted on Iroquois Refuge.

Foot travel may increase root exposure and trampling effects, however it is anticipated that under the current use the incidence of these problems will be minor. Routes for pedestrian travel consist of roads and trails through the woods. The roads have hardened surfaces or are existing trails that have been used for many years. Routes do not have any known occurrences of rare plant species on their surface that will be impacted by this use. It is anticipated that some soil erosion could occur as a result of continuing pedestrian access on designated routes or meandering through the uplands.

Wildlife species using habitat on or directly adjacent to the designated pedestrian routes will likely be affected. These disturbances are likely to be short term and infrequent based on the current level of use. Sedimentation impacts will likely be minor as a result of foot travel. Long-term impacts may include some wildlife species avoiding designated trails as a result of this use over time. These impacts are not likely to significantly affect wildlife populations along these routes based on current use.

## **COMPATIBILITY DETERMINATION**

**USE:** Walking and Hiking

**REFUGE NAME:** Iroquois National Wildlife Refuge

**DATE ESTABLISHED:** May 19, 1958

**ESTABLISHING AUTHORITY:** Migratory Bird Conservation Act (16 U.S.C. 715d)

**PURPOSE(S) FOR WHICH ESTABLISHED:**

...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...  
16 U.S.C. § 715d (Migratory Bird Conservation Act)

**MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:**

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

**DESCRIPTION OF USE:**

**(a) What is the use? Is the use a priority public use?**

The uses are walking and hiking. These uses are not priority public uses.

**(b) Where would the use be conducted?**

These activities will be conducted on refuge nature trails, including Swallow Hollow, Kanyoo, and Onondaga. Feeder Road will also be open to these activities. Walking and hiking will also be permitted in refuge uplands from October 1 to the end of February.

**(c) When would the use be conducted?**

The trails will be used daily from sunrise to sunset, year round. Trails will be open during the hunting seasons. A safety zone of 500 feet is in effect in which no hunting will take place around refuge trails, however, visitors should still proceed with caution while using the trails during the hunting season.

Refuge visitors will be able to go off trail in upland areas only during the fall and winter from October 1 to the end of February.

**(d) How would the use be conducted?**

The uses are self-regulating with signs indicating appropriate routes of travel in the case of refuge trails. Refuge staff will remove fallen trees and limbs provided staff resources are available to provide safe conditions that could become hazardous for visitors. The trail surfaces are maintained each year by applying gravel where needed, repairing boardwalks and handrails, and so on. Dogs are allowed on all designated trails while on a leash of 10 feet or shorter in length and under the control of their owner.

Visitors are encouraged, but not required, to wear hunter orange while on the refuge while on the refuge during most hunting seasons. However, walkers/hikers who take advantage of off-trail opportunities October 1 through February will be required to wear 400 square inches of solid-colored hunter orange clothing or material that is visible 360 degrees in a conspicuous manner on their head, chest, and back during the firearms deer season.

**(e) Why is this use being proposed?**

Walking and hiking are not priority public uses; however, they facilitate priority public uses on the refuge. Although walking and hiking are classified as non-wildlife activities, most visitors use the refuge for the "wildlands" experience it provides. Walking and hiking usually occur on designated trails through most of the year. Many walkers and hikers stop at the visitor contact station to obtain refuge or wildlife viewing information.

**AVAILABILITY OF RESOURCES:**

The refuge has a trail system in place to support public uses and these trails are being maintained. Allowing walking and hiking on these trails will not increase the maintenance or operational needs. Feeder Road is the main service road used by refuge employees and also provides access to the refuge for other public uses, thus maintenance of this facility is on-going and no additional resources will be required.

The following breakdown shows the estimated amount of funds needed to administer the program.

**Staff time to administer the walking and hiking program:**

Identifier	Cost
Trail/road maintenance	\$500
Fact sheets/publications	\$150
<b>Total Annual Cost</b>	<b>\$750</b>

*\* Refuge trails and roads are maintained for a variety of activities. Costs shown are a percentage of total costs for trail/road maintenance on the refuge and are reflective of the percentage of trail/road use for this activity. Volunteers account for some maintenance hours and help to reduce overall cost of the program.*

**ANTICIPATED IMPACTS OF THE USE:**

Hiking and walking, as well as other forms of trail use, have the potential to impact shorebird, waterfowl, and other migratory bird populations feeding and resting near the trails during certain times of the year. Human disturbance to migratory birds has been documented in many studies in different locations. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). Response of wildlife to human activities includes: departure from site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increased energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). McNeal et al. (1992) found that many waterfowl species avoid disturbance by feeding at night instead of during the day. Studying the effects of human visitation on waterbirds at J.N. "Ding" Darling Refuge, Klein (1989) found resident waterbirds to be less sensitive to disturbance than migrants; she also found that sensitivity varied according to species and individuals within species. Ardeids were quite tolerant of people but were disturbed as they took terrestrial prey; great blue herons, tricolored herons, great egrets, and little blue herons were observed to be disturbed to the point of flight more than other birds. Kushlan (1978) found that the need of these birds to move frequently while feeding may disrupt interspecific and intraspecific relationships. In addition, Batten (1977) and Burger (1981) found that wading birds were extremely sensitive to disturbance in the northeastern U.S. Klein (1993) in a studying waterbird response to human disturbance found that as intensity of disturbance increased, avoidance response by the birds increased and found that out-of-vehicle activity to be more disruptive than vehicular traffic; Freddy et al. (1986) and Vaske (1983)

also found the latter to be true. In regards to waterfowl, Klein (1989) found migratory dabbling ducks to be the most sensitive to disturbance and migrant ducks to be more sensitive when they first arrived, in the late fall, than later in winter. She also found that gulls and sandpipers to be apparently insensitive to human disturbance, with Burger (1981) finding the same to be true for various gull species.

For songbirds, Gutzwiller et al. (1994) found that singing behavior of some species was altered by low levels of human intrusion. Some studies have found that some bird species habituate to repeated intrusion; frequently disturbed individuals of some species have been found to vocalize more aggressively, have higher body masses, or tend to remain in place longer (Cairns and McLaren 1980). Disturbance may affect the reproductive fitness of males by hampering territory defense, male attraction and other reproductive functions of song (Arrese 1987). Disturbance, which leads to reduced singing activity, will make males rely more heavily on physical deterrents in defending territories which are time and energy consuming (Ewald and Carpenter 1978).

Travel routes can disturb wildlife outside the immediate trail corridor (Miller et al. 2001). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. Bird communities in this study were apparently affected by the presence of recreational trails, where “generalists” (American robins) were found near trails and “specialist” species (i.e. grasshopper sparrows) were found farther from trails. Nest predation was also found to be greater near trails (Miller et. al 1998).

Disturbance can cause shifts in habitat use, abandonment of habitat and increased energy demands on affected wildlife (Knight and Cole, 1991). Flight in response to disturbance can lower nesting productivity and cause disease and death. Hammitt and Cole (1998) conclude that the frequent presence of humans in “wildland” areas can dramatically change the normal behavior of wildlife mostly through “unintentional harassment.”

Seasonal sensitivities can compound the effect of disturbance on wildlife. Examples include regularly flushing birds during nesting or causing mammals to flee during winter months, thereby consuming large amounts of stored fat reserves. Hammitt and Cole (1998) note that females with young (such as white-tailed deer) are more likely to flee from a disturbance than those without young.

The Delaware Natural Heritage Program, Division of Fish & Wildlife and the Department of Natural Resources and Environmental Control prepared a document titled “The Effects of Recreation on Birds: A Literature Review” which was completed in April of 1999. The following information was reference from this document:

Several studies have examined the effects of recreationists on birds using shallow-water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981; Burger 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1995, 1997; Burger & Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreation activities always have at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1997; Burger & Gochfeld 1998). The findings that were reported in these studies are summarized as follows in terms of visitor activity and avian response to disturbance.

*Presence:* Birds avoided places where people were present and when visitor activity was high (Burger 1981; Klein et al. 1995; Burger & Gochfeld 1998).

*Distance:* Disturbance increased with decreased distance between visitors and species (Burger 1986), though exact measurements were not reported.

*Approach Angle:* Visitors directly approaching birds on foot caused more disturbance than visitors driving by in vehicles, stopping vehicles near birds, and stopping vehicles and getting out without approaching birds (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger & Gochfeld 1981; Burger et al. 1995; Knight & Cole 1995a; Rodgers & Smith 1995, 1997).

*Type and Speed of Activity:* Joggers and landscapers caused birds to flush more than fishermen, clammers, sunbathers, and some pedestrians, possibly because the former groups move quickly (joggers) or create more noise (landscapers). The latter groups tend to move more slowly or stay in one place for longer periods, and thus birds likely perceive these activities as less threatening (Burger 1981, 1986; Burger et al. 1995; Knight and Cole 1995a). Alternatively, birds may tolerate passing by with unabated speed whereas if the activity stops or slacks birds may flush (Burger et al. 1995).

*Noise:* Noise caused by visitors resulted in increased levels of disturbance (Burger 1986; Klein 1993; Burger & Gochfeld 1998), though noise was not correlated with visitor group size (Burger & Gochfeld 1998).

In determining compatibility, the cumulative effects of all public use on trails are considered. Due to the limitations put on these activities and that historical record show low use, disturbance from walkers and hikers is not expected to greatly increase the disturbance to wildlife.

#### **PUBLIC REVIEW AND COMMENT:**

As part of the CCP process for Iroquois Refuge, this compatibility determination underwent a comment period of 30 days concurrent with the release of our draft CCP.

#### **DETERMINATION (check one below):**

THIS USE IS COMPATIBLE              X  

THIS USE IS NOT COMPATIBLE                  

#### **STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

- Dogs are allowed on refuge trails, but need to be on a leash 10 feet long or shorter and in the immediate control of their owner.
- Off trail walking/hiking is permitted in upland areas only between October 1 and the end of February. However, eagle nesting areas between October 1 and January 1 will be closed. Walkers/hikers will be required to wear blaze orange.
- Activities will be allowed from sunrise to sunset

#### **JUSTIFICATION:**

The Service and the National Wildlife Refuge System maintain the goal of providing opportunities to view wildlife. Allowing the use of already established trail system by persons engaging in walking and hiking will provide visitors the chance to view wildlife, and hence promotes public appreciation of conservation wildlife and habitats. Walking and hiking are not priority public uses; however they facilitate priority public uses on the refuge. This use will not materially interfere with or detract from the



fulfillment of the National Wildlife Refuge System mission or the purpose for which the refuge was established.

**CONSULTATION WITH THE REFUGE SUPERVISOR:**

The refuge supervisor was consulted on January 2010; changes were made as needed.

**Signature:** Refuge Manager: Thomas Marks 8/29/2011  
(Signature/Date)

**Concurrence:** Regional Chief: Sean B. Kahn 9/1/2011  
(Signature/Date)

**Mandatory 10 - year Reevaluation Date:** 9/1/2021

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**Finding of Appropriateness of a Refuge Use (603 FW 1, Exhibit 1)**

Refuge Name: Iroquois National Wildlife Refuge

Use: Jogging and Bicycling

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

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

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

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

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

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

Not Appropriate      Appropriate X

Refuge Manager: 

Date: 8/29/2011

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

Refuge Supervisor: 

Date: 9/1/11

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

**Justification for a Finding of Appropriateness of a Refuge Use**

Refuge Name: Iroquois National Wildlife Refuge

Use: Jogging and Bicycling

**Narrative**

Trail activities consisting of jogging and bicycling will be used to facilitate priority public uses on Iroquois Refuge. Priority public uses of the National Wildlife Refuge System as defined by statute regulation are hunting, fishing, wildlife observation and photography, environmental education, and interpretation. 16 U.S.C. § 668ee (2); 50 C.F.R. § 25.12. Currently all priority public uses are permitted on Iroquois Refuge.

Jogging and bicycling are not priority public uses, however, they facilitate priority public uses on the refuge. Although jogging and bicycling are classified as a non-wildlife activity, most use the refuge for the "wildlands" experience it provides. Jogging and bicycling generally occur between March and September. Some bicyclist stop at the visitor contact station to obtain refuge or wildlife viewing information. Visual observations indicate that total use is extremely light, but exact numbers are currently not available. Some hunters use bicycles to access hunting spots along Feeder Road.

It is anticipated that some soil erosion could occur as a result of jogging and bicycling access on designated routes. There are also temporal disturbances to wildlife species using habitat, on or directly adjacent to, the routes as well. These disturbances are likely to be short term and infrequent based on current levels of use. Therefore the disturbance from joggers and bicyclists is not expected to greatly increase the disturbance to wildlife or the refuge's habitats.

## COMPATIBILITY DETERMINATION

**USE:** Jogging and Bicycling

**REFUGE NAME:** Iroquois National Wildlife Refuge

**DATE ESTABLISHED:** May 19, 1958

**ESTABLISHING AUTHORITY:** Migratory Bird Conservation Act (16 U.S.C. 715d)

**PURPOSE(S) FOR WHICH ESTABLISHED:**

...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...  
16 U.S.C. § 715d (Migratory Bird Conservation Act)

**MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:**

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

**DESCRIPTION OF USE:**

**(a) What is the use? Is the use a priority public use?**

The uses are jogging and bicycling. Jogging and bicycling are not priority public uses.

**(b) Where would the use be conducted?**

Jogging will be allowed on designated refuge trails including Swallow Hollow, Kanyoo, and Onondaga Trails and Feeder Road. Bicycling will be allowed on Feeder Road only.

**(c) When would the use be conducted?**

The activities will be allowed year-round from sunrise to sunset.

**(d) How would the use be conducted?**

The uses are self-regulating with signs indicating appropriate routes of travel. During the entire year, persons engaged in bicycling will only use the Feeder Road to bike and will only use existing public roads and refuge parking areas to access the Feeder Road. Refuge staff will remove fallen trees and limbs provided staff resources are available so to provide safe conditions that could become hazardous for visitors. The trail surfaces are maintained each year by applying gravel where needed, repairing boardwalks and handrails, and so on. Dogs are allowed on the trails while on a leash of 10 feet or shorter in length and under the control of their owner.

**(e) Why is this use being proposed?**

Jogging and bicycling are not priority public uses; however they facilitate priority public uses on the refuge. Although jogging and bicycling are classified as a non-wildlife activity, most use the refuge for the "wildlands" experience it provides. Jogging and bicycling generally occur between March and September. Some bicyclist stop at the visitor contact station to obtain refuge or wildlife viewing information. Visual observations indicate that total use is extremely light, but exact numbers are currently not available.

**AVAILABILITY OF RESOURCES:**

The refuge has a maintained trail system in place to support priority public uses. Allowing jogging on these trails will not increase the maintenance or operational needs. Feeder Road is the main service road used by refuge employees and also provides access to the refuge for other public uses, thus maintenance of this facility is on-going and no additional needs will be required.

The following breakdown shows the estimated amount of funds needed to administer the program.

**Staff time to administer the jogging and biking program:**

Identifier	Cost
Trail/road maintenance*	\$240
Compliance checks	\$100
<b>Total Annual Cost</b>	<b>\$340</b>

*\* Refuge trails and roads are maintained for a variety of activities. Costs shown are a percentage of total costs for trail/road maintenance on the refuge and are reflective of the percentage of trail/road use for this activity. Volunteers account for some maintenance hours and help to reduce overall cost of the program.*

**ANTICIPATED IMPACTS OF THE USE:**

Jogging and bicycle use, as well as other forms of trail use, have the potential to impact shorebird, waterfowl, and other migratory bird populations feeding and resting near the trails during certain times of the year. Human disturbance to migratory birds has been documented in many studies in different locations. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). Response of wildlife to human activities includes: departure from site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increased energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). McNeal et al. (1992) found that many waterfowl species avoid disturbance by feeding at night instead of during the day. Studying the effects of human visitation on waterbirds at J.N. "Ding" Darling Refuge, Klein (1989) found resident waterbirds to be less sensitive to disturbance than migrants; she also found that sensitivity varied according to species and individuals within species. Ardeids were quite tolerant of people but were disturbed as they took terrestrial prey; great blue herons, tricolored herons, great egrets, and little blue herons were observed to be disturbed to the point of flight more than other birds. Kushlan (1978) found that the need of these birds to move frequently while feeding may disrupt interspecific and intraspecific relationships. In addition, Batten (1977) and Burger (1981) found that wading birds were extremely sensitive to disturbance in the northeastern U.S. Klein (1993) in a studying waterbird response to human disturbance found that as intensity of disturbance increased, avoidance response by the birds increased and found that out-of-vehicle activity to be more disruptive than vehicular traffic; Freddy et al. (1986) and Vaske (1983) also found the latter to be true. In regards to waterfowl, Klein (1989) found migratory dabbling ducks to be the most sensitive to disturbance and migrant ducks to be more sensitive when they first arrived, in the late fall, than later in winter. She also found that gulls and sandpipers to be apparently insensitive to human disturbance, with Burger (1981) finding the same to be true for various gull species.

For songbirds, Gutzwiller et al. (1994) found that singing behavior of some species was altered by low levels of human intrusion. Some studies have found that some bird species habituate to repeated intrusion; frequently disturbed individuals of some species have been found to vocalize more aggressively, have higher body masses, or tend to remain in place longer (Cairns and McLaren 1980). Disturbance may

affect the reproductive fitness of males by hampering territory defense, male attraction and other reproductive functions of song (Arrese 1987). Disturbance, which leads to reduced singing activity, will make males rely more heavily on physical deterrents in defending territories which are time and energy consuming (Ewald and Carpenter 1978).

Travel routes can disturb wildlife outside the immediate trail corridor (Miller et al. 2001). Miller et al. (1998) found bird abundance and nesting activities (including nest success) increased as distance from a recreational trail increased in both grassland and forested habitats. Bird communities in this study were apparently affected by the presence of recreational trails, where “generalists” (American robins) were found near trails and “specialist” species (i.e. grasshopper sparrows) were found farther from trails. Nest predation was also found to be greater near trails (Miller et. al 1998).

Disturbance can cause shifts in habitat use, abandonment of habitat and increased energy demands on affected wildlife (Knight and Cole, 1991). Flight in response to disturbance can lower nesting productivity and cause disease and death. Hammitt and Cole (1998) conclude that the frequent presence of humans in “wildland” areas can dramatically change the normal behavior of wildlife mostly through “unintentional harassment.”

Seasonal sensitivities can compound the effect of disturbance on wildlife. Examples include regularly flushing birds during nesting or causing mammals to flee during winter months, thereby consuming large amounts of stored fat reserves. Hammitt and Cole (1998) note that females with young (such as white-tailed deer) are more likely to flee from a disturbance than those without young.

The Delaware Natural Heritage Program, Division of Fish & Wildlife and the Department of Natural Resources and Environmental Control prepared a document titled “The Effects of Recreation on Birds: A literature Review” which was completed in April of 1999. The following information was reference from this document:

Several studies have examined the effects of recreationists on birds using shallow-water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981; Burger 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1995, 1997; Burger & Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreation activities always have at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1997; Burger & Gochfeld 1998). The findings that were reported in these studies are summarized as follows in terms of visitor activity and avian response to disturbance.

*Presence:* Birds avoided places where people were present and when visitor activity was high (Burger 1981; Klein et al. 1995; Burger & Gochfeld 1998).

*Distance:* Disturbance increased with decreased distance between visitors and species (Burger 1986), though exact measurements were not reported.

*Approach Angle:* Visitors directly approaching birds on foot caused more disturbance than visitors driving by in vehicles, stopping vehicles near birds, and stopping vehicles and getting out without approaching birds (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger & Gochfeld 1981; Burger et al. 1995; Knight & Cole 1995a; Rodgers & Smith 1995, 1997).

*Type and Speed of Activity:* Joggers and landscapers caused birds to flush more than fishermen, clammers, sunbathers, and some pedestrians, possibly because the former groups move quickly



(joggers) or create more noise (landscapers). The latter groups tend to move more slowly or stay in one place for longer periods, and thus birds likely perceive these activities as less threatening (Burger 1981, 1986; Burger et al. 1995; Knight and Cole 1995a). Alternatively, birds may tolerate passing by with unabated speed whereas if the activity stops or slacks birds may flush (Burger et al. 1995).

*Noise:* Noise caused by visitors resulted in increased levels of disturbance (Burger 1986; Klein 1993; Burger & Gochfeld 1998), though noise was not correlated with visitor group size (Burger & Gochfeld 1998).

In determining compatibility, the cumulative effects of all public use on trails are considered. Due to the limitations put on these activities, and that historical records show low use, disturbance from joggers and bicyclists is not expected to increase disturbance to wildlife.

**PUBLIC REVIEW AND COMMENT:**

As part of the CCP process for Iroquois Refuge, this compatibility determination underwent a comment period of 30 days concurrent with the release of our draft CCP.

**DETERMINATION (check one below):**

THIS USE IS COMPATIBLE              X  

THIS USE IS NOT COMPATIBLE                  

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

- Activities will be restricted to designated trails and roads.
- Activities will be allowed from sunrise to sunset.
- Mountain bikes, as well as all bikes, will be restricted to Feeder Road. Mountain biking, in the sense of “off-trail” riding, running single-tracks, will not be allowed.
- The refuge will monitor and restrict future activity if, at any time, wildlife disturbance becomes a significant problem.

**JUSTIFICATION:**

Jogging and bicycling should continue to be permitted but not encouraged on the refuge. Most visitors jog and bike on Feeder Road which is open for a variety of public use activities and is the main service road used by refuge staff for management functions. Visual observations indicate that total use is extremely low and no significant wildlife impacts have been identified on the refuge as a result of these activities. Jogging and bicycling are not priority public uses; however they facilitate priority public uses on the refuge. These uses will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose for which the refuge was established.

**CONSULTATION WITH REFUGE SUPERVISOR:**

The refuge supervisor was consulted on January 2010; changes were made as needed.

**Signature:**

Refuge Manager:

Monica M. A. 8/29/2011  
(Signature/Date)

**Concurrence:**

Regional Chief:

Scott B. Kow 9/1/2011  
(Signature/Date)

**Mandatory 10 - year Reevaluation Date:**

9/1/2021

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**Finding of Appropriateness of a Refuge Use (603 FW 1, Exhibit 1)**

Refuge Name: Iroquois National Wildlife Refuge

Use: Cross Country Skiing and Snowshoeing

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

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

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

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

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

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

Not Appropriate      Appropriate X

Refuge Manager: *Thomas M. [Signature]*

Date: 8/29/11

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

Refuge Supervisor: *J.R. [Signature]*

Date: 9/1/11

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

**Justification for a Finding of Appropriateness of a Refuge Use**

Refuge Name: Iroquois National Wildlife Refuge

Use: Cross Country Skiing and Snowshoeing

**Narrative**

Trail activities consisting of cross-country skiing and snowshoeing will be used to facilitate priority public uses on Iroquois Refuge. Priority public uses of the National Wildlife Refuge System as defined by statute regulation are hunting, fishing, wildlife observation and photography, environmental education, and interpretation. 16 U.S.C. § 668ee (2); 50 C.F.R. § 25.12. Currently all priority public uses are permitted on Iroquois Refuge.

There are temporal disturbances to wildlife species using habitat, on or directly adjacent to, the designated cross country skiing and snowshoeing routes. These disturbances are likely to be short term and infrequent based on current levels of use. Due to the limitations put on these activities, the seasonal timing, and that historical record show low use, disturbance from skiers and snowshoers is not expected to greatly increase the disturbance to wildlife or the refuge's habitats.

## **COMPATIBILITY DETERMINATION**

**USE:** Cross-country Skiing and Snowshoeing

**REFUGE NAME:** Iroquois National Wildlife Refuge

**DATE ESTABLISHED:** May 19, 1958

**ESTABLISHING AUTHORITY:** Migratory Bird Conservation Act (16 U.S.C. 715d)

### **PURPOSE(S) FOR WHICH ESTABLISHED:**

...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...  
16 U.S.C. § 715d (Migratory Bird Conservation Act)

### **MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:**

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

### **DESCRIPTION OF USE:**

#### **(a) What is the use? Is the use a priority public use?**

The use is cross-country skiing and snowshoeing. These two uses are not priority public uses.

#### **(b) Where would the use be conducted?**

Cross-country skiing and snowshoeing will be permitted on Kanyoo and Onondaga Nature Trails as well as Mohawk Ski Trail, a 7.5 mile loop around Mohawk Pool. The Mohawk Ski Trail closes every year on March 1.

#### **(c) When would the use be conducted?**

The trails will be used daily from sunrise to sunset. Cross-country skiing and snowshoeing will be allowed when adequate snow is present in the fall through the end February. Trails will be open to the use during the hunting seasons. A safety zone of 500 feet is in effect in which no hunting will take place around refuge trails except the Mohawk Ski Trail. However, visitors should still proceed with caution while using the trails during the hunting season.

#### **(d) How would the use be conducted?**

The uses are self-regulating with signs indicating appropriate routes of travel. The trails are not groomed, so skiers will be required to cut their own trail when there is new fallen snow. Provided staff resources are available, refuge staff will remove fallen trees and limbs so to provide safe conditions that could become hazardous for visitors. The trail surfaces are maintained each year by applying gravel where needed, repairing boardwalks and handrails, and so on. Dogs are allowed on all designated trails while on a leash of 10 feet or shorter in length and under the control of their owner.

#### **(e) Why is this use being proposed?**

Cross-country skiing and snowshoeing are not priority public uses, however, they facilitate priority public uses on the refuge. Although cross-country skiing and snowshoeing are classified as non-wildlife dependent activities, most visitors use the refuge for the "wildlands" experience it provides. These activities allow visitors to access the refuge during the winter time and partake in wildlife observations of

winter residents. Additionally, many skiers and snowshoers stop at the visitor contact station to obtain refuge or wildlife viewing information. General observations indicate that total use is extremely light, but exact numbers are currently not available.

#### AVAILABILITY OF RESOURCES:

The refuge has a trail system in place to support priority public uses, and these trails are already being maintained for these purposes. Allowing cross-country skiing and snowshoeing on these trails will not increase the maintenance or operational needs. Refuge staff and volunteers maintain signs designating the location of trails including the Mohawk Ski Trail, but this time is minimal and can be completed with current refuge funding.

The following breakdown shows the estimated amount of funds needed to administer the program.

#### Annual costs for skiing and snowshoeing:

Identifier	Cost
Trail/road maintenance	\$240
Signage, publications	\$240
<b>Total Annual Cost</b>	<b>\$480</b>

*\* Refuge trails and roads are maintained for a variety of activities. Costs shown are a percentage of total costs for trail/road maintenance on the refuge and are reflective of the percentage of trail/road use for this activity. Volunteers account for some maintenance hours and help to reduce overall cost of the program.*

#### ANTICIPATED IMPACTS OF THE USE:

Cross-country skiing and snowshoeing, as well as other forms of trail use, have the potential to impact shorebird, waterfowl, and other migratory bird populations feeding and resting near the trails during certain times of the year. Human disturbance to migratory birds has been documented in many studies in different locations. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). Response of wildlife to human activities includes: departure from site (Owen 1973, Burger 1981, Kaiser and Fritzell 1984, Korschen et al 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), use of sub-optimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschen et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increased energy expenditure (Morton et al. 1989, Belanger and Bedard 1990). McNeal et al. (1992) found that many waterfowl species avoid disturbance by feeding at night instead of during the day. Studying the effects of human visitation on waterbirds at J.N. "Ding" Darling Refuge, Klein (1989) found resident waterbirds to be less sensitive to disturbance than migrants; she also found that sensitivity varied according to species and individuals within species. Ardeids were quite tolerant of people but were disturbed as they took terrestrial prey; great blue herons, tricolored herons, great egrets, and little blue herons were observed to be disturbed to the point of flight more than other birds. Kushlan (1978) found that the need of these birds to move frequently while feeding may disrupt interspecific and intraspecific relationships. In addition, Batten (1977) and Burger (1981) found that wading birds were extremely sensitive to disturbance in the northeastern U.S. Klein (1993) in a studying waterbird response to human disturbance found that as intensity of disturbance increased, avoidance response by the birds increased and found that out-of-vehicle activity to be more disruptive than vehicular traffic; Freddy et al. (1986) and Vaske (1983) also found the latter to be true. In regards to waterfowl, Klein (1989) found migratory dabbling ducks to be the most sensitive to disturbance and migrant ducks to be more sensitive when they first arrived, in the late fall, than later in winter. She also found that gulls and sandpipers to be



apparently insensitive to human disturbance, with Burger (1981) finding the same to be true for various gull species.

Seasonal sensitivities can compound the effect of disturbance on wildlife. Examples include regularly flushing birds during nesting or causing mammals to flee during winter months, thereby consuming large amounts of stored fat reserves. Hammitt and Cole (1998) note that females with young (such as white-tailed deer) are more likely to flee from a disturbance than those without young.

The Delaware Natural Heritage Program, Division of Fish & Wildlife and the Department of Natural Resources and Environmental Control prepared a document titled “The Effects of Recreation on Birds: A literature Review” which was completed in April of 1999. The following information was reference from this document:

Several studies have examined the effects of recreationists on birds using shallow-water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981; Burger 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1995, 1997; Burger & Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreation activities always have at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1997; Burger & Gochfeld 1998). The findings that were reported in these studies are summarized as follows in terms of visitor activity and avian response to disturbance.

*Presence:* Birds avoided places where people were present and when visitor activity was high (Burger 1981; Klein et al. 1995; Burger & Gochfeld 1998).

*Distance:* Disturbance increased with decreased distance between visitors and (Burger 1986), though exact measurements were not reported.

*Approach Angle:* Visitors directly approaching birds on foot caused more disturbance than visitors driving by in vehicles, stopping vehicles near birds, and stopping vehicles and getting out without approaching birds (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger & Gochfeld 1981; Burger et al. 1995; Knight & Cole 1995a; Rodgers & Smith 1995, 1997).

*Type and Speed of Activity:* Joggers and landscapers caused birds to flush more than fishermen, clammers, sunbathers, and some pedestrians, possibly because the former groups move quickly (joggers) or create more noise (landscapers). The latter groups tend to move more slowly or stay in one place for longer periods, and thus birds likely perceive these activities as less threatening (Burger 1981, 1986; Burger et al. 1995; Knight and Cole 1995a). Alternatively, birds may tolerate passing by with unabated speed whereas if the activity stops or slacks birds may flush (Burger et al. 1995).

*Noise:* Noise caused by visitors resulted in increased levels of disturbance (Burger 1986; Klein 1993; Burger & Gochfeld 1998), though noise was not correlated with visitor group size (Burger & Gochfeld 1998).

In determining compatibility, the cumulative effects of all public use on trails are considered. Due to the limitations put on these activities, the seasonal timing, and that historical record show low use, disturbance from skiers and snowshoers is not expected to greatly increase the disturbance to wildlife.

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**Finding of Appropriateness of a Refuge Use (603 FW 1, Exhibit 1)**

Refuge Name: Iroquois National Wildlife Refuge

Use: Haying

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

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

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

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

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

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

Not Appropriate      Appropriate X

Refuge Manager: *Thomas M. [Signature]*

Date: 8/29/2011

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

Refuge Supervisor: *J. R. [Signature]*

Date: 9-1-11

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

**Justification for a Finding of Appropriateness of a Refuge Use**

Refuge Name: Iroquois National Wildlife Refuge

Use: Haying

**Narrative**

The refuge was established to provide habitat for migratory birds. Currently, the refuge supports healthy populations of several grassland nesting birds, including Savannah sparrow, bobolink, and eastern meadowlark and smaller populations of sedge wren, Henslow's sparrow, grasshopper sparrow, and upland sandpiper. Additionally several duck species including mallard, black duck, gadwall, northern shoveler, blue-winged teal, green-winged teal, American widgeon, and northern pintail use refuge grasslands for nesting. During migration and winter several other species use refuge grasslands as resting and feeding areas.

Grasslands must periodically be rejuvenated to maintain their optimum vigor. Haying will be conducted after the nesting season and very little impact to populations is expected. Haying is useful in controlling woody vegetation and broad-leaf forbs, thus maintaining the grassland habitat. Haying of refuge grasslands will have short-term disturbance from equipment during the haying operations. It is plausible that late- or re-nesting birds may be injured or killed from haying equipment. However, this impact is mitigated by the delaying of haying operations until July 15 or later. Some species may be displaced after the mowing while others will colonize recently mowed fields.

## COMPATIBILITY DETERMINATION

**USE:** Haying – Economic Use

**REFUGE NAME:** Iroquois National Wildlife Refuge

**DATE ESTABLISHED:** May 19, 1958

**ESTABLISHING AUTHORITY:** Migratory Bird Conservation Act (16 U.S.C. 715d)

**PURPOSE(S) FOR WHICH ESTABLISHED:**

...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...  
16 U.S.C. § 715d (Migratory Bird Conservation Act)

**MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:**

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

**DESCRIPTION OF USE:**

**(a) What is the use? Is the use a priority public use?**

This use permits the harvest and removal of hay from designated refuge grasslands by private parties through the issuance of a Special Use Permit. Hay on the refuge consists of native and naturalized grasslands originally planted and currently maintained to provide habitat for migratory birds and resident wildlife. Haying on the refuge is strictly a tool used to maintain the refuge grasslands in an early successional condition and no attempt is made to improve the hay crop (e.g., fertilizing, planting additional hay species) for the cooperators. The use is an existing use and over the last several years, up to three individuals have annually harvested hay on up to 400 acres. Pursuant to refuge regulations at 50 C.F.R. 29.1, the use is considered an economic use, since the hay has a value as feed for farmer's livestock or as a crop. As such, we must determine if haying by private parties is compatible with and contributes to the refuge purposes or the mission of the Refuge System. The use assists in maintaining grasslands for migratory birds and other wildlife as a component of the grassland management program. Periodic management of grasslands is essential to maintaining them in a grass dominated state and to providing the best possible habitat for grassland dependent wildlife. Haying is not identified as a priority public use in the Improvement Act of 1997.

**(b) Where would the use be conducted?**

The use is conducted in various refuge grassland management units. Each year the need for a specific unit to be hayed is dependent on the biological needs of maintaining established grasslands or assisting in restoring additional grasslands. See attached map for potential haying locations.

**(c) When would the use be conducted?**

Haying is permitted in designated grassland units after July 15 to insure that nearly all grassland birds have completed nesting for the year. All haying must be completed by September 15. All hay and equipment is removed by October 1 to insure that refuge habitat is not damaged by rutting of soil due to wet conditions normally associated with autumn in this area.



**(d) How would the use be conducted?**

The refuge staff annually evaluates the grassland units to determine the biological need for management and the means (e.g., prescribed fire, mowing). Local individuals will be notified if and when units are available for haying via news releases and contact with previous individuals who have hayed. In accordance with 5 RM 17 of the Refuge Manual, units will be awarded through a competitive bid system. Each haying unit is treated as a separate bid and potential permittees are allowed to bid on as many units as they choose. There is a minimum bid of \$50.00 per bidder to ensure that the administrative costs of conducting the bidding process are covered. After the bidding deadline, bids are opened and the unit is awarded to the highest bidder. The successful bidders will supply all necessary equipment to harvest and remove the hay.

Over the past 3 years, cooperators have cut hay on 301 acres and paid a total of \$2,005 to do so. This is an average of \$6.66/acre to cut hay on the refuge. Refuge grasslands do not contain ideal hay species and often contain a large amount of broad-leaf forbs which make poor quality hay. Regardless of quality, cooperators are required to cut the entire unit that they bid on. This results in approximately 10 percent of each hay unit on average cut but not of high enough quality to bale for hay. This adds up to a total of approximately 30 acres of grassland cut by cooperators and not used as hay over the last 3 years. The custom rate for brush hogging in this area is approximately \$50.00/acre. It would have cost the refuge approximately \$1,500 to cut this same 30 acres. Adding this cost into the cost/acre increases the total to \$11.65/acre as a rental rate to cut hay on the refuge over the past 3 years.

The average cost for renting an acre of hayland in western New York is generally between \$25 and \$100/acre (Cornell Cooperative Extension, pers. comm.). This cost assumes a higher quality of hay than what is cut on the refuge and it also assumes multiple cuttings (usually three) of hay each year. Our cooperators are only able to get one cutting of generally poor quality hay off the refuge. Renting hayland similar to what is available on the refuge will likely cost farmers approximately \$15/acre (Genesee County Soil and Water Conservation District, pers. comm.), however, a haying program with restrictions similar to our haying program is unusual on private land and therefore makes identification of comparable costs difficult. Using the best information available, the fees estimated through the current bidding system for haying privileges on the refuge appear to be commensurate with what is available on private property in the area.

**(e) Why is this use being proposed?**

The refuge was established to provide habitat for migratory birds. Currently, the refuge supports healthy populations of several grassland nesting birds, including Savannah sparrow, bobolink, and eastern meadowlark and smaller populations of sedge wren, Henslow's sparrow, grasshopper sparrow, and upland sandpiper. Additionally several duck species including mallard, black duck, gadwall, northern shoveler, blue-winged teal, green-winged teal, American widgeon, and northern pintail use refuge grasslands for nesting. During migration and winter several other species use refuge grasslands as resting and feeding areas.

As these grasslands succeed into shrublands and then forestlands the amount of available habitat for grassland nesting species declines. Haying is beneficial in maintaining refuge grasslands in their intended state. Without periodic treatment by mowing, burning, or chemicals, refuge grasslands quickly revert to brush and forests. Haying can be used in lieu of refuge staff treating the grasslands, thus saving the refuge thousands of dollars while still accomplishing mission related goals. The hay crop has value to the farmer as forage for his livestock or as a cash crop.

Historically most of the Northeast was forested, except for a period following European settlement when much of the region was cleared for agriculture and subsequently grasslands and fields became abundant. In pre-settlement times, permanent, large openings were uncommon. Scattered openings occurred along

large river floodplains, around beaver flowages, in coastal heathlands, and in other areas of regular disturbance. Large grasslands are now in decline and the region has reforested closer to pre-settlement proportions.

Populations of grassland birds are declining as grassland habitats and other agricultural conditions diminish. Norment (2002) notes that despite the relatively recent (last 200 years) rise and fall of grassland habitats and associated birds in New England, the region may still be important for these species given their continental decline and habitat loss in the core of their ranges in the Midwest.

#### **AVAILABILITY OF RESOURCES:**

During calendar year 2009 there were two Special Use Permits issued for haying refuge lands. Time spent reviewing, issuing, and overseeing permit holders will be minimal for refuge staff, and therefore resources are available under current staffing and budgets. Overall, it has cost the refuge approximately \$40 per acre to treat grasslands via mowing; the annual grassland management program can easily save thousands of dollars by not having to mow the acres that can be hayed.

#### **Annual costs of haying:**

<b>Identifier</b>	<b>Cost</b>
Surveys, data analysis, recommendations, reporting	\$1,000
Permitee compliance	\$250
Permitting, news release, general information	\$250
<b>Total Annual Cost</b>	<b>\$1,500</b>

#### **ANTICIPATED IMPACT OF THE USE:**

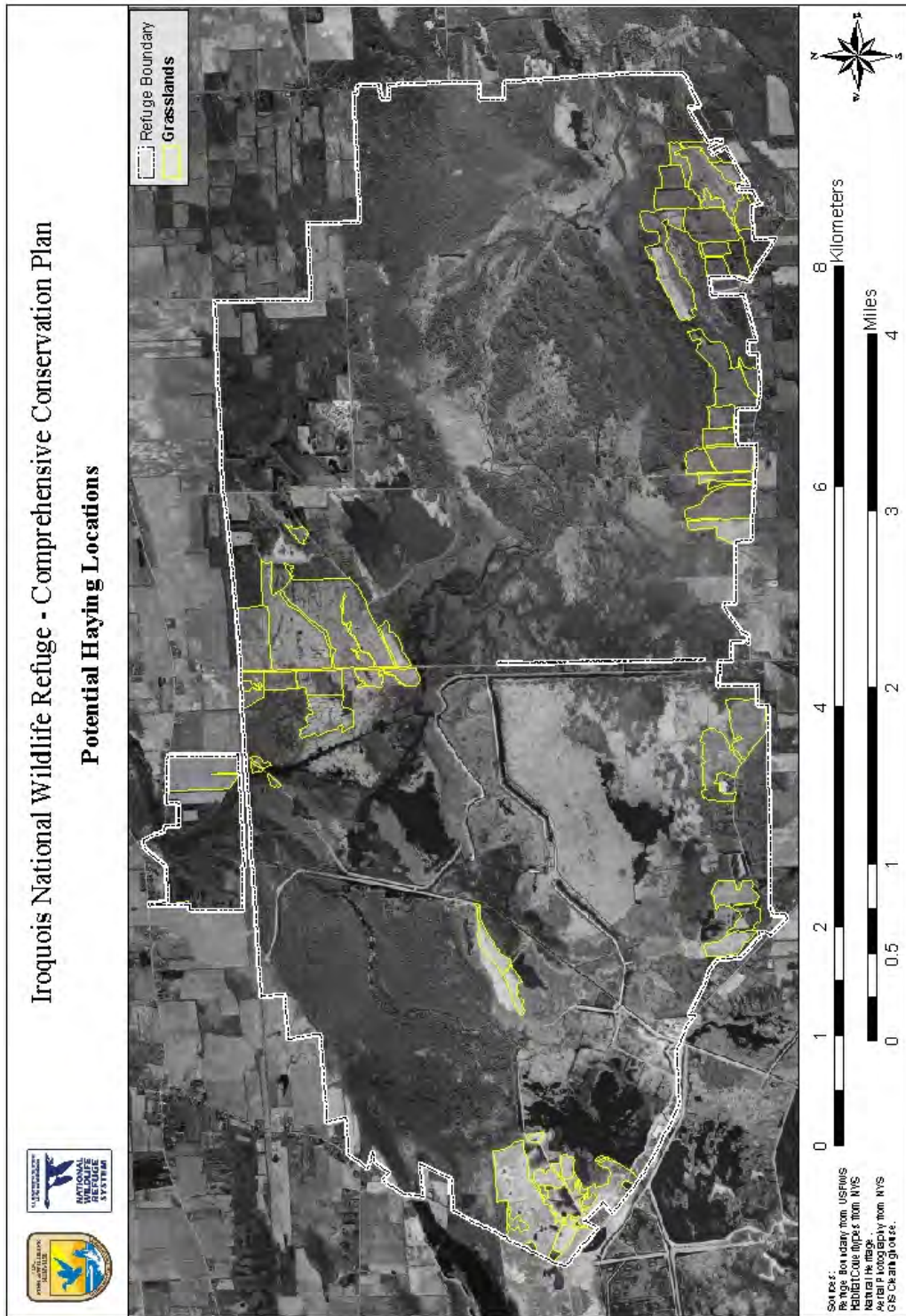
Grasslands must periodically be rejuvenated to maintain their optimum vigor. Haying will be conducted after the nesting season and very little impact to populations is expected. Haying is useful in controlling woody vegetation and broad-leaf forbs, thus maintaining the grassland habitat. Haying of refuge grasslands will have short-term disturbance from equipment during the haying operations. It is plausible that late- or re-nesting birds may be injured or killed from haying equipment. However, this impact is mitigated by the delaying of haying operations until July 15 or later. Some species may be displaced after mowing while others will colonize recently mowed fields. Species such as bobolink, red-winged black bird, eastern meadowlark, and Henslow's sparrow abandon fields mowed during breeding season (Sample and Mossman, 1997). Sample and Mossman, 1997, also reported that many grassland bird species do well in habitats that are mowed either annually or every few years during the late summer or fall time frame. Hekert et al.1996, found that it was important to rotate or change management of a given tract in order to keep residual material available for species that require it. In the Midwest, sedge wrens did not use hay fields after mowing, but preferred un-mowed fields that were dense and lush (Skinner 1975, Sample 1989, Frawley and Best 1991). Disturbance via vehicles used for auto tour routes or road traffic is much more documented than disturbance due to machinery for management purposes. Several articles stated that vehicles can cause disturbance to vegetation cover and height, reduce diversity, change community compositions, compact soils, and reduce avian diversity.

#### **PUBLIC REVIEW AND COMMENT:**

As part of the CCP process for Iroquois Refuge, this compatibility determination underwent a comment period of 30 days concurrent with the release of our draft CCP.



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**Finding of Appropriateness of a Refuge Use (603 FW 1, Exhibit 1)**

Refuge Name: Iroquois National Wildlife Refuge

Use: Commercial Forest Management

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

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

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

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

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

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

Not Appropriate \_\_\_ Appropriate X

Refuge Manager: *Sharon M. [Signature]*

Date: 8/29/2011

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

Refuge Supervisor: *J.R. [Signature]*

Date: 9-1-11

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

**Justification for a Finding of Appropriateness of a Refuge Use**

Refuge Name: Iroquois National Wildlife Refuge

Use: Commercial Forest Management

**Narrative**

The primary objective of forest management will be to enhance and maintain habitat for our priority resources of concern and associated communities over the long-term. Upland forest habitat on the refuge now lacks the optimal structure, composition, and patch size those species require. Forest management can improve and accelerate the development of appropriate structures and forest composition. Without active management, the development of appropriate habitat may take longer or fail to happen at all, depending on site characteristics, prior management history, and the frequency of natural disturbances. Forest management can also create and maintain the appropriate forest structure and age or size class distribution on the landscape into the future, so that adequate habitat is always available for species of concern. Because the refuge lacks the funding, personnel, or equipment to carry out forest management safely, commercial timber harvest and silvicultural treatments are the only reasonable alternative for accomplishing this work.

## **COMPATIBILITY DETERMINATION**

**USE:** Commercial Forest Management

**REFUGE NAME:** Iroquois National Wildlife Refuge

**DATE ESTABLISHED:** May 19, 1958

**ESTABLISHING AUTHORITY:** Migratory Bird Conservation Act (16 U.S.C. 715d)

**PURPOSE(S) FOR WHICH ESTABLISHED:**

. . .for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...  
16 U.S.C. § 715d (Migratory Bird Conservation Act)

**MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:**

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

**DESCRIPTION OF USE:**

**(a) What is the use? Is the use a priority public use?**

The use is commercial forest management. The use is not a priority public use of the National Wildlife Refuge System, under the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), as amended by the Improvement Act of 1997.

Commercial forest management will be performed for the primary purpose of improving wildlife habitat and ensuring that Iroquois Refuge has a diversity of forest habitat types, age classes, and canopy stratifications. The specific types of harvest that will be performed include improvement cuts (thinnings, release cuttings), regeneration cuts (seed tree, selection, shelterwood, and clear cuts) and salvage cuts performed as a result of storm, insect or disease damage, or outbreaks. Commercial harvesting is preferred over using refuge resources to harvest timber because the refuge does not own the equipment necessary to perform the tasks properly without causing significant negative impacts to the sites. Additionally, the refuge does not have the manpower to either run equipment or remove trees using chainsaws.

**(b) Where would the use be conducted?**

Commercial forest management will only occur in the refuge's upland forests and conifer plantations excluding forested islands that are completely surrounded by marsh and/or open water, the Oak Orchard National Natural Landmark and the Milford Posson Research Natural Area (Attachment 1). The refuge's wetland forests are rarely dry enough, outside of the breeding season of forest dwelling species, for any commercial forest management to take place. Any commercial harvesting that takes place on the refuge must follow the best forest and wildlife management practices recommended by the State of New York (New York State DEC. 2007. New York State Forestry Best Management Practices for Water Quality, BMP Field Guide).

**(c) When would the use be conducted?**

Commercial forest management may occur at different times of the year and at different locations depending on individual site characteristics, stand conditions, and other resource concerns. All



commercial forest management will occur at times designed to minimize unwanted impacts on resources, e.g., erosion, soil compaction, or the disturbance of wildlife, while maximizing the desired silvicultural results, such as seed germination and natural tree regeneration. To achieve specific silvicultural goals, most of the harvesting will occur in late summer through winter, as appropriate. A comprehensive forest inventory will evaluate forest habitat and wildlife species of concern and determine the best timing and method before harvesting. We will not harvest timber during the primary breeding and nesting season for forest dwelling migratory birds, and for bald eagles if nests are within or directly adjacent to the harvest area.

**(d) How would the use be conducted?**

Although the refuge completed a forest management plan in 1990 and has descriptions of each compartment's vegetation type, we will need additional details regarding the refuge forests before implementation of a forest management program. A comprehensive forest inventory will help design appropriate silvicultural prescriptions to meet the objectives of our CCP and Habitat Management Plan (HMP). Variables to be inventoried include, but are not limited to, basal area, trees per acres, age, species composition, canopy closure, understory composition, and volume of forest product in the whole stand.

Before any harvest occurs, stands to be harvested in that particular year will be delineated so that local timber harvesting companies can visit the harvest sites prior to bidding. A news release on the proposed harvest will be issued to local papers and packets of materials related to the harvest will be mailed to known timber harvesters. Companies may perform their own inventories and subsequently submit sealed bids for the forest products expected to be harvested when harvest includes complete removal. In the case of selection harvests, individual trees will be marked for harvesting and inventory information will be specified to interested bidders.

A Special Use Permit will be issued to the chosen contractor. The inventory data will be provided in the Special Use Permit along with a statement of work including all of the particulars and stipulations which must be adhered to (Attachment 2). Selected timber harvesters must provide proof of insurance prior to issuance of a Special Use Permit. The refuge manager may also select individual harvesters based on an evaluation of their equipment, availability, and past performance. Commercial timber harvest on the refuge may yield products including, pulpwood, firewood, saw timber, veneer, biomass, or chips. After the harvest, the contractor must supply the refuge with all reports obtained from the mill documenting all products removed from the refuge.

**(e) Why is the use being proposed?**

The primary objective of commercial forest management will be to enhance and maintain habitat for our species of concern and associated habitat communities (see table below). Forest management can improve and accelerate the development of appropriate structures and forest composition. Without active management, the development of appropriate habitat may take longer or fail to happen at all, depending on site characteristics, prior management history, and the frequency of natural disturbances. Forest management can also create and maintain the appropriate forest structure and age or size class distribution on the landscape into the future, so that adequate habitat is always available for species of concern. Because the refuge lacks the funding, personnel, or equipment to carry out forest management safely and efficiently, commercial forest management and silvicultural treatments are the only reasonable alternative for accomplishing the work.

**Priority Resources of Concern, Habitat Structure, and Other Benefiting Species for Forest Habitats on Iroquois Refuge**

Habitat Type	Focal Species	Habitat Structure	Other Benefiting Species
<b>Forested Wetlands</b>	Wood duck	Nest cavities in mature, living (sometimes dead) trees, greater than 18 inches d.b.h. within 1.2 miles of water; broken limbs for perching.	Prothonotary warbler, Baltimore oriole, rusty blackbird, northern flicker, bats, river otter
	Cerulean warbler	More often in riparian or bottomland hardwood forest but also on dry slopes and ridgetops. Requires large tracts of mature forest (> 500 acres) with sparse understories and closed or semi closed canopies; stays in the canopy (DeGraaf and Yamasaki 2001, Rosenberg et al. 2000).	
<b>Upland Forest</b>	Wood thrush	Nests in interior and edge of mature, deciduous or mixed forests, particularly damp woodlands near swamps or water. Primary habitat features include trees taller than 53 feet, a shrub-sub canopy layer, shade, moist soil, and leaf litter (DeGraaf and Yamasaki 2001).	Rose-breasted grosbeak, scarlet tanager
	Black-billed cuckoo	Young deciduous and mixed forest or shrubland with a dense understory of shrubs and vines. May be susceptible to habitat fragmentation and avoid forest patches less than 10 acres (DeGraaf and Yamasaki 2001, Hughes 2001).	
	Cerulean warbler	More often in riparian or bottomland hardwood forest but also on dry slopes and ridge tops. Requires large tracts of mature forest (> 500 acres) with sparse understories and closed or semi closed canopies; stays in the canopy (DeGraaf and Yamasaki 2001, Rosenberg et al. 2000).	
	American woodcock	During the breeding season woodcock use several habitat conditions in close proximity to one another: forest openings, 0.5 acre or more in size, as singing grounds; shrubby areas, particularly alders and dense young hardwoods on moist soils as feeding/daytime cover; young to mid-aged forest (15-30 years old) as brood and nesting habitat; and clearings of 2-3 acres as roost sites during migration (Keppie and Whiting 1994, Sepik et al. 1981).	
<b>Early Successional Forest and Shrublands</b>	Field sparrow	Breeds in old fields in early stages of succession with scattered woody vegetation such as lightly overgrown pastures, abandoned hayfields, power line corridors, woodland edges (DeGraaf and Yamasaki 2001).	Brown thrasher, song sparrow, willow flycatcher, black-billed cuckoo, American woodcock
	Blue-winged warbler	A mix of vegetation including dense herbaceous growth, shrubs, and young forest (<20 feet tall); often near wetland edges or damp areas but also in dry uplands (Gill et al. 2001).	

	Golden-winged warbler	Patches of herbs, shrubs, and scattered trees, plus a forested edge; shrubby fields as well as in marshes and bogs with a forest edge (Confer 1992). Most golden-wing territories have less than 60 percent herbaceous growth and less than 10 percent forest cover. Most territories include patches of shrub that are over 10 feet (3 meters) tall and un-mowed or un-grazed herbaceous growth (Cornell Lab Golden-winged Atlas Project).	
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**Rationale**

Although once dominated by a mix of oak-hickory, northern hardwood, and hemlock-northern hardwood forests, the upland areas around the refuge are now dominated by agricultural land interspersed with wetlands and remnant forest stands. Thus, the refuge offers some of the best remaining blocks of both upland and wetland forest in this region. Currently, the mature forest habitats on the refuge are not actively managed. Although in small patch sizes, the upland forests are relatively intact with a diversity of canopy tree species and some mid-story and understory plant associates and light impact from invasive species. These forests support Bird Conservation Region (BCR) 13 priority bird species including wood thrush and cerulean warbler (highest), and black-billed cuckoo (high). These three species are also birds of management concern for the Service in the northeast region and are noted as species of greatest conservation need in the New York Wildlife Action Plan.

Over 4,800 acres of the refuge is covered by forest (44 percent). The refuge forests can be generally categorized as upland (1,520 acres), wetland (3,297 acres) and conifer plantation (202 acres). Species composition of the upland forests vary across the refuge with mixed hardwood stands predominated by elm, maple, aspen, and upland species such as oak and beech. Most conifers occur in plantations and include white pine, white spruce, Norway spruce, Scotch pine, red pine and Douglas fir. Several eastern hemlock stands are found in small pockets. The majority of the wetland forested stands are mature and under- to well-stocked. Most of these forested stands are palustrine and are inaccessible to forest management equipment due to the excessively wet soils.

Within the present day landscape of the Ontario Lake Plain, large pockets of forested habitat are rare. Landuse or landcover data for northwestern New York were developed by the USGS as part of the Geographic Information Retrieval Analysis System (GIRAS) during the 1970’s. Of the entire area displayed (1,469,706 acres), 1.6 percent of the land cover (23,709 acres) is forested wetlands and 6 percent (8,417 acres) is upland forest. Sizes of these forested areas vary, but the largest pocket of forested wetlands, 20 percent of the total forested wetland cover, is within the refuge boundary.

In the early 1800’s, there were many attempts to drain the “Alabama Swamps,” the historic local name for the area that is now the refuge and surrounding areas. These endeavors to develop the land for agriculture proved to be too expensive and were ultimately abandoned. However, most of the virgin timber was removed as a result of these drainage projects and the area has been cut over numerous times since then for saw timber, pulp, and firewood products.

During the 1960’s and 1970’s, logging was conducted on the refuge for both production of wood products and firewood. Pulpwood and saw log size cottonwood and soft maple (red and silver) were selectively cut on large acreages and clear cut on small acreages for hardwood pulp and pallet construction. Habitat degradation due to cutting outside specified areas and lack of staff time to monitor these areas brought an end to cutting activities in 1978. The timber harvesting practices of the past had also altered species composition, forest age class, and structure.

During the last 30 years, there has been no management within the forested areas on the refuge. This is a result of a weak local market for many forest products and lack of refuge staff. The refuge lacks the equipment and personnel to carry out timber harvesting. Therefore, commercial forest management is the most economical, safe method of achieving many of our proposed forest management objectives. Our approaches to silviculture will differ among different habitat types (upland forests and conifer plantations), but will stay within the inherent capability of those sites to grow certain species (e.g., soil properties, moisture regimes, elevation, aspect, etc). The use of accepted silvicultural practices will perpetuate quality wildlife habitats. Strategies for the different habitats are described in Attachment 3.

#### **AVAILABILITY OF RESOURCES:**

In the absence of a refuge forester, the refuge biologist and wildlife refuge specialist will coordinate and run the commercial forest management program at the refuge. The refuge may contract the services of a private consulting forester, use other Service personnel or consult our partners if needed. The sales of timber will fund the fees for consultation.

A portion of the funds generated by the sale of timber on the refuge will go into the revenue sharing fund. We will use another portion to continue the forest management program and such activities as additional stand inventories, timber marking, pre-commercial thinning, and related roadwork. When appropriate and applicable, we may include tasks such as road rehabilitation in the contract as products and include them as part of the bid. That will alleviate any additional management costs associated with this specific activity. However, it will not eliminate most of the preliminary preparation.

We expect all harvesting to be performed near, or from, existing roads. Because we will not construct any new facilities or improvements on refuge property for this use, we expect no significant construction costs associated with it. The refuge biologist and wildlife refuge specialist will assume management of contract development and administration, monitoring, and resource database.

We expect the estimate costs in the following table for the refuge to administer the proposed forest management practices each year. Timber sales revenues returned to the refuge should cover any additional costs.

#### **Estimated annual cost of a forest management program:**

<b>Identifier</b>	<b>Cost</b>
Forest inventory and monitoring*	\$5,000
Wildlife inventory and monitoring	\$2,500
Marking timber	\$2,500
Management administration**	\$2,500
Data entry and analysis	\$1,000
<b>Total Annual Cost</b>	<b>\$13,500</b>

\*A complete forest inventory will be completed before any management takes place. Forest monitoring will take on a 5-year cycle as permanent vegetation plots are in place.

\*\*The administration of a commercial forest management program will include preparation of information packets, preparation of permits, processing payments, layout of harvest areas, compliance checks and program evaluation.

#### **ANTICIPATED IMPACTS OF USE:**

In case of the unregulated harvest of timber, the following impacts could occur.

Soils: The maintenance of roads and landings and the operation of heavy equipment could compact soil, cause rutting, and result in increased erosion. To mitigate those potential impacts and minimize erosion from timber harvesting on the refuge, the refuge will follow the best management practices recommended by the State of New York (NYS DEC 2007). Harvesting will occur primarily in upland forests and conifer plantations, at seasons appropriate for minimizing the effects of compaction and erosion (Attachment 1).

Aquatic Resources: Unregulated timber harvest and use of heavy equipment near streams, rivers, or ponds can result in increased run-off, sedimentation, and reduced shading of streams, with concomitant increases in aquatic temperatures. Downed wood in streams may initially increase and then decrease to levels below that of streams in un-harvested areas. Those factors may have detrimental effects on stream organisms, including fish, invertebrates, and amphibians. Poorly planned timber harvests and road construction can alter surface and groundwater hydrology and water storage capability. The effects of multiple harvests in a watershed can accumulate over time. Maintaining forested buffers around streams and other aquatic resources of concern will minimize impacts on water resources and water quality. Road construction, skid trail planning, harvest operation, and stream crossings will follow best management practices advocated by the state of New York to minimize the alteration of hydrology and the impacts of siltation on water quality. Harvesting will use existing forest roads and no new roads will be constructed.

Wildlife and Vegetation:

The construction of roads, creation of landings, and operation of heavy equipment can result in localized impacts and the damage or destruction of understory vegetation, including rare plants. Those practices may also damage the litter layer, coarse woody debris, snags, or cavity trees important for wildlife. They may alter the moisture regimes in soil and on the forest floor in ways that affect plants and animals such as forest floor amphibians and small mammals. Whole tree harvesting can result in a reduction of downed wood in the forest system. Skidding operations may cause residual damage to trees in the stand. Residual stand damage may result in the introduction of insects or disease into an otherwise healthy stand. Harvesting may also leave the remaining trees more susceptible to wind throw, alter plant and animal communities, facilitate the spread of invasive plants, disturb wildlife temporarily, or displace it over the long term. We will mitigate most of those impacts by placing seasonal restrictions on harvesting to avoid disturbing wildlife or damaging trees or understory vegetation, the careful layout of skid trails, the use of mechanical harvesters, and pre-harvest surveys of resources of concern. We will require timber contractors to leave tops, branches, and other downed wood on site whenever possible.

Under refuge management, the average forest age/size class and canopy closure will increase over the long term, although different age classes will be present on the landscape. The non-native conifer component of refuge matrix forests will decrease as plantations are cut, but will be replaced by native eastern hemlock which will be planted whenever possible after plantations are harvested. Habitat connectivity will increase and the fragmentation of forest habitat will decrease.

Visitor Impacts:

Logging may disturb refuge visitors, cause safety issues, or detract from visitors' esthetic experience. We will temporarily close areas of the refuge undergoing active logging. Because the amount acres that will be harvested on a yearly basis will be a very small proportion of the refuge, impacts on the public should be minimal.

**PUBLIC REVIEW AND COMMENT:**

As part of the CCP process for the refuge, this compatibility determination underwent an extensive public review, including a comment period of 30 days following the release of the draft CCP for Iroquois Refuge.

**DETERMINATION (check one below):**

THIS USE IS COMPATIBLE                      X  

THIS USE IS NOT COMPATIBLE                          

**STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

Our management philosophy is to create a commercial forest management program that improves refuge wildlife habitats. To protect refuge resources of concern, we will follow the best management practices for harvests and wildlife habitat recommended by the State of New York (NYS DEC 2007). When the State recommends a range of best management strategies and buffer distances, we will implement the most conservative of those recommendations. The refuge may exceed state recommendations in some cases, for specific resource protection objectives.

Snags, live cavity trees, and large coarse woody debris will be retained, as appropriate, to refuge objectives. At the discretion of the refuge manager, the creation of snags, live cavity trees, or coarse woody debris, or the removal of individual trees or groups of trees may occur in any area of the refuge, for specific wildlife management or safety purposes.

We will review the forest management program annually in our Annual Habitat Work Plan to ensure that the program contributes to refuge objectives for wildlife and habitat. Before harvests, resource surveys will ensure that resources of concern have been identified and impacts minimized or eliminated. Harvesting will occur at times that are seasonally appropriate for the site and silvicultural objectives and likely to minimize impacts on wildlife: e.g., outside eagle or heron nesting seasons. We will discourage whole tree harvesting and encourage contractors to leave tops, branches, and other woody debris on site. No commercial harvesting will occur in forested wetlands delineated on Attachment 1.

We will use adaptive management in assessing and modifying silvicultural prescriptions to achieve wildlife habitat objectives. Management actions will ensure the future growth of the forest and sustainable productivity consistent with ecological conditions. Features in the implementation of the habitat management plan will ensure the application of new scientific, social, and economic information to improve silvicultural and management practices and enhance environmental and financial performance.

**JUSTIFICATION:**

We have determined this use to be compatible, provided the stipulations necessary to ensure its compatibility are implemented. The commercial forest management program will contribute to the following goals of the Refuge System's Strategic Plan: 1. Provide Healthy Fish, Wildlife and Plant Populations, 3. Maintain Productive Habitats, and 5. Provide Quality Environments. Therefore, it is the determination of the Service that commercial forest management, at the discretion of the refuge manager, is a compatible use of the refuge.

Commercial forest management will contribute to the purposes for which the refuge was established and the mission of the Refuge System and facilitate the ability of the refuge to meet its wildlife management objectives. The use will not pose significant adverse effects on refuge resources, interfere with the public use of the refuge, or cause an undue administrative burden. We may adjust the habitat management program on the refuge annually to insure its continued compatibility.

**CONSULTATION WITH THE REFUGE SUPERVISOR:**

The refuge supervisor was consulted on January 2010; changes were made as needed.

**Signature:** Refuge Manager: *[Handwritten Signature]* 8/29/2011  
(Signature/Date)

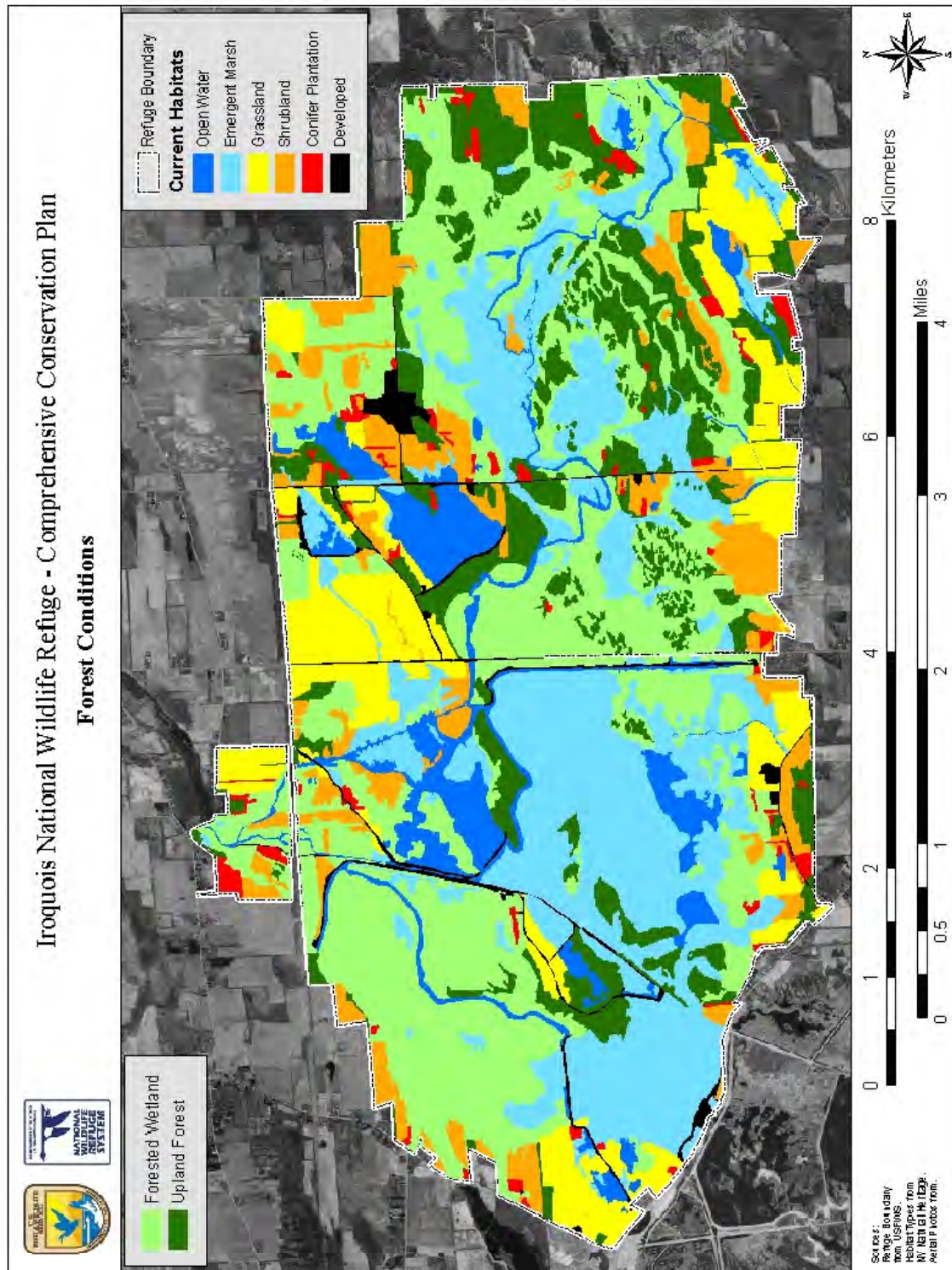
**Concurrence:** Regional Chief: *[Handwritten Signature]* 9/1/2011  
(Signature/Date)

**Mandatory 10 - year Reevaluation Date:** 9/1/2021

**BIBLIOGRAPHY**

New York State DEC. 2007. New York State Forestry Best Management Practices for Water Quality, BMP Field Guide.  
NY State DEC Timber Harvesting Guidelines <http://www.dec.ny.gov/lands/5240.html>

**Attachment 1**  
*(for Commercial Forest Management Compatibility Determination)*





**Attachment 2**

*(for Commercial Forest Management Compatibility Determination)*



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Iroquois National Wildlife Refuge  
1101 Casey Road  
Basom, NY 14013  
(585)948-5445



**SPECIAL USE CONDITIONS  
COMMERCIAL FOREST MANAGEMENT AGREEMENT  
IROQUOIS NATIONAL WILDLIFE REFUGE  
February 2010**

**I. Property Location/Access/Boundaries**

The Iroquois National Wildlife Refuge (Refuge), a unit of the National Wildlife Refuge System under the jurisdiction of the U.S. Department of the Interior, Fish and Wildlife Service, grants the permittee permission to enter refuge lands, together with workers and equipment upon terms and conditions of this Permit, to harvest forest products. Permittee agrees to cut and remove the forest products and to pay the refuge according to the terms and conditions in this agreement.

**A. Unit Locations and Descriptions**

Cutting Units subject to this permit are located on the Iroquois National Wildlife Refuge, within the Town of Alabama in Genesee County, NY and the Town of Shelby in Orleans County, NY. Maps and/or sketches and descriptions of each cutting unit are appended to the Special Use Permit.

**B. Boundaries**

The boundaries of each individual cutting unit have been marked with pink "Harvest Unit Boundary" flagging; corners of each unit are designated by three pink "Harvest Unit Boundary" flags tied to a tree.

**C. Access**

Access to each cutting unit will be by the most direct route across existing interior refuge roads. On Units where skid trails have been marked, permittees must use these trails. Permittees will be responsible for plowing and maintaining roads so they are passable by conventional four-wheel drive vehicle in winter (two-wheel drive in spring after snow and ice is gone) during the period of the harvest operation. Access routes must be approved by Refuge manager or designee, prior to commencing the harvest operation.

On roads/trails open to vehicles, the permittee must leave a travel lane suitable for passage by. Roads should be plowed in a manner so as not to leave large piles of snow or ice which may block or pose a hazard for vehicles.

If it is necessary to access harvest units through refuge gates, the permittee must provide a lock which will be placed in the chain by refuge personnel. When the permittee has completed the timber harvest, they will notify the refuge to secure the gate before their lock is removed. Refuge gates must remain closed at all times, but may be left un-locked when timber harvest operations are taking place. The exception to this will be the gate at the entrance to Feeder Road which is open during the hunting season.

All vehicles and equipment will be operated in a safe and careful manner. Refuge personnel and refuge visitors may also be using refuge roads and trails during the harvest operation.

## **II. Term**

Permittee may begin harvesting only after issuance of the Special Use Permit, and meeting with the refuge manager and designated agent to discuss access routes, skid trail and yard locations. All required documentation must be submitted for review by the refuge manager prior to issuance of the Special Use Permit.

**All harvesting must be completed by March 1, 2010, and all wood and equipment removed from the refuge by 4:00 p.m. on March 31, 2010, unless the Special Use Permit is terminated, as elsewhere provided in this document, or the Permit is extended at the agreement of both parties in writing. Any equipment left on refuge lands after March 31, 2010 will be considered abandoned property in accordance with 50 CFR and may be removed by the refuge at the owner's expense.**

## **III. Description of Timber to be Cut and Removed**

Permittees must cut all live woody vegetation with a diameter at breast height (dbh) over 2 inches within the designated blocks when the prescription is complete removal. During a selective harvest, permittees must cut all trees marked for removal.

The following **may not** be cut in complete removal areas: apple trees, oak trees, any trees with obvious wildlife value (such as dead stubs with woodpecker holes or cavities), and any trees which are marked with paint and/or “**Do Not Cut**” flagging. A buffer of trees will be maintained around marked trees to prevent damage during harvest operations. The buffer may be taken after the remainder of the block has been cut, and there is no chance of damage to marked trees.

## **IV. Status of Parties**

### **A. Designated Agent**

For the purpose of oversight of the permittee's compliance with the conditions of this Permit the refuge Wildlife Biologist and the Wildlife Refuge Specialist will be deemed the designated agents.

The designated agents will have the authority to review and approve forestry activities on refuge lands during the term of the Special Use Permit. The permittee agrees to consult with the designated agents and abide by their determinations and instructions during all stages of the harvest operation.

### **B. Permittee Responsibilities and Warranties**

Permittee warrants and represents that he or she does have, and will employ and utilize the equipment and personnel necessary to perform the harvesting contemplated under this Permit in a timely manner. Permittee will be solely responsible for the acquisition, maintenance, replacement and repair of equipment, and for the selection, training, supervision, control, direction, compensation, work rules, discipline, and termination of his or her employees or subcontractors. Permittee warrants and

represents that all of his or her employees will perform in accordance with the requirements of these special conditions when assigned to the work to be performed hereunder. Permittee will equip and train his or her employees and subcontractors adequately to perform the required services in a safe, timely and lawful manner.

Permittee will conduct business in a manner to be at all times in full compliance with all requirements of Federal, State, and local law, including applicable common law, statutes and requirements, and including but not limited to the requirements of the Federal Fair Labor Standards Act, all federal and State labor and employment laws, federal immigration laws, the worker's compensation laws, federal and State equal employment laws, the Internal Revenue Code and State tax laws and regulations, the unemployment insurance laws, the federal Occupational Safety and Health act of 1970, as amended, and its regulations, state laws pertaining to occupational safety and health, New York Worker's Compensation Act and New York Employment Security Law, state laws and regulations pertaining to wood harvesting, and any other laws or governmental rules and regulations pertaining to the services to be provided hereunder.

## **V. Forestry Practices**

The following are minimum forestry practices applicable to all forestry Special Use Permits. The permittees will, at their sole cost and expense, harvest wood products from the designated cutting areas, during the terms of the Special Use Permit, in accordance with the accepted principles of professional forestry, the NY State DEC Best Management Practices and the following conditions.

### **A. Scaling**

All wood products harvested and removed from the refuge will be measured in standard cords, board feet, tons, or pounds in accordance with the Wood Measurement Rules.

All weights will be green or wet weights.

Scaling will be done only by State licensed scalers.

Payment for all forest products removed from the refuge will be made monthly by check or money order. All payments must be accompanied by a summary sheet, detailing amounts of each product for which payment is being made, legible scale slips, measurement tally sheets, or the like.

All payments will be based on the most current Schedule of stumpage prices.

The first payment will be due 30 calendar days from the date harvesting begins. Subsequent payments will be due each 30-calendar days thereafter.

### **B. Utilization Requirements**

1. Harvesting will proceed in an orderly manner to ensure cutting of all trees designated for harvest. When harvest is to be completed by clear cutting, all trees greater than 2 inches d.b.h. must be cut, with the following exceptions:

A. Apples, oaks, wildlife trees (standing snags (dead or hollow live) 10 inches or greater d.b.h.), trees marked with “**Timber Harvest Boundary**” flagging, and trees marked with paint and/or “**Do Not Cut**” flagging may not be cut.

B. Any saplings (trees 4 inches d.b.h. or smaller) within 30 feet of a timber harvest boundary need not be cut unless otherwise directed by Refuge Biologist.

C. Any non-merchantable trees of any size within 30 feet of a wildlife tree (standing snags (dead or hollow live) 10 inches or greater d.b.h.) need not be cut unless otherwise directed by Refuge biologist.

2. During a selective harvest, permittees must cut all trees marked for removal and only those marked.

3. Stump heights shall not exceed six (6) inches, except where obvious obstacles, problems with terrain, swell of roots, or similar hindrances do not permit such a low cut. Snow shall be removed as necessary to comply with this requirement.

4. Outside of areas designated for clear cutting and log landings, insofar as ground conditions permit, trees shall not be skidded against residual trees or trees marked to be left uncut.

5. Travel and skidding across previously harvested areas will be kept to a minimum. Routes across these areas must be approved by the refuge's designated agent.

### **C. Condition of Roads and Facilities**

Permittee agrees, at his or her expense, to construct roads and/or skidder trails in accordance with the appropriate rules of the State of New York Land Use Regulation Commission and/or Department of Environmental Conservation BMP, and any applicable municipal ordinances.

Harvesting activities may be restricted during wet conditions to avoid excessive damage to roads or clear-cut areas. Permittees will be notified in person or by phone when this determination is made.

Permittee agrees to maintain and leave existing interior refuge roads, fences, gates, signs, and any other government property or facilities in the same or better condition than when harvesting began. All damaged property or facilities must be repaired, replaced, or restored, at the permittee's expense, per the designated agent's specifications.

The size of landings shall not exceed that necessary for safe and efficient skidding and loading operations. Wherever possible, landings should be established within the harvest blocks. The designated agent must approve the location and size of all landings prior to the beginning of harvest operations.

It is the responsibility of the permittee to abide by weight restrictions which may be placed on certain local or State roadways.

### **D. Slash**

Permittee is responsible for ensuring that no slash remains within twenty-five (25) feet of adjoining private property, national natural landmark or research natural area boundary lines, railroad rights-of-way, and electric power or telephone lines.

Slash and debris (tops, limbs, logs) resulting from the harvest operation may not be left in piles on the landings, or within the harvest blocks. This material should be skidded back onto the harvest unit and evenly distributed across the unit.

### **E. Litter/Pollution Avoidance**

Permittee shall not discard or otherwise dispose of litter on refuge or private property, into waters of the refuge or State or on ice of such waters, or upon any adjacent highway or public way, and shall be

responsible for off-site disposal of garbage and refuse generated by forest operations in a lawful manner. Litter includes all waste materials, including bottles, cans, machine parts and equipment, tires, junk, paper, garbage and similar refuse. Waste of the primary processes of forest product harvesting, such as sawdust and slash are not considered litter.

Permittees shall not service skidders, trucks, or other equipment at locations where pollution of the waters of the refuge and/or State of New York is likely to occur. Any oil, grease, hydraulic fluid, or other materials that leak from the permittee's equipment must be immediately cleaned up using appropriate oil-absorbing pads or towels. Equipment should be maintained to the extent that there are no leaks of contaminants. Any leaks or spills must be reported to the refuge immediately.

**F. Firearms and Alcoholic Beverages**

The use or possession of all firearms, weapons, and alcoholic beverages on the refuge is prohibited at all times, except that the possession of firearms for hunting during an open season in an area open to hunting is permitted, subject to refuge regulations and State law.

**G. Fire Suppression**

Permittee shall comply with all forest fire suppression laws of the State of New York.

Each piece of equipment on the harvest site must be equipped with a 5 pound or larger type BC fire extinguisher.

**H. General Compliance with Forestry, Land Use, and Environmental Laws**

Permittee shall comply with all laws, ordinances, and regulations of the municipality where the harvest unit is located, the Towns of Alabama and Shelby, the State New York, and of the United States, relating to timber cutting; removal and disposal of slash, debris and litter; construction of roads, trails and landings; protection of streams, rivers and other waters of the refuge and State of New York; soil erosion; and all other laws regulations and ordinances pertaining to forest product harvest operations and their effect on the environment and land use, including but not limited to the applicable standards of the Land Use Regulation Commission and rules. Best management practices as published in NY State Department of Conservation Best Management Practices for Water Quality, BMP Field Guide (2007) and NY State DEC Timber Harvesting Guidelines (<http://www.dec.ny.gov/lands/5240.html>) will be implemented.

Permittee warrants that the refuge manager or his designee will be immediately notified on any occasion that a potential violation of the laws governing the harvest operation has occurred.

**VI. Default/Enforcement of Obligations**

Upon the occurrence of any event of default by Permittee, the refuge manager or his designee may, at any time thereafter, do any or all of the following:

- A. For good cause, to halt the Permittee's harvest operations and terminate the Special Use Permit, if in the opinion of the refuge manager or his designee, the Permittee is breaching the terms and conditions of the Permit.
- B. Enter into the harvest unit and take possession of all forest products remaining on the unit.
- C. Grant other permits to third parties to complete the harvesting specified in the Permit in the event of termination of the Permit or for unexcused harvesting stumpage by permittee.

- D. Take corrective action as the refuge manager or his designee deems necessary to abate erosion or damage to the harvest area, and to remove slash, litter and abandoned property of the Permittee, at the Permittee's cost.
- E. Enjoin any activity of the Permittee in default of the conditions of the Special Use Permit, and/or seek any other judicial or administrative remedy available to the refuge manager at law or in equity.

**Permittees must contact the designated agent 14 days prior to the anticipated completion of harvest operations to arrange for an inspection. Upon the termination or completion of the Special Use Permit, the refuge's designated agent shall examine the harvest unit and access roads, gates, and other facilities, and report to the Permittee any failure on their part to comply with the conditions, terms, and specifications of the Special Use Permit Conditions.**

**VII. Insurance**

Permittee shall provide and maintain, during the term of the harvest operation, insurance as follows:

- A. Worker's Compensation and Employer's Liability Insurance
  - 1. Permittee shall obtain and maintain during the term of the harvest operation, Worker's Compensation Insurance covering all its employees and any others performing work under this Special Use Permit, with coverage set forth in New York Statutes, and Employer's Liability Insurance covering all such persons; **or**
  - 2. The permittee shall supply a signed statement to the refuge manager that he or she is an independent contractor. As an independent contractor he will not hire any employees to assist in the wood harvesting without first providing the required certificate of insurance to the landowner. The refuge manager will obtain a declaration of independent status of the permittee from the Worker's Compensation Board.

- B. Public Liability and Property Damage Insurance

The Permittee shall take out and maintain during the term of the Special Use Permit, Public Liability and Property Damage Insurance to protect against claims for damages for bodily injury, including personal injury to or destruction of property which may arise from operations performed under this Special Use Permit. The minimum amounts of such insurance shall be as follows:

Bodily Injury Liability	\$100,000 each person \$500,000 each occurrence
Property Damage Liability	\$100,000 each occurrence

Permittees will be required to submit proof that they meet insurance requirements prior to issuance of the Special Use Permit.

**VIII. Assignment**

Permittee may not assign the Special Use Permit to another party.

**IX. Modification of Agreement/Special Use Permit**

The Special Use Permit and this listing of conditions may only be amended by a written statement which must be signed by the Permittee and the refuge manager or designated agent. Failure to comply with any conditions of the Special Use Permit may result in revocation of the permit and the loss of the privilege to engage in commercial forest management on the refuge in the future.

### **Attachment 3**

*(for Commercial Forest Management Compatibility Determination)*

#### **Potential Strategies for Commercial Forest Management**

##### ***Strategies for Northern Hardwood Habitat Type (including hemlock areas)***

- Maintain natural community characteristics of northern hardwoods by single-tree or group selection cutting;
- The size of each management unit, its silvicultural prescription and rotation age will determine size of each treatment action and the cutting interval.
- Maintain nut producing oaks and beech.
- Retain snags, cavity trees (4 of each >15 inch dbh), and downed woody debris.

##### ***Without Hemlock:***

- single tree selection to maintain mature forest (consistent with natural disturbance patterns) and maintain a >60 percent overstory canopy closure;
- group selection to maintain mature forest while encouraging mid-tolerant species and creating small patches of early successional (up to 2 acres);

##### ***With Hemlock:***

- single tree and group selection to maintain mature forest (consistent with natural disturbance patterns) and regenerate hemlock (0.1 acre or less);
- retain individual trees and groups of hemlock within northern hardwoods to provide important food and cover.

##### ***Strategies for Oak-Hickory Habitat Type***

- Maintain natural community characteristics of the oak-hickory forest by single-tree group selection or shelterwood cutting;
- The size of each management unit, its silvicultural prescription and rotation age will determine size of each treatment action and the cutting interval.
- Maintain nut producing oaks and beech.
- Retain snags, cavity trees (4 of each >15 inch dbh) and downed woody debris.
- To regenerate oaks, when overstory oaks are present, use shelterwood cutting where BA of 70 is left after cutting takes place; removing undesirable trees and low quality oaks first.

##### ***Strategies for Early Successional Areas***

- In early successional areas (to be determined in HMP), use accepted silvicultural practices to create openings, understory development and early successional habitat for American woodcock, field sparrows, and golden-winged warblers.
- We will use group selection, clearcuts or patch cuts of up to 5 acres in size. We may also maintain some larger, roosting fields. Cutting cycles will be approximately 8 to 10 years on a 40-year rotation.



- We may permanently maintain some large openings (through grassland management), primarily by mowing and brush clearing using mechanized equipment for species like American woodcock, adjacent to early successional areas.
- We will perpetuate aspen-birch communities in early successional management areas, when possible.

### ***Strategies for Conifer Plantations***

Eliminate all conifer plantations by:

- clear cutting – removal of all trees in plantation;
- shelterwood cut – removing part of stand to allow natural regeneration and then coming back to remove the remaining stand at a later date and/or
- girdling - determine best girdling regime to reduce introduction of invasive species.

Regenerate to native forest communities by:

- natural regeneration and/or
- seedling planting.

### **Potential Strategies for Forested Wetland Management (Non-Commercial)**

#### ***Strategies for Forested Wetlands (including Oak Orchard NNL and Milford Posson RNA)***

- Improve habitat structure through stand improvement operations for focal species. We will favor mast producing species during stand improvements, although it is not our intent to eliminate all other hardwood types.
- No commercial harvesting will take place in forested wetlands.
- Regenerate this habitat type through accepted silvicultural practices. Methods will include using single tree or group selection and treatments timed to optimize the ability of the site to regenerate softwood.
- The size of each management unit, its silvicultural prescription and rotation age will determine the size of each treatment and the cutting interval.

## **COMPATIBILITY DETERMINATION**

**USE:** Furbearer Management – Economic Use

**REFUGE NAME:** Iroquois National Wildlife Refuge

**DATE ESTABLISHED:** May 19, 1958

**ESTABLISHING AUTHORITY:** Migratory Bird Conservation Act (16 U.S.C. 715d)

### **PURPOSE(S) FOR WHICH ESTABLISHED:**

...for use as an inviolate sanctuary, or for any other management purpose, for migratory birds...  
16 U.S.C. § 715d (Migratory Bird Conservation Act)

### **MISSION OF THE NATIONAL WILDLIFE REFUGE SYSTEM:**

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

### **DESCRIPTION OF USE:**

#### **(a) What is the use? Is the use a priority public use?**

The use is furbearer management. Furbearer management through trapping is an existing economic use of the refuge's natural resources. Pursuant to refuge regulations at 50 C.F.R. 29.1, this is considered to have economic value because the fur can be sold and we must determine if furbearer removal by private parties is compatible with and contributes to the refuge purposes or the mission of the Refuge System. Trapping is used on the refuge to keep populations of furbearers in check protecting refuge structures (dikes and water control structures) and to decrease predation on nesting migratory birds. The trapping program is described in the Annual Trapping Plan. Over the last 10 seasons, an average of 23 marsh trapping permits and 24 upland trapping permits were issued. Reports indicate that every year some trappers who receive permits do not actually trap. The average actual number of trappers in the field each year is approximately 25 total for both marsh and upland trapping. Although a wildlife activity, it is not a priority public use.

#### **(b) Where would the use be conducted?**

Trapping will be permitted in most areas of the refuge. Occasionally, marsh trapping is not permitted in certain areas to allow muskrat populations to increase to help create more desirable wetland conditions. Additionally, marsh trapping in some wetlands is occasionally restricted to certain areas (e.g., along dikes) to lower muskrat populations in an attempt to reduce damage to refuge infrastructure. A description of authorized trapping areas is provided to trappers with their trapping permit. Occasionally, certain areas will be closed due to construction activities or biological need to allow furbearer populations (primarily muskrats) to increase.

To reduce potential conflict, trapping will not be permitted in the waterfowl hunt areas during the refuge's waterfowl season, designated nature trails, or administrative areas including the refuge office, refuge quarters, and Iroquois Job Corps Center.

**(c) When would the use be conducted?**

Trapping will be conducted under New York State regulations, typically in the fall and winter. This corresponds with the period when pelts of furbearers are prime and when the use will not affect nesting migratory birds. Trapping for upland species including raccoon, fox, skunk, opossum, coyote, and weasel is from late October through mid-February, trapping for muskrats and mink is from late-November through mid-February, and trapping for beavers is from mid-December through mid-January. These are general season periods and may change as New York State regulations change. Additionally, marsh trapping in areas where waterfowl hunting occurs does not open until after the refuge waterfowl hunting has completed.

**(d) How would the use be conducted?**

Trapping will be conducted via a permit that requires the trapper to follow State of New York regulations and refuge specific regulations. Interested individuals will be issued a refuge Special Use Permit and we will issue a maximum of 50 trapping permits for both upland and marsh trapping. Permits for marsh furbearers will cost \$50.00 and permits for upland furbearers will be free. Any furbearer species that can be legally harvested under New York State regulations can be trapped on the refuge unless special refuge regulations are in effect. The refuge manager reserves the authority to regulate the number of furbearers taken in any zone or throughout the season and to enact specific refuge trapping regulations.

Anyone issued a trapping permit is required to submit a monthly trapping report. The information on this report includes the number of days that the trapper trapped and the species and number of animals harvested, as well as any non-target animals that might have been caught. At the conclusion of the trapping season information from all trappers is collated and included in the refuge's Annual Trapping Program Report. If the trapper fails to return trapping reports, we will not issue them a permit for the next year.

Furbearer populations and/or habitat conditions will be assessed yearly so that recommendations for the next year's trapping regulations can be determined. This is especially critical for muskrat populations because of the damage they can cause to refuge infrastructure and their significance to marsh management. In some years the refuge may not allow trapping, if for example muskrat populations show a significant decrease.

Refuge specific regulations include, but are not limited to:

1. Permittee must personally tend his/her traps unless otherwise authorized by the refuge manager.
2. A maximum of 25 traps and stakes may be used by each permittee.
3. All traps must have a tag affixed that shows the permittee's name and address.
4. Permittee must submit a monthly report to the refuge even if no animals were taken that month. Failure to do so will result in loss of trapping privileges the following year.
5. All trap location markers (flagging, etc) must be removed within five (5) days of completion of trapping.
6. Dead muskrats found in the marsh should be promptly turned in to the refuge headquarters for analysis by the state for possible disease.
7. Un-motorized boats are permitted on Oak Orchard Creek only, between Knowlesville Road and Route 63.
8. No dogs are allowed.
9. Permit must be in trapper's possession.

10. Incidental take of non-target species needs to be reported to the refuge manager within one (1) day of capture.
11. Traps are required to be a minimum of 10 feet from the edge of public trails, service roads, top edge of dikes, or any cut path (i.e., paths to waterfowl hunt stands, etc.) where people may be walking or staff may be driving.
12. No water sets are permitted by upland trappers.
13. All trappers during any firearms deer seasons must wear in a conspicuous manner on head, chest, and back a minimum of 400 square inches of solid-colored hunter orange clothing or material and must be visible for 360 degrees.

**(e) Why is this use being proposed?**

Furbearer management will be conducted first and foremost as a tool to maintain habitat and keep the predator prey balance. The implementation of a regulated furbearer management program on the refuge also affords a potential mechanism to collect survey and monitoring information, or contribute to research on furbearer (and other wildlife) occurrence, activity, movement, population status, and ecology. By maintaining a trained and experienced group of trappers, the Service can utilize their skills and local knowledge to perform or assist with valuable management or research functions. Trappers that participate in the refuge program will provide assistance with the implementation of structured management objectives, such as alleviation or reduction of wildlife damage conflicts, negative species interactions, and habitat modifications. Refuge trappers typically have a stake in proper habitat and wildlife conservation, and protection of the ecological integrity of the refuge so that their activity can continue. Accordingly, they are valuable assets to the refuge manager in terms of providing on-site reports concerning the fundamental status of habitat, wildlife, and refuge conditions.

Removal of harvestable furbearers will have a beneficial effect by protecting refuge infrastructure such as dikes and water control structures from damage, thus ensuring management capabilities over wetlands. It will also help the refuge to achieve the objectives outlined in the Annual Habitat Work Plan. Decreasing predators will decrease the potential for predation on nesting migratory birds. In addition, reducing predator densities can reduce the spread of some density dependent diseases such as distemper, parvo, and rabies.

Furbearer management is not a priority public use; however it facilitates priority public uses on the refuge as well as contributing to the purpose of the refuge by regulating the populations of species to ensure quality habitat conditions and maintain mission critical infrastructure.

**AVAILABILITY OF RESOURCES:**

During calendar years 2008 and 2009, there were 28 (17 upland and 11 marsh) and 25 (14 upland and 11 marsh) trapping permits issued, respectively. Time spent reviewing, issuing, and overseeing permit holders will be minimal for refuge staff, and therefore resources are available under current staffing and budgets. Additionally, maintaining adequate levels of furbearers on an annual basis will help ensure major failures in refuge infrastructure do not occur, thus reducing large expenditures of funds to repair infrastructure.

The following breakdown shows the estimated funds needed to administer the program.

**Annual costs of furbearer management:**

Identifier	Cost
Trail/road maintenance*	\$720
Surveys, data analysis, recommendations, reporting	\$1,580
Trapper compliance	\$1,000
Permitting, news release, fact sheets	\$1,000
<b>Total Annual Cost</b>	<b>\$4,300</b>

*\* Refuge trails and roads are maintained for a variety of activities. Costs shown are a percentage of total costs for trail/road maintenance on the refuge and are reflective of the percentage of trail/road use for this activity. Volunteers account for some maintenance hours and help to reduce overall cost of the program.*

**ANTICIPATED IMPACTS OF USE:**

The impacts of furbearer management on the purposes of the refuge and the mission of the Refuge System can be either direct or indirect, and may have negative, neutral or positive impacts on refuge resources.

Wetlands and wetland plants: Removing plant-eating species, such as beaver and muskrat, can have a positive and negative impact on refuge resources. These species dig bank dens into refuge dikes and embankments. These dens and holes must be filled to prevent the compromise of the dikes. The costs to repair the damage to these structures can be reduced by managing beaver and muskrat populations at levels through a furbearer management program.

Muskrats can enhance habitats in many ways. The house and dens that muskrats build are from aquatic vegetation. This removal creates openings for fish, waterfowl and other migratory birds. These benefits minimize the need to commit refuge resources to achieve quality habitat conditions. However, over population of muskrats can devoid a marsh of needed perennial vegetation, like cattail, if populations are left unchecked.

Furbearers: Impacts to furbearers from a furbearer management program are obvious. Trapping will remove individuals. The anticipated direct impacts of trapping on furbearers will be a reduction of the furbearer populations in those areas with harvestable furbearers. Their removal will maintain furbearer populations at levels compatible with the habitat and with refuge objectives, minimize furbearer damage to facilities and wildlife habitat, minimize competition with or interaction among wildlife populations and species that conflict with refuge objectives, and minimize threats of disease to wildlife and humans.

Migratory birds: Indirect impacts may include displacing migratory birds from their resting areas on the refuge during migration. Migratory birds will not be impacted during the pair bonding/nesting season because trapping will not occur during this time period. Reductions in the populations of nest predators, such as raccoon, have positive impacts on nesting birds. The degree to which predator management benefits migratory bird production can vary widely depending on the timing of the removal of predators, the size of the habitat block, habitat isolation, and adjacent land use.

Several studies have examined the effects of recreationists on birds using shallow-water habitats adjacent to trails and roads through wildlife refuges and coastal habitats in the eastern United States (Burger 1981; Burger 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1995, 1997; Burger &

Gochfeld 1998). Overall, the existing research clearly demonstrates that disturbance from recreation activities always have at least temporary effects on the behavior and movement of birds within a habitat or localized area (Burger 1981, 1986; Klein 1993; Burger et al. 1995; Klein et al. 1995; Rodgers & Smith 1997; Burger & Gochfeld 1998). The findings that were reported in these studies are summarized as follows in terms of visitor activity and avian response to disturbance.

*Presence:* Birds avoided places where people were present and when visitor activity was high (Burger 1981; Klein et al. 1995; Burger & Gochfeld 1998).

*Distance:* Disturbance increased with decreased distance between visitors and birds (Burger 1986), though exact measurements were not reported.

*Approach Angle:* Visitors directly approaching birds on foot caused more disturbance than visitors driving by in vehicles, stopping vehicles near birds, and stopping vehicles and getting out without approaching birds (Klein 1993). Direct approaches may also cause greater disturbance than tangential approaches to birds (Burger & Gochfeld 1981; Burger et al. 1995; Knight & Cole 1995a; Rodgers & Smith 1995, 1997).

*Type and Speed of Activity:* Joggers and landscapers caused birds to flush more than fishermen, clammers, sunbathers, and some pedestrians, possibly because the former groups move quickly (joggers) or create more noise (landscapers). The latter groups tend to move more slowly or stay in one place for longer periods, and thus birds likely perceive these activities as less threatening (Burger 1981, 1986; Burger et al. 1995; Knight and Cole 1995a). Alternatively, birds may tolerate passing by with unabated speed whereas if the activity stops or slacks birds may flush (Burger et al. 1995).

*Noise:* Noise caused by visitors resulted in increased levels of disturbance (Burger 1986; Klein 1993; Burger & Gochfeld 1998), though noise was not correlated with visitor group size (Burger & Gochfeld 1998).

In determining compatibility, the cumulative effects of all public uses are considered. Due to the limitations put on these activities, as well as the season of use, disturbance from trappers is not expected to significantly increase the disturbance to wildlife. Trappers are afield during a period of the year when nearly all wildlife breeding activity has ceased. Additionally, much of the marsh trapping activity occurs when refuge wetlands are iced over and very little wildlife are using the area.

#### **PUBLIC REVIEW AND COMMENT:**

As part of the CCP process for Iroquois Refuge, this compatibility determination underwent a comment period of 30 days concurrent with the release of our draft CCP for Iroquois Refuge.

#### **DETERMINATION (check one below):**

THIS USE IS COMPATIBLE

THIS USE IS NOT COMPATIBLE

#### **STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY:**

- New York State trapping seasons, methods, and other regulations are strictly adhered to.

- Trapping seasons will be monitored to ensure that the majority of the trapping efforts are conducted outside of peak migratory bird movement through the refuge.
- Eagle nesting zones will be closed to trapping after January 1.
- Timing of trapping authorization will be issued to ensure no interference with priority public uses.
- Each permittee is allowed 25 traps and stakes at a time.
- Trappers must report harvested animals monthly, thus if it appears there is excessive harvest on a species, refuge trapping can be closed down early to keep harvest levels in line with current furbearer population.
- Traps are checked daily.
- Every effort is made to prevent the capture of non-target species.

**JUSTIFICATION:**

Maintaining furbearer populations at levels that are conducive to management of the refuge's habitat for waterfowl, other migratory birds, and endangered species assist in benefitting the mission of the refuge and the National Wildlife Refuge System. An adequate muskrat population allows for effective management of refuge marshes to create/maintain a hemi-marsh condition. However, excessive numbers could mean that refuge infrastructure can be compromised because of burrowing into dike systems. Keeping furbearing predators in check will assist in keeping depredation of migratory bird nests, eggs, etc. to a minimum. Additionally, trapping on the refuge is a cost-effective way of helping to maintain furbearer and migratory bird populations.

Furbearer management is not a priority public use; however, it facilitates priority public uses on the refuge as well as helping to contribute to the purpose of the refuge. This use will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose for which the refuge was established.

**CONSULTATION WITH THE REFUGE SUPERVISOR:**

The refuge supervisor was consulted on January 2010; changes were made as needed.

<b>Signature:</b>	Refuge Manager:	<u><i>Thomas M. Smith</i></u> (Signature/Date)
<b>Concurrence:</b>	Regional Chief:	<u><i>Scott B. Kahn</i></u> 9/1/2011 (Signature/Date)
<b>Mandatory 10 - year Reevaluation Date:</b>		<u>9/1/2021</u>

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## Appendix C



USFWS

*American Woodcock*

## Species of Regional Conservation Concern

- Iroquois Refuge Species of Conservation Concern
- Habitat Requirements for Selected Species of Conservation Concern
- New York Natural Heritage Report on Rare Animals, Rare Plants, and Significant Ecological Communities

## Iroquois Refuge Species of Conservation Concern

Species*	Seasons on refuge <sup>1</sup>	Federal T&E <sup>2</sup>	New York T&E <sup>3</sup>	NY Comprehensive Wildlife Conservation Strategy Pritotities <sup>4</sup>	USFWS Birds of Management Concern <sup>5</sup>	BCR 13 <sup>6</sup>	Partners in Flight <sup>7</sup>	Shorebird Plan-Atlantic Flyway <sup>8</sup>	Waterbird Plan <sup>9</sup>	Waterfowl Plan <sup>10</sup>
<b>WATERBIRDS</b>										
American bittern	B, M-U		SC	X		H			H	
Black-crowned night heron	B, M-O			X		M			H	
Black tern	B, M-C		E	X		M			H	
Common tern	M-O		T	X	X	H			H	
Great egret				X					L	
King rail	M-R		T	X		H	IB		HI	
Least bittern	B, M-U		T	X		M			M	
Pied-billed grebe	B, M-C		T	X		M			M	
Virginia rail	B, M-U					M			L	
<b>WATERFOWL</b>										
American black duck	B-O, M			X	X	HH	IB			H (H)
Blue-winged teal	B, M-C					M				MH (ML)
Canada goose Atl/SJBP	M-A			X	X	HH				(H)
Canvasback	M-O			X	X	H				
Common goldeneye	M-O					HH				
Common merganser	M-U					M				L (L)
Greater scaup	M-O			X	X	H				(H)
Greater snow goose	M-O					M				
Green-winged teal	B, M									ML (ML)
Hooded merganser	B, M									H (L)
Lesser scaup	M-U			X	X	HH				(H)
Long-tailed duck	M-O			X		HH				
Mallard	B, M-C				X	M				H (M)
Northern pintail	B, M-C			X	X	H				M (M)
Redhead	B, M-O					M				
Ruddy duck	B, M-O			X						
Tundra swan	M-C					H				(H)
Wood duck	B, M-C			X	X	H				H (H)
<b>SHOREBIRDS</b>										
American golden plover	M-R			X	X	H		3		
American woodcock	B, M			X	X	H	IA	4		
Black-bellied plover	M-R			X		M		3		

Species*	Seasons on refuge <sup>1</sup>	Federal T&E <sup>2</sup>	New York T&E <sup>3</sup>	NY Comprehensive Wildlife Conservation Strategy Pritotities <sup>4</sup>	USFWS Birds of Management Concern <sup>5</sup>	BCR 13 <sup>6</sup>	Partners in Flight <sup>7</sup>	Shorebird Plan-Atlantic Flyway <sup>8</sup>	Waterbird Plan <sup>9</sup>	Waterfowl Plan <sup>10</sup>
Dunlin	M-U			X		M		3		
Greater yellowlegs	M-C			X		M		4		
Hudsonian godwit	M-R			X	X	M		3		
Least sandpiper	M-U					M		3		
Pectoral sandpiper	M-O					M		2		
Sanderling	M-?			X		M		3		
Semipalmated sandpiper	M-C			X		M		3		
Short-billed dowitcher	M-O			X	X	H		4		
Solitary sandpiper	M-O					H		3		
Upland sandpiper	B, M		SC	X		M	IB			
Wilson's snipe	B, M-C					M		3		
<b>LANDBIRDS</b>										
Bald eagle	B, M		T	X	X					
Baltimore oriole	B, M					M	IIA			
Black-billed cuckoo	B, M			X	X	H	IIA			
Blue-winged warbler	B, M			X		H	IB			
Bobolink	B, M			X		M	IIA			
Brown thrasher	B, M			X		H				
Canada warbler	?			X	X	M	IB			
Cerulean warbler	B, M		SC	X	X	HH	IB			
Chimney swift	B, M					M				
Common nighthawk	B, M		SC	X						
Cooper's hawk	B, M		SC	X						
Eastern meadowlark	B, M			X		M				
Field sparrow	B, M					H	IIA			
Golden-winged warbler	B, M		SC	X	X	HH	IB			
Grasshopper sparrow	B, M		SC	X		M	IIC			
Henslow's sparrow	B, M		T	X	X	HH	IB			
Horned lark	M		SC	X						
Long-eared owl	W			X						
Northern flicker	B, M					M				
Northern goshawk	M		SC	X						
Northern harrier	B, M		T	X	X	M				
Osprey	B, M		SC	X						
Peregrine falcon	M-R		E	X	X					
Prothonotary warbler	B, M			X		M	IB			
Red-headed woodpecker	B, M		SC	X	X	M	IB			
Red-shouldered hawk	B, M		SC	X						
Rose-breasted grosbeak	B, M					M	IIB			
Rusty blackbird	M-U			X		M				
Scarlet tanager	B, M			X		M	IIA			

Species*	Seasons on refuge <sup>1</sup>	Federal T&E <sup>2</sup>	New York T&E <sup>3</sup>	NY Comprehensive Wildlife Conservation Strategy Pritotities <sup>4</sup>	USFWS Birds of Management Concern <sup>5</sup>	BCR 13 <sup>6</sup>	Partners in Flight <sup>7</sup>	Shorebird Plan-Atlantic Flyway <sup>8</sup>	Waterbird Plan <sup>9</sup>	Waterfowl Plan <sup>10</sup>
Sedge wren	B, M		T	X	X		IIC			
Sharp-shinned hawk	B, M		SC	X						
Short-eared owl	M, W-O		E	X	X	M	IB			
Song sparrow	B, M					M				
Vesper sparrow	B, M-O		SC	X			VI			
Whip-poor-will	B, M		SC	X	X					
Willow flycatcher	B, M			X		M	IA			
Wood thrush	B, M			X	X	HH	IA			
Yellow-breasted chat	B, M		SC	X						
<b>MAMMALS</b>										
Eastern red bat	X			X						
Eastern small-footed bat	?			X						
Hoary bat	X			X						
River otter	X			X						
Silver-haired bat	X			X						
<b>AMPHIBIANS</b>										
Blue-spotted salamander	X		SC	X						
Jefferson salamander	X		SC	X						
Western chorus frog	X			X						
<b>REPTILES</b>										
Black rat snake	X			X						
Eastern massasuaga	?	C	E	X						
Eastern box turtle	X		SC	X						
Smooth green snake	X			X						
Snapping turtle	X			X						
Spotted turtle	X		SC	X						
Wood turtle	X		SC	X						

**KEY**

<sup>1</sup>Seasons on the refuge: B=Breeding, W=Wintering, M=Migration, A=Abundant, C=Common, O=Occasional, U=Uncommon, R=Rare, X=Resident

<sup>2</sup>Federal T&E = Federal Endangered Species List: T=Threatened, E=Endangered, C=Candidate, L=Least Concern

<sup>3</sup>State T&E= State of New York Threatened and Endangered Species List: T=Threatened, E=Endangered, SC=Special Concern.

<sup>4</sup>New York State Comprehensive Wildlife Conservation Strategy. X=Species of greatest conservation need

<sup>5</sup>U.S. Fish and Wildlife Service Birds of Management Concern for Region 5 (Northeast) 21 September 2005

<sup>6</sup>BCR 13 = Bird Conservation Region 13: Lower Great Lakes/St. Lawrence Plain. HH=Highest Priority, H=High Priority, M=Medium Priority (Hartley 2007)

<sup>7</sup>Partners in Flight Landbird Priorities for the Lower Great Lakes Plain (Dettmers and Rosenberg 2003). IA=High continental concern and high regional responsibility; IB=High continental concern and low regional responsibility; IIA=High regional concern; IIB=high regional responsibility; IIC=High regional threats

<sup>8</sup>Upper Mississippi Valley/Great Lakes Regional Shorebird Conservation Plan (Szalay et al. 2000) Revised 26 January 2009. 5=highly imperiled species; 4=species of high concern; 3=species of moderate concern; 2=species of low concern

<sup>9</sup>Upper Mississippi Valley/Great Lakes Watershed Conservation Plan. Priorities: HI=Highly Imperiled; H=High; M=Moderate; L=Low; NR=Not at Risk; TD=To be Determined

<sup>10</sup>North American Waterfowl Management Plan: Atlantic Coast Joint Venture Waterfowl Implementation Plan Revision, June 2005 Priorities: H=High; MH=Moderately High; M=Moderate; ML=Moderately Low; L=Low. Example: H(H) = Breeding (Non-Breeding).

## Habitat Requirements for Selected Species of Conservation Concern

### Freshwater Emergent Wetlands *High-Priority Habitat*

#### AMERICAN BITTERN (*Botaurus lentiginosus*)

(Poole 2005, Connecticut DEP 2009, USFWS 2009)

- **Associated Species:**
  - Sora, black-crowned night heron, king rail, common tern
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: migrates north to breed from mid-April to early May in most states in the northern half of the continental US, and provinces of southern Canada.
  - Wintering: Southeastern and Gulf States as far south as Central America and Cuba.
- **Habitat:**
  - Freshwater and saltwater wetlands: prefer freshwater wetlands with vegetation that provides protective cover and hosts a forage base of insects, small fish, amphibians, and small mammals.
  - Typically dominated by tall emergent or aquatic bed vegetation including wetland fringes, shorelines, bogs, swamps, and wet meadows.
- **Nesting:**
  - Females nest in wetland areas, usually on the ground or raised slightly on a platform of thick vegetation.
  - Nest is built with reeds, sedges, and similar plant material.
  - Will nest only on wetlands of 2.5 to 11 ha or larger.
- **Food:**
  - Frogs, salamanders, crayfish, water scorpions, diving beetles, dragonflies, killifish, pickerel, suckers, small eels, garter and water snakes, and occasionally voles.
- **Potential Limiting Factors/Threats:**
  - Human disturbance interferes with foraging.
  - Declines in water quality and subsequent changes in vegetative composition and structure.
  - Invasion by exotic species such as purple loosestrife or Phragmites which may reduce the abundance and diversity of species useful to bitterns and their prey.
- **Management:**
  - Preserve freshwater habitats, particularly large (>10 ha) shallow wetlands with dense growth of robust emergent's.
  - Develop standardized survey methodologies for monitoring population and habitat availability.

**VIRGINIA RAIL (*Rallus limicola*)**  
(Poole 2005)

- **Associated Species:**
  - Sora, black-crowned night heron, king rail, common tern
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: locally in North America from northern Washington across to the east coast, cutting through northern Ohio and southern Pennsylvania, extending down to northern Virginia and across to southeastern Texas and southern Arizona.
  - Wintering: predominantly along the East, West and Gulf coasts with large interior populations. From southwest British Columbia south through south Baja California and central Mexico.
- **Habitat:**
  - Freshwater marshes; occasionally inhabits salt marshes. Lives in dense emergent vegetation.
  - Shallow water, emergent cover, and substrate with high invertebrate abundance
  - Needs standing water, moist-soil, or mudflats for foraging.
- **Nesting:**
  - Nest usually placed above shallow water.
  - Basket of loosely woven vegetation, often with a canopy.
- **Food:**
  - Insects, insect larvae, other aquatic invertebrates, fish, frogs, small snakes, a variety of aquatic plants, and seeds of emergent plants.
- **Potential Limiting Factors/Threats:**
  - Spring temperatures may influence breeding and wintering distribution.
  - Competition with other rails (soras, king, and clapper rails) may influence density and habitat breadth.
  - Susceptible to toxic bioaccumulation.
  - Nests are lost or deserted due to flooding in some areas.
- **Management:**
  - Monitor Virginia rail populations.
  - Increase wetland cover of emergent perennial vegetation, while retaining 30-60 percent of the wetland in open water or mudflat to provide an optimal habitat.



**BLACK TERN** (*Chlidonias niger*)  
(Poole 2005, USFWS 2009a)

- **Associated Species:**
  - Sora, black-crowned night heron, king rail, common tern
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: Northern United States through central Canada. Sparse on northeast and along southern edge of the breeding range.
  - Wintering: Mainly marine and marine coastal areas of Central America and northern South America, both Pacific and Caribbean.
- **Habitat:**
  - Shallow freshwater marshes with emergent vegetation, including prairie sloughs, margin lakes, occasionally river or island edges.
  - In the winter the habitat is largely marine with most birds found within 30 km of land and some up to 3,500 km offshore.
- **Nesting:**
  - Location has about 25-75 percent vegetation to open water. Nests are only 2-6 cm above the surface of the water, and shallow in depth. Located within approximately 2 m of open water.
  - Builds nests on a floating substrate of matted vegetation, often cattail or bullrush.
  - Woody debris such as posts, snags, or floating logs is an important component of nesting habitat for perching, breeding, and feeding young.
- **Food:**
  - Variety of aquatic insects, particularly dragonflies, damselflies, mayflies, and caddis flies, as well as small fishes and crustaceans.
- **Potential Limiting Factors/Threats:**
  - Nests and young are readily lost to strong winds, rising water levels, or even to active foraging by waterfowl around a nest.
  - Drought conditions can expose nests to mammalian predation by raccoons, minks, and rats; avian predation includes raptors, bitterns, gulls, crows, and blackbirds.
  - Loss and degradation of wetlands for both breeding and migration stopover.
- **Management:**
  - Target protection for large (>18.9 ha) wetlands within high-density wetland complexes.
  - Wetlands managed for waterfowl are attractive if flooding/drawdown regimes preserve appropriate emergent vegetation, nesting substrate, and stable water levels through the nesting season.
  - Muskrat herbivory should be encouraged as a means to modify ratios of vegetation cover to open water, providing additional nesting substrate and foraging habitat.

**LEAST BITTERN** (*Ixobrychus exilis*)  
(Poole 2005)

- **Associated Species:**
  - Sora, black-crowned night heron, king rail, common tern
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: Southeastern Canada down through the United States and Mexico to Costa Rica.
  - Wintering: Along the Atlantic coastal plain from Maryland and Virginia south to Louisiana and Texas, with peak numbers in southern Florida along the Rio Grande valley, the lower Colorado River, and Baja California. Many also overwinter in the Greater Antilles and eastern and Central America.
- **Habitat:**
  - Breeds in low-lying areas associated with large rivers, lakes and estuaries of the United States.
  - Freshwater and brackish marshes with dense, tall growths or aquatic or semi-aquatic vegetation interspersed with clumps of woody vegetation and open water.
  - Occasionally found in salt marshes and mangrove swamps.
  - Are found in dense tall stands of cattail and sedge bogs.
  - Overwintering birds occur mainly in brackish and saline swamps and marshes.
- **Nesting:**
  - Nest is placed roughly a foot above water, usually on the base of dried plants. Create a canopy by pulling tall marsh plants over and crimping them in place. Placed in dense, tall stands of vegetation.
- **Food:**
  - Small fishes, including top minnows, mud-minnows, sunfishes, and perches. Also snakes, frogs, tadpoles, salamanders, leeches, slugs, crayfish, insects (mainly Odonata and Orthoptera), small mammals (shrews and mice), and vegetable matter.
- **Potential Limiting Factors/Threats:**
  - Destruction of wetland habitat.
  - Invasion of purple loosestrife and Phragmites may alter and degrade marshland habitats.
- **Management:**
  - Protect wetland habitats, particularly large (>10 ha), shallow wetlands with dense growth of robust, emergent vegetation.

**PIED-BILLED GREBE** (*Podilymbus podiceps*)  
(Poole 2005, Seattle Audubon Society 2009)

- **Associated Species:**
  - Sora, black-crowned night heron, king rail, common tern
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: southern Canada and most of the central states down to Arizona and northern Texas, through southern Ohio and most of the Northeast states.
  - Wintering: Northern Idaho, Washington, Arizona, southern California, west coast of Mexico, and Middle America to Panama.
- **Habitat:**
  - During breeding season they are found at low elevations in ponds, lakes, and marshes.
  - During the winter they are found on both fresh and salt water, although more likely to be found on fresh water.
  - Wetlands used have relatively intricate shoreline edge, greater areas of aquatic bed vegetation, and emergent vegetation.
- **Nesting:**
  - Built in shallow water in a marsh, either floating or built up from the bottom.
  - Dense mat of plant material anchored to emergent vegetation. The nest can be approached from under water.
- **Food:**
  - Insects, fish, and other aquatic creatures
  - Bills are adapted to crushing large crustaceans, but also prey on a wide variety of aquatic creatures including fish.
- **Potential Limiting Factors/Threats:**
  - Habitat loss
  - Disturbed nests / human impact
- **Management:**
  - Preserve relatively large (>10 ha) wetlands with a mixture of dense, robust emergent's, submergent vegetation, and open water.
  - Periodically reverse vegetative succession and open up extensive stands of emergent vegetation while maintaining suitable habitats nearby to serve as alternative nesting areas during wetland manipulation.

**AMERICAN BLACK DUCK** (*Anas rubripes*)  
(Poole 2005)

- **Associated Species:**
  - Canvasback, greater yellowlegs
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: northeast, with the greatest concentration of birds between New England and Nova Scotia. From there, it breeds across Ontario and Quebec, and even as far north as the Hudson Bay in Manitoba.
  - Wintering: along the Atlantic coast as far south as Florida, but also west to the Mississippi and points between.
- **Habitat:**
  - Nesting: Palustrine emergent, broad-leaved deciduous forested and broad leaved deciduous scrub-shrub types.
  - Foraging: Ephemeral pools, streams with sandy or stony bottoms interspersed with invertebrate-rich detrital patches.
  - Brood-rearing: Palustrine emergent, scrub-shrub and deciduous forested wetlands. In Maine, they prefer emergent wetlands over evergreen scrub-shrub wetlands;
  - Brood habitat: Emergent and floating leaved aquatics with abundant invertebrates; females with broods use entire surfaces of shallow, relatively permanent wetlands with emergents (e.g., reed grasses [*Calamagrostis* spp.], sedges [*Carex* spp.]), floating-leaved plants (e.g., cow lily [*Nuphar* spp.], pondweeds [*Potamogeton* spp.]), or scrub-shrub vegetation (leatherleaf [*Chamaedaphne calyculata*], sweet gale [*Myrica gale*]) that support abundant invertebrates.
- **Nesting:**
  - Nests on ground, well-concealed in diverse upland sites.
  - Composed of vegetation available on site. Materials (grass, twigs, leaves, stems, conifer needles) are added during egg-laying.
- **Food:**
  - Seeds, roots, tubers, stems, and leaves of moist soil and aquatic plants. Eats corn or other grains when available.
  - Animal food includes aquatic insects, crustaceans, mollusks, and fish, especially in marine habitats.
- **Potential Limiting Factors/Threats:**
  - Hybridization with mallards
  - Acid rain
  - Loss of habitat to development
  - Overhunting

- **Management:**

- Careful monitoring regarding the hunting of this popular game bird to determine future hunting needs.

**BLUE-WINGED TEAL** (*Anas discors*)  
(Poole 2005, Seattle Audubon Society 2009)

- **Associated Species:**

- Canvasback, greater yellowlegs

- **Seasonal Use of Refuge:**

- Breeding, migration

- **Distribution:**

- Breeding: over a large portion of North America but occurs irregularly or at low densities in many portions of range. Highest breeding densities occur in mixed-grass prairie and parklands of north central U.S. and Prairie Provinces of Canada, where species is often the most abundant breeding duck.
  - Wintering: winters on the coast of California along the lower Colorado River in southeast Arizona, in southern New Mexico (lower Rio Grande and lower Pecos Rivers), in central and southern Texas, the southern half of Louisiana, along the Mississippi River north to southwestern Tennessee. Throughout all of Mexico into Central America and throughout Florida.

- **Habitat:**

- Marshes, shallow ponds, and lakes
  - Seasonal and permanent wetlands

- **Nesting:**

- On the ground in prairies, coastal meadows, and other open areas. Nests are usually near water, but may be several hundred yards away.
  - In a shallow depression with some grass or weeds, lined with down and usually well concealed by vegetation.

- **Food:**

- Vegetative parts of aquatic plants (algae, duckweeds, pondweeds, etc.), seeds (sedges, pondweeds, grasses, etc.), and large amounts of aquatic invertebrates found in shallowly flooded wetlands.

- **Potential Limiting Factors/Threats:**

- Exposed to harmful pesticides used in their wintering areas (Central and South America).
  - Wetland degradation
  - Disturbance at nest and roost sites

- **Management:**

- Breeding-pair abundance is greater in areas with a high proportion of restored grasslands than in areas with a high proportion of agricultural cropland.

- Nest success higher in areas where Conservation Reserve Program (CRP) and grassland cover is abundant.

**MALLARD** (*Anas platyrhynchos*)  
(Poole 2005)

- **Associated Species:**
  - Canvasback, greater yellowlegs
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: northwestern Canada to southeastern Canada, throughout all of the United States besides for the very southern borders of the country.
  - Wintering: all of US including the southern borders of the country and into Mexico.
- **Habitat:**
  - Nests in a wide variety of situations with dense cover, including grasslands, marshes, bogs, floodplains, dikes, roadside ditches, pastures, cropland, shrubland, fence lines, rock piles, forests, and fragments of cover around farmsteads.
  - Shallow wetlands such as marshes, small ponds, flooded basins, flooded alluvial plains, and flooded agricultural fields.
- **Nesting:**
  - Nest found in depression scraped in the ground. Lined with vegetation and down from female's breast.
  - Prefer to nest in grass fields where the residual vegetation is > 1 ft tall and dense enough to provide overhead cover, must have some lateral and/or overhead cover
  - May nest side-by-side, nests are usually scattered throughout fields at densities ranging from 1 to 8 nests per 40 acres.
  - Also nest over water on muskrat houses and clumps of cattails if they are available.
- **Food:**
  - During breeding season, eats mostly animal foods, including insects such as midge larvae and other Diptera, dragonflies, and caddisfly larvae, aquatic invertebrates such as snails and freshwater shrimp, and terrestrial earthworms.
  - Outside of breeding season, diet predominately seeds from moist-soil plants, acorns, aquatic vegetation, and cereal crops, and wheat.
  - Agricultural foods dominate diet during autumn migration and often during winter, depending on relative availability of natural versus agricultural foods.
- **Potential Limiting Factors/Threats:**
  - Hunting
  - Pesticides and other contaminants/toxins
  - Ingestion of lead

- Degradation of habitat
- Disturbance of nest and roost sites
- **Management:**
  - Conservative hunting regulations during population declines.
  - Enhancement of nesting cover. Used to increase nesting success by establishing dense nesting cover on previously cultivated lands.
  - Controlling wetland levels or cover by cutting, tilling, blasting, or burning vegetation.

**NORTHERN PINTAIL** (*Anas acuta*)  
(Poole 2005, Ducks Unlimited 2009)

- **Associated Species:**
  - Other waterfowl
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: Alaska, the central Canadian Arctic, and western Greenland south to the western and central USA.
  - Wintering: Central Valley of California, but some continue south to the west coast of Mexico. Pintails using the Central Flyway winter in the Texas Panhandle and the Gulf Coast of Texas and western Louisiana. The majority of pintails using the Mississippi Flyway winter in Louisiana with smaller numbers wintering in Arkansas, Tennessee, Mississippi, and Alabama.
- **Habitat:**
  - Nests in open country with shallow, seasonal, or intermittent wetlands and low vegetation. Nests on islands in shallow basins or, in Alaska, on coastal barrier islands, but most nests are on mainland.
  - Prairie Pothole Region, pairs prefer shallow ephemeral to semi-permanent wetlands with emergent vegetation and low upland cover.
  - Males are commonly found on large, shallow marshes with extensive emergent and submersed vegetation that provide abundant cover, food and minimal disturbance.
  - Spring and fall migration, use shallow wetlands when not frozen, larger lakes and reservoirs, and various estuarine and riverine wetlands.
- **Nesting:**
  - Nests in open country with shallow, seasonal wetlands and low vegetation.
  - Bowl of grasses or other vegetative materials from around nest.
  - May use old burrows or natural depressions; completed nest may be flush with or below ground level.
  - In emergent wetland vegetation, may build up bowl on layer of dead vegetation from immediate area.

- **Food:**
  - Grain (rice, wheat, corn, barley), moist-soil and aquatic plant seeds, pond weeds, aquatic insects, crustaceans, and snails.
- **Potential Limiting Factors/Threats:**
  - Degradation of habitat
  - Disturbance at nest and roost sites
- **Management:**
  - Preserve wetlands to ensure proper nesting areas.

**ATLANTIC-SOUTHERN JAMES BAY CANADA GOOSE** (*Branta canadensis*)  
(Bellrose, 1978, Poole 2005)

- **Associated Species:**
  - Other waterfowl
- **Seasonal Use/Refuge Habitats:**
  - Migration
- **Distribution:**
  - Breeding: Southern James Bay.
  - Wintering: Ontario, eastern Michigan, Ohio, Indiana, Kentucky, Tennessee and Alabama.
- **Habitat:**
  - Breeds in coastal areas along a gradient of soil moisture, salinity, and drainage from coastline to more elevated inland areas. Most geese nest in elevated inland areas, including banks of tidal rivulets in lower intertidal zone dominated by goose grass, seaside plantain and sea-milkwort; along edges of pools in mid- and upper intertidal zone dominated by sea-milkwort and red fescue and emergent species such as mares-tail and marsh spike-rush.
  - Breeds in or near impoundments in refuges and other managed habitats.
  - Habitat for spring and fall migration include: lakes, slow-moving rivers, freshwater marshes, coastal salt marshes, bays, extensive mud and sand tidal flats, sand and gravel bars, shallow brackish ponds, upland heath, grassy fields, pastures, and agricultural fields.
  - Winters in coastal areas. Inhabits mudflats, shallow tidal waters, and salt-water marshes with extensive beds of bulrush and cord grass near or adjacent to agricultural fields of grain or cover crops; inland, on wet grasslands, freshwater marshes, lakes, reservoirs, and rivers within easy flying distance of agricultural fields.
- **Nesting:**
  - Atlantic and Southern James Bay Canada Geese do not breed on Iroquois Refuge.
- **Food:**
  - Grasses, sedges, or other green monocots during periods of increase in lean body mass.



- Stems and leaves of *Carex mackenziei* and spike-rush, sea-lyme grass, leaves of burreed, and seeds and berries of black crowberry and mountain cranberry.
- **Potential Limiting Factors/Threats:**
  - Unfavorable weather conditions in northern nesting grounds cause poor annual production of young.
  - Low survival rate caused largely by hunting pressures.
- **Management:**
  - In U.S., identification of critical habitats, population objectives, and approaches to harvest regulation are recommended through a series of population-management plans for most populations.

**LEAST SANDPIPER** (*Calidris minutilla*)

(Poole 2005, Seattle Audubon Society 2009, whatbird.com 2009)

- **Associated Species:**
  - Other shorebirds
- **Seasonal Use of Refuge:**
  - Migration
- **Distribution:**
  - Breeding: Alaska to Labrador and, in the east, south to Nova Scotia and, recently, Massachusetts.
  - Wintering: southern U.S. to central South America and the West Indies.
- **Habitat:**
  - Breeds in mossy or wet grassy tundra, occasionally in drier areas with scattered scrubby bushes.
  - Migrates and winters in wet meadows, mudflats, flooded fields, shores of pools and lakes, and, less frequently, sandy beaches.
- **Nesting:**
  - Least Sandpipers do not breed on Iroquois Refuge.
- **Food:**
  - Fly larvae and other insects
  - On the coast, they eat small crustaceans, snails, and other marine creatures.
- **Potential Limiting Factors/Threats:**
  - Habitat destruction; migratory staging areas and wintering areas are concentrated.
- **Management:**
  - Create optimal shorebird habitat for foraging.

**PECTORAL SANDPIPER** (*Calidris melanotos*)  
(Poole 2005, Seattle Audubon Society 2009)

- **Associated Species:**
  - Other shorebirds
- **Seasonal Use of Refuge:**
  - Migration
- **Distribution:**
  - Breeding: tundra of North America and Siberia
  - Wintering: southern South America
- **Habitat:** (Bird Web)
  - During migration they can be found in fresh- and saltwater marshes, on mudflats, or drying lakes and wet meadows.
  - Breeds in dry edges of well-vegetated wetlands.
  - Winters in grasslands.
- **Nesting:**
  - Pectoral Sandpipers do not breed on Iroquois Refuge.
- **Food:**
  - Eats flies and fly larvae, spiders, and seeds.
  - During migration, they eat small crustaceans and other aquatic invertebrates, although insects may still be the major food.
- **Potential Limiting Factors/Threats:** (Cornell Lab of Ornithology online)
  - Loss of tall grass prairie and the draining of seasonal pools in the Great Plains.
  - Loss or degradation of varied migratory stopover habitat in North America, the Caribbean, and in South America.
  - Climate change affects high arctic tundra breeding area.
- **Management:**
  - Management of wetland and agricultural units that maintain shallowly flooded fields (1–15 cm deep) during migratory periods provide good foraging sites.

**SEMPALMATED SANDPIPER** (*Calidris pusilla*)  
(Poole 2005)

- **Associated Species:**
  - Other shorebirds
- **Seasonal Use of Refuge:**
  - Migration
- **Distribution:**
  - Breeding: low arctic from Alaskan coast across Canada to northern Quebec, central Baffin Island and northern Labrador.
  - Wintering: northern and central coasts of South America, primarily Suriname and French Guiana. Fewer in West Indies, Pacific coast of Central America, and very few in southern South America and Florida.
- **Habitat:**
  - Breeds in low and sub-arctic tundra, near water, drained upland tundra with low vegetation near small ponds, lakes, and streams; moist or wet sedge-grass or heath tundra; sandy areas along rivers; and pond-dotted sand dunes.
  - Stages (flock in preparation for migration) in areas of shallow fresh or salt water and little vegetation, muddy intertidal zones, or along edges of lakes, usually on soft silt/clay mudflats, or at junction of short-grass marsh and tidal flats.
  - Winters in areas of shallow lagoons with dead mangroves; also low tidal zone of mudflats, on wet or dry mud.
- **Nesting:**
  - Semi-palmate Sandpipers do not breed on Iroquois Refuge.
- **Food:**
  - Benthic invertebrates (small arthropods, mollusks, and annelids) in fresh or salt water, also some terrestrial invertebrates (insects and spiders).
- **Potential Limiting Factors/Threats:**
  - Habitat degradation
- **Management:**
  - Preserve nesting habitat.

**SOLITARY SANDPIPER** (*Tringa solitaria*)  
(Poole 2005, Seattle Audubon Society 2009)

- **Associated Species:**
  - Other shorebirds
- **Seasonal Use of Refuge:**
  - Migration
- **Distribution:**
  - Breeding: from central Canada through northern Canada and Alaska.
  - Wintering: from southern Texas, Tamaulipas on the Atlantic slope of Mexico, southern Zacatecas and from Sinaloa on the Pacific slope south through Middle America, and virtually throughout South America, including Netherlands Antilles, Trinidad.
- **Habitat:**
  - Breeds in taiga, nesting in trees in deserted songbird nests.
  - Winters along freshwater ponds, stream edges, temporary pools, flooded ditches and fields, more commonly in wooded regions, less frequently on mudflats and open marshes.
- **Patch/Territory Size:**
  - Males defend territories against non-specific's, particularly other males, chasing away intruders.
  - May be territorial all year.
  - Territory can be large; up to 0.5 sq. km.
- **Nesting:**
  - Solitary Sandpipers do not breed on Iroquois Refuge.
- **Food:**
  - Aquatic and terrestrial invertebrates are the most common food of the Solitary Sandpiper. These include insects and insect larvae, spiders, worms, and tadpoles.
- **Potential Limiting Factors/Threats:**
  - Loss of habitat
- **Management:**
  - Maintain good habitat for migration.

**WILSON'S SNIPE** (*Gallinago gallinago*)  
(Poole 2005, Seattle Audubon Society 2009)

- **Associated Species:**
  - Other shorebirds
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: all of Canada and part of the Northern United States.
  - Wintering: central and southern US, Mexico, and Central America.
- **Habitat:**
  - Breeds in sedge bogs, fens, willow and alder swamps, and marshy edges of ponds, rivers, and brooks. Requires soft organic soil rich in food organisms just below surface, with clumps of vegetation offering both cover and good view of approaching predators. Avoids marshes with tall, dense vegetation.
  - Winters in marshes (including cattails), swamps, wet meadows, wet pastures, wet fallow fields, and marshy edges of streams and ditches.
- **Nesting:**
  - Shallow depression lined with moss, leaves, and grass, sometimes with plants from above woven in a canopy.
- **Food:**
  - Eats mostly larval insects, but also takes crustaceans, earthworms, and mollusks. Also eat leaves and seeds.
- **Potential Limiting Factors/Threats:**
  - Loss of wetlands continues to reduce available habitat.
- **Management:**
  - Preserve wetlands to ensure proper breeding habitat.

**BALD EAGLE** (*Haliaeetus leucocephalus*)  
(Poole 2005)

- **Associated Species:**
  - Osprey
- **Seasonal Use/Refuge Habitats:**
  - Breeding, migration, winter
- **Distribution:**
  - Breeding: associated with aquatic habitats (coastal areas, rivers, lakes, and reservoirs) with forested shorelines or cliffs in North America. Extensive breeding populations in Alaska, and Canada. Extensive breeding populations along the Atlantic Coast from Florida (extending south to Florida Keys). Extensive breeding populations in Great Lakes states (Michigan, Wisconsin, and Minnesota) and Pacific Northwest (n. California, Oregon, and Washington). Breeds in all other contiguous U.S. states except Rhode Island and Vermont.
  - Wintering: majority of wintering population located in lower 48 states, coastal Canada and Alaska.
- **Habitat:**
  - Breeds in forested areas near large bodies of water.
  - Winters in coastal areas, along large rivers, and large unfrozen lakes.
- **Nesting:**
  - Associated with fishable waters.
  - River nests sites are close to the shores of rivers with large aquatic areas and little forest edge.
  - Lake nest sites are near water, had super dominant trees, and little overall human disturbance.
  - Large nests of sticks lined with finer woody materials. Reused over many years. Placed in large trees, usually the largest in the area. Rarely nests are found on ground or cliff.
- **Food:**
  - Uses birds and mammals often as carrion, especially in winter.
  - Eats a great variety of aquatic and terrestrial mammals, including muskrats and hares, reptiles and amphibians, crustaceans, and a variety of birds, including many species of waterfowl, gulls, and even Great Blue Herons.
- **Potential Limiting Factors/Threats:**
  - Degradation of habitat: breeding and wintering.
- **Management:**
  - Limit human disturbance.

**Bottomland Hardwood Forest *High-Priority Habitat***

**WOOD DUCK (*Aix sponsa*)**  
(USGS 2009)

- **Associated Species:**
  - Prothonotary warbler, Baltimore oriole, rusty blackbird, northern flicker, bats, river otter
- **Seasonal Use/Refuge Habitats:**
  - Breeding, migration
- **Distribution:**
  - Breeding: western North America from southern British Columbia and southwestern Alberta south to central California and western Montana; in eastern North America from east-central Saskatchewan east to Prince Edward Island and Nova Scotia south (east of the Rockies) to central and southeastern Texas and the Gulf Coast.
  - Wintering: in the East, winters primarily in the southern parts of the breeding range. Wintering Birds are increasingly found in n. Mexico, extending south to central Mexico, sporadically south to Veracruz and Yucatán Peninsula.
- **Habitat:**
  - Wide variety of habitats: creeks, rivers, overflows, bottomlands, swamps, marshes, beaver and farm ponds. Although swamps, marsh, and overflow areas may provide better habitat than streams, the extensive distribution of streams creates the single most important habitat for breeding birds. Current data suggest that structure and use of habitats are similar among seasons. Freshwater wetlands with an abundance of vegetative cover are important habitats in all seasons.
  - Wood ducks nest in woodland areas along lakes, rivers, and vegetated wetland areas. During the winter months, wood ducks inhabit bottomland hardwood wetlands, beaver ponds and flowages, river oxbows, meanders and backwaters, and other inland freshwater forested wetland areas. Habitat areas chosen by wood ducks are commonly used by other waterfowl species such as black ducks, hooded mergansers, and ring-necked ducks. High-quality wood duck habitat is intricately linked to preservation and management of old growth timber along river corridors and availability of nesting sites.
- **Nesting**
  - Cavity nester, but does not excavate cavity; instead uses preformed cavities. In forested areas, female selects nest sites near canopy openings. Rarely nests on ground.
  - Mature forests are needed for development of trees with suitable cavities. Birds prefer sites close to or over water and near good brood-rearing areas; depending on availability of cavities, will use nest sites within 2 km of water. Most cavities (> 60 percent) suitable for Wood Ducks develop when branches break and permit subsequent heart rot of the trunk. Abandoned woodpecker cavities (e.g., Pileated Woodpecker) are used infrequently. Trees species providing nest cavities include various oaks, maples, and ashes, quaking aspen (*Populus tremuloides*), sycamore (*Platanus occidentalis*), American beech (*Fagus grandifolia*), American elm (*Ulmus americana*), bald cypress (*Taxodium distichum*), tupelo, and black gum.

- **Food:**
  - Wood Duck is an omnivore with a broad diet. Seeds, fruits, and aquatic and terrestrial invertebrates are main foods taken (similar to many dabbling ducks). Food for young birds and adults differs dramatically.
  - The early diet of ducklings consists largely of insects, aquatic invertebrates, small fish, and other high-protein animal material. After six weeks of age, the young switch to plant foods until their diet consists of approximately 90 percent vegetative material, primarily aquatic plants such as algae, watermeal, watershield, sago pondweed, and duckweed. Adult wood ducks feed on a variety of nuts and fruits, aquatic plants and seeds, and aquatic insects and other invertebrates. Insects and aquatic invertebrates are particularly important food items of adult hens during egg laying in spring. Acorns and other forest mast are important fall and winter foods. Wood ducks feed primarily in shallow water areas, but will also forage on the forest floor for seeds, acorns, and nuts.
- **Potential Limiting Factors/Threats:**
  - Not enough natural nesting sites, loss of habitat, and over hunting.
- **Management:**
  - Natural cavities are scarce in some areas, and nest boxes have been used widely to supplement natural cavities.
  - Recommend habitat management measures include: (1) eliminate stream channelization; (2) establish greenways of timber and shrubs along stream banks that would reduce erosion and provide food, cover, and nest sites; (3) reduce drainage of wooded wetlands and bottomland forests; (4) control water levels by levees and weirs to enhance food availability of moist soil plants and mast in bottomland hardwoods in fall and winter; (5) encourage development of beaver and farm ponds; and (6) establish predator-resistant nest houses where food and cover resources warrant this approach.

**CERULEAN WARBLER (*Dendroica cerulea*)**  
(Poole 2005)

- **Associated Species:**
  - Prothonotary warbler, Baltimore oriole, rusty blackbird, northern flicker, bats, river otter
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: southeastern Nebraska across the southern Great Lakes region to southern Ontario, southwestern Quebec, and western New England, south to northern Texas, Arkansas, northern Alabama, and northern Georgia.
  - Wintering: primarily on the eastern slopes of the Andes from Colombia and Venezuela through Ecuador to Peru. Relatively few are found elsewhere during the winter, though a small population can be found in the Tepui region of Venezuela.
- **Habitat:**
  - Large, contiguous forest tracts composed of structurally matured hardwoods with a high variably closed canopy. Establish territories near interior forest gaps.



- Tree size is important, both height and diameter at breast height (DBH). Almost always found above the midpoint of a tall tree, often in the canopy and are usually found in the stands where most trees fall into the larger DBH classes.
- Specific forest types vary throughout the species' range and include bottomland hardwood and riparian forests (especially with tall sycamores or cottonwoods), dry ridgetops with mature oaks and hickories, mesic cove forests with tulip-polar and other southern hardwoods, red-maple swamps, and lake margins.
- **Nesting:**
  - The nest is usually placed 6-25 feet from the bole of a large tree, saddled on a large, lateral branch and sometimes attached to a small protruding twig. Most nests are located from 10-40 feet high and can range to over 65 feet.
  - Nests are most often found in oaks, elms and American sycamore.
  - The shallow cup is constructed by a female of finely woven grass, plant stems/fibers, tree bark, mosses, and lichens. The entire structure is bound together on the outside with spider silk. The cup is lined with plant fibers and moss.
- **Food:**
  - Includes adult and immature insects such as; wasps, beetles, weevils, caterpillars, ants, sawflies, and locusts.
- **Potential Limiting Factors/Threats:**
  - Because of its small overall range and population, its dependence on mature bottomland and ridgetop forests and rapid deforestation on its tropical wintering grounds causes conservation concerns.
  - Sensitive to forest fragmentation.
- **Management:**
  - Need a better understand of precise habitat requirements, area sensitivity and response to land-use practices and how these vary geographically.
  - Identify and protect important breeding sites and habitat.

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## **Grasslands Moderate-Priority Habitat**

### **BOBOLINK** (*Dolichonyx oryzivorus*) (Poole 2005)

- **Associated Species:**
  - Eastern meadowlark, horned lark, sedge wren
- **Seasonal Use/Refuge Habitats:**
  - Breeding, migration
- **Distribution:**
  - Breeding: breeds in U.S. and Canada from British Columbia and Alberta in west to w. Newfoundland in east, and as far south as West Virginia. Breeds more or less continuously throughout this range wherever suitable habitat exists; distribution is patchy in western and southern portions of breeding range.
  - Winter: in South America east of Andes principally from eastern Bolivia and southwestern Brazil south through Paraguay and northeastern Argentina to Buenos Aires. Small numbers also occur along the coast of Peru, and as far south as northern Chile. Full winter range may include broader area, but principal wintering area as described above.
- **Habitat:**
  - Short and tall, particularly graminoid cover.
  - Chooses sites with increased tall graminoid, tall forb, and blueberry cover, and reduced tall shrub cover.
  - Prefers a mixture of grasses and broad-leaved forbs.
  - Densities significantly higher in fields with relatively low amounts of total vegetative cover, low alfalfa cover, and low total legume cover. These vegetative characteristics occur in hay fields  $\geq 8$  yr old.
- **Nesting:**
  - Nests are often placed beneath forbaceous growth, which provides shading and temperature modulation.
  - On ground; outer wall of dead grass with central lining of fine grass or sedges. May have canopy of dead grass hanging over top.
- **Food:**
  - Breeding season: weed seeds, a variety of larval and adult insects, spiders, harvestmen.
  - Migration and winter periods: wild and domesticated rice, oats, other small grains, corn, tassels, weed seeds, occasional insects. Young are fed exclusively invertebrates.
- **Potential Limiting Factors/Threats:**
  - Loss of habitat, predation and human disturbance.
- **Management:**

- Fields should be mowed annually to maintain breeding habitat, but mowing should be delayed until early Jul to minimize impacts on fledglings. Even later mowing would allow fledging of birds in re-nesting situations.
- Natural prairies can be managed by prescribed burning, but this should be done after one nesting season or at least several weeks prior to arrival of adults in spring.

**GRASSHOPPER SPARROW** (*Ammodramus savannarum*)  
(Poole 2005)

- **Associated Species:**
  - Eastern meadowlark, horned lark, sedge wren
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: mostly in central and eastern United States.
  - Wintering: southeastern lower states of United States and Mexico.
- **Habitat:**
  - Generally prefers moderately open grasslands and prairies with patchy bare ground; selects different components of vegetation, depending on grassland ecosystem. More likely to occupy large tracts of habitat than small fragments.
  - Dry grassy fields, hayfields, overgrown pastures and cultivated fields. Prefers habitat that is not extensively brushy.
- **Nesting:**
  - Cup of grass stems and blades, very well concealed on the ground. Usually has a dome made of overhanging grasses with a side entrance.
- **Food:**
  - Insects, including grasshoppers (staple), beetles, caterpillars, and crickets; spiders, earthworms, snails, weed seeds, grass seeds, waste grain.
- **Potential Limiting Factors/Threats:**
  - Declining throughout range from habitat loss, fragmentation, and degradation.
- **Management:**
  - Three primary management techniques have been used and are recommended for this species: prescribed burning, grazing, and mowing. Each has different impacts depending on the type of grassland ecosystem.
  - Mowing: Early-season mowing of hayfields and other agricultural lands is generally responsible for major nest failure of grassland birds, including Grasshopper Sparrows. In general, contemporary farming practices cut hayfields more frequently, and the first cuttings occur 1–3 wk earlier in spring than they did 50 yr ago; these practices have had significant negative impacts on nesting success of grassland birds. Deferred mowing on publicly owned lands would provide improved breeding opportunities for Grasshopper

Sparrows and other grassland birds. Incentives to encourage private farmers to defer mowing should be developed.

- Grazing: In more lush grassland habitats, i.e., tall grass prairie and eastern hayfields, light to moderate grazing is generally beneficial to Grasshopper Sparrow.
- Prescribed Burning: Grasshopper Sparrow generally prefers large, recently burned grassland tracts >1 yr after fire.

**HENSLOW'S SPARROW** (*Ammodramus henslowii*)  
(Poole 2005)

▪ **Associated Species:**

- Eastern meadowlark, horned lark, sedge wren

▪ **Seasonal Use of Refuge:**

- Breeding, migration

▪ **Distribution:**

- Breeding: breeding range is shrinking in many areas (especially northeast) and apparently increasing in others (mostly west). Minnesota; Wisconsin; Michigan; Ontario, but declining and now much reduced New York: almost throughout, except Adirondack Mtns., and Long Island regions; Nebraska; Kansas; Oklahoma; Iowa; Missouri; Arkansas; Illinois; Indiana; Ohio; Kentucky; W. Virginia; Pennsylvania; Maryland; N. Carolina; Virginia.
- Wintering: given secretive habits, winter range not precisely known, but appears to winter largely in se. U.S. Winter range includes e. Texas, s. Louisiana, s. Mississippi, s. Alabama, Florida (except for southern tip), s. Georgia, e. South Carolina, and se. North Carolina. Northern limit unclear, but extends north at least to s. Arkansas.

▪ **Habitat:**

- Habitat can be characterized as relatively large fields consisting of tall, dense grass, a well-developed litter layer, standing dead vegetation, and sparse or no woody vegetation. Habitat also usually dominated by grasses and has scattered forbs for singing perches.

▪ **Nesting:**

- An open bowl of loosely woven dry grasses, placed in layer of grass litter just off the ground.
- Nests typically placed among layers of thick litter about 2 - 4 cm off ground. In areas with little litter, nests generally placed within large clumps of grass close to ground. Deep litter may contribute to higher nesting success.

▪ **Food:**

- Insects, mostly grasshoppers, and beetles

▪ **Potential Limiting Factors/Threats:**

- Pesticides and/or herbicides used in habitat
- Degradation of breeding habitats
- Human disturbance; ill-timed mowing/haying

▪ **Management:**

- Declining in the northeastern portion of its range, and apparently increasing in some other parts, the Henslow's Sparrow has been identified as the highest priority for grassland bird conservation in eastern and midwestern North America by Partners in Flight (PIF), a cooperative effort of many organizations dedicated to bird conservation. Henslow's Sparrow does not have federally protected status in the United States, but is listed as Endangered in seven states, as well as Canada. PIF is promoting establishment of large grassland conservation areas for this and other species. The CRP, a program of the U.S. Department of Agriculture that assists farmers in setting aside qualifying land for conservation, has apparently successfully contributed to local population increases in isolated cases.

**Shrublands Moderate-Priority Habitat****FIELD SPARROW (*Spizella pusilla*)**

(Poole 2005)

- **Associated Species:**
  - Brown thrasher, song sparrow, willow flycatcher, black-billed cuckoo, American woodcock
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: midwestern and eastern US.
  - Wintering: lower midwestern and eastern US; Kansas, Missouri, Illinois, southern Michigan, northern Ohio, Pennsylvania, and Massachusetts south to southeastern New Mexico, northern Coahuila, central Nuevo León, northern Tamaulipas, the Gulf Coast, and southern Florida.
- **Habitat:**
  - Generally in successional old fields, woodland openings and edges, roadsides and railroads near open fields. Does not breed close to human habitation. Will nest in old fields directly after a burn or within a year of cultivation, but only if there is scattered woody vegetation with elevated perches in the territory. As thickets of trees spread in the habitat, numbers decline. The general trend for old field habitats is that Field Sparrows begin breeding within 1-2 years after human uses stop; population sizes rise for perhaps a decade, then decline. After ~30 years of old field succession, the habitat is overgrown with trees and shrubs and no longer used for breeding.
  - Breeds in old fields, woodland openings, and edges. Winters in fields and forest edges.
- **Nesting:**
  - Open cup of large grass pieces interwoven with finer grasses. Lined with fine grasses, rootlets, and hair. Placed on or near ground in grass clumps or at base of shrubs.
  - Later nests higher in crotches of shrubs or saplings.
- **Food:**
  - Winter: small seeds, primarily grasses.
  - Breeding season: small seeds, adult and larval insects.
- **Potential Limiting Factors/Threats:**
  - Sensitivity to disturbance at nests and roost sites
  - Pesticides and other contaminants
  - Degradation of habitat
- **Management:**
  - Management includes protecting existing prairie and successional habitats; avoiding practices that completely remove woody vegetation; burning to prevent the

encroachment, but not removal, of woody vegetation; and removing the canopy and thinning shrubs and saplings in forested habitats.

**BLUE-WINGED WARBLER** (*Vermivora pinus*)

(Poole 2005, USFWS 2009b)

▪ **Associated Species:**

- Brown thrasher, song sparrow, willow flycatcher, black-billed cuckoo, American woodcock

▪ **Seasonal Use of Refuge:**

- Breeding, migration

▪ **Distribution:**

- Breeding: eastern U.S., northeast through Massachusetts, the southern tip of New Hampshire, and the extreme southern tip of Maine.
- Wintering: Mexico, Central America, and northern South America.

▪ **Habitat:**

- Early to mid-succession habitats, especially abandoned farmland and forest clearings.
- Breeds at forest/field edges, often shaded by large trees.

▪ **Nesting:**

- Open cup of grasses, bark and dead leaves. Leaves may form cap over eggs. Usually on or near ground.
- Forest-field eco-tones, often shaded by large trees. Nests also along edge of deer trails. Most nests 30 m outside forest edge.
- Nests usually placed at base of goldenrod (*Solidago* spp.) or berry bushes (*Rubus* spp.); sometimes built in a clump of grass or sedge (*Carex* spp.). Most well concealed by leafy material.
- Nest sites similar to those of Golden-winged Warbler.

▪ **Food:**

- Arthropods, especially Lepidoptera larvae, small orthopterans (crickets and grasshoppers), and arachnids (spiders).

▪ **Potential Limiting Factors/Threats:**

- Loss of breeding habitat is accelerating because of suburban expansion.
- Populations may be declining in some parts of range because of decreased abandonment of farmland, increased succession of forests, and conversion of old fields to suburbs.

▪ **Management:**

Dependence on successional habitat and regional patterns of forestry and farmland abandonment may lead to continued range expansion and contraction. As with all Neotropical migrants, should be monitored continuously because of threats posed by increased human consumption of land (e.g., television and cellular-phone towers, suburban sprawl, agriculture, and tropical deforestation).

**GOLDEN-WINGED WARBLER** (*Vermivora chrysoptera*)  
(Poole 2005)

- **Associated Species:**
  - Brown thrasher, song sparrow, willow flycatcher, black-billed cuckoo, American woodcock
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: northeastern and north-central U.S. and southern Ontario.
  - Wintering: central and northern South America.
- **Habitat:**
  - Breeds in patchy shrubland and forest edge, such as shrubby fields, marshes, and bogs. Winters in canopy of tropical forests.
- **Nesting:**
  - Open cup of grasses, bark, and dead leaves. Leaves may form cap over eggs. Usually on or near ground.
  - Nest usually on the ground, often at the base of a cluster of leafy plant material. Base of supporting plants often above the nearby ground level, with leafy material quite thick and obscuring the nest, especially later in the growing season. Most nests include a taller, thicker stem in the supporting basal material, which adults grasp when arriving at the nest.
- **Food:**
  - Insects and spiders
- **Potential Limiting Factors/Threats:**
  - Possible but unknown if invading Blue-winged Warblers directly cause the extinction of local populations of Golden-winged Warblers.
  - Nest parasitism by the Brown-headed Cowbird
  - Loss of habitat
- **Management:**
  - Increase habitat.



**Upland Forests *Moderate-Priority Habitat***

**WOOD THRUSH** (*Hylocichla mustelina*)  
(Poole 2005, Smithsonian Migratory Bird Center 2009)

- **Associated Species:**
  - Rose-breasted grosbeak, scarlet tanager
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: south from southern Canada to northern Florida and west from the Atlantic coast to the Missouri River and the eastern regions of the Great Plains.
  - Wintering: Mexico and Central America, mostly in the lowlands along the Atlantic and Pacific coasts from Mexico to Panama.
- **Habitat:**
  - Breed in the Interior and edges of deciduous and mixed forests, especially well-developed, upland, mesic ones.
  - Winters in interior understory of tropical primary, closed-canopy, semi-evergreen, broad-leaved, and mixed palm forests.
- **Nesting:**
  - In trees or shrubs, usually in crotch or saddled over horizontal branch at fork or where twigs provide support and where some concealment exists.
  - First material is dead grass, stems, or leaves or piece of pliable, pale plastic or paper, often draped over support; sometimes extends noticeably below the nest. Similar materials form enlarged base and walls. Wall woven by placing material at edge of base, lifting loose part up and inward and tucking it into bottom. Mud added and molded inside cup, followed by rootlet lining.
- **Food:**
  - Some arboreal insects, snails, and small salamanders.
  - Soil invertebrates; use of fruit greater in late summer, fall, and late winter.
  - Larval and adult insects, millipedes, and isopods.
  - Fruits in diet include spicebush, fox grape, blueberry, holly, elderberry, jack-in-the-pulpit, Virginia creeper, pokeweed, dogwood, black cherry, and black gum.
- **Potential Limiting Factors/Threats:**
  - Forest fragmentation may cause lower reproductive success.
  - Loss of Central American primary and old second-growth forest on lower slopes threatens winter survival.
- **Management:**
  - Protection of primary and old, secondary broad-leaved tropical forests.

**BLACK-BILLED CUCKOO** (*Coccyzus erythrophthalmus*)  
(Poole 2005)

- **Associated Species:**
  - Rose-breasted grosbeak, scarlet tanager
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: Upper midwest and eastern US.
  - Wintering: Mexico and South America.
- **Habitat:**
  - They inhabit extensive areas of upland woods that provide a variety of trees, bushes and vines. Streamside woods and moist thickets in overgrown pastures and orchards are preferred; however, they are also found in brushy pastures, hedgerows, open woodlands, orchards, thickets, and along wooded roadsides.
- **Nesting:**
  - Nest typically saddled on or placed between horizontal branches; sometimes in crotch against main trunk. Few nests built over water. Nests generally well concealed by overhanging branches and leaf clusters.
  - The nest is a platform, typically four to six feet above the ground, constructed out of loosely woven twigs and lined with grasses and roots.
- **Food:**
  - Primarily of caterpillars, especially tent caterpillars, but they also feed on other insects, spiders, small mollusks, fish and wild fruits and berries.
- **Potential Limiting Factors/Threats:**
  - May be susceptible to habitat fragmentation.
  - May be poisoned by caterpillars sprayed by pesticides.
- **Management:**
  - Maintain mature hardwood forest.

**CERULEAN WARBLER**

See discussion in Bottomland Hardwood Forest section above.

**AMERICAN WOODCOCK** (*Scolopax minor*)  
(Sepik et al., 1994)

- **Associated Species:**
  - Rose-breasted grosbeak, scarlet tanager
- **Seasonal Use of Refuge:**
  - Breeding, migration
- **Distribution:**
  - Breeding: throughout the eastern half of U.S., north of Gulf Coast State.
  - Wintering: southern states from Louisiana east, and is limited in northern extent by snow cover and ground frost.
- **Habitat:**
  - Singing Ground: range from less than 1 acre to over 100 acres. Is usually an abandoned field, forest openings, clear-cuts, dirt roads, blueberry fields, new tree plantations, and pastures and abandoned farmlands.
  - Daytime Male Habitat: close to singing grounds and have moist, rich soils with plenty of earthworms and dense overhead cover of young alders, aspen, or birch.
  - Daytime Feeding: predominately second-growth (15-30 year-old) hardwood or mixed woods with shrubs, bottomland hardwoods, and upland mixed pine-hardwoods. Dense alder thickets < 20 years of age and young aspen and birch stands.
  - Nesting: young, open second growth deciduous forests with well-drained soils. Dense deciduous sapling or conifer cover including young open woodlands, low shrubby cover, old fields, tall herbage bordering clearings, thickets, scrub oaks or pines, open woodland with dead leaf cover on ground, and flat bottomlands near water.
  - Roosting: large fields (similar or the same as singing grounds).
  - Brood Rearing: similar to nesting cover.
- **Nesting:**
  - Nests are often within 100 yards of an occupied singing ground.
  - Nest consists of a shallow depression lined with a few leaves and occasionally small twigs placed around the edges.
- **Food:**
  - Earthworms make up 50 to 90 percent of their diet.
  - Other foods include beetles and fly larvae.
- **Potential Limiting Factors/Threats:**
  - Hunting
  - Habitat loss on both breeding and wintering grounds
- **Management:**
  - Stands of alder and similar shrub species should be encouraged and maintained by strip-cutting on a 20 year rotations.

- Block or strip cuts on a 40 -50 year rotations to provide a continuous supply of young growth.
- Shelterwood and seed trees that are often left over in partial timber harvests help to retain a patchy structure.
- Singing Ground: Create openings where few are present adjacent to feeding habitat. Clearings should be at least 0.5 acres where surrounding trees are taller than 25 feet. Openings with shorter surrounding vegetation can be as small as 0.25 acres.
- Roosting cover: clearcuts.

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**New York Natural Heritage Report  
on Rare Animals, Rare Plants, and Significant Ecological Communities  
of Iroquois National Wildlife Refuge**

Prepared February, 2006 from the Biodiversity Databases of the New York Natural Heritage Program  
NYS DEC, 625 Broadway, Albany, NY, 12233-4757.



COMMON NAME	SCIENTIFIC NAME	NY STATE LISTING	NY STATE RANK*
<b><u>Documented on the refuge since 1985</u></b>			
<b>Birds</b>			
Pied-billed Grebe	<i>Podilymbus podiceps</i>	Threatened	S3
Least Bittern	<i>Ixobrychus exilis</i>	Threatened	S3
Great Blue Heron	<i>Ardea herodias</i>		S5
Ruddy Duck	<i>Oxyura jamaicensis</i>		S1
Black Tern	<i>Chlidonias niger</i>	Endangered	S2
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened**	S2S3
Upland Sandpiper	<i>Bartramia longicauda</i>	Threatened	S3
Short-eared Owl	<i>Asio flammeus</i>	Endangered	S2
Sedge Wren	<i>Cistothorus platensis</i>	Threatened	S3
Prothonotary Warbler	<i>Protonotaria citrea</i>		S2
Henslow's Sparrow	<i>Ammodramus henslowii</i>	Threatened	S3
<b>Plants</b>			
Smooth Bur-marigold	<i>Bidens laevis</i>	Threatened	S2
Georgia Bulrush	<i>Scirpus georgianus</i>	Endangered	S1
<b>Ecological Communities</b>			
Deep Emergent Marsh			S5
Hemlock-Northern Hardwood Forest			S4
<b><u>Other Species and Community Types Documented near the refuge since 1985</u></b>			
<b>Birds</b>			
King Rail	<i>Rallus elegans</i>	Threatened	S1B
Northern Harrier	<i>Circus cyaneus</i>	Threatened	S3B, S3N
<b>Dragonflies</b>			
American Rubyspot	<i>Hetaerina americana</i>		S2S3
<b>Freshwater Mussels</b>			
Threeridge	<i>Amblema plicata</i>		S1
Wabash Pigtoe	<i>Fusconaia flava</i>		S2
Wavyrayed Lampmussel	<i>Lampsilis fasciola</i>	Threatened	S1
Pocketbook	<i>Lampsilis ovata</i>		S2S3

COMMON NAME	SCIENTIFIC NAME	NY STATE LISTING	NY STATE RANK*
Fragile Papershell	<i>Leptodea fragilis</i>		S3
Black Sandshell	<i>Ligumia recta</i>		S2S3
Kidneyshell	<i>Ptychobranthus fasciolaris</i>		S2
Rainbow	<i>Villosa iris</i>		S2S3
<b>Plants</b>			
Harbinger-of-spring	<i>Erigeron bulbosa</i>	Endangered	S1
Heartleaf Plantain	<i>Plantago cordata</i>	Threatened	S3
Nodding Trillium	<i>Trillium flexipes</i>	Endangered	S1
Nodding Pogonia	<i>Triphora trianthophora</i>	Endangered	S2
<b>Ecological Communities</b>			
Rich hemlock-hardwood peat swamp			S2S3
<b><u>Documented from "Tonawanda Swamp" at unknown date at unknown location</u></b>			
<b>Plants</b>			
Eastern Prairie Fringed Orchid	<i>Plantanthera leucophaea</i>	Endangered**	SH
<b><u>Documented near the refuge before 1975; current status unknown</u></b>			
<b>Butterflies</b>			
Karner Blue	<i>Lycaeides melissa samuelis</i>	Endangered**	S1
<b>Plants</b>			
Pink Wintergreen	<i>Pyrola asarifolia</i> ssp. <i>asarifolia</i>	Threatened	S2

\* Rarity in NYS as ranked by NY Natural Heritage Program on a 1 to 5 scale:  
 S1 = Critically imperiled; S2 = Imperiled; S3 = Rare or uncommon;  
 S4 = Abundant and apparently secure; S5 = Demonstrably abundant and secure;  
 SH = Historical records only; no recent information available;  
 SU = Not yet ranked.



\*\* Also Federally Listed.

Natural community occurrences in this report are all ranked as being of excellent quality, and therefore are considered significant from a statewide perspective. By meeting specific, documented significance criteria, the NY Natural Heritage Program considers this occurrence to have high ecological and conservation value.

## Appendix D



John Mosesso Jr./NBII

*Eastern Box Turtle*

# Wildlife and Plant Common and Scientific Names

## Wildlife and Plant Common and Scientific Names

Common Name	Scientific Name
<b>Swans, Geese, and Ducks</b>	
American Black Duck	<i>Anas rubripes</i>
American Wigeon	<i>Anas americana</i>
Black Scoter	<i>Melanitta nigra</i>
Blue-winged Teal	<i>Anas discors</i>
Brant	<i>Branta bernicla</i>
Bufflehead	<i>Bucephala albeola</i>
Cackling Goose	<i>Branta hutchinsii</i>
Canada Goose	<i>Branta canadensis</i>
Canvasback	<i>Aythya valisineria</i>
Cinnamon Teal	<i>Anas cyanoptera</i>
Common Goldeneye	<i>Bucephala clangula</i>
Common Merganser	<i>Mergus merganser</i>
Gadwall	<i>Anas strepera</i>
Greater Scaup	<i>Aythya marila</i>
Greater White-fronted Goose	<i>Anser albifrons</i>
Green-winged Teal	<i>Anas crecca</i>
Hooded Merganser	<i>Lophodytes cucullatus</i>
Lesser Scaup	<i>Aythya affinis</i>
Long-tailed Duck	<i>Clangula hyemalis</i>
Mallard	<i>Anas platyrhynchos</i>
Mute Swan	<i>Cygnus olor</i>
Northern Pintail	<i>Anas acuta</i>
Northern Shoveler	<i>Anas clypeata</i>
Red-breasted Merganser	<i>Mergus serrator</i>
Redhead	<i>Aythya americana</i>
Ring-necked Duck	<i>Aythya collaris</i>
Ruddy Duck	<i>Oxyura jamaicensis</i>
Snow Goose	<i>Chen caerulescens</i>
Surf Scoter	<i>Melanitta perspicillata</i>
Tundra Swan	<i>Cygnus columbianus</i>
White-winged Scoter	<i>Melanitta fusca</i>
Wood Duck	<i>Aix sponsa</i>
<b>Gallinaceous Birds</b>	
Northern Bobwhite	<i>Colinus virginianus</i>
Ring-necked Pheasant	<i>Phasianus colchicus</i>
Ruffed Grouse	<i>Bonasa umbellus</i>
Wild Turkey	<i>Meleagris gallopavo</i>



Common Name	Scientific Name
<b>Loons</b>	
Common Loon	<i>Gavia immer</i>
<b>Grebes</b>	
Horned Grebe	<i>Podiceps auritus</i>
Pied-billed Grebe	<i>Podilymbus podiceps</i>
Red-necked Grebe	<i>Podiceps grisegena</i>
<b>Cormorants</b>	
Double-crested Cormorant	<i>Phalacrocorax auritus</i>
<b>Bitterns, Herons, and Egrets</b>	
American Bittern	<i>Botaurus lentiginosus</i>
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>
Great Blue Heron	<i>Ardea herodias</i>
Great Egret	<i>Ardea alba</i>
Cattle Egret	<i>Bubulcus ibis</i>
Green Heron	<i>Butorides virescens</i>
Least Bittern	<i>Ixobrychus exilis</i>
<b>New World Vulture</b>	
Turkey Vulture	<i>Cathartes aura</i>
<b>Osprey, Hawks, and Eagles</b>	
Bald Eagle	<i>Haliaeetus leucocephalus</i>
Broad-winged Hawk	<i>Buteo platypterus</i>
Cooper's Hawk	<i>Accipiter cooperii</i>
Golden Eagle	<i>Aquila chrysaetos</i>
Northern Goshawk	<i>Accipiter gentilis</i>
Northern Harrier	<i>Circus cyaneus</i>
Osprey	<i>Pandion haliaetus</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Rough-legged Hawk	<i>Buteo lagopus</i>
Sharp-shinned Hawk	<i>Accipiter striatus</i>
<b>Falcon</b>	
American Kestrel	<i>Falco spararius</i>
Peregrine Falcon	<i>Falco peregrinus</i>
<b>Rails</b>	
American Coot	<i>Fulica americana</i>
Common Moorhen	<i>Gallinula chloropus</i>
King Rail	<i>Rallus elegans</i>
Sora	<i>Porzana carolina</i>
Virginia Rail	<i>Rallus limicola</i>
Yellow Rail	<i>Coturnicops noveboracensis</i>

Common Name	Scientific Name
<b>Cranes</b>	
Sandhill Crane	<i>Grus canadensis</i>
<b>Plovers</b>	
American Golden-Plover	<i>Pluvialis dominica</i>
Black-bellied Plover	<i>Pluvialis squatarola</i>
Killdeer	<i>Charadrius vociferus</i>
Semipalmated Plover	<i>Charadrius semipalmatus</i>
<b>Sandpipers and Phalaropes</b>	
American Woodcock	<i>Scolopax minor</i>
Dunlin	<i>Calidris alpina</i>
Greater Yellowlegs	<i>Tringa melanoleuca</i>
Hudsonian Godwit	<i>Limosa haemastica</i>
Least Sandpiper	<i>Calidris minutilla</i>
Lesser Yellowlegs	<i>Tringa flavipes</i>
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>
Pectoral Sandpiper	<i>Calidris melanotos</i>
Red-necked Phalarope	<i>Phalaropus lobatus</i>
Ruddy Turnstone	<i>Arenaria interpres</i>
Semipalmated Sandpiper	<i>Calidris pusilla</i>
Short-billed Dowitcher	<i>Limnodromus griseus</i>
Solitary Sandpiper	<i>Tringa solitaria</i>
Spotted Sandpiper	<i>Actitis macularia</i>
Stilt Sandpiper	<i>Calidris himantopus</i>
Upland Sandpiper	<i>Bartramia longicauda</i>
White-rumped Sandpiper	<i>Calidris fuscicollis</i>
Wilson's Phalarope	<i>Phalaropus tricolor</i>
Wilson's Snipe	<i>Gallinago delicata</i>
<b>Gulls and Terns</b>	
Black Tern	<i>Chlidonias niger</i>
Bonaparte's Gull	<i>Larus philadelphia</i>
Caspian Tern	<i>Sterna caspia</i>
Common Tern	<i>Sterna hirundo</i>
Great Black-backed Gull	<i>Larus marinus</i>
Herring Gull	<i>Larus argentatus</i>
Ring-billed Gull	<i>Larus delawarensis</i>
<b>Pigeons and Doves</b>	
Mourning Dove	<i>Zenaida macroura</i>
Rock Pigeon	<i>Columba livia</i>
<b>Cuckoos</b>	
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>

Common Name	Scientific Name
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
<b>Owls</b>	
Barn Owl	<i>Tyto alba</i>
Barred Owl	<i>Strix varia</i>
Eastern Screech-Owl	<i>Megascops asio</i>
Great Horned Owl	<i>Bubo virginianus</i>
Long-eared Owl	<i>Asio otus</i>
Northern Saw-whet Owl	<i>Aegolius acadicus</i>
Short-eared Owl	<i>Asio flammeus</i>
Snowy Owl	<i>Bubo scandiacus</i>
<b>Night Jars</b>	
Common Nighthawk	<i>Chordeiles minor</i>
Whip-poor-will	<i>Caprimulgus vociferus</i>
<b>Swifts</b>	
Chimney Swift	<i>Chaetura pelagica</i>
<b>Hummingbirds</b>	
Ruby-throated Hummingbird	<i>Archilochus colubris</i>
<b>Kingfishers</b>	
Belted Kingfisher	<i>Ceryle alcyon</i>
<b>Woodpeckers</b>	
Downy Woodpecker	<i>Picoides pubescens</i>
Hairy Woodpecker	<i>Picoides villosus</i>
Northern Flicker	<i>Colaptes auratus</i>
Pileated Woodpecker	<i>Dryocopus pileatus</i>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
<b>Tyrant Flycatchers</b>	
Acadian Flycatcher	<i>Empidonax virescens</i>
Alder Flycatcher	<i>Empidonax alnorum</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Eastern Wood-Pewee	<i>Contopus virens</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Least Flycatcher	<i>Empidonax minimus</i>
Willow Flycatcher	<i>Empidonax traillii</i>
<b>Shrikes</b>	
Northern Shrike	<i>Lanius excubitor</i>
<b>Vireos</b>	
Blue-headed Vireo	<i>Vireo solitarius</i>

Common Name	Scientific Name
Philadelphia Vireo	<i>Vireo philadelphicus</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>
Warbling Vireo	<i>Vireo gilvus</i>
Yellow-throated Vireo	<i>Vireo flavifrons</i>
<b>Crows and Jays</b>	
American Crow	<i>Corvus branchyrhynchos</i>
Blue Jay	<i>Cyanocitta cristata</i>
<b>Larks</b>	
Horned Lark	<i>Eremophila alpestris</i>
<b>Swallows</b>	
Bank Swallow	<i>Riparia riparia</i>
Barn Swallow	<i>Hirundo rustica</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Purple Martin	<i>Progne subis</i>
Tree Swallow	<i>Tachycineta bicolor</i>
<b>Titmice and Chickadees</b>	
Black-capped Chickadee	<i>Poecile atricapillus</i>
Tufted Titmouse	<i>Baeolophus bicolor</i>
<b>Nuthatches</b>	
Red-breasted Nuthatch	<i>Sitta canadensis</i>
White-breasted Nuthatch	<i>Sitta carolinensis</i>
<b>Creepers</b>	
Brown Creeper	<i>Certhia americana</i>
<b>Wrens</b>	
Carolina Wren	<i>Thryothorus ludovicianus</i>
House Wren	<i>Troglodytes aedon</i>
Marsh Wren	<i>Cistothorus palustris</i>
Sedge Wren	<i>Cistothorus plantensis</i>
Winter Wren	<i>Troglodytes troglodytes</i>
<b>Kinglets</b>	
Golden-crowned Kinglet	<i>Regulus satrapa</i>
Ruby-crowned Kinglet	<i>Regulus calendula</i>
<b>Old World Warblers</b>	
Blue-gray Gnatcatcher	<i>Poliptila caerulea</i>
<b>Thrushes</b>	
American Robin	<i>Turdus migratorius</i>
Eastern Bluebird	<i>Sialia sialis</i>
Gray-cheeked Thrush	<i>Catharus minimus</i>
Hermit Thrush	<i>Catharus guttatus</i>

Common Name	Scientific Name
Swainson's Thrush	<i>Catharus ustulatus</i>
Veery	<i>Catharus fuscescens</i>
Wood Thrush	<i>Hylocichla mustelina</i>
<b>Mimic Thrashers</b>	
Brown Thrasher	<i>Toxostoma rufum</i>
Gray Catbird	<i>Dumetella carolinensis</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
<b>Starlings</b>	
European Starling	<i>Sturnus vulgaris</i>
<b>Pipits</b>	
American Pipit	<i>Anthus rubescens</i>
<b>Waxwings</b>	
Bohemian Waxwing	<i>Bombycilla garrulus</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
<b>Warblers</b>	
American Redstart	<i>Setophaga ruticilla</i>
Bay-breasted Warbler	<i>Dendroica castanea</i>
Black-and-white Warbler	<i>Mniotilta varia</i>
Blackburnian Warbler	<i>Dendroica fusca</i>
Blackpoll Warbler	<i>Dendroica striata</i>
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>
Black-throated Green Warbler	<i>Dendroica virens</i>
Blue-winged Warbler	<i>Vermivora pinus</i>
Canada Warbler	<i>Wilsonia canadensis</i>
Cape May Warbler	<i>Dendroica tigrina</i>
Cerulean Warbler	<i>Dendroica cerulea</i>
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
Golden-winged Warbler	<i>Vermivora chrysoptera</i>
Hooded Warbler	<i>Wilsonia citrina</i>
Magnolia Warbler	<i>Dendroica magnolia</i>
Nashville Warbler	<i>Vermivora ruficapilla</i>
Northern Parula	<i>Parula americana</i>
Northern Waterthrush	<i>Seiurus noveboracensis</i>
Orange-crowned Warbler	<i>Vermivora celata</i>
Ovenbird	<i>Seiurus aurocapilla</i>
Palm Warbler	<i>Dendroica palmarum</i>
Pine Warbler	<i>Dendroica pinus</i>
Prairie Warbler	<i>Dendroica discolor</i>
Prothonotary Warbler	<i>Protonotaria citrea</i>

Common Name	Scientific Name
Tennessee Warbler	<i>Vermivora peregrina</i>
Wilson's Warbler	<i>Wilsonia pusilla</i>
Yellow Warbler	<i>Dendroica petechia</i>
Yellow-breasted Chat	<i>Icteria virens</i>
Yellow-rumped Warbler	<i>Dendroica coronata</i>
<b>Tanagers</b>	
Scarlet Tanager	<i>Piranga olivacea</i>
<b>Sparrows and Towhees</b>	
American Tree Sparrow	<i>Spizella arborea</i>
Chipping Sparrow	<i>Spizella passerina</i>
Dark-eyed Junco	<i>Junco hyemalis</i>
Eastern Towhee	<i>Pipilo erythrophthalmus</i>
Field Sparrow	<i>Spizella pusilla</i>
Fox Sparrow	<i>Passerella iliaca</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Henslow's Sparrow	<i>Ammodramus henslowii</i>
Lapland Longspur	<i>Calcarius lapponicus</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Snow Bunting	<i>Plectrophenax nivalis</i>
Song Sparrow	<i>Melospiza melodia</i>
Swamp Sparrow	<i>Melospiza georgiana</i>
Vesper Sparrow	<i>Pooecetes gramineus</i>
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>
White-throated Sparrow	<i>Zonotrichia albicollis</i>
<b>Cardinals, Grosbeaks, and Allies</b>	
Indigo Bunting	<i>Passerina cyanea</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>
<b>Blackbirds and Orioles</b>	
Baltimore Oriole	<i>Icterus galbula</i>
Bobolink	<i>Dolichonyx oryzivorus</i>
Brown-headed Cowbird	<i>Molothrus ater</i>
Common Grackle	<i>Quiscalus quiscula</i>
Eastern Meadowlark	<i>Sturnella magna</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Rusty Blackbird	<i>Euphagus carolinus</i>
<b>Finches</b>	
American Goldfinch	<i>Carduelis tristis</i>
Common Redpoll	<i>Carduelis flammea</i>
Evening Grosbeak	<i>Coccothraustes vespertinus</i>

Common Name	Scientific Name
House Finch	<i>Carpodacus mexicanus</i>
Pine Grosbeak	<i>Pinicola enucleator</i>
Pine Siskin	<i>Carduelis pinus</i>
Purple Finch	<i>Carpodacus purpureus</i>
<b>Old World Sparrows</b>	
House Sparrow	<i>Passer domesticus</i>
<b>Accidentals</b>	
American Avocet	<i>Recurvirostra americana</i>
American White Pelican	<i>Pelecanus erythrorhynchos</i>
Baird's Sandpiper	<i>Calidris bairdii</i>
Barnacle Goose	<i>Branta leucopsis</i>
Black-legged Kittiwake	<i>Rissa tridactyla</i>
Eared Grebe	<i>Podiceps nigricollis</i>
Eurasian Wigeon	<i>Anas penelope</i>
Forster's Tern	<i>Sterna forsteri</i>
Fulvous Whistling-Duck	<i>Dendrocygna bicolor</i>
Glaucous Gull	<i>Larus hyperboreus</i>
Glossy Ibis	<i>Plegadis falcinellus</i>
Gyr Falcon	<i>Falco rusticolus</i>
Lesser Black-backed Gull	<i>Larus fuscus</i>
Lincoln's Sparrow	<i>Melospiza lincolnii</i>
Little Blue Heron	<i>Egretta caerulea</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Marbled Godwit	<i>Limosa fedoa</i>
Merlin	<i>Falco columbarius</i>
Orchard Oriole	<i>Icterus spurius</i>
Red Crossbill	<i>Loxia curvirostra</i>
Red Knot	<i>Calidris canutus</i>
Red-throated Loon	<i>Gavia stellata</i>
Ross's Goose	<i>Chen rossii</i>
Sanderling	<i>Calidris alba</i>
Snowy Egret	<i>Egretta thula</i>
Summer Tanager	<i>Piranga rubra</i>
Three-toed Woodpecker	<i>Picoides dorsalis</i>
Western Sandpiper	<i>Calidris mauri</i>
Whimbrel	<i>Numenius phaeopus</i>
White-eyed Vireo	<i>Vireo griseus</i>
White-winged Crossbill	<i>Loxia leucoptera</i>
Willet	<i>Catoptrophorus semipalmatus</i>
Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>

Common Name	Scientific Name
<b>Mammals</b>	
Beaver	<i>Castor canadensis</i>
Big Brown Bat	<i>Eptesicus fuscus</i>
Bobcat	<i>Lynx rufus</i>
Coyote	<i>Canus latrans</i>
Deer Mouse	<i>Peromyscus maniculatus</i>
Eastern Chipmunk	<i>Tamias striatus</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>
Eastern Pipistrelle	<i>Pipistrellus subflavus</i>
Gray Fox	<i>Urocyon cinereoargenteus</i>
Hairytail Mole	<i>Parascalops breweri</i>
Hoary Bat	<i>Lasiurus cinereus</i>
House Mouse	<i>Mus musculus</i>
Keen Myotis	<i>Myotis keeni</i>
Little Brown Myotis	<i>Myotis lucifugus</i>
Longtail Weasel	<i>Mustela frenata</i>
Masked Shrew	<i>Sorex cinereus</i>
Meadow Jumping Mouse	<i>Zapus hudsonius</i>
Meadow Vole	<i>Microtus pennsylvanicus</i>
Mink	<i>Mustela vison</i>
Muskrat	<i>Ondatra zibethicus</i>
Northern Flying Squirrel	<i>Glaucomys sabrinus</i>
Norway Rat	<i>Rattus norvegicus</i>
Porcupine	<i>Erethizon dorsatum</i>
Raccoon	<i>Procyon lotor</i>
Red Bat	<i>Lasiurus borealis</i>
Red Fox	<i>Vulpes fulva</i>
Red Squirrel	<i>Tamiasciurus hudsonicus</i>
River Otter	<i>Lutra canadensis</i>
Shorttail Shrew	<i>Blarina brevicauda</i>
Shorttail Weasel	<i>Mustela erminea</i>
Silver-Haired Bat	<i>Lasionycteris noctivagans</i>
Small-footed myotis	<i>Myotis subulatus</i>
Snowshoe Hare	<i>Lepus americanus</i>
Southern Flying Squirrel	<i>Glaucomys volans</i>
Star-nosed Mole	<i>Condylura cristata</i>
Striped Skunk	<i>Mephitis mephitis</i>
Virginia Opossum	<i>Didelphis marsupialis</i>
White-footed Mouse	<i>Peromyscus leucopus</i>



Common Name	Scientific Name
Whitetail Deer	<i>Odocoileus virginianus</i>
Woodchuck	<i>Marmota monax</i>
Woodland Jumping Mouse	<i>Napaeozapus insignis</i>
<b>Fish</b>	
Banded Killifish	<i>Fundulus diaphanus</i>
Black Crappie	<i>Pomoxis nigromaculatus</i>
Bluegill	<i>Lepomis macrochirus</i>
Bluntnose Minnow	<i>Pimephales notatus</i>
Brown Bullhead	<i>Ameiurus nebulosus</i>
Central Mudminnow	<i>Umbra limi</i>
Common Carp	<i>Cyprinus carpio</i>
Golden Shiner	<i>Notemigonus crysoleucas</i>
Goldfish	<i>Carassius auratus</i>
Grass Pickerel	<i>Esox americanus</i>
Largemouth Bass	<i>Micropterus salmoides</i>
Northern Pike	<i>Esox lucius</i>
Pumpkinseed	<i>Lepomis gibbosus</i>
Tadpole Madtom	<i>Noturus gyrinus</i>
White Sucker	<i>Catostomus commersoni</i>
Yellow Perch	<i>Perca flavescens</i>
<b>Reptiles and Amphibians</b>	
Allegheny Dusky Salamander	<i>Desmognathus ochrophaeus</i>
Black Rat Snake	<i>Elaphe o. obsoleta</i>
Blue-spotted Salamander	<i>Ambystoma laterale</i>
Bullfrog	<i>Rana catesbeiana</i>
Common Snapping Turtle	<i>Chelydra s. serpentina</i>
Eastern American Toad	<i>Bufo a. americanus</i>
Eastern Box Turtle	<i>Terrapene c. carolina</i>
Eastern Garter Snake	<i>Thamnophis s. sirtalis</i>
Eastern Milk Snake	<i>Lampropeltis t. triangulum</i>
Green Frog	<i>Rana clamitans melanota</i>
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>
Midland Painted Turtle	<i>Chrysemys picta marginata</i>
Northern Brown Snake	<i>Storeria d. dekayi</i>
Northern Dusky Salamander	<i>Desmognathus f. fuscus</i>
Northern Gray Treefrog	<i>Hyla versicolor</i>
Northern Leopard Frog	<i>Rana pipiens</i>
Northern Redbelly Snake	<i>Storeria o. occipitamaculata</i>
Northern Slimy Salamander	<i>Plethodon glutinosus</i>
Northern Spring Peeper	<i>Pseudacris c. crucifer</i>

Common Name	Scientific Name
Northern Two-lined Salamander	<i>Eurycea bislineata</i>
Northern Water Snake	<i>Nerodia s. sipedon</i>
Redback Salamander	<i>Plethodon cinereus</i>
Red-spotted Newt	<i>Notophthalmus viridescens</i>
Smooth Green Snake	<i>Liochlorophis vernalis</i>
Spotted Salamander	<i>Ambystoma maculatum</i>
Spotted Turtle	<i>Clemmys guttata</i>
Western Chorus Frog	<i>Pseudacris triseriata</i>
Wood Frog	<i>Rana sylvatica</i>
Wood Turtle	<i>Clemmys insculpta</i>
<b>Trees</b>	
American Basswood	<i>Tilia americana</i>
American Beech	<i>Fagus grandifolia</i>
American Chestnut	<i>Castanea dentata</i>
American Elm	<i>Ulmus americana</i>
American Hornbeam	<i>Carpinus caroliniana</i>
Apple	<i>Pyrus malus</i>
Balsam Fir	<i>Abies balsamea</i>
Big-toothed Aspen	<i>Populus grandidentata</i>
Black Cherry	<i>Prunus serotina</i>
Black Locust	<i>Robinia pseudoacacia</i>
Black Walnut	<i>Juglans nigra</i>
Black Willow	<i>Salix nigra</i>
Box-elder	<i>Acer negundo</i>
Bur Oak	<i>Quercus macrocarpa</i>
Butternut	<i>Juglans cinerea</i>
Chestnut Oak	<i>Quercus prinus</i>
Choke-cherry	<i>Prunus virginiana</i>
Colorado Blue Spruce	<i>Picea pungens</i>
Common Pear	<i>Pyrus communis</i>
Cottonwood	<i>Populus deltoides</i>
Crack Willow	<i>Salix fragilis</i>
Cucumber Tree	<i>Magnolia acuminata</i>
Douglas Fir	<i>Pseudotsuga menziesii</i>
Eastern Hemlock	<i>Tsuga canadensis</i>
Eastern Hophornbeam	<i>Ostrya virginiana</i>
Eastern White Pine	<i>Pinus strobus</i>
European Mountain Ash	<i>Sorbus aucuparia L.</i>
Flowering Dogwood	<i>Cornus florida</i>
Gray Birch	<i>Betula populifolia</i>

Common Name	Scientific Name
Green Ash	<i>Fraxinus pennsylvanica</i>
Hawthorn	<i>Crataegus sp.</i>
Horse-chestnut	<i>Aesculus hippocastanum</i>
Northern Catalpa	<i>Catalpa speciosa</i>
Northern Red Oak	<i>Quercus rubra</i>
Norway Spruce	<i>Picea abies</i>
Pignut Hickory	<i>Carya glabra</i>
Pin Cherry	<i>Prunus pensylvanica</i>
Pussy Willow	<i>Salix discolor</i>
Quaking Aspen	<i>Populus tremuloides</i>
Red Maple	<i>Acer rubrum</i>
Red Pine	<i>Pinus resinosa</i>
Red Spruce	<i>Picea rubens</i>
Scotch Pine	<i>Pinus sylvestris</i>
Shag-bark Hickory	<i>Carya ovata</i>
Silver Maple	<i>Acer saccharinum</i>
Slippery Elm	<i>Ulmus rubra</i>
Staghorn Sumac	<i>Rhus typhina</i>
Sugar Maple	<i>Acer saccharum</i>
Swamp White Oak	<i>Quercus bicolor</i>
Sweet Cherry	<i>Prunus avium</i>
Sycamore	<i>Platanus occidentalis</i>
Shadbush Tree	<i>Amelanchier arborea</i>
Tamarack	<i>Larix laricina</i>
Tulip Tree	<i>Liriodendron tulipifera</i>
Weeping Willow	<i>Salix babylonica</i>
White Ash	<i>Fraxinus americana</i>
White Oak	<i>Quercus alba</i>
White Spruce	<i>Picea glauca</i>
Witch Hazel	<i>Hamamelis virginiana</i>
Yellow Birch	<i>Betula lula</i>
<b>Other Plants</b>	
Arbor Vitae	<i>Thuja occidentalis</i>
Alder Buckthorn	<i>Rhamnus frangula</i>
Alfalfa	<i>Medicago sativa</i>
Alpine Violet (Dog violet)	<i>Viola labradorica</i>
Alyssum Hoary	<i>Berteroa incana</i>
American Wild Mint	<i>Mentha arvensis var. glabrata</i>
Arrow-leaved Tear-thumb	<i>Polygonum sagittatum</i>
Asparagus	<i>Asparagus officinalis</i>

Common Name	Scientific Name
Aster Heart-leaved	<i>Aster cordifolius</i>
Barnyard Grass	<i>Echinochloa crusgalli</i> var. <i>crusgalli</i>
Barren strawberry	<i>Waldsteinia</i>
Bedstraw Rough	<i>Galium asprellum</i>
Beech-drops	<i>Epifagus virginiana</i>
Biennial Wormwood	<i>Artemisia biennis</i>
Bindweed Hedge	<i>Convolvulus sepium</i>
Birdsfoot Trefoil	<i>Lotus corniculatus</i>
Bitter Nightshade	<i>Solanum dulcamara</i>
Black Medic	<i>Medicago lupulina</i>
Black-eyed Susan	<i>Rudbeckia hirta</i> var. <i>pulcherrima</i>
Bladder Campion	<i>Silene cucubalus</i>
Bladder Sedge	<i>Carex intumescens</i>
Bloodroot	<i>Sanguinaria canadensis</i>
Blue Cohosh	<i>Caulophyllum thalictroides</i>
Blue Flag Iris	<i>Iris veriscolor</i>
Blue Meadow Violet	<i>Viola papilionacea</i>
Boneset	<i>Eupatorium perfoliatum</i>
Bottle-brush Grass	<i>Hystrix patula</i>
Bouncing Bet	<i>Saponaria officinalis</i>
Breaded Short-husk	<i>Brachyelytrum erectum</i>
Bristly Greenbrier	<i>Smilax hispida</i>
Brittons Agrimony	<i>Agrimonia striata</i>
Broad-leaved Arrowhead	<i>Sagittaria latifolia</i>
Broad-leaved Cat-Tail	<i>Typha latifolia</i>
Broad-leaved Dock	<i>Rumex obtusifolius</i>
Broad-leaved Plantain	<i>Plantago major</i>
Brookweed	<i>Samolus floribundus</i>
Broomsedge	<i>Andropogon virginicus</i>
Brown Knapweed	<i>Centaurea jacea</i>
Buckwheat	<i>Fagopyrum esculentum</i>
Bugleweed Virginia	<i>Lycopus virginicus</i>
Butter-and-Eggs	<i>Linaria vulgaris</i>
Butterfly Milkweed	<i>Asclepias tuberosa</i>
Buttonbush	<i>Cephalanthus occidentalis</i>
Canada Anemone	<i>Anemone canadensis</i>
Canada Goldenrod	<i>Solidago canadensis</i> var. <i>canadensis</i>
Canada Thistle	<i>Cirsium vulgare</i>
Canadian Tick Trefoil	<i>Desmodium canadense</i>
Cardinal-flower	<i>Lobelia cardinalis</i>

Common Name	Scientific Name
Carpet-weed (Wild Madder) Bedstraw	<i>Galium mollugo var. mollugo</i>
Carrion-flower	<i>Smilax herbacea</i>
Catnip	<i>Nepeta cataria</i>
Chairmakers Rush	<i>Scirpus americanus</i>
Charlock	<i>Brassica kaber</i>
Cheeses	<i>Malva neglecta</i>
Chicory	<i>Cichorium intybus</i>
Christmas Fern	<i>Polystichum acrostichoides</i>
Clammy Ground Cherry	<i>Physalis heterophylla var. heterophylla</i>
Clearweed	<i>Pilea pumila</i>
Climbing Bittersweet	<i>Celastrus scandens</i>
Climbing False Buckwheat	<i>Polygonum scandens var. scandens</i>
Climbing Hempweed	<i>Mikania scandens</i>
Clover Alsike	<i>Trifolium hybridum</i>
Club-moss Ground-pine	<i>Lycopodium obscurum</i>
Cockle-bur (Clotbur)	<i>Xanthium strumarium</i>
Coltsfoot	<i>Tussilago farfara</i>
Common Highbush Blackberry	<i>Rosa allegheniensis</i>
Common Beggar-ticks	<i>Bidens frondosa</i>
Common Bugle	<i>Ajuga reptans</i>
Common Burdock	<i>Arctium minus</i>
Common Cinquefoil	<i>Potentilla simplex</i>
Common Dandelion	<i>Taracacum officinale</i>
Common Groundsel	<i>Senecio vulgaris</i>
Common Horsetail	<i>Equisetum arvense</i>
Common Knotweed	<i>Polygonum aviculare</i>
Common Milkweed	<i>Asclepias syrauaca</i>
Common Ragweed	<i>Ambrosia artemisiifolia</i>
Common Reed Grass	<i>Phragmites communis</i>
Common Rush	<i>Juncus effusus var. solutus</i>
Common St. John's Wort	<i>Hypericum perforatum</i>
Common Teasel	<i>Dipsacus sylvestris</i>
Common Wood (Evergreen) Fern	<i>Dryopteris austriaca var. intermedia</i>
Common Yarrow	<i>Achillea millefolium</i>
Corn Chamomile	<i>Anthemis arvensis</i>
Cow Vetch	<i>Vicia cracca</i>
Crab-grass Small	<i>Leptoloma cognatum</i>
Cranberry High-Bush	<i>Viburnum opulus var. americanum</i>
Creeping Bellflower	<i>Campanula rapunculoides</i>
Cress Winter	<i>Barbarea vulgaris</i>

Common Name	Scientific Name
Crown Vetch	<i>Coronilla varia</i>
Curled Dock	<i>Rumex crispus</i>
Curly Pondweed	<i>Potamogeton crispus</i>
Daffodil	<i>Narcissus pseudo-narcissus</i>
Daisy Fleabane	<i>Erigeron strigosus</i>
Dame's Rocket	<i>Hesperis matronalis</i>
Dark-green Bulrush	<i>Scirpus atrovirens</i>
Day Lily	<i>Hemeocallis fulva</i>
Deptford Pink	<i>Dianthus ameria</i>
Devil's Paint-brush	<i>Hieracium aurantiacum</i>
Ditch Stonecrop	<i>Penthorum sedooides</i>
Dock-leaved Smartweed	<i>Polygonum lapathifolium</i>
Dodder	<i>Cuscuta spp.</i>
Dogbane Spreading	<i>Apocynum androsaemifolium</i>
Dropseed	<i>Muhlenbergia schreberi</i>
Duckweed Star	<i>Leemna trisulca</i>
Early Goldenrod	<i>Solidago juncea</i>
Early Winter Cress	<i>Barbarea verna</i>
Eastern Bracken Fern	<i>Pteridium aquilinum var. latiusculum</i>
Elm-leaf Goldenrod	<i>Solidago ulmifolia</i>
English Plantain	<i>Plantago lanceolata</i>
European Centaury	<i>Centaurium umbellatum</i>
European Forget-me-not	<i>Mysostis scorpioides</i>
European Strawberry	<i>Fragaria vesca var vesca</i>
Evening Lychnis	<i>Lychnis alba</i>
Evening Primrose	<i>Oenothera biennis</i>
Everlasting Pea	<i>Lathyrus latifolius</i>
False Nettle	<i>Boehmeria cylindrica</i>
Fennel-leaved Pondweed	<i>Potamogeton pectinatus</i>
Fern Autumn Grape	<i>Botrychium dissectum var. obliquum</i>
Fern Cinnamon	<i>Osmunda cinnamomea</i>
Fern Crested Shield	<i>Dryopteris cristata</i>
Fern Marginal	<i>Dryopteris marginalis</i>
Field Bindweed	<i>Convolvulus arvensis</i>
Field Chamomile	<i>Matricaria arvensis</i>
Field Peppergrass	<i>Leersia oryzoides</i>
Floating Pondweed	<i>Potamogeton natans</i>
Foam-Flower	<i>Tiarella cordifolia</i>
Foxtail Sedge	<i>Carex vulpinoidea</i>
Frost Grape	<i>Vitis riparia</i>

Common Name	Scientific Name
Gentian Closed	<i>Gentiana andrewsii</i>
Gentian Fringed	<i>Gentiana crinita</i>
Giant Bur-reed	<i>Sparganium eurycarpum</i>
Gill-over-the-Ground	<i>Glechoma hederacea</i>
Goat's-beard	<i>Tragopogon pratensis</i>
Golden Dock	<i>Rumex maritimus</i>
Golden Ragwort	<i>Senecio aureus</i>
Gooseberry Prickly	<i>Ribes cynosbati</i>
Grass English Rye	<i>Lolium perenne</i>
Grass Hungarian Brome	<i>Bromus inermis</i>
Grass Redtop	<i>Agrostis stolonifera var. major</i>
Grass Sweet Vernal	<i>Anthoxanthum odoratum</i>
Grass Velvet	<i>Holcus lanatus</i>
Gray's Goldenrod	<i>Solidago nemoralis</i>
Great Bulrush	<i>Scirpus validus</i>
Greater Bladderwort	<i>Utricularia vulgaris</i>
Green Amaranth	<i>Amaranthus retroflexus</i>
Green Foxtail	<i>Setaria viridis</i>
Green-fruited Bur-reed	<i>Sparganium chlorocarpum</i>
Ground Cedar	<i>Lycopodium complanatum var. flabelliforme</i>
Hairy Willow-herb	<i>Epilobium hirsutum</i>
Hairy Wood Lettuce	<i>Lactuca hirsuta</i>
Heal-all	<i>Prunella vulgaris</i>
Herb Robert	<i>Geranium robertianum</i>
Highbush Blueberry	<i>Vaccinium corymbosum</i>
Hog Peanut	<i>Amphicarpa bracteata var. bracteata</i>
Honeysuckle Smooth-leaved	<i>Lonicera dioica var. dioica</i>
Hooded Skullcap	<i>Scutellaria lateriflora</i>
Hop Sedge	<i>Carex lupulina</i>
Hops	<i>Humulus lupulus</i>
Horse Balm	<i>Collinsonia canadensis</i>
Horseweed	<i>Conyza canadensis</i>
Indian Hemp	<i>Apocynum cannabinum</i>
Indian-tobacco Lobelia	<i>Lobelia inflata</i>
Jack-in-the-Pulpit	<i>Arisaema triphyllum var. triphyllum</i>
Japanese Knotweed	<i>Polygonum cuspidatum</i>
Jerusalem Artichoke	<i>Helianthus tuberosus var. tuberosus</i>
Joe-Pye-Weed	<i>Eupatorium maculatum</i>
Juniper Low	<i>Juniperis communis var. depressa</i>

Common Name	Scientific Name
King Devil	<i>Hieracium gronovii</i>
Lady-Upland Fern	<i>Athyrium filix-femina</i> var. <i>michauxii</i>
Lambs Quarters	<i>Chenopodium album</i>
Larch European	<i>Larix decidua</i>
Large Crab-grass	<i>Digitaria sanguinalis</i>
Large-flowered Bellwort	<i>Uvularia grandiflora</i>
Large-leaved Aster	<i>Aster macrophyllus</i>
Larger Enchanters Night-shade	<i>Circea quarisulcata</i> var. <i>canadiens</i>
Late Goldenrod	<i>Solidago gigantea</i> var. <i>gigantea</i>
Lesser Swithwort	<i>Stellaria gramimea</i>
Lily-of-the-Valley	<i>Convallaria majalis</i>
Lily-of-the-Valley False	<i>Maianthemum candense</i> var. <i>candense</i>
Live-forever	<i>Sedum telephium</i>
Lizard's Tail	<i>Saururus cernuus</i>
Long-spurred Violet	<i>Viola rostrata</i>
Low Hop Clover	<i>Trifolium procumbens</i>
Loweries Aster	<i>Aster lowrieanus</i>
Maple-leaved Viburnum	<i>Viburnum acerifolium</i>
Marsh Bedstraw	<i>Galium palustre</i>
Marsh Fern	<i>Thelypteris palustris</i> var. <i>pubescens</i>
Marsh Yellow Crest	<i>Rorippa islandica</i>
May-apple	<i>Podophyllum peltatum</i>
Mayweed	<i>Anthemis cotula</i>
Meadow Fescue	<i>Festuca elatior</i>
Mild Water Smartweed	<i>Polygonum hydropiperoides</i> var. <i>hyperpipoides</i>
Mint Curled	<i>Mentha crispa</i>
Monkey Flower	<i>Mimulus ringens</i>
Moonseed	<i>Menispermum canadense</i>
Morrow's Honeysuckle Tartariam	<i>Lonicera morrowii</i>
Motherwort	<i>Leonurus caridiaca</i>
Mouse-ear Chickweed	<i>Cerastium vulgatum</i>
Multiflora Rose	<i>Rosa multiflora</i>
Musk Mallow	<i>Malva moschata</i>
Nannyberry Viburnum	<i>Viburnum lentago</i>
Narrow-leaved Cat-Tail	<i>Typha augustifolia</i>
Narrow-leaved Goldenrod	<i>Solidago graminifolia</i>
Narrow-leaved Meadow-sweet	<i>Spiraea alba</i>
New England Aster	<i>Aster novae-angliae</i>
New York Fern	<i>Thelypterid noveborancensis</i>
Night-flowering Catchfly	<i>Silene noctiflora</i>



Common Name	Scientific Name
Nodding Lady's Tresses	<i>Spiranthes cernua</i>
Nodding Sedge	<i>Carex crinita</i> var. <i>gynandra</i>
Nodding Sticktight	<i>Bidens cernua</i>
Northern White Violet	<i>Viola pallens</i>
Northern Willow-herb	<i>Epilobium ciliatum</i>
Northern Woodland Sedge	<i>Carex leptoneura</i>
Nuttall's Bur-reed	<i>Sparganium americanum</i>
Orchard Grass	<i>Dactylis glomerata</i>
Orchid Helleborine	<i>Epipactis helleborine</i>
Orchids Showy	<i>Orchis spectabilis</i>
Ostrich Fern	<i>Matteuccia struthopteris</i>
Ox-eye Daisy	<i>Chrysanthemum leucanthemum</i>
Pale Touch-me-not	<i>Impatiens pallida</i>
Panicled Dogwood	<i>Cornus stolonifera</i>
Parsnip Water	<i>Sium suave</i>
Partridge-berry	<i>Mitchella repens</i>
Path Rush	<i>Juncus tenuis</i>
Pearly Everlasting	<i>Anaphalis margaritacea</i>
Pennsylvania Smartweed	<i>Polygonum pennsylvanicum</i>
Peppermint	<i>Mentha piperita</i>
Periwinkle	<i>Vinca minor</i>
Philadelphia Fleabane	<i>Erigeron philadelphicus</i>
Pineapple-weed	<i>Matricaria matricarioides</i>
Plantain-leaved Sedge	<i>Carex plantaginea</i>
Plantain-water	<i>Alisma plantago-aquatica</i>
Pointed Broom Sedge	<i>Carex scoparia</i>
Pokeweed	<i>Phytolacca americana</i>
Prickly Lettuce	<i>Lactuca serriola</i> var. <i>serriola</i>
Purple Meadow-rue	<i>Thalictrum dasycarpum</i>
Purple or White Lilac	<i>Syringa vulgaris</i>
Purple-stemmed Aster	<i>Aster puniceus</i>
Pussy-toes	<i>Antennaria neglecta</i> var. <i>neglecta</i>
Quack-grass	<i>Agropyron repens</i>
Queen Anne's Lace	<i>Daucus carota</i>
Red Baneberry	<i>Actaea rubra</i>
Red Clover	<i>Trifolium pratense</i>
Red Currant	<i>Ribes sativum</i>
Red Raspberry	<i>Rosa strigosus</i>
Red Trillium	<i>Trillium erectum</i>
Reddish Bulrush	<i>Scirpus lineatus</i>

Common Name	Scientific Name
Reed Canary Grass	<i>Phalaris arundinacea</i>
Rough Cinquefoil	<i>Potentilla norvegica</i>
Rough-leaved Goldenrod	<i>Solidago patula</i>
Royal Fern	<i>Osmunda regalis</i> var. <i>spectabilis</i>
Rush Tall Scouring	<i>Equisetum hyemale</i> var. <i>psudohyemale</i>
Rush Variegated Scouring	<i>Equisetum variegatum</i>
Rye	<i>Secale cereale</i>
Sensitive Fern	<i>Onoclea sensibilis</i>
Shaggy Mane Mushroom	<i>Coprinus comatus</i>
Shaggy Soldier	<i>Galinsoga ciliata</i>
Sharp-lobed Hepatica	<i>Hepatica acutiloba</i>
Shepherd's Purse	<i>Capsella bursa-pastoris</i>
Shin leaf	<i>Pyrola elliptica</i>
Showy Sunflower	<i>Helianthus laetiflorus</i>
Sickle Sedge	<i>Carex crinita</i> var. <i>crinita</i>
Sidebells Wintergreen (One-sided pyrola)	<i>Orthilia secunda</i>
Silky Dogwood	<i>Cornus amomum</i>
Small Forget-me-not	<i>Mysostis laxa</i>
Small Solomon's Seal	<i>Polygonatum biflorum</i>
Small-flowered Buttercup	<i>Ranunculus abortivus</i>
Smartweed Swamp	<i>Polygonum coccineum</i>
Smooth Aster	<i>Aster laevis</i>
Smooth Rose	<i>Rosa blanda</i>
Smooth Yellow Violet	<i>Viola ericorcarpa</i>
Soft Agrimony	<i>Agrimonia pubescens</i>
Soft Willow-herb	<i>Epilobium strictum</i>
Solomon's Seal, False	<i>Smilacina stellara</i>
Sorrel Sheep	<i>Rumex acetosella</i>
Spearmint	<i>Mentha spicata</i>
Spicebush	<i>Lindera benzoin</i>
Spike-rush Bald	<i>Eleocharis erythropoda</i>
Spinulose Wood Fern	<i>Dryopteris austriaca</i> var. <i>spinulosa</i>
Spiny-leaved Sow-thistle	<i>Sonchus asper</i>
Spotted Touch-me-not	<i>Impatiens biflora</i>
Spring beauty Broad-leaved	<i>Claytonia caroliniana</i>
Spurge Hairy	<i>Euphorbia vermiculata</i>
Squill	<i>Scilla siberica</i> Haw.
Squirreltail Grass	<i>Hordeum jubatum</i>
St. John's Wort, Canadian	<i>Hypericum canadense</i>
Starved Aster	<i>Aster lateriflorus</i>

Common Name	Scientific Name
Stiff Marsh Bedstraw	<i>Galium trifidum var. tinctorium</i>
Straw-colored Cyperus	<i>Cyperus strigosus</i>
Sulphury Cinquefoil	<i>Potentilla recta</i>
Summer Grape	<i>Vitis aestivalis var. aestivalis</i>
Swamp Beggar-ticks	<i>Bidens laevis</i>
Swamp Loosestrife	<i>Decodon verticillatus</i>
Swamp Milkweed	<i>Asclepias incarnata</i>
Sweet Cicely	<i>Osmorhiza berteroi</i>
Sweet-scented Bedstraw	<i>Galium triflorum</i>
Switch-Grass	<i>Panicum virgatum</i>
Tall Goldenrod	<i>Solidago canadensis var. scabra</i>
Tall Meadow Buttercup	<i>Ranunculus acris</i>
Tall Meadow-rue	<i>Thalictrum polygamum</i>
Tall Nettle	<i>Urtica dioica var. procera</i>
Tall White Aster	<i>Aster simplex</i>
Tall Wormwood	<i>Artemisia campestris ssp. Caudata</i>
Thimble-weed	<i>Anemone virginiana</i>
Three-seeded Mercury	<i>Acalypha rhomboidea</i>
Thyme-leaved Speedwell	<i>Veronica serpyllifolia</i>
Tick Trefoil Hoary	<i>Desmodium canescens</i>
Timothy	<i>Phleum pratense</i>
Toothwort Cut-leaved	<i>Dentaria laciniata</i>
Toothwort Two-leaved	<i>Dentaria diphylla</i>
Torrey's Rush	<i>Juncus torreyi</i>
Tradescants Aster	<i>Aster tradescantii</i>
Tree Rowan	<i>Sorbus aucuparia</i>
Tree Shadbush	<i>Amelanchier arborea</i>
Tufted Loosestrife	<i>Lysimachia thrysiflora</i>
Turtlehead	<i>Chelone glabra</i>
Upright Yellow Wood-sorrel	<i>Oxalis stricta</i>
Virginia Creeper	<i>Parthenocissus quinquefolia</i>
Virginia Knotweed	<i>Polygonum virginianum</i>
Virginia Strawberry	<i>Fragaria virginiana</i>
Virginia Wild Rye	<i>Elymus virginicus</i>
Virgins Bower	<i>Clematis virginiana</i>
Wartweed (Spurge)	<i>Euphorbia maculata</i>
Water Cress	<i>Nasturtium officinale</i>
Water Dock	<i>Rumex verticillatus</i>
Water Hemlock	<i>Cicuta maculata</i>
Water Hemlock Bulb-bearing	<i>Cicuta bulbifera</i>

Common Name	Scientific Name
Water Perslane	<i>Ludwigia palustris var. americana</i>
Water Smartweed	<i>Polygonum hydropiper</i>
Water Speedwell	<i>Verbascum thapus</i>
Water-weed	<i>Anarcharis canadensis</i>
White Avens	<i>Geum canadense</i>
White Baneberry	<i>Actaea alba</i>
White Heath Aster	<i>Aster ericoides</i>
White Snakeroot	<i>Eupatorium rugosum</i>
White Sweet Clover	<i>Melilotus alba</i>
White Tall Flat-topped Aster	<i>Aster umbellatus</i>
White Trillium	<i>Trillium grandiflorum</i>
White Wood Aster	<i>Aster divaricatus</i>
White-top Slender	<i>Erigeron annus</i>
Wild Basil	<i>Satureja vulgaris</i>
Wild Bergamot	<i>Monarda fistulosa</i>
Wild Cucumber	<i>Echinocystis lobata</i>
Wild Leek	<i>Allium tricoccum</i>
Wild parsnip	<i>Pastinaca sativa</i>
Wild Sarsaparilla	<i>Aralia nudicaulis</i>
Willow-leaved Aster	<i>Aster praealtus</i>
Witch-grass	<i>Panicum capillare var. campestre</i>
Witch-grass Gattingers	<i>Panicum capillare var. campestre</i>
Witch-grass Spreading	<i>Panicum dichotomiflorum</i>
Woodreed	<i>Cinna arundinacea</i>
Wool Grass	<i>Scirpus cyperinus</i>
Wrinkled Goldenrod	<i>Solidago rugosa var. aspera</i>
Yellow Adder's-tongue	<i>Erythronium americanum</i>
Yellow Hop Clover	<i>Trifolium agrarium</i>
Yellow Iris	<i>Iris pseudacorus</i>
Yellow Nut Grass	<i>Cyperus esculentus</i>
Yellow Sedge	<i>Carex flava</i>
Yellow Sweet-clover	<i>Melilotus officinalis</i>
Zigzag Goldenrod	<i>Solidago flexicaulis</i>

## Appendix E



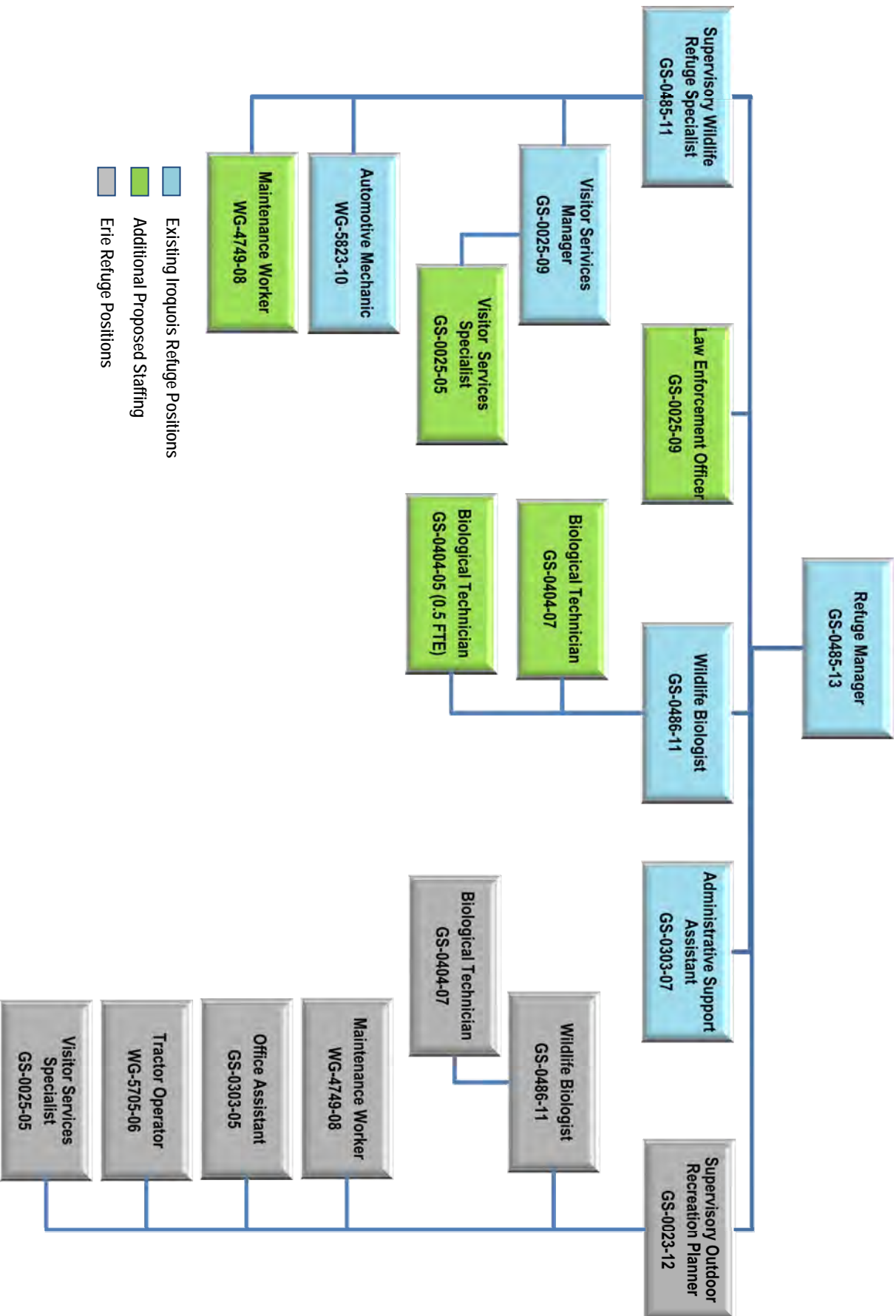
USFWS

*Swallow Hollow Kiosk*

## Staffing Chart

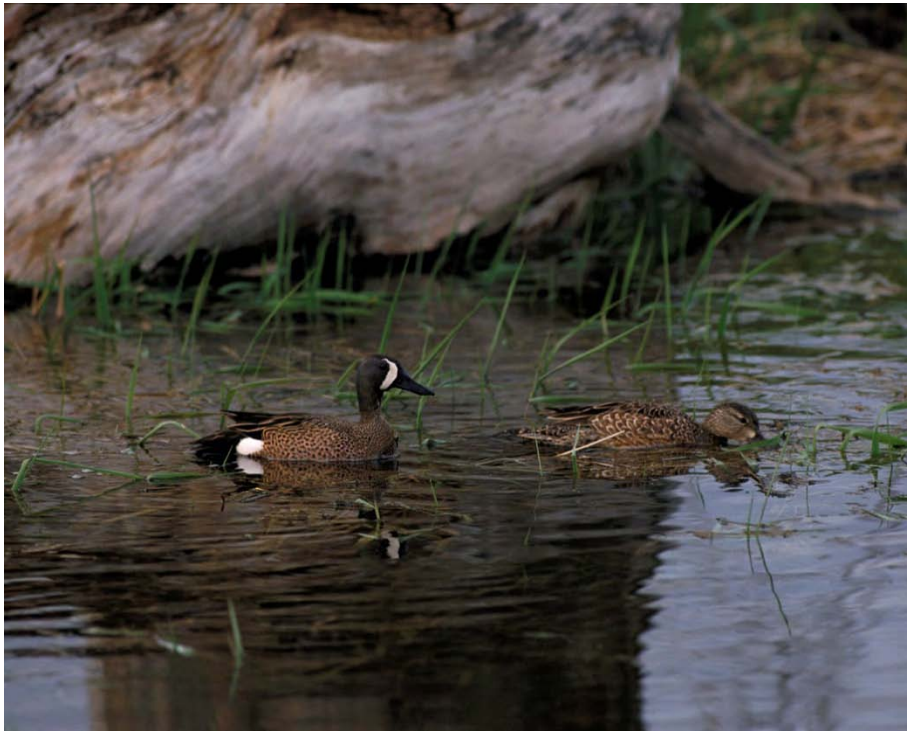
# Iroquois and Erie National Wildlife Refuges

## Staffing According to National Staffing Model



- Existing Iroquois Refuge Positions
- Additional Proposed Staffing
- Erie Refuge Positions

## Appendix F



USFWS

*Blue-winged Teal*

# Refuge Operating Needs (RONS) & Service Asset Maintenance Management Systems (SAMMS)

- RONS Projects
- SAMMS Projects

**Table F.1. Budget and Refuge Operations Needs System (RONS) Projects for Iroquois National Wildlife Refuge**

Refuge Rank	Project No.	Project Description	Staffing (FTE*)	Costs <i>(in thousands of dollars)</i>		
				Total First Year	One-Time Costs	Recurring Base
		Current Staffing (FY 2010)	6			\$490
		Current Management Capability (FY 2010)				\$181
1	3473	Provide Resource, Facility and Visitor Protection (Law Enforcement)	1			
2	3781	Maintain Mission Critical Habitat Structures and Facilities	1	\$150		\$150
3	3784	Conduct Monitoring of Migratory Bird Species Of Concern	1	\$78		\$78
4	4722	Implement Invasive Species Plant Control Measures		\$80		\$80
5	3953	Conduct Wetland Habitat Monitoring for Breeding Marsh Birds	0.5	\$56	\$20	\$18
6	3871	Implement Visitor Services Programs	1	\$28		\$28
7	5062	Assess Refuge Conservation Easements		\$65		\$65
8	3726	Enhance 1,073 acres of Refuge Warm and Cool Season Grasslands				
9	4701	Establish Visitor Contact Station Trail		\$76	\$40	\$18
		Bathymetry		\$53	\$30	\$5
		Flora and Fauna Inventory of Rare Communities		\$10	\$10	
		Complete Evaluation of Outreach Techniques Effectiveness		\$25	\$25	
SAMMS		Standard Design Refuge Visitor Contact Station and Administration Building		\$10	\$10	
		Develop a Comprehensive GIS Wildlife and Habitat Database		\$3,500		\$50
SAMMS		Oneida - Mohawk Pool Restoration Project		\$113	\$75	\$20



Refuge Rank	Project No.	Project Description	Staff (FTE*)	Costs (in thousands of dollars)		
				Total First	One-Time	Recurring Base
		Feasibility and Removal of Northeast Seneca Pool Dike		\$750		\$10
		Develop a Index of Biological Integrity for Oak Orchard Creek		\$93	\$70	\$5
		Complete Forest Resources Assessment and Establish Long Term Forest Vegetation Monitoring Program		\$25	\$25	
		Restoration of Conifer Plantations to Native Forest Communities		\$68	\$25	\$25
		Restoration of Conifer Plantations to Native Shrub Communities		\$80	\$20	\$45
		Contract Refuge Visitor Demographics Study		\$48	\$25	\$5
		Revamp Visitor Services Exhibits		\$25	\$25	
		Develop an Accessible Photo/Hunting Blind		\$180	\$175	\$5
		Develop One Canoe Launch Site		\$77	\$75	\$2
		Develop and Accessible Fishing Pier		\$85	\$80	\$5
		Partners for Wildlife Program and Easement Management		\$55	\$50	\$5
<b>Totals</b>				<b>\$5,780</b>	<b>\$800</b>	<b>\$50</b>

\* FTE = Full-time equivalency

**F.2.Service Asset Maintenance Management Systems (SAMMS) projects for Iroquois National Wildlife Refuge**

<b>Project No.</b>	<b>Project Title*</b>	<b>Costs (\$1,000)</b>	<b>Refuge Rank</b>
<b>EXISTING FACILITIES</b>			
2005219253	Rehab Feeder Road (Rte 100)	\$5.0	4
2005219282	Rehab Cayuga Parking Area (Rte 901)	\$5.0	4
2005219311	Rehab Sour Spring North Parking Area (Rte. 906)	\$5.0	4
2005219613	Rehab HQ Parking Area (Rte. 900)	\$5.0	4
2005219635	Rehab Sour Spring South Parking Area (Rte. 908)	\$5.0	4
2005219651	Rehab Mallard Overlook Parking Area (Rte. 905)	\$5.0	4
2005219664	Rehab Schoolhouse Overlook Parking Area (Rte. 904)	\$5.0	4
2005219689	Rehab Onondaga Parking Area (Rte. 907)	\$5.0	4
2005219721	Rehab Ringneck Overlook Parking Area (Rte. 903)	\$5.0	4
2005219724	Rehab Kanyoo Parking Area (Rte. 902)	\$5.0	4
2005220882	Rehab Feeder Road (Rte 100) FHWA	\$240.0	4
2005220883	Rehab Cayuga Parking Area (Rte 901)	\$17.5	4
2005220887	Rehab Sour Spring North Parking Area (Rte. 906)	\$17.5	4
2005220889	Rehab HQ Parking Area (Rte. 900)	\$17.5	4
2005220890	Rehab HQ Parking Area (Rte. 900) FHWA	\$17.5	4
2005220891	Rehab Sour Spring South Parking Area (Rte. 908)	\$17.5	4
2005220893	Rehab Mallard Overlook Parking Area (Rte. 905)	\$17.5	4
2005220894	Rehab Mallard Overlook Parking Area (Rte. 905) FHWA	\$17.5	4
2005220895	Rehab Schoolhouse Overlook Parking Area (Rte. 904)	\$17.5	4
2005220896	Rehab Schoolhouse Overlook Parking Area (Rte. 904) FHWA	\$17.5	4
2005220897	Rehab Onondaga Parking Area (Rte. 907)	\$17.5	4
2005220899	Rehab Ringneck Overlook Parking Area (Rte. 903)	\$17.5	4
2005220901	Rehab Kanyoo Parking Area (Rte. 902)	\$17.5	4
2005225063	Rehab Feeder Road (Rte 100)	\$5.0	4
2005225064	Rehab Feeder Road (Rte 100) FHWA	\$5.0	4
2005225065	Rehab Cayuga Parking Area (Rte 901)	\$5.0	4
2005225066	Rehab Cayuga Parking Area (Rte 901) FHWA	\$5.0	4
2005225069	Rehab Sour Spring North Parking Area (Rte. 906)	\$5.0	4
2005225070	CE Rehab Sour Spring North Parking Area (Rte. 906) FHWA	\$5.0	4
2005225071	Rehab HQ Parking Area (Rte. 900)	\$5.0	4
2005225072	Rehab HQ Parking Area (Rte. 900) FHWA	\$5.0	4

<b>Project No.</b>	<b>Project Title*</b>	<b>Costs (\$1,000)</b>	<b>Refuge Rank</b>
2005225073	Rehab Sour Spring South Parking Area (Rte. 908)	\$5.0	4
2005225074	Rehab Rehab Sour Spring South Parking Area (Rte. 908) FHWA	\$5.0	4
2005225075	Rehab Mallard Overlook Parking Area (Rte. 905)	\$5.0	4
2005225077	Rehab Mallard Overlook Parking Area (Rte. 905)	\$5.0	4
2005225078	Rehab Schoolhouse Overlook Parking Area (Rte. 904)	\$5.0	4
2005225079	Rehab Schoolhouse Overlook Parking Area (Rte. 904) FHWA	\$5.0	4
2005225080	Rehab Onondaga Parking Area (Rte. 907)	\$5.0	4
2005225081	Rehab Onondaga Parking Area (Rte. 907) FHWA	\$5.0	4
2005225082	Rehab Ringneck Overlook Parking Area (Rte. 903)	\$5.0	4
2005225083	Rehab Ringneck Overlook Parking Area (Rte. 903)	\$5.0	4
2005225084	Rehab Kanyoo Parking Area (Rte. 902)	\$5.0	4
2005225085	Rehab Kanyoo Parking Area (Rte. 902) FHWA	\$5.0	4
2009957056	Rehab Feeder Road (Rte 100) FHWA	\$35.0	4
2009957057	Rehab Cayuga Parking Area (Rte 901) FHWA	\$5.0	4
2009957058	Rehab Sour Spring North Parking Area (Rte. 906) FHWA	\$5.0	4
2009957059	Rehab HQ Parking Area (Rte. 900) FHWA	\$5.0	4
2009957060	Rehab Rehab Sour Spring South Parking Area (Rte. 908) FHWA	\$5.0	4
2009957061	Rehab Mallard Overlook Parking Area (Rte. 905) FHWA	\$5.0	4
2009957062	Rehab Schoolhouse Overlook Parking Area (Rte. 904) FHWA	\$5.0	4
2009957063	Rehab Onondaga Parking Area (Rte. 907) FHWA	\$5.0	4
2009957064	Rehab Ringneck Overlook Parking Area (Rte. 903) FHWA	\$5.0	4
2009957065	Rehab Kanyoo Parking Area (Rte. 902) FHWA	\$5.0	4
03126457	Rehabilitate Headquarters Building	\$73.0	11
87104129	Rehabilitate Visitor Center Fixed Displays	\$175.0	26
88104146	Rehabilitate Shallow Hollow Dike	\$68.5	33
90104141	Rehabilitate Dike and Oneida Pool Dam #5	\$39.0	34
2009943696	Remove Deteriorated Quarters #1 Garage	\$5.0	36
87104139	Remove Deteriorated Quarters #1	\$27.0	36
00104133	Rehabilitate Onondaga Trail	\$45.0	37
90104144	Rehabilitate Seneca Pool Flap Gate	\$79.0	41
01112808	Rehabilitate Quarters 152	\$26.0	63
2006553897	Replace Roof on Oil/Grain Shed	\$3.6	
2007729104	Rehabilitate Cayuga Pool Dike 52540	\$5.8	
2007729106	Rehabilitate County Line Dike Surface 52540	\$6.2	

<b>Project No.</b>	<b>Project Title*</b>	<b>Costs (\$1,000)</b>	<b>Refuge Rank</b>
2007729116	Rehabilitate Seneca Pool Dike Surface 52540	\$8.9	
2007729154	Rehabilitate Sutton's Marsh Dike Surface 52540	\$2.8	
2007729165	Rehabilitate Ringneck Marsh Dike Surface 52540	\$4.1	
2007729168	Rehabilitate Center Marsh Dike Surface 52540	\$4.4	
2007729171	Rehabilitate Oneida Pool Dike Surface 52540	\$5.6	
2007729176	Rehabilitate Mohawk Pool Dike Surface - North 52540	\$4.0	
2007729187	Rehabilitate Mohawk Pool Dike - West 52540	\$2.0	
2007729192	Rehabilitate Mohawk Pool Dike - East (child)	\$7.5	
2007729197	Rehabilitate Olsen Marsh Dike Surface 52540	\$1.6	
2007729242	Rehabilitate Caldwell's Folly Dike Surface 52540	\$1.1	
2007729250	Rehabilitate Schoolhouse Marsh Dike Surface 52540	\$1.7	
2007729257	Rehabilitate Galaxie Marsh Dike Surface - South 52540	\$0.6	
2007729259	Rehabilitate O'Brien Marsh Dike Surface 52540	\$0.9	
2008864022	Replace Water Control Structure U Cayuga Pool	\$25.4	
2008864535	Replace Building Storage Williams Barn	\$317.0	
2009945530	Rehabilitate Visitor Contact Building	\$750.0	
2009957069	Swallow Hollow Parking FHWA	\$0.0	
<b>Total</b>		<b>\$2,370.7</b>	

## Appendix G



USFWS

*Bald Eagle*

# Intra-Service Section 7 Biological Evaluation Form

duplicate

**INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM**

**Originating Person:** Thomas P. Roster  
**Telephone Number:** 585-948-5445  
**Date:** March 03, 2011

**I. Region:**  
Region 5 (Northeast)

**II. Service Activity (Program):**  
The U.S. Fish and Wildlife Service, Region 5, Iroquois National Wildlife Refuge (INWR) has prepared a Comprehensive Conservation Plan (CCP), a document required under the National Wildlife Refuge System Improvement Act of 1997. The CCP provides a framework for guiding refuge management decisions for the next 15 years. All aspects of refuge management, including habitat and public use management, are outlined in the CCP.

**III. Pertinent Species and Habitat:**

**A. Listed species potentially present within the action area:**

None. Bald eagles (*Haliaeetus leucocephalus*) nest on the refuge but have been delisted. Other Federally-designated endangered and threatened species known to occur, or to have occurred, in Genesee and Orleans Counties (see attached species occurrence information) are not known to currently occur on INWR.

**There is no Federally-designated critical habitat within the action area.**

**B. Proposed species and/or proposed critical habitat within the action area**  
None

**C. Candidate species within the action area:**  
None

**D. Include species/habitat occurrence on a map.**  
N/A

**IV. Geographic area or station name and action:**  
Iroquois National Wildlife Refuge, Genesee and Orleans Counties, New York. Comprehensive Conservation Plan.

**V. Location:**  
Maps are found in Chapters 1, 3, and 4 of the CCP.

**A. Ecoregion Number and Name:**  
Lower Great Lakes Plain

**B. County and State:**  
Genesee and Orleans Counties, New York

**C. Section, township, and range (or latitude and longitude):**

Alabama and Shelby townships. The Refuge headquarters is located at latitude 43 degrees, 6'44" and longitude -78 degrees, 24'18" (plus or minus 16' GPS error).

**D. Distance (miles) and direction to nearest town:**

The Refuge is 1 mile north of Alabama, New York.

**E. Species/habitat occurrence:**

No federally listed endangered species are known to occur on the Refuge. For many years the bald eagle was the primary endangered species upon which the Refuge focused its efforts. Due to successful conservation efforts, the bald eagle is now listed in the least concern category. Two active eagle nests currently occur on the Refuge, and two more nests occur on the nearby Tonawanda and Oak Orchard State Wildlife Management Areas.

The Karner blue butterfly was listed as Federally-endangered in 1992. Its historical range included savanna/barren ecosystems in 12 states from Minnesota to Maine and in the province of Ontario. The lupine flower is a critical component for Karner blue habitat. Lupines grow primarily on sandy soils within oak and pine savanna/barrens communities. In New York, the Karner blue butterfly was once common. The Tonawanda Potential Recovery Unit is one of two units that could form a geographic connection between eastern and western populations (USFWS 2003). Iroquois NWR and Oak Orchard WMA are also being considered for Karner blue reintroduction if a minimum of 100 acres of suitable habitat can be developed. Planting of lupines on the Refuge and Oak Orchard began in 1995-96. For more information and details, please refer to chapter 3, "Refuge Resources" of the CCP.

**VI. Description of proposed action (attach additional pages as needed):**

The proposed actions are described in and alternatives selected by the Service are described in Chapter 4 of the CCP. This Section 7 consultation does not release INWR from any future Section 7 consultation requirements. If any listed species are discovered on INWR in the future, a Section 7 consultation will be conducted on any action that has an effect on a listed species, not just actions that have the potential to negatively affect a listed species.

**VII. Determination of effects:**

**A. Explanation of effects of the action on species in item III:**

None.

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

N/A.

**VIII. Effect determination and response requested: [\* = optional]**

**A. List species/designated critical habitat:**

<u>Determination</u>	<u>Response requested</u>
No effect/No adverse modification	<u>  </u> * <u>  </u> Concurrence
May affect, but is not likely to adversely affect species/adversely modify critical habitat	<u>  </u> Concurrence

May affect, and is likely to adversely affect  
species/adversely modify critical habitat

\_\_\_\_ Formal Consultation

  
Signature \_\_\_\_\_ Date 5/4/2011

[Title/office of supervisor at originating station]

IX. Reviewing ESO Evaluation:

A. Concurrence  Nonconcurrency \_\_\_\_\_

B. Formal consultation required \_\_\_\_\_

C. Conference required \_\_\_\_\_

D. Informal conference required \_\_\_\_\_

E. Remarks (attach additional pages as needed):

  
Signature \_\_\_\_\_ Date 5/23/2011

[Title/office of reviewing official]



**Federally Listed Endangered and Threatened Species and Candidate Species**

**Genesee and Orleans Counties, New York**

This list represents the best available information regarding known or likely County occurrences of Federally-listed and candidate species and is subject to change as new information becomes available.

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Bald eagle <sup>1</sup>	<i>Haliaeetus leucocephalus</i>	D (G, O)
Bog turtle ( <i>Historic</i> )	<i>Clemmys [=Glyptemys] muhlenbergii</i>	T (G,O)
Eastern massasauga	<i>Sistrurus catenatus catenatus</i>	C (G)
Eastern prairie fringed orchid ( <i>Historic</i> )	<i>Platanthera leucophea</i>	T (G,O)
Houghton's goldenrod	<i>Solidago houghtonii</i>	T (G)

Status Codes: E=Endangered, T=Threatened, P=Proposed, C=Candidate, D=Delisted.

G=Genesee County, O=Orleans County

<sup>1</sup> The bald eagle was delisted on August 8, 2007. While there are no ESA requirements for bald eagles after this date, the eagles continue to receive protection under the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), and by the New York State Department of Environmental Conservation (Status: Threatened). INWR will continue to follow the Service's May 2007 Bald Eagle Management Guidelines to avoid impacts under BGEPA for all projects. Information current as of: 3/23/2010



## Appendix H



David Westphalen/Painet Inc.

*Bobcat*

# Summary of Response to Public Comments

## **Appendix H**

### **Summary of Public Comments and Service Responses on the Draft Comprehensive Conservation Plan and Environmental Assessment for the Iroquois National Wildlife Refuge**

#### **Introduction**

In September 2010, we completed the “Iroquois National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment” (draft CCP/EA). That draft refuge plan outlines three alternatives for managing the refuge over the next 15 years, and identifies alternative B as the “Service-preferred alternative.” We released the draft plan for 30 days of public review and comment from October 4 to November 3, 2010.

We evaluated all letters and e-mails sent to us during the comment period, along with comments recorded at our two public meetings. This document summarizes those comments and provides our responses to them. Based on our analysis in the draft CCP/EA, and our evaluation of comments, we modified alternative B, and recommended it to our Regional Director for implementation. It is that modified alternative B which is detailed in this CCP. Our modifications include additions, corrections, or clarifications of our preferred management actions. We have also determined that none of these modifications warrants publishing a revised or amended draft CCP/EA before publishing the CCP.

These are some of the changes we made:

- We adjusted the unrestricted off-trail use timeframe to incorporate times of the year we feel are in line with other activities on the refuge. This will permit off-trail use on the refuge from October 1 to the end of February.
- We recommended opening the refuge to fall turkey hunting, consistent with NYSDEC regulations.
- We adjusted the spring turkey season permit numbers and dates.

Our Regional Director will either select our modified alternative B for implementation, or one of the other two alternatives analyzed in the draft CCP/EA, or a combination of actions from among the three alternatives. It will be determined whether a Finding of No Significant Impact (FONSI) is justified prior to finalizing the decision. The decision will be made after:

- Reviewing all the comments received on the draft CCP/EA, and our responses to those comments; and,
- Affirming that the CCP actions support the purpose and the need for the CCP, the purposes for which the refuge was established, help fulfill the mission of the Refuge System, comply with all legal and policy mandates, and work best toward achieving the refuge’s vision and goals.

Concurrent with release of the approved CCP, we are publishing a notice of the availability in the *Federal Register*. That notice will complete the planning phase of the CCP process, and we can begin its implementation phase.

#### **Summary of Comments Received**

During the comment period, 44 letters were received, including letters from five organizations:

- New York State Department of Environmental Conservation
- New York State Office of Parks, Recreation and Historic Preservation
- New York State Chapter of the National Wild Turkey Federation
- Finger Lakes and Western New York Waterfowl Association

- Friends of Iroquois National Wildlife Refuge, Inc.

Additionally two public meetings were held at Iroquois National Wildlife Refuge on October 20, 2010. Comments from meeting attendees were recorded and are also addressed in this summary.

In the discussion below we address all substantive comments received. In our responses, we may refer the reader to other places in the document where we address the same comment. Directly beneath each subject heading, you will see a list of unique letter ID numbers that correspond to the person, agency or organization that submitted the comment. The cross-reference list appears at the end of this appendix. A large majority of the letters received commented on the restriction of just wandering through the refuge, as well as how we manage the hunting season for spring turkey. Multiple members of the following groups submitted comments: Iroquois Observations, Buffalo Ornithological Society, and Friends of Iroquois National Wildlife Refuge, Inc.

In several instances, we refer to specific text in the draft CCP/EA, and indicate how the CCP was changed in response to comments. There are options available for obtaining the full version of either the Draft CCP/EA or the CCP.

They are available online through a link at the refuge's Web site (<http://www.fws.gov/northeast/iroquois/>) or the Region 5 CCP Web site (<http://www.fws.gov/northeast/planning/refugeccps.html>).

For a CD-ROM or a print copy, contact the refuge headquarters at:

Iroquois National Wildlife Refuge  
1101 Casey Road  
Basom, New York 14013  
Phone: (585) 948-5445  
Email: [northeastplanning@fws.gov](mailto:northeastplanning@fws.gov)

## **Planning and Public Involvement**

### NEPA policy (Letter ID# 1)

- The Service would be “... in violation of NEPA by doing an EA instead of EIS.”
  - NEPA states that an Environmental Impact Statement (EIS) is required when certain actions “significantly affect the quality of the human environment”. An EA, under the regulations of the Council on Environmental Quality, is defined as a concise document briefly providing enough evidence and analysis to determine whether an EIS is necessary. The deciding official must examine the analysis and determine whether she can make a finding of no significant impact or if an EIS is necessary.

### Comment period (Letter ID# 4, 10, 11, 15, 19, 20, 23, 24, 30, 32, 35,)

- Unaware of actions being proposed, and suggested that an extension of the comment period would be appropriate. (10) Another commenter said that a thirty-day review and comment period is inadequate for such a large document.
  - We believe the time allowed for the public comment period on this plan not only meets legal and policy requirements and guidelines, but was an adequate time for most to provide comment.

## **Document (Clarity, Technical, Editorial, Availability)**

### Creek Walk (Letter ID# 2)

- A commenter wondered if there were different spots where people can get out of a canoe, or if there is a nature trail from Knowlesville/East Shelby Road (on east end) to Route 63 (on west end).
  - The refuge currently allows non-motorized boating in Oak Orchard Creek, from Knowlesville Road to Route 63. Currently, there are no nature trails along the creek. Boaters may exit their boats to get over and around obstructions in the creek, but must otherwise stay in their boats. The interpretive trail that was mentioned for Oak Orchard Creek was on page 2-125 in alternative C of Goal 4. This would have been a water trail which would still require visitors to stay in their non-motorized boat while on the Creek.

### Deer hunting (Letter ID# 2)

- A commenter wanted to know the source of hunting figures used in the plan, believing that actual numbers are lower.
  - All deer hunting figures included in the CCP were calculated from daily hunt permits and reports received from deer hunters accessing the refuge. Each hunter was required to obtain a daily permit prior to going afield and was required to return a daily hunt report prior to leaving the refuge. These figures represent the minimum number of hunter visits to the refuge; thus, the actual number may be even higher.

### The Nature Conservancy – Migratory Stopover Project (Letter ID# 4)

- The “Migratory Stopover Project” was not mentioned.
  - This is not a Service sponsored project. There are many projects like this, initiated by other organizations, that would be too numerous to mention. The refuge cooperates with many organizations to assist in these types of projects and will continue to do so as long as it contributes to the purpose of the refuge. The refuge has provided access to The Nature Conservancy and Audubon New York to conduct their surveys as part of the Migratory Stopover Project. We intend to continue to provide access until completion of the project.

Turkey hunting (Letter ID# 8)

- The Finger Lakes and Western New York Waterfowl Association (FLWNYWA) commented that “the plan states that Iroquois does not have the proper habitat for turkeys and that the population is not high. No population figures or habitat assessment are provided to substantiate these statements and it appears they were made up to justify the proposed reduction in opportunity.”
  - The draft plan actually stated that “relative to many areas in New York State, Iroquois NWR does not have a large population of wild turkeys nor the habitat to support them”. This statement seems appropriate given that over half of the refuge is under water during much of the year, effectively making it unavailable for wild turkeys. Additionally, New York State only provides a two week fall season (the shortest season in the state outside of Long Island) in the area around the refuge, suggesting that turkeys in this area cannot sustain harvest levels similar to other areas in the state. Furthermore, the spring and fall turkey harvest in Genesee and Orleans Counties are amongst the lowest in the state. The population and habitat information originally presented in the draft CCP/EA is not germane to the turkey season discussion, and has been removed from the final document.

Change process (Letter ID# \*, 38, 39)

- \* Is the plan subject to change after it is finalized?
- With uncertainties involved, there should be some mention of the change process from the Regional Office in the plan itself.
  - Through adaptive management, evaluation of monitoring and research results may indicate the need to modify refuge objectives or strategies. Therefore, the CCP will be reviewed by refuge staff at least annually to decide if it requires any revisions. The refuge will modify the plan and associated management activities whenever this review or other monitoring and evaluation determine that we need changes to achieve the refuge’s purpose, vision, and goals.

The CCP will also be revised when significant new information becomes available, ecological conditions change, or when we identify the need to do so during the plan review. This should occur every 15 years or sooner, if necessary. All plan revisions will follow the procedures outlined in this CCP for preparing plans and will require NEPA compliance, including opportunity for public input. If there are minor plan revisions that meet the criteria of a categorical exclusion in an Environmental Action Statement, in accordance with 550 FW 3.3C, the plan will not have to go through the NEPA process again. However, if the plan requires a major revision, then the CCP process starts anew at the preplanning step.

Notification (Letter ID# \*)

- How does the public stay involved with the refuge in the future?
  - The refuge headquarters is open Monday through Friday from 7:30 a.m. to 4:00 p.m., except on holidays. The refuge also maintains a Web site where information is updated regularly: <http://www.fws.gov/northeast/iroquois/index.html>
  - The public can send written correspondence to:
    - Iroquois National Wildlife Refuge
    - 1101 Casey Road
    - Basom, NY 14013
    - [iroquois@fws.gov](mailto:iroquois@fws.gov)

- Additionally, folks can keep up to date with what is happening at the refuge through the Friends of Iroquois NWR, Inc. organization, or participate in volunteer activities through the year.

**Lack of scientific information for disturbance to migratory birds** (Letter ID# \*, 8, 10)

- One commenter asked “What is the conflict between turkey hunters and neotropical migrants in the spring?”
- FLWNYWA believes that citing conflict with nesting songbirds as a reason for proposed reductions in hunting opportunities is not credible, and that no factual support is provided. FLWNYWA is unaware of any technical reports tying human disturbance directly to the drop in neotropical migrant populations.
- The National Wild Turkey Foundation (NWTF) disagrees with the description of potential conflicts to nesting birds and foraging warblers provided on page 2-86. They note that while much of the draft CCP has been developed by USFWS staff using sound science, the draft falls short with regards to descriptions of potential conflicts caused by spring turkey hunting activities.
  - The disturbance to wildlife as a result of public recreation is well documented in the scientific literature. Regardless of the type of recreation, humans entering wildlife habitat disturb wildlife to some degree. We agree that there are no published studies that specifically link turkey hunting to bird disturbance and furthermore, we know of no attempts to gather those data. We felt it was appropriate to move the discussion of wildlife disturbance to an earlier section of the document where it better reflects the potential disturbance caused by all types of public recreation and not any one specific activity.

**Staffing**

Increased staff (Letter ID# 4, 7, 11, 23, 35, 36, 38, 39, 43)

- Some commenters support the planned addition of 4.5 people to the refuge staff. (7)
- One commenter suggested the refuge “deputize people for hunting season” to help provide enforcement.
  - Deputizing people during the hunting season is not an allowable practice in the state of New York or on a national wildlife refuge. We recognize that other states use this as a means to have additional law enforcement individuals available; however, the Service has been moving to increase the number of permanent full-time officers and even reduce the number of “collateral” or “dual function” officers. These are employees that have law enforcement authority, but primary duties might be in management, biology, or visitor services. One of the additional staff members proposed in the plan will be a full-time law enforcement officer.

**Refuge facilities**

Occupation by non-Federal entities (Letter ID# 1)

- A commenter objects to the friends group occupying space in a building that is federally funded, and objects to NYSDEC occupying a building that is federally funded.
  - The National Wildlife Refuge System Act allows us to develop partnerships and contracts for accommodations that are not inconsistent with the purpose of the refuge. Both entities are under a partnership agreement indicating the relationship and partnership. The collaboration between the refuge and NYSDEC and Friends of Iroquois NWR, Inc. for the betterment of stewardship, conservation and the management of the refuge are so frequent in nature that having both entities in the same building as refuge staff is extremely beneficial to the Refuge System.

New refuge headquarters and office building (Letter ID# 3, 4, 11, 24, 32, 38, 39, 42, 43)

- A commenter noted that a “larger building for visitors and administration is a must. The current building is out dated and too small” and several commenters strongly support the plan to construct a new headquarters/visitor contact facility at the site of the current building.
- One commenter likes the idea of having a wind turbine and improving the facility.
- One commenter suggested that when a new building and landscaping is completed, that enough area is mowed and maintained through a contractor to make it “look like a first class refuge.”
  - We agree that having safe, modern, and energy efficient facilities will help support the visitors that come to the refuge, and we expect all new facilities and grounds to be well maintained to Service requirements.

Waterfowl Check Station (Letter ID# 3)

- A commenter would like to see the Waterfowl Check Station improved, including an indoor restroom and using environmentally friendly technology to help reduce energy costs.
  - The refuge will strive to provide up to date facilities to be used by the visiting public. Green technologies and energy reducing functions will continue to be investigated. These items will be explored during any future renovation work that might be done on the waterfowl check station.

Contaminants (Letter ID# 40)

- A commenter suggested we monitor DDT buried off Roberts Road.
  - In 1996, the pesticide burial site in question was completely remediated, and all contaminated materials that were removed from the site were properly disposed. In 1997, monitoring of the water table was completed. Trees, shrubs and grasses were then planted to complete the restoration.

**Alternatives**

- Comments ranged in support of alternative A, alternative B, and alternative B with modifications. The New York State Historic Preservation Office (SHPO) supports alternative B, but also recommends that any future undertakings in the refuge that require ground disturbing activities are fully assessed against the previously completed SJS Archaeological Services study.
  - The SHPO will be consulted in the future when we plan any ground disturbing activities.

Goal 6 (Letter ID# \*, 4, 11, 32, 38, 39, 43)

- Enhanced volunteer support would be positive action as more dedicated volunteers are needed for day to day activities. (2) Continued support of the Friends of Iroquois NWR would be a very positive thing. The group is dedicated to helping the refuge attain its goals from both a financial and a manpower perspective. (2)
- Accommodations for people with disabilities are justified and will help to build visitation for the future.
  - The refuge intends to provide enhanced volunteer support, continued support for the Friends of Iroquois NWR and accommodations for those with disabilities to help build visitation. The strategies outlined in Goals 4-6, show how the refuge plans to accomplish these specific achievements.

**Nature trails**

No pets on nature trails (Letter ID# 4)

- All nature trails need to be designated “No Pets Allowed” with substantive signage that states penalty.



- As stated in our Compatibility Determination for Walking and Hiking: “Dogs are allowed on all designated trails while on a leash of 10 feet or shorter in length and under the control of their owner.” We understand that individuals find solitude in walking their pets on the refuge, and as long as the dogs are controlled from free running or disturbing other visitors, we feel that this use can continue.

#### Closing Onondaga Trail to hunting (Letter ID# 2, 4, 9, 11, 15, 32, 36, 37, 38, 39, 43)

- Comments ranged in support of closing the Onondaga Trail to hunting, to keeping it open. Specific comments focused on closing it to hunting to be consistent with other refuge nature trails (6); keeping it open during the deer season; restricting access to the Onondaga Trail during hunting season as a necessary measure for habitat preservation; keeping it open for bow, gun and muzzleloader; and limited to hunting only October 1 to December 21.
- One commenter wondered why should hunters lose other sections of woods when hunters only use it a couple of months out of the year, and there are other trails already setup for walking and hiking. Appropriate signage should be sufficient for safety.
  - The closing of Onondaga Trail will allow the refuge to manage all refuge trails in the same consistent manner. Closing Onondaga Trail for hunting access will not significantly reduce hunting opportunities on the refuge. We believe that there is adequate access to the non-trail portion of this area from both the south, via refuge access road, and from the north between the trail and Oak Orchard Creek. Once regulations are put into effect, the refuge will improve no hunt zone signs around Onondaga Trail and also improve hunter access from the south.

#### Make Onondaga a loop trail (Letter ID# 2, 4, 11, 23, 30, 32, 35)

- A circle walking path might be more used for activities like walking, cross country skiing, etc.
- Some commenters would support construction of a loop trail addition on the east end of Onondaga Trail to provide access to the heart of Oak Orchard Swamp (6)
  - We do not feel it is feasible at this time to make Onondaga Trail a loop trail. The refuge already has several loop trails that can be accessed for walking, and we are proposing a new trail that begins at the refuge visitor contact station.

#### Addition of office trail (Letter ID# 3, 4, 7, 11, 23, 30, 32, 35, 38, 39, 42)

- Many commenters support the plan to open a trail behind refuge headquarters and create an overlook (9); and another commenter noted that a new trail is well needed, and should be in an area with multiple land habitats which could be used by many, especially education groups and school field trips.
  - A new trail proposed behind the refuge headquarters will give our visitors another way to observe wildlife and their habitats at the refuge as well as groups that come to the refuge’s visitor contact station for programs.

### **Wildlife Observations**

#### Fees (Letter ID# 9, 24, 34, 36, 38, 39)

- Some commenters suggested that fees (and/or permits) could be implemented to curb unwanted activities. These comments include: If collection of recreation fees is necessary, it needs to be established for all users on the refuge and not just a select few; if numbers of roaming visitors requires limiting, then permits should be issued for it; the refuge should look into a bird watcher or walkers permits, or maybe a lottery system; the first step should be to keep track of the how many people really go off trail, and then limit it if needed; and an annual fee to hunt on the refuge would be appropriate, as hunting takes things away from the refuge and causes litter, damage to property and holes in signs (2).

- Consider offering some permits to non-hunters to enter the refuge during the non-breeding season;
- Every refuge user should be required to have a valid Duck Stamp.
  - Normally, national wildlife refuges are not open to visitors to just wander refuge lands, unless it is associated with consumptive uses like hunting, or regulated through a Special Use Permit. Compatibility determinations are done for all uses on refuges to address impacts to refuge lands and resources, as well as to put restrictions on areas or timing of year to not interfere with the purpose for which the refuge was established. Special Use Permits are required to access lands that are not associated with areas already open to the public like trails and overlooks. The refuge has adjusted its recommendation from the draft CCP of no unrestricted access of refuge lands year-round to allowing unrestricted access for non-consumptive uses, like wildlife observation and wildlife photography, during the same time of year that most consumptive uses are allowed to take place; October 1 to the end of February. However, this would be for refuge uplands only, as refuge wetlands would be closed year-round unless authorized through a refuge permit.
  - Currently, only waterfowl and spring turkey hunters are charged a fee. This fee is used to offset the refuge's administrative costs of conducting the activities. In the future, we may propose a fee and/or a quota hunt for the deer season if we deem it necessary to help manage the hunt more effectively and safely. The refuge encourages everyone that uses the refuge to buy and possess a Duck Stamp. Duck Stamp proceeds are used to help acquire additional refuge lands or wetlands.

#### Highway 63 viewing area (Letter ID# 2)

- A commenter suggested putting in a pull off area along Route 63 (north of creek) for people in the spring to watch geese.
  - The refuge will explore the possibility of improving the O'Brien Marsh parking area on the west side of Route 63 that might suffice as a viewing area for geese during the spring migration.

#### Driving loop that goes though the refuge (Letter ID# 4)

- A commenter suggested a driving loop or straight through drive to Dunlap Road for the public, to enhance opportunities to view waterfowl and shorebirds close up.
  - The south half of Feeder Road is open to vehicular travel from October 1 until the end of February. This gives the public a great opportunity to view migrating waterbirds from many different pools on the refuge, while still minimizing disturbance to wildlife. The refuge believes there is adequate opportunity to see wildlife via driving by way of public roads that go through or around the refuge including Highway 63, Sour Springs Road, Salt Road, and Knowlesville Road, as well as all the refuge overlooks.

#### Schoolhouse Marsh Overlook (Letter ID# 4)

- A commenter noted that viewing for shorebirds would be difficult at best. If any effective viewing were to happen, the lot would have to be much closer to the water, and/or, driving around the mudflats in fall could be considered.
  - Refuge overlooks give visitors an opportunity to view wildlife, but at the same time keep the disturbance to wildlife to a minimum. This is especially true during migration and the breeding seasons. The current refuge overlooks give visitors many opportunities to view wildlife all year long, and changing them may have negative consequences for wildlife, especially migrating birds. The refuge also has bird viewing areas along Feeder Road and other overlooks that can be used.

Increased access for bird watching and hiking (Letter ID# 4, 11, 12, 14, 15, 16, 17, 18, 19, 23, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35)

- Several commenters oppose the proposal to close to the general public off-trail areas of the refuge that are currently open between July 16 and February 28/29 (**18**). Some felt that considering the significance of visitation for the refuge for non-consumptive uses, the off-trail access periods should be increased (**6**).
- This area is one of the few places where the public can enjoy nature in a natural setting.
  - The refuge understands its role as a place where many come to enjoy nature, especially non-consumptive uses like wildlife observation, wildlife photography, interpretation and environmental education. However, the purpose for which the refuge was established states, "...for use as an inviolate sanctuary, or any other management purposes for migratory birds" which comes under authority of the Migratory Bird Conservation Act. Therefore, the refuge has to make decisions based on this purpose. Unrestricted access to refuge lands is highly unusual for national wildlife refuges, especially during times when birds are actively nesting or when birds are staging during spring and fall migrations. We feel that unrestricted access can be counterproductive to achieving the purpose for which the refuge was established. User groups that want to access refuge lands that are not part of the areas currently open, like nature trails and overlooks, can still request a Special Use Permit from the refuge headquarters. This allows refuge staff to regulate how many people are on the refuge during this time period, as well as restrict locations or time of day to ensure that we are not hindering the purpose of the refuge. Unrestricted access to refuge lands would not allow us to do this. We have adjusted the timing of restricted access to the refuge outlined in the draft CCP from year-round to March 1 through September 30 in this final CCP.

Canoeing (Letter ID# 6)

- A commenter was pleased to see a proposed canoe launch for Oak Orchard Creek.
- The take-out point at Sour Springs Road is very muddy with deep tire ruts at times, making it tricky to carry the canoes/kayaks up to the road. The commenter suggested that a couple large rocks at the road's edge, spaced far enough to carry a canoe or kayak, would stop people from driving down there.
  - The refuge understands the issues at the take-out point at Sour Springs Road, and will work to rectify this problem so that it is safer for those carrying canoes and kayaks.

Restrict hikers to trail areas only (Letter ID# \*, 4, 8, 11, 20, 21, 22, 24, 38, 39, 41).

- A commenter noted that "wandering" is a good thing, and the refuge should not limit it in some aspects as it is a law enforcement issue.
- Support for plan to provide high quality migration stopover habitat *with appropriate access*, for waterfowl, marshbirds, shorebirds, and state-listed endangered and threatened bird species. Additional mudflats *with appropriate access* are of great desirability to the bird watching community. (**2**)
- FLWNYWA advocates public usage and opposes any attempt to reduce public access for approved activities such as wildlife observation, photography and nature walks during the non-breeding seasons. Allowing visitor access outside of the breeding season can only serve to enhance public support for Iroquois and the entire refuge system.
- There were many comments that strongly encourage the Service to maintain the current policy which covers the nesting season, and to look at changing policy to cover only sensitive areas (such as around bald eagle nests) rather than the bulk of the refuge. Commenters noted that

visitors do no violence to breeding populations of birds and other wildlife, and wandering (e.g., birding and nature photography) has a minimal or no effect impact to wildlife.

- Support the restriction of public access to designated areas; and limiting access to roam the refuge would be a good thing as it is disturbing to wildlife and fauna and may help reduce the spread of invasive species. (2)
  - The Refuge System encourages public use of national wildlife refuges as indicated by our priority public uses, which consist of hunting, fishing, interpretation, environmental education, and wildlife observation and photography. All uses, including our priority public uses, are required to have a written compatibility determination to document whether the use will be compatible or incompatible with the mission of the Refuge System or the purpose for which the refuge was established. The refuge was established as an “inviolable sanctuary for migratory birds.” The compatibility determinations identify the use, location, time of year, research findings, and take into consideration other activities to determine the appropriate amount of access to allow and still maintain a refuge for migratory birds.

Unrestricted access to national wildlife refuges for all or part of the year is very unusual, and does not allow us to determine level of use for compatibility. Typically, access is controlled through regulations set forth through management of programs like hunting and fishing, or specified requirements in permits like trapping and Special Use Permits. Other times, access is controlled by requiring use of refuge facilities like photo blinds, nature trails, or overlooks. Refuges are different than most Federal or State lands in controlling access throughout the majority of the year and limiting access to ensure our “wildlife first” principle.

We understand the need and want for visitors to be able to explore and enjoy nature in their own way or pace, and for visitors to not be tied to required facilities. We have adjusted the time of year that we will allow unrestricted access. The refuge opens Feeder Road to vehicles on October 1 and closes it at the end of February. This is to facilitate access for hunting, wildlife observation, and trapping. Since there are other activities already in progress on the refuge, we feel that allowing visitors to hike the refuge uplands during this time period will not add any significant disturbance to refuge resources. However, this will not pertain to refuge wetlands. During the late-summer and fall, refuge wetlands are used by thousands of waterfowl for staging, as they make their fall flight southward. Allowing unrestricted access to wetlands could cause significant disturbance to waterfowl using the refuge to rest and feed for their continued migration south. Waterfowl hunting will still be allowed on a limited basis Tuesday, Thursday and Saturday mornings and in restricted locations, giving waterfowl and other wetland species undisturbed time in the afternoon as well as the other days of the week.

Eagle camera (Letter ID# 38, 39)

- It would be positive if the opportunity arises to have a camera on an eagle nest with a monitor in the new building lobby (2)
  - We agree that having a monitor to view eagles during the nesting season has been a favorite of visitors. It gives them a chance to see the eaglets up close compared to what they would see otherwise. We are always looking for an opportunity to provide this activity again for our visitors. However, the trees in which the eagle nests are currently located do not allow us to provide this resource. The refuge will continue to monitor the eagle nesting locations, nesting trees, as well as technology to try and provide this activity in the future.

### **Wildlife Photography**

#### Photo blinds (Letter ID# 42)

- Support enhanced photo blinds.
  - refuge is recommending two new blinds in two new locations. Please see Objective 4.4 Wildlife Observation and Photography.

#### **Outreach** (Letter ID# 41, 43)

- Suggest that the information in the CCP (natural history, ecology, and census) be incorporated into improved refuge publications and websites, thus available to a wider audience.
  - We will continue to disseminate information about the refuge, its history, current events and activities, as well as what we are doing with our partners. The information and goals of the CCP are priority information that will be distributed or made available to refuge visitors via several means: publications, Web sites, or social networking areas like Facebook.

### **Wildlife Species Management**

#### Bald eagle (Letter ID# 43)

- Enforce guidelines for bald eagle management to increase refuge visitation. Support that strategy and continuing publicity about these iconic residents.
  - The refuge will continue to manage for, protect, and publicize our bald eagles within the Service's Bald Eagle Management Guidelines.

#### Wild turkey (Letter ID# \*)

- \*\*Work with Wild Turkey Federation to stock turkey and improve habitat."
  - We are happy to work with any conservation partner for enhancing the refuge habitats as indicated in several areas under Goals 1, 2 and 3. Enhancing the overall habitat of the refuge will ensure quality habitat to support the refuge's purpose of being an inviolate sanctuary for migratory birds. Other species may benefit from this management action like turkey and deer, but they are not our primary focus. However, stocking is not something the refuge will take since the turkey is not a trust resource.

#### Invasive animals (Letter ID# \*)

- \* "Can we hunt invasive animal species on the refuge: starlings, house sparrows, rock doves?"
  - Hunting is not considered to be an effective tool in controlling the invasive animal species found on the refuge. Page 4-42 and 4-43 list the Service's wildlife-dependent recreation and hunting programs guiding principles. These principles include encouraging an appreciation and understanding for our wildlife resources, promote resource stewardship and conservation, and minimize conflicts with other wildlife-dependent recreation, but not to control invasive species.

#### **Furbearer Management** (Letter ID# \*)

- \* "In addition to limiting 25 traps, also limit 25 stakes."
  - The recommendation to limit the number of traps is to provide adequate opportunity for all permitted trappers to conduct their business without interference or lack of room because other trappers have already covered the area. Limiting the number of stakes to the number of traps allowed by the trapper will also help reduce this competition issue. We will consider limiting the number of stakes any trapper can have to the maximum number of traps that they can put out. This way the trapper is not "reserving" trapping areas beyond their 25 trap limit.

**Habitat Management**

Habitat fragmentation (Letter ID# 38, 39)

- Larger plots of habitat are helpful to many species of birds and wildlife and will help make the Refuge a safer place for the wildlife to breed and live. (2)
- When Seneca dike is removed and the area is replanted to trees, it is recommended that a dirt access road be left to service the area and leave a trail for hunters to enter. (2)
  - Leaving an access road would be counter to the project objective of reducing forest fragmentation and restoring hydrology. There are many acres of the refuge that are not easily accessible by the refuge staff, volunteers, law enforcement officers or hunters. We believe that there will be adequate access to this area of Seneca without providing road access.

Removal of non-native conifers (Letter ID# \*, 2, 4, 6, 11, 13, 24, 32, 35, 36)

- \* “What is the plan for removing conifer plantations?”
- \* “Why are we removing conifer trees that other species are using?”
- A few commenters oppose removal of conifer plantations. They say “Do not disturb uncommon and rare bird species that use these plantations, regardless of their non- native status.” (4) “Norway spruce trees provide beauty to Swallow Hollow, and is a great spot for the birds and birdwatchers.”
- “These areas are small, and provide necessary roosting sites for owls and other wildlife.”
- “NYS website indicates that conifers and spruces provide habitat for endangered Spruce Grouse, winter short-eared owls, and eagles that can nest in tall white pines.”
- One commenter wondered that “if the warbler is doing so well here should we really change so much of the landscape?”
  - The only naturally occurring, native conifer is the eastern hemlock, which is often found in association with sugar maple and American beech. All other conifers on the refuge are planted stock. Conifer planting peaked during the 1960s and early 1970s. Species planted include white spruce, white pine, red pine, Austrian pine, Scotch pine, Douglas fir and Norway spruce.

The conifer plantations on the refuge are either monocultures or have only a few different species associated with them. This has caused a lack of diversity, not only in the overstory and understory tree composition, but in age classes as well. The closely planted conifers restrict the amount of light that reaches the forest floor and therefore causes impoverished flora and fauna. The acidity from the conifer foliage also limits growth on the forest floor.

Plantations cause unnatural edges in the forest where naturally there would be transition zones between two different forest types. While edges can in general increase wildlife species richness and abundance, it can have a negative effect on species which the refuge is managing for including nesting migratory songbirds. Negative effects include but are not limited to: nest predation and parasitism, decrease in forest interior nesting birds, and an absence of shade tolerant plant species (Hunter 1990).

Conifer plantations make up a small component of the forest types found on the refuge. These areas will be prioritized for removal and depending on location and outcome, different techniques maybe used as described in the Commercial Forest Harvest Compatibility Determination or through girdling and nature regeneration. Restoring these non-native conifer plantations will result in more diverse forest communities and reduce the edge effect which will both result in better habitats for refuge species of

conservation concern. Spruce grouse are not native to this area of New York, and therefore are not species of concern on the refuge.

#### Forest management (Letter ID# 24, 36)

- A commenter noted concern about the plan to remove mature trees, with regard to the appearance of the forest for humans.
- A commenter noted that oaks and beechnut have “died off or blown down”, as a result of flooding. New plantings of trees would be a good thing for future generations.
  - Commercial forest management will be performed for the primary purpose of improving wildlife habitat and ensuring that the refuge has a diversity of forest habitat types, age classes and canopy stratifications. The specific types of harvest that will be performed include improvement cuts (e.g., thinnings and release cuttings), regeneration cuts (e.g., seed tree, selection, shelterwood and clear cuts) and salvage cuts performed as a result of storm, insect or disease damage or outbreaks. Commercial harvesting is preferred over using refuge resources to harvest timber, as the refuge does not own the equipment necessary to perform the tasks properly without causing significant negative impacts to the sites. Additionally, the refuge does not have the manpower to either run equipment or remove trees using chainsaws.

Commercial forest management will only occur in the refuge’s upland forests and conifer plantations excluding forested islands that are completely surrounded by marsh and/or open water, the Oak Orchard National Natural Landmark and the Milford Posson Research Natural Area. The refuge’s wetland forests are rarely dry enough, outside of the breeding season of forest dwelling species, for any commercial forest management to take place. Any commercial harvesting that takes place on the refuge must follow the best forest and wildlife management practices recommended by the State of New York (New York State DEC. 2007 New York State Forestry Best Management Practices for Water Quality, BMP Field Guide).

Concerns relating to the refuge’s mature trees have been noted. The refuge will not specifically target these mature trees. However, in some cases, a few of these trees may be removed for the overall benefit for the wildlife species that the habitat is being managed for. In many cases, any work that may be done in the forest will not be noticeable to visitors. There were concerns about mast trees for wildlife being eliminated. There are some areas of the refuge in which these trees may have been present and are no longer. The refuge will be evaluating all forested habitats, and detailed prescriptions will be implemented only when necessary to address forested habitat issues and work to improve them. This will involve planting trees in some cases.

#### Shrubland management (Letter ID#2, 7, 10, 40)

- Increasing scrubland would be a great for small mammal reintroduction (e.g., better foraging habitat). Increase acreage to shrubland beyond that identified in Table 2-2 (539 acres) by allowing smaller grasslands areas (i.e., less than 5 acres in size) to shift into the shrubland classification through succession.
  - The amount of shrubland acreage identified as being managed in the draft CCP under alternative B (now Table 4-1 Habitat Acres) is the maximum number of acres we believe can be managed given average annual resources. The expected acreage already includes letting small grasslands succeed to shrublands, while recognizing that some older

shrubland areas will succeed to forestland. In doing this, we have reduced habitat fragmentation over existing acres for Federal trust resources such as migratory birds.

- Hydroaxing several areas also helps wildlife. Trim the north side of Roberts Road along shoulder.
  - The refuge property along Roberts Road has several habitat types including grasslands, shrublands, and forests. These habitats are managed this way to best suit the surrounding habitat type. Some of the areas in question that the commenter would like to be cut back are part of the shrublands or forest type. We feel this is the best habitat type for this area based on surrounding habitat and will manage it in that manner. Other areas, if they are along the shoulder of the road, are in the road Right-of Way, in which case management lies with the Town of Alabama.

#### Haying (Letter ID# \*, 2)

- A commenter wondered “how much grassland habitat is available for haying?”
- A commenter suggested that haying would be another form of income for the refuge, and allow a place for geese to land in.
  - We currently offer approximately 170 acres annually for haying, and intend to continue to offer a similar acreage in the future. The haying program is put out as a competitive bid process because of the economic value of haying. The proceeds for this use go into a fund managed by the Service to be distributed out to communities and municipalities that have refuges as part of the Refuge Revenue Sharing program. This program makes up, to a greater or lesser degree, for the loss of local tax revenue because the land is owned by the Federal government. The haying program helps keep our native grasslands in the early successional state with minor expenditure of resources by the refuge. During the spring and fall migrations, geese congregate in these open areas that are sometimes inundated with water.

#### Invasive species (Letter ID# \*, 4, 40, 41)

- Commenters were concerned with invasive species, specifically mentioning control of grapevines, galls on trees, Canada geese, and feral cats.
- A commenter suggested partnering with Job Corps to reduce the number of feral cats or cats allowed to free roam.
  - The identification and removal of invasive species is a high priority at the refuge. Preventing new invasions is extremely important in maintaining biological diversity and native plant populations. The refuge staff collaborates with partners on invasive species issues and keeps informed of new threats via Forest Service alerts, through the Western NY PRISM (Partnerships for Regional Invasive Species Management) and NYSDEC.

Control of invasive species is mentioned throughout the CCP to help achieve Goals 1, 2 and 3. The actual strategy is written: “...continue to monitor and control non-native invasive species using a combination of mechanical, biological, and chemical techniques to restore native plant communities and healthy ecosystems; and refine the protocol for prioritizing mapping, monitoring and control of invasive species to have the greatest impact on the highest priority habitat objectives”.

In addition, Goal 2 of the CCP states that “the refuge will monitor the condition of the Oak Orchard Creek Marsh National Natural Landmark every five years to record the representative native plant species and condition (e.g. presence of invasive species)”. A strategy under Goal 3 is to “work with partners to develop cost-efficient methods for



managing and maintaining shrublands dominated by native shrub species with few or no invasive species.”

#### Shorebird habitat (Letter ID# 4, 25, 32, 35)

- A commenter suggests creation of more than 40 acres of mudflat habitat for spring and fall migrating shorebirds, which would also benefit numerous birders who use the refuge.
  - The refuge currently manages 50 acres of impoundment specifically for shorebird habitat. This is maximum number of acres we believe can be managed given average annual resources as well as shorebird population levels. However, other impoundments that are drawn down to produce moist soil annual vegetation often contain mudflats used by shorebirds in both the spring and fall. These areas change from year to year depending on drawdown schedules. Although they may not be in areas that are accessible to birders to view shorebirds, they do provide habitat during the time shorebirds use the refuge.
- “The sub-impoundment at Cayuga right now is not really attracting fall shorebirds. Will the plan create viewable to the public, close up, flat shorebird areas close to Feeder Road?”
  - The Cayuga sub-impoundment is the only area on the refuge that can satisfy all the details listed in the comment. Weather plays a critical role in the annual management of this unit. In drier years, the unit can be managed more completely, allowing better viewing for shorebirds. The refuge will continue to make every effort to provide the best possible shorebird habitat in this area.
- Support efforts to create habitat for migrating shorebirds, which is in short supply world-wide and is critical to their survival. (2)
  - The refuge tries to provide shorebird habitat specifically in Cayuga sub-impoundment as well as in other wetland units that are in a drawdown state.

#### Grassland management (Letter ID# 4, 11, 32, 35)

- Support removal of hedgerows within grasslands areas to increase the size of grassland patches.(3)
- Manage habitat for Henslow’s sparrow, which is severely declining in western New York and may face extirpation from the region in the near future.
  - As a New York State Threatened Species, the Henslow’s sparrow is always considered in our grassland management planning efforts. Managing larger tracts of grasslands helps facilitate this.

#### Artificial nesting structures (Letter ID# \*, 7, 38, 39)

- One commenter supported removal of artificial wood duck boxes that are not being used by wood ducks, while another commenter asked ”Why is the refuge removing wood duck nest structures in 15 years?”
  - As stated in the proposed action in the draft CCP/EA and in this CCP: “Over a 15 year period, systematically remove the majority of artificial nest structures as appropriate. Wood duck nesting data should be evaluated to determine which boxes are not used and which are used by undesirable species. These boxes should be removed sooner and the remainder phased out.”

Poorly maintained predator guards and improperly placed boxes can lead to significant predation on both eggs and nesting females, can encourage “dump nesting” where more

than one female lays a clutch of eggs in a single box which usually results in failure of eggs on the bottom of the clutch to incubate and hatch properly, or can just be unused and a waste of time and effort. While some levels of predation, dump nesting, and disuse are normal and expected, without considerable effort, time, and diligence the level can quickly become excessive and reach a point where the birds are better off without artificial boxes and have a better chance of being successful using natural cavities. We will be working to rectify any problems, like those listed above, that our wood duck box program may have.

- Understand that artificial cavities for wood ducks is not the long term plan for sustaining the wood duck population, and that eliminating artificial cavities is the ultimate goal. The volunteers that maintain the current boxes would like to work with the staff in finalizing this part of the plan in an effort to accomplish this objective. (2)
  - Our volunteers are a valuable asset to the refuge. We have every intention of working with our volunteers to make the nesting box program as effective and efficient as possible.
- There is no mention of continued support for nest boxes of blue birds, purple martins, and other cavity nesters. (2)
  - Other nesting structures will be evaluated as information becomes available regarding those bird species that the boxes are meant for, and the refuge will make decisions for removal based on that information and other expertise. The refuge has no plans to eliminate other nest box programs at this time, as adequate volunteer support is available to keep the program going. However, we will not be adding more nest box structures in the future. Some of these other structures, including wood duck nesting boxes, provide opportunities to conduct interpretive program or environmental education activities to get visitors involved in conservation efforts. Included in this is the refuge's Take a Kid Along (TAKA) program. These structures provide easy access to expose children to wildlife and activities like bird banding.

#### Water management (Letter ID# 36, 38, 39)

- Allow some ponds to stay with water all of the time.
  - Refuge wetlands are managed to mimic the water fluctuations in natural emergent or forested wetlands. These wetlands often go dry under natural conditions and in fact, these drought cycles are critical to the life of the wetland. While some species of fish and wildlife die as the water recedes, others such as the great blue heron and bald eagle benefit from the lower water and available food resources. Fish and invertebrates are adapted to these wet-dry cycles and generally return to the wetlands soon after the water returns.
- Controlling water levels is important to make the impoundments effective on the refuge, both for controlling cattails and providing food for migrating birds. (2)
  - Thank you for your comment.
- Sub-dividing Oneida pool would benefit wildlife, and be a help to control invasive plant species from invading the pool. (2)
  - Thank you for your comment.

#### **Hunting**

Miscellaneous (Letter ID# \*, 9, 36)

- Keep existing hunting strategies. Do not restrict hunting any more than it already is.
- \*"It is getting harder to find places to hunt and the refuge would be contributing to it."
- No lottery. No fees.
- A commenter suggested that there needs to be a balance between hunting and being a "refuge".
- \* "Have you approached the insurance companies about these hunting changes?" \* How many deer are killed by cars yearly?"
- A commenter asked if the refuge will allow crossbows for deer hunting in the future.
- A commenter suggested that food plots on open public lands (e.g., hay fields, soybeans, corn could) would benefit hunting.
  - The strategies of this CCP do not drastically change the amount of hunting opportunity being offered on the refuge. Some modifications have been made to actually provide additional hunting opportunities, including increasing the number of spring turkey hunt permits, opening a fall turkey hunt and extending the waterfowl season. All hunting strategies were documented in compatibility determinations (see Appendix B) to ensure that we do not interfere with the purpose for which the refuge was established.

The idea of a lottery draw for high-use deer hunting days is something that we mentioned as a possibility if hunting quality or hunter safety decline as a result of increased hunter participation. We currently intend to monitor the number of hunters using the refuge, and have no plans to implement a lottery draw system based on current hunter numbers.

The majority of refuge regulations, in reference to hunting, follow regulations implemented by NYSDEC with some modification usually on the number of permits or in the case of waterfowl which days of the week that can be hunted. This is to ensure that we conduct the activities in relation to achieving the refuge's purpose. Changes in hunting methods allowed by NYSDEC should be implemented unless there is a specific Service policy prohibiting it or actions cause the activity to be incompatible.

The refuge focuses on providing quality habitats that provide a benefit for a wide range of wildlife species, and does not focus on single species management. Row crops provide a benefit for only a few wildlife species for a short period of time. Providing overall high quality of habitat will not only provide food resources for hunted species, but also for a large number of other species.

#### **Small Game Hunting (Letter ID# \*)**

- \*"Why can't the squirrel hunting be open Sept. 1 like the rest of the state? (Can we split the difference – Sept. 15?)"
  - Currently the refuge is open for small game hunting on October 1 and closes at the end of February of each year. The demand for small game hunting is low to moderate, and the refuge believes that five months is an adequate length of time for this hunting season.

#### **Deer Hunting**

Potential lottery draw for high use days (Letter ID# 2, 5, 7, 8, 36, 37)

- Landowners adjacent to the refuge should be exempt from the lottery, since deer come into their yards in winter and eat their bushes.
- A commenter is disappointed with any restriction to the number of deer hunters. Restricting or going to a pay/lottery type deer hunting system would prevent and discourage people from hunting.

- Deer are numerous on the refuge lands and can cause serious over browsing. FLWNYWA recommends that deer hunting opportunities be maintained at current levels unless there is quantifiable rationale that justifies limiting access through a lottery system.
- Conducting a pre-season lottery draw or other restrictive measure for high use days during the deer hunting seasons (shotgun season) to provide for uncrowded and ensure quality hunting is a very good idea, primarily from the stand point of safety and protecting the hunters.
- A commenter wondered about various uncontrolled and unregulated aspects of hunting, in terms of schedules, weather, luck, etc.
  - The possibility of a lottery draw for high-use deer hunting days is something that may happen if hunting quality declines or hunter safety issues arise as a result of increased hunter pressure. As we mentioned under Objective 5.1 Hunting, “Develop survey/permitting protocol to look at hunting pressure and harvest data for firearms season. Evaluate to determine if hunting pressure restriction is needed.” We currently intend to monitor the number of hunters using the refuge to determine how much pressure the refuge is receiving.

We recognize that deer can cause over browsing of habitat, which is something we do not want to happen. The recommendation is for lowering the number of hunters on days during the regular firearms where hunter numbers are high, not the entire firearms season. Archery and muzzleloader seasons would not change. Restricting the number of hunters on high use days should not interfere with maintaining deer numbers at recommended levels, reduce the chance of over browsing, significantly reduce the number of deer hunters for the overall season, or severely hinder an opportunity to hunt the refuge.

The refuge cannot plan for every possible scenario that will benefit an individual. Just like other controlled hunting programs, the hunters will have to take into account their own personal schedule, weather, and other factors when applying for lottery hunts, if implemented.

#### Deer stand (Letter ID# 2, 36)

- Climbers do more damage to trees than screw-in steps.
- A commenter notes that having no permanent stands with screw-ins is understandable to protect the trees, but questions why all bird markers are put in with large nails.
  - It is generally believed in the hunting and forestry communities that screw-in steps do more damage than climbing stands. Also, screw-in steps often get left in the tree, and after many years may be hard to find making any future cutting of that tree a hazard to the chain saw operator. The marker system referred to, involving nailing markers to trees, is no longer in use (though some old markers may remain). Bird survey markers are now identified in ways other than nailed to a tree.

#### Hunter orange (Letter ID# 36)

- For safety, everyone on the refuge during firearms season should be required to wear 400 square inches of blaze orange, not just the hunters.
  - Any visitor who is traveling off trail during the regular firearm season will now be required to wear hunter orange. This includes trappers, other hunters and wildlife observers.

### **Turkey Hunting**

Spring turkey hunt (Letter ID# \*, 7, 8, 10, 24, 38, 39)

- Proposed changes in the spring turkey hunt brought forth a range of comments. “All though we are glad to see that alternative B includes some reduced limits on the spring turkey hunt we still feel strongly that this phase of hunting should be eliminated on the refuge”. (2)
- Support the increase in total number of spring turkey hunting permits, but disagree with the rationale used to decrease the number per session as the season progresses. Suggest maintaining 25 permits in sessions 2 and 3.
- A commenter notes that decreasing the number of turkey hunters throughout the spring season for migratory bird nesting season is what the refuge is all about (i.e., “wildlife comes first”).
- FLWNYWA observes that while alternative B recommends giving out more permits, the opportunity is being reduced by 45 percent.
- FLWNYWA observes that the 10-day windows are too narrow and represent too large of a reduction.
- A commenter agrees with the changes in spring turkey hunt that will hopefully reduce human impacts later in May.
  - Based on feedback we have received from our partners and the public, we have adjusted how the permitting system will be implemented for the spring turkey hunt. The new framework in the CCP, Objective 5.1 Hunting – Spring Turkey Hunting, will increase the number of permits from 50 to 75, divided between two permit sessions. The first session will run from May 1 – May 15 with 50 permits being available. The second session will run from May 16 - May 31 with 25 permits being available. Permits will be allocated on a preseason lottery basis with hunters choosing their desired season in order of preference. Hunters may receive a permit for one session only. This system will allow more hunters to receive permits and provide ample days for hunters to hunt the refuge.

#### Fall turkey season (Letter ID# 8, 10)

- FLWNYWA questions why there is no fall turkey hunting on the refuge.
- A commenter suggests that fall turkey hunting should be made available at the refuge, as it is compatible with other uses and should be offered within alternative B.
  - After further review, we added the strategy of opening up a fall turkey season under Objective 5.1 Hunting to the CCP. The refuge believes that this will not add any additional administrative burden to refuge staff by allowing it under the general hunting permit. Additionally, there should be no additional impact to refuge resources since the refuge is open to hunting already, with NYSDEC indicating that fall hunting pressure on turkeys is very light compared to spring.

#### Youth turkey hunt and orientation (Letter ID# 10)

- Support shifting the spring turkey hunt to the NYS designated youth turkey weekend. Both weekend days should be included for the youth hunting opportunities.
  - Thank you for your support.

#### **Waterfowl Hunting**

##### Waterfowl hunting expansion into Deer Season (Letter ID# 8)

- FLWNYWA supports expansion of waterfowl hunting season into deer season on Cayuga Pool only.
  - Thank you for your comment.

##### Waterfowl lottery system (Letter ID# 8)

- FLWNYWA noted that the lottery system has been often criticized by waterfowlers because some have not been selected for 10 years or more, while a few get picked every few years. FLWNYWA would welcome any attempt to improve this problem.

- We believe that the current lottery system is completely fair and impartial. Complicating the system by tracking previous permit applications by current applicants would cause an unnecessary administrative burden.

Free roam areas (Letter ID# 38, 39)

- “This is definitely a good idea from a manpower standpoint but could result in increased habitat disturbance to the marsh area due to hunters wandering around.” (2)
  - The refuge believes that having the Mohawk South Pool as a designated free-roam area will not result in increased habitat disturbance to the marsh. The number of hunters that will be accessing this area will be regulated by the refuge from the Hunter Check Station at the 5 a.m. stand drawing. The refuge will designate a specific number of hunters that will be allowed to hunt in that area before the drawing begins. When that number is reached during the drawing, no more hunters will be allowed to access that area. Access to the Mohawk South Pool will be via canoe only from points designated by refuge staff. The refuge staff will monitor the area for the potential habitat disturbance mentioned by the commenter’s. However, during this time of the year, wetland vegetation is going into dormancy for the winter and disturbance to the habitat is unlikely.

**Fishing**

Fishing pier (Letter ID# 38, 39)

- A fishing pier at the Ringneck fishing area would be great enhancement to improve the fishing experiences, especially for children.
- It may result in more litter in the impoundment. (2)
  - Thank you for your support. With any increase in visitation there is a likelihood of increased litter as visitors congregate in certain areas. The addition of a refuge officer should hopefully discourage incidents like this. The refuge will do what it can by providing signage on no littering, as well as mentioning it in our information brochures. Also, we would hope that the anglers themselves would do what they can to make sure their sport projects a good image for others.

**Other Recreation**

Snowmobiling (Letter ID # 2)

- A commenter asked if a snowmobile club could establish a trail on the dikes.
  - Due to an agreement between the Town of Alabama, Genesee County and a local snowmobile club, there is now a bridge on Sour Springs Road so that snowmobiles may cross Oak Orchard Creek to get back and forth between Orleans and Genesee Counties. This is allowed because under New York State law snowmobilers are allowed to use the Right-of-Way for seasonally maintained roads, which is what Sour Springs Road is. Sour Springs Road is not maintained by the Townships from December 1 to the following April 1.

Snowmobiling is not one of the refuge’s priority public uses and is not considered an appropriate use on Iroquois Refuge. The refuge facilitates wildlife dependent recreational activities, and snowmobiling is not wildlife dependent.

Berry picking (Letter ID# 2, 38, 39, 43)

- Set up a certain area for people to pick berries.

- Elimination of berry picking will have little effect on the refuge but is a positive thing for wildlife that use berries as a food source. **(2)**
- Suggest that the proposed prohibition of “berry picking” (by people) is only enforceable if “commercial” picking is prohibited to enhance bird habitat. Casual berry picking cannot effectively be prohibited.
  - While berry picking has been allowed on the refuge in the past, the refuge has decided that it is not an appropriate use. The berries are not only used as a food source for wildlife, but the habitat that the shrubs produce is also important for nesting and migrating birds. Human presence in these habitats can cause unnecessary disturbance to wildlife and may cause wildlife to avoid these areas all together. In addition, berry picking is not a priority public use of the Refuge System and therefore will no longer be permitted on the refuge.

### **Off-Refuge Developments**

#### Overall development (Letter ID# 41)

- The serious threats to the refuge are outside its borders, and therefore more attention must go into interacting with governments, groups and schools outside the boundaries of the refuge.
  - The refuge uses onsite and offsite programs throughout the year to reach the public and to get our message out. Our friends group also assists in this outreach effort. Objectives 4.2 Outreach, addresses continuing to participate or develop programs that address more awareness for not only the refuge, but wildlife resources and conservation. Additionally, Objective 6.1 Landscape-scale Conservation addresses doing more in the Oak Orchard Watershed and areas off refuge lands to promote conservation and management efforts in western New York. This would be work with non-government organizations, private landowners, state and local agencies to develop more partnerships for conservation.

#### Proposed stone quarry (Letter ID# 38, 39, 41)

- The refuge needs to monitor the situation and work with Friends Group and others to be sure that this activity does not damage the refuge in any way. **(3)**
  - The refuge has been involved with this proposed project for several years including reviewing and providing comments on the draft Environmental Impact Statement. We will continue to monitor the movement of this project and provide comments or concerns for actions that might have an impact to refuge resources including flora, fauna, aquatic resources, or public uses.

#### Proposed wind turbine farm (Letter ID# 38, 39, 40, 41)

- The refuge needs to monitor the situation and work with Friends Group and others to be sure that this activity does not damage the refuge in any way. **(3)**
- “Keep those wind mills out of here.”
  - The need for alternative energy sources has become apparent in the last 10 years and has been a priority at both the State and Federal levels. The Service’s Ecological Services Division provides regulatory oversight for issues pertaining to federal trust resources; this would include migratory birds, federal threatened and endangered species, among others. The refuge understands the need to monitor activities near the refuge that may affect refuge habitats and its wildlife. The refuge provides input on regulatory issues off refuge lands to our Ecological Services Field Office located in Cortland, New York. The refuge provides biological information like population numbers, migration phenology, location of specific nesting sites (like bald eagle) that helps Ecological Services prepare its responses to the proposed projects.

**Climate Change** (Letter ID 38, 39)

- The refuge should be more proactive in the plan to spell out what will be done to accommodate vegetation and wildlife as a result of climate change. (2)
  - We agree that global climate change is an issue with strong management implications on our national wildlife refuges. It will, in fact, have strong implications on the way in which we all live. Accordingly, the Service and its many governmental and nongovernmental partners are initiating measures to discuss and understand these changes, not the least of which is to first identify and recognize climate-related changes.

While this issue has been under discussion for years by scientists, it has not captured the attention of the public until very recently. Interestingly, it was not identified as a planning issue during the scoping process for this CCP. We do not wish to delay completion of this important planning document while awaiting an assessment of the impact of global climate change on the refuge's resources. This plan will be used by the refuge manager who will review it regularly for inaccuracies or significantly changing variables, including environmental changes. This will occur no less frequently than annually. The plan is more formally reviewed every 15 years. As any new information become available, including climate change related information, it will be evaluated and its potential impacts to the refuge considered and acted upon if appropriate.

**Law Enforcement** (Letter ID# 41)

- Suggest exploration for increasing enforcement on the refuge over the long term.
  - Thank you for your support of the refuge's law enforcement program. The CCP proposes 4.5 additional staff members, one of which will be a full time law enforcement officer.

**Land Acquisition** (Letter ID# 41, 43)

- Recommend that land acquisition become a priority with a set of strategies.
  - The refuge currently has an approved acquisition boundary. During the CCP process refuge staff determined that there was not a need to expand that boundary. In the future, if it is found to be necessary, the refuge will at that point initiate that strategy. In the meantime, under Objective 6.1 Landscape-level Conservation, the refuge will be working on enhancing conservation and management efforts in western New York with existing programs like Partner's for Fish and Wildlife Program and existing NRCS programs.
- Support a refuge that also looks beyond its borders to help manage and keep what it already has. Support adding lands and easements to broaden the boundaries of the refuge.
  - Currently, refuge staff are partnering with the USDA NRCS to perform habitat improvement projects on neighboring properties. These improvements are aimed at improving areas on farmlands that are impacting the water quality of Oak Orchard Creek watershed. The CCP additionally calls for enhanced conservation and management efforts in western New York under Objective 6.1 Landscape-Scale Conservation.



**Letter ID Numbers and Respondents**

Letter Number	Name	Organization
1	Jean Public	
2	Doug Bracey	
3	Garner A. Light	Iroquois Observations
4	Celeste Morien	
5	Brian Scotch	
6	Bob Ensminger	
7	Thomas J. Poczciwinski	
8	Bill Kalwas	FLWNYWA
9	Michael W. Diel	
10	Bret Eccleston, others	NWTF
11	Chuck Rosenburg	
12	Tom Connare	
13	David A. Muller	
14	Alphonse Kolodziejczak	
15	Richard Sowinski	
16	Wendi Pencille	
17	Anita Wierzba	
18	Robert DeLeon	
19	James Landau	
20	Thomas O'Donnell	
21	Gerald Rising	
22	Morgan Jones	
23	mgalas (email)	
24	Jocelyn and Jeff Welton	
25	William C. D'Anna	
26	David and Debra Suggs	
27	Betsy Potter	
28	Bill Broderick	
29	Donna V. DeLeon	
30	Elizabeth Wells	
31	Frank Voelker	
32	Richard Thomas, MD	
33	Sharon Sisti	
34	Brendan Klick	
35	Mike Morgante	
36	Joel Diel	
37	Donald C. Wolters	
38	Carl and Phyllis Zenger	
39	Robert and Kay Schmidt	
40	Chris Koan	
41	Peter Gold	
42	Judith Derry	
43	Peter Gold	Friends of Iroquois NWR, Inc.
44	David Barus	
	Patricia Riexinger	NYSDEC
	John A. Bonafide	SHPO

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Peter M. Iwanowicz  
Acting Commissioner

November 15, 2010

Mr. Thomas Bonetti  
Planning Team Leader  
Iroquois National Wildlife Refuge Comprehensive Conservation Plan  
U.S. Fish and Wildlife Service  
300 Westgate Center Drive  
Hadley, MA 01035

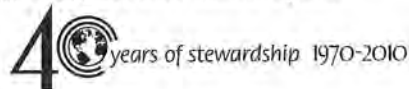
Dear Mr. Bonetti:

Thank you for the opportunity to comment on the draft *Iroquois National Wildlife Refuge Comprehensive Conservation Plan and Environmental Assessment*. As you know, DEC has a close working relationship with Iroquois National Wildlife Refuge and we look forward to continuing that relationship. The current draft CCP is an improvement over an earlier draft that was circulated for internal review. However, we still have some comments and suggestions for improvements.

As a general principle, hunting opportunities on the refuge should be as consistent with statewide regulations as possible, as is required in U.S. Fish and Wildlife Service Manual Part 605-FW2. While the preferred alternative contained in this draft of the CCP improves upon the existing conditions with regard to hunting on the refuge, it could be improved even more. Specific hunting-related comments include:

Wild Turkey Hunting:

- We are deeply troubled by the discussion on pages 2-86, B-29, and elsewhere in the document regarding concern over disturbance to nesting and/or migrating songbirds by turkey hunters. Please remove this discussion unless you can cite published data or studies to back these concerns. (We are unaware of any research or evidence linking turkey hunting activity to disturbance of migrating or nesting passerines.) Concern over Cerulean warbler disturbance, for example, seems especially unfounded since this is a canopy-nesting species that is unlikely to be found at ground level where hunters are active. We are also very concerned about the precedent set in your statements on this topic as they may apply to other managed properties.
- Alternative B (the proposed action) maintains the current spring turkey hunting and expands the number of permits issued, which we applaud. However, there is still a lack of fall turkey hunting opportunity on the refuge under Alternative B, even though it is proposed under Alternative C. Both spring and fall turkey hunting should be included as an action in Alternative B. This would make hunting opportunities on the refuge more consistent with statewide regulations and would not pose a conflict with big game hunters since the fall turkey season for this area of the state closes before firearms deer season opens.



Waterfowl Hunting:

- We applaud the increased waterfowl hunting opportunity proposed under Alternative B, but we question why it is for such a limited area. Waterfowl and deer hunting co-exist on the neighboring state wildlife management areas with little conflict between the two and no history of safety incidents. We ask that you consider extending waterfowl hunting opportunity in all areas open to this activity, not just the limited area as proposed in Alternative B.

Deer Hunting:

- Closing Onondaga Trail to hunters during deer season runs contrary to the goal of managing the deer population on the refuge. Deer hunters should be allowed to use the trail for access as long as their firearm is unloaded. Closing the trail makes access to the interior of that section of the refuge unnecessarily difficult. There is no reason that hikers and hunters cannot share the same trail.
- Accessible ground blinds for deer hunting are proposed in Alternative C but not in Alternative B. They should be a part of the strategies under both alternatives.

Other comments:

- The Compatibility Determinations for big game and upland game may confuse some readers because under state law, wild turkeys are considered upland game birds rather than big game. This should be clearly noted in both sections of the document if there is some reason why the Service prefers to keep turkey hunting in the big game section.
- Snapping turtle management is mentioned in Alternative C, but not in Alternative B. They are classified as a small game species in New York State with a hunting season (July 15-September 30) and can only be taken by bow or gun. The CCP should indicate whether the refuge will open areas to turtle hunting.
- On page 2-72, the strategies listed refer to implementing all strategies listed for Objective 3.4 in Alternative A, which is for plantations. This should be changed to refer to Objective 3.3 in Alternative A.
- The CCP states that the feasibility of using Refuge grasslands for Karner blue butterfly reintroduction will be determined. However, the Tonawanda/Iroquois Potential Recovery Unit for this species may not meet the criteria for amount of suitable habitat needed to support a viable population. Consideration should be given for the site as a possible reintroduction site for the State-threatened frosted elfin butterfly. The frosted elfin requires similar habitat as Karner blue butterflies, and it shares their dependence on wild blue lupine in this area. Please revise this strategy to state: "Evaluate and determine the feasibility of using refuge grasslands for Karner Blue and/or Frosted Elfin butterfly reintroduction."
- In sections of the plan dealing with invasive species and/or forestry management, a discussion of the likelihood of an Emerald Ash Borer (EAB) Infestation on the Refuge is warranted. Emerald Ash

Borer has already been detected in Genesee County fairly close to the Refuge. The plan could include surveys to monitor for EAB presence, implications for existing habitat, and possible management options to deal with an infestation.

- On Page 4-46, no adverse impacts to wildlife observation and photography are listed for Alternative B. This does not take into account the elimination of wandering under Alternative B which would certainly limit wildlife observation and photography opportunities. This should be discussed in this section.
- On Table 2-4, Page 2-149, in the Alternative B column it states that the Refuge would continue to issue up to 50 permits for upland furbearer management. This seems to be inconsistent with page B-114 where it states that a maximum of 50 trapping permits would be issued (25 marsh and 25 upland).
- Page B-34 states that “Dogs are allowed for hunting of migratory birds, cottontail rabbits and ruffed grouse during designated seasons only.” The use of dogs for pheasant hunting should be included.

Once again, thank you for the opportunity to comment on this draft of the Iroquois NWR CCP. My staff may provide additional technical comments on the draft document in the near future, and we look forward to making this something that we can all embrace. Please feel free to contact me if you have any questions about the comments provided above.

Sincerely,



Patricia Riexinger  
Director  
Division of Fish, Wildlife and Marine Resources

cc: Paul D'Amato  
Marvin Moriarty  
Gordon Batcheller



## United States Department of the Interior



FISH AND WILDLIFE SERVICE

Iroquois National Wildlife Refuge  
1101 Casey Road  
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September 9, 2011

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Albany, New York 12233-4750

Director Riexinger:

We have completed the final draft of the *Iroquois National Wildlife Refuge Comprehensive Conservation Plan*. The plan, as you are aware, was compiled in cooperation with several individuals from the Department of Conservation including Gordon Batcheller, Mike Walsico, Jenny Landry, and Heidi Kennedy. It has been a pleasure working with them.

To specifically address the concerns relayed to us in your letter dated November 12, 2010, please see the following:

- 1) We are deeply troubled by the discussion on pages 2-86, B-29 and elsewhere in the document regarding concern over disturbance to nesting and/or migrating songbirds by turkey hunters. Please remove this discussion unless you can cite published data or studies to back these concerns. (We are unaware of any research or evidence linking turkey hunting activity to disturbance, of migrating or nesting passerines). Concern over Cerulean warbler disturbance, for example, seems especially unfounded since this is a canopy-nesting species that is unlikely to be found at ground level where hunters are active. We are also concerned about the precedent set in your statements on this topic as they may apply to other managed properties.

Reply: The references were removed in relation to hunters or specific user groups. A modified version of disturbance was added as it relates to completing our compatibility determinations and in reference to all recreational activities. Verbiage was approved by Mr. Batcheller before it was inserted into the document.

Alternative B (the propose action) maintains the current spring turkey hunting and expands the number of permits issued, which we applaud. However, there is still a lack of fall turkey hunting opportunity on the refuge under Alternative B, even though it is proposed under Alternative C.

Reply: A fall turkey season has been added, and opened according to state regulations.



2) We applaud the increased waterfowl hunting opportunity proposed under Alternative B, but we question why it is for such a limited area. Waterfowl and deer hunting co-exist on the neighboring state wildlife management areas with little conflict between the two and no history of safety incidents. We ask that you consider extending waterfowl hunting opportunity in all areas open to this activity, not just the limited area as proposed in Alternative B.

Reply: We agreed to leave the activity as indicated under Alternative B, extend waterfowl hunting in Cayuga Pool only. Iroquois NWR had received many accolades on how our waterfowl hunting is conducted to provide a quality experience for those involved. We feel that we can maintain this quality experience as well as provide for the demand late in the season with only opening Cayuga Pool.

3) Closing Onondaga Trail to hunters during the deer season runs contrary to the goal of managing the deer population on the refuge. Deer hunters should be allowed to use the trail for access as long as their firearm is unloaded.

Reply: We agreed to leave Onondaga Trail closed to hunting as indicated in Alternative B. Onondaga Trail would be closed similar to our other trail areas to provide consistency on all refuge trail areas. The hunting areas near the trail area are still easily accessible from other locations on the refuge including a "jeep trail" that is to the south of this area. Closing the trail will also provide one more area that our non-hunters can enjoy during the hunting season and not interfere with those folks that are hunting.

4) Accessibility ground blinds for deer hunting are proposed in Alternative C but not in Alternative B. They should be a part of the strategies under both alternatives.

Reply: Agreed, accessible hunting blinds are currently offered and we will continue to do so. We modified the strategy to include improving existing accessible blinds including ground blinds.

5) The Compatibility Determination for big game and upland game may confuse some readers because under state law, wild turkeys are considered upland game birds rather than big game. This should be clearly noted in both sections of the document if there is some reason why the Service prefers to keep turkey hunting in the big game section.

Reply: Agreed to leave the reference to turkey hunting under big game because the Service has categorized turkeys as big game. We have included reference to the CCP that indicates turkeys are hunted as part of the upland game regulations with in the State of New York as well as make sure refuge brochures and information have this information as well.

6) Snapping turtle management is mentioned in Alternative C, but not in Alternative B. They are classified as a small game species in New York State with a hunting season (July 15 – September 30) and can only be taken by bow or gun. The CCP should indicate whether the refuge will open areas to turtle hunting.

Reply: Agreed to leave it out of Alternative B as written. The mention of snapping turtle management was for management purposes only not for a recreational activity. The refuge is not proposing a turtle hunting program.

7) On page 2-72, the strategies listed refer to implementing all strategies listed in Objective 3.4 in Alternative A, which is for plantations. This should be changed to refer to Objective 3.3 in Alternative A.

Reply: Thanks, the correction is noted.

8) The CCP states that the feasibility of using the Refuge grasslands for Karner blue butterfly reintroduction will be determined. However, the Tonawanda/Iroquois Potential Recovery Unit for this species may not meet the criteria for amount of suitable habitat needed to support a viable population. Consideration should be given for the site as a possible reintroduction site for the State-threatened frosted elfin butterfly. The frosted elfin requires similar habitat as Karner blue butterflies. Please revise this strategy to state: "Evaluate and determine the feasibility of using refuge grasslands for Karner Blue and /or Frosted Elfin butterfly reintroduction.

Reply: Agreed to indicate that management for Karner blue butterfly and other trust resources will benefit other species like the frosted elfin butterfly, as well as, continue to cooperate with NYS DEC on projects like this to determine how management of federal trust resources can benefit state listed species.

9) In sections of the plan dealing with invasive species and/or forestry management, a discussion of the likelihood of an Emerald Ash Borer (EAB) infestation on the Refuge is warranted. Emerald Ash Borer has already been detected in Genesee County fairly close to the Refuge. The plan could include surveys to monitor for EAB presence, implications for existing habitat, and possible management options to deal with an infestation.

Reply: Agreed that we would mention EAB in the CCP and do further and more detailed evaluation of EAB will be conducted when the refuge completes its Habitat Management Plan and Integrated Pest Management Plan. Language was added to CCP to address this.

10) On Page 4-46, no adverse impacts to wildlife observations and photography are listed for Alternative B. This does not take into account the elimination of wandering in Alternative B which would be certainly limit wildlife observation and photography opportunities. This should be discussed in this section.

Reply: Thanks, the correction is noted. However, the consequences chapter will not be part of the final CCP.

11) On Table 2-4, Page 2-149, in the Alternative B column it states that the Refuge would continue to issue up to 50 permits for upland furbearer management. This seems to be inconsistent with page B-114 where it states that a maximum of 50 permits would be issued (25 marsh and 25 upland).

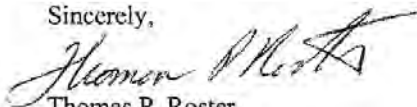
Reply: Thanks, inconsistency changed; refuge is to issue a maximum of 50 permits for upland trapping and 50 permits for marsh trapping.

12) Page B-34 states that "Dogs are allowed for hunting of migratory birds, cottontail rabbits and ruffed grouse during designated seasons only." The use of dogs for pheasant hunting should be included.

Reply: Sentence was changed to include use of dogs for ring-necked pheasants as well.

The U.S. Fish and Wildlife Service is looking for your concurrence of the Iroquois National Wildlife Refuge's Comprehensive Conservation Plan. It has been a pleasure working with your staff on the development of the Iroquois NWR's CCP. I look forward to the continued cooperation as we move into the implementation of the plan's strategies. I can be reached at 585.948.5445 ext 202 for any further discussion. Thanks.

Sincerely,



Thomas P. Roster  
Refuge Manager





**New York State Office of Parks,  
Recreation and Historic Preservation**

Historic Preservation Field Services Bureau • Peebles Island, PO Box 189, Waterford, New York 12188-0189  
518-237-8643  
www.nysparks.com

November 9, 2010

**David A. Paterson**  
Governor  
**Carol Ash**  
Commissioner

Tom Roster  
USFWS  
1101 Casey Rd  
Basom, New York 14013

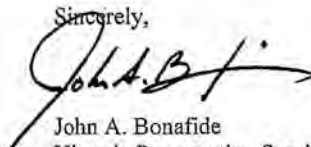
Re: USFWS  
Iroquois National Wildlife Refuge Plan  
Alabama, Genesee County/ Shelby, Orleans  
County  
10PR06796

Dear Mr. Roster:

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966. These comments are those of the SHPO and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the National Environmental Policy Act and/or the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8).

Based upon this review, the New York SHPO concurs with your recommendation of Alternative B. It is our opinion that the retention of the existing refuge's impound, open water, and marsh areas will minimize any potential impacts to known archaeological resources. As this is a plan review we would recommend that a Section 106 finding of No Effect would be appropriate for this undertaking. We would also recommend that any future undertakings in the refuge that require ground disturbing activities are fully assessed against the previously completed SJS Archaeological Services study.

If I can be of any further assistance do not hesitate to contact me at (518) 237-8643, ext. 3263.

Sincerely,  
  
John A. Bonafide  
Historic Preservation Services  
Coordinator

## Appendix I



John Mosesso Jr./NBII.

*Green Frog*

**Finding of No Significant Impact  
(FONSI)**

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## **Finding of No Significant Impact Iroquois National Wildlife Refuge Comprehensive Conservation Plan**

In October 2010, the U.S. Fish and Wildlife Service (Service) published the draft comprehensive conservation plan and environmental assessment (draft CCP/EA) for Iroquois National Wildlife Refuge (NWR). The refuge is currently 10,828 acres and located in Basom, New York. The draft CCP/EA identified the refuge's purposes, proposed a vision statement, and included management goals and objectives to be achieved through plan implementation. It evaluated three alternatives for managing the refuge over the next 15 years, and compared their potential contribution to the refuge's purposes, vision, goals, and the mission of the National Wildlife Refuge System (Refuge System). Alternative B is identified as the Service-preferred alternative. Chapter 2 in the draft plan details the respective goals, objectives, and strategies for each of the three alternatives. Chapter 4 describes the predicted direct, indirect, and cumulative impacts on the environment from implementing each alternative. The draft plan's appendixes provide additional information supporting the assessment and specific proposals in alternative B. A brief overview of each alternative as it was presented in the draft CCP/EA follows.

Alternative A (Current Management): The Council of Environmental Quality regulations on implementing the National Environmental Policy Act (NEPA) require this "No Action" alternative, which we define as continuing current management. Alternative A includes our existing programs and activities and serves as the baseline against which to compare the other alternatives. Under current management, we manage open water and emergent marsh impoundments, early successional habitat including grasslands and shrublands, and forest habitat including a conifer plantation. Under alternative A, we would continue to conduct furbearer management, monitor waterfowl during spring and fall migration, conduct landbird surveys, and manage for invasive species. We would maintain existing opportunities for visitors to engage in wildlife observation, photography, and environmental education and interpretation, as well as maintain existing hunting and fishing opportunities on the refuge. We would maintain existing infrastructure and buildings, and maintain current staffing levels. While this alternative is intended as a "snapshot in time," we include activities that were underway at the time the plan was being prepared, some of which are completed, and some of which are still in progress.

Alternative B (the Service-preferred alternative): This alternative includes an array of management actions that, in our professional judgment, work best toward achieving the purposes of the refuge, our vision and goals for those lands, the Refuge System mission, and the goals in State and regional conservation plans. This alternative focuses on enhancing the conservation of wildlife through habitat management, as well as providing additional visitor opportunities on the refuge. Alternative B incorporates existing management activities and/or provides new initiatives or actions aimed at improving efficiency and progress towards refuge goals and objectives. Some of the major strategies proposed include increasing grassland, shrubland, and forest habitats, replacing non-native conifer plantation with native forest species, restricting public access to designated areas of the refuge year-round, and implementing a permit system for hunting upland game, migratory birds, and big game. This alternative would also increase some existing wildlife-dependent recreational activities, including wildlife observation and hunting.

We would co-locate the Lower Great Lakes Fish and Wildlife Conservation Office (LGLFWCO) with a new visitor contact station and administrative building by adding on to the existing building. We would expand our existing staff to include a full-time permanent law enforcement officer, maintenance worker, biological technician, and one part-time biological technician.

We would also continue our monitoring and inventory program, and regularly evaluate the results to help us better understand the implications of our management actions and identify ways to improve their effectiveness.

**Alternative C (Improved Biological Integrity):** Alternative C, prominently features additional management that aims to restore (or mimic) natural ecosystem processes or function to achieve refuge purposes. Under alternative C, refuge habitat conditions would change as a result of management decisions that target a more natural state (less management) and emphasize restoration to historical habitats. Refuge impoundments would no longer be actively managed and some would be removed. This would result in a decrease of approximately 329 acres of open water and emergent marsh habitat. Grassland acres would be reduced by 50 percent as only the two largest grassland units would be managed. Management of shrublands would be discontinued and the only shrub habitats that would remain are small native shrub swamps. Forest cover would increase (1,548 additional acres) under this alternative in response to the reversion, succession and conversion of conifer plantations, grasslands, shrublands, emergent marsh and open water to forest. Similar to alternative B, we propose to restrict public access to designated areas of the refuge year-round, allowing wildlife observation, hiking and walking on established refuge nature trails. Also, we propose to co-locate the Lower Great Lakes Fish and Wildlife Conservation Office currently located in Amherst, New York with a new visitor contact station and administration building at Iroquois Refuge.

We distributed the draft CCP/EA for a 30-day period of public review and comment from October 4, 2010 to November 3, 2010. During the comment period, 37 individual comments were received. These were assessed during the content analysis process. Appendix I in the final CCP includes a summary of those comments, our responses to them, and additional rationale for the changes we make in the final CCP outlined below.

After reviewing the proposed management actions, and considering all public comments and our responses to them, I have determined that the analysis in the draft CCP/EA is sufficient to support my findings. I am selecting alternative B, as presented in the draft CCP/EA with the following changes recommended by the planning team, to implement as the final CCP.

- Due to comments directed at closing the refuge to wandering, the refuge has decided to allow visitors unrestricted access off of designated trails, but only during the hunting season (October 1 to the end of February). All visitors, including those wandering on the refuge, must wear hunter orange during the firearm deer seasons. Hunter orange must be visible from 360 degrees and must be at least 400 square inches of solid fluorescent orange on head chest and back -- a hat and vest may fulfill this requirement. There will be no wandering in any refuge wetlands, only upland wandering will be permitted. The refuge will continue to restrict public access for hiking and walking to designated trails from March 1 to September 30.
- Based on feedback we have received from our partners and the public, we have decided to modify the Alternative B turkey hunting proposal. The new framework will consist of two seasons. The first season will run from May 1 – May 15 with 50 permits being available. The second season will run from May 16 - May 31 with 25 permits being available. Permits will be allocated on a lottery system basis with hunters choosing their desired season in order of preference. Hunters may receive a permit for one season only.
- The refuge has also reconsidered its decision to not allow fall turkey hunting on the refuge. There will be no additional administrative burden on the refuge by having this season added to the refuge hunts.

I concur that modified alternative B, including the above changes, helps fulfill the mission of the Refuge System; best achieves the refuge's purposes, vision, and goals; maintains and, where appropriate, helps restores

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the refuge's ecological integrity, addresses the major issues identified during the planning process, and is consistent with the principles of sound fish and wildlife management. It also provides the most reasonable and effective enhancements to existing public use programs that are in high demand, with minimal impacts to wildlife and habitats. The plans to increase staffing and improve infrastructure are reasonable, practicable and will result in the most efficient management of the refuge and best serve the American public. This finding of no significant impact (FONSI) includes the EA by reference.

We have reviewed the predicted beneficial and adverse impacts with alternative B that are presented in chapter 4 of the draft CCP/EA, and compared them to the other alternatives. We specifically reviewed the context and intensity of those predicted impacts over the short- and long-term, and considered the cumulative effects. The review of each of the NEPA factors to assess whether there will be significant environmental effects is summarized here (40 C.F.R. 1508.27).

(1) Beneficial and adverse effects – we expect the final CCP (alternative B) management actions to benefit both the wildlife and habitats at Iroquois NWR. Important examples include the measures to increase forest habitats through natural early succession of grasslands and scrub-shrublands, control non-native invasive species, and manage a variety of other habitats on the refuge to benefit breeding and migrating songbirds, waterfowl, and raptors, as well as amphibians, reptiles, and mammals of conservation concern. These benefits will not result from any major change in management strategy; rather, they will be incremental to the effects of the current management. Therefore, we do not anticipate any significant beneficial or adverse effect on the human environment.

(2) Public health and safety – we expect the good safety record of the refuge to continue based on the protective actions provided in the stipulations of the compatibility determination for each of the authorized public uses on the refuge. There should be no significant impact on public health and safety from the implementation of the CCP.

(3) Highly controversial effects – the management actions in the final CCP such as invasive species control, early successional habitat restoration, hunting, and other wildlife-dependent recreational uses are time-tested measures. Their effects on the refuge are well-studied and widely known from past management and monitoring. There is no scientific controversy over what these effects will be. Thus, there is little risk of any unexpectedly significant effects on the environment.

(4) Highly uncertain effects or unknown risks – the management measures in the final CCP are evolutionary: they are mostly refinements of existing management measures that we have used for years. As discussed in the draft CCP/EA and in the final CCP, the selected alternative includes a comprehensive monitoring program to reassess the effectiveness of each planned improvement. With the data available on the current management results and the system in place to adjust for any unplanned effect, we do not find a high degree of uncertainty or unknown risk that the CCP will cause any significant impact on the environment.

(5) Precedent for future actions with significant effects – the purpose of the CCP is to establish the precedent for managing the refuge for up to 15 years. But the effects of that management are designed as gradual improvements over the existing conditions, not global changes. For example, strategies such as marsh restoration will be completed over several years. Therefore, we do not expect this precedent to cause any significant impact on the environment.

(6) Cumulatively significant impacts – the CCP provides the programmatic, long-term management plan for the refuge. We plan to coordinate with surrounding land managers to promote common goals. Our management jurisdiction is limited, however, to the refuge lands, and we do not foresee any of the coordinated activities rising to the level of a significant effect on the environment. Within the term of the CCP, we intend to pursue


additional projects such as constructing an additional trail and installing additional observation areas. We will review the alternatives for these projects and their effects in additional NEPA studies tiered from the draft CCP/EA. We will design these tiered projects so they are not likely to have a significant effect on the environment. Further, we will examine the cumulative effects of all projects under the CCP before they are approved, and we will conduct whatever level of additional NEPA review is warranted.

(7) Effects on scientific, cultural, or historical resources – the archaeological and cultural studies summarized in the CCP showed no significant impacts on these resources from the planned management activities. Service cultural resource managers in the Regional Office keep an inventory of known sites and structures, and ensure that we consider them in planning new ground-disturbing or structure-altering changes to the refuge. Throughout the implementation of the CCP, we will continue to conduct or contract archaeological or architectural surveys when needed.

(9) Effects on Endangered Species Act (ESA)-listed species and habitats – as detailed in the CCP, we have completed a consultation with the Service’s Ecological Services Field Office under Section 7 of the ESA. Their endangered species specialists have concurred in our biological assessment that the planned actions are not likely to adversely affect any of the ESA-listed species that may be present on the refuge. The CCP also protects the delisted bald eagle. Our management actions are designed to preserve and improve the existing habitat for these species and there is no ESA-designated, critical habitat on the refuge. Therefore, we do not anticipate any significant effects on these ESA resources.

(10) Threat of violating any environmental law – our habitat management actions are designed to benefit the environment. They will comply with all applicable protections such as the Clean Water Act and the Clean Air Act. Pursuant to the National Wildlife Refuge System Administration Act (16 U.S.C. 668dd(e)(3), 668dd(m)), our public hunting and fishing programs under the CCP require all participants to comply with State regulations. We do not anticipate a threat that the CCP will violate any environmental law or cause any significant impact on the environment.

Based on this review, we find that implementing alternative B will not have a significant impact on the quality of the human environment, in accordance with Section 102(2)(c) of NEPA. Therefore, we have concluded that an Environmental Impact Statement is not required, and this FONSI is appropriate and warranted.



Theresa E. Rabot  
Acting Regional Director  
U.S. Fish and Wildlife Service  
Hadley, Massachusetts



Date

**Iroquois National Wildlife Refuge**

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**<http://www.fws.gov/northeast/iroquois>**

**Federal Relay Service**

**for the deaf or hard of hearing**

**1 800/877-8339**

**U.S. Fish and Wildlife Service Website**

**<http://fws.gov>**

**For National Wildlife Refuge System Information:**

**1800/344 WILD**

**September 2011**

