

Chapter 1



USFWS/ Steve Vittum

Refuge trails meander along the creek

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Missisquoi National Wildlife Refuge

*in the midst of a slow, languid stream
that the Abenaki people call
“Missisquoi” the “Land of the Flint”*

Purpose and Need for the Plan

This Comprehensive Conservation Plan (CCP) for the Missisquoi National Wildlife Refuge was prepared pursuant to 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. 668dd et seq.; Refuge Improvement Act). An Environmental Assessment (EA), required by the National Environmental Policy Act of 1969 (42 U.S.C. 4321–4347), was prepared concurrently with the draft CCP.

This final CCP presents the combination of management goals, objectives, and strategies that we believe will best achieve our vision for the refuge; contribute to the mission of the National Wildlife Refuge System (Refuge System); achieve refuge purposes; fulfill legal mandates; address key issues; incorporate sound principles of fish and wildlife management, and serve the American public. The CCP will guide management decisions and actions on the refuge over the next 15 years. It will also be used as a tool to help the natural resource agencies of the State of Vermont, our conservation partners, local communities, and the public understand our priorities.

This document has 4 chapters and 12 appendixes. Chapter 1 introduces the plan and sets the stage for chapters 2 through 4. It

- describes the purpose and need for a CCP;
- identifies national, regional, and state plans that influenced this plan;
- highlights the purposes for establishing the refuge and their land acquisition histories; and,
- presents the vision and goals for the refuge.

Chapter 2, “The Planning Process,” describes the planning process we followed, including public and partner involvement, in the course of developing this final plan.

Chapter 3, “Refuge and Resource Descriptions,” describes the existing physical, biological, and human environment.

Chapter 4, “Management Direction and Implementation,” presents the general refuge management actions and the goals, objectives, and strategies that will guide decision-making and land management. It also outlines our staffing and funding needs to accomplish the management direction.

Twelve appendixes, a glossary, and a bibliography provide additional documentation and reference information used in compiling this document.

Developing a CCP is vital for the management of each refuge. This final CCP will provide strategic management direction over the next 15 years by:

- providing a clear statement of desired future conditions for habitat, wildlife, visitor services, staffing, and facilities
- providing State agencies, refuge neighbors, visitors, and partners with a clear explanation of the reasons for management actions
- ensuring refuge management reflects the policies and goals of the Refuge System and legal mandates

- ensuring the compatibility of present and future public use
- providing long-term continuity and direction for refuge management
- providing direction for staffing, operations, maintenance, and annual budget requests

The present needs for this CCP are many. First, Missisquoi Refuge lacks a master plan to fulfill its obligations, especially as environmental, economic, and social conditions have changed dramatically since the refuge was first established. Development and land protection near the refuge have both increased in the last few decades; the refuge completed a new Headquarters and Visitor Contact Station in 2005, providing new opportunities



Missisquoi River

for education and outreach; and the refuge staff is working with many new partners on water quality and land use issues in the Lake Champlain Basin. Given the changing face of the region, we feel our responsibility is to develop our priorities clearly. This CCP is also a valuable tool to help the State of Vermont natural resource agencies, Lake Champlain Basin and Missisquoi River watershed partners, other conservation organizations, local communities and the public understand and support refuge priorities.

Second, the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act; Public Law 105-57; 111 Stat. 1282) requires that all national wildlife refuges have CCPs in place by 2012 to help fulfill the mission of the Refuge System.

Finally, the CCP is needed to address issues identified through the planning process, by the public, partners, other agencies and refuge staff, as adversely affecting the populations and habitats of fish, wildlife, and plants within the refuge. These issues are described in detail in Chapter 2, “Planning Process.”

Project Area

Missisquoi National Wildlife Refuge (Missisquoi Refuge, the refuge) lies on the eastern shore of Lake Champlain, near the Canadian border in Franklin County, Vermont (map 1-1). Established in 1943, the 6,592-acre refuge includes most of the Missisquoi River Delta, the largest wetland complex in the Lake Champlain Basin. As it flows through the refuge, the Missisquoi River passes through the largest and perhaps highest quality silver maple floodplain forest in the State. The river meanders through extensive natural and managed marshes of wild rice, buttonbush, and tussock sedge that host thousands of waterfowl during migration. The part of the river in the refuge harbors rare freshwater mussels, turtles, and fish. Its delta is a critical link for migratory birds along the Atlantic Flyway. Refuge lands protect the Shad Island great blue heron rookery, the largest in Vermont. Other important refuge habitats include pitch pine woodland bog, alder thickets and other shrub lands, patches of oak and northern hardwood forest, and grasslands.

The refuge sits at the mouth of the 767,000-acre Missisquoi River watershed (refer to map 1-1). The 88-mile river flows through forested and agricultural uplands and many towns in Vermont and Quebec. Broad-based watershed-wide



planning is underway to address water quality concerns, including excessive phosphorus, bacteria, mercury, pesticides, and other pollutants and the loss of fish and wildlife habitat. The refuge staff is engaged in that planning. The river flows through the refuge and into Lake Champlain at Missisquoi Bay. About the size of the State of Massachusetts, Lake Champlain drainage basin comprises five distinct segments. The Missisquoi Bay segment, which lies mostly in Canada, is quite shallow and relatively warm. A host of local, regional, and international groups focuses on the lake and its management issues.

The management issues in the Missisquoi River watershed and the Lake Champlain Basin also affect the fish, wildlife, and habitats of the Missisquoi Refuge; any refuge planning and management decisions must address them. Our planning process enables the refuge to identify its management priorities for lands under its jurisdiction and identify its role in helping to conserve the lands and waters in the larger landscape.

This section presents hierarchically, from the national to the local level, highlights of Service policy, legal mandates and regulations, and existing resource plans and conservation initiatives that directly influenced the development of this CCP.

Policies, Legal Mandates, and Other Plans Guiding the Planning Process

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service, part of the Department of the Interior, administers the National Wildlife Refuge System (Refuge System). The mission of the Service is:

“Working with others, to conserve, protect and enhance fish and 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 include the lands included in national wildlife refuges, migratory birds, federal-listed endangered and threatened species, inter-jurisdictional fishes, wetlands, and certain marine mammals. The Service also manages national fish hatcheries, enforces federal wildlife laws and international treaties on importing and exporting wildlife, assists state fish and wildlife programs, and helps other countries develop wildlife conservation programs.

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

The Refuge System is the world’s largest network of public lands and waters set aside specifically for conserving wildlife and protecting ecosystems. From its inception in 1903, it has grown to more than 96 million acres of public lands, 545 national wildlife refuges in all 50 states, and waterfowl production areas in 10 states. More than 34 million visitors each year hunt, fish, observe and photograph wildlife, or participate in environmental education and interpretation on those refuges.

Refuge System Mission and Goals

“The mission of the 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.”

— National Wildlife Refuge System Improvement Act of 1997

The fundamental mission of the Refuge System is wildlife conservation. The goals of the Refuge System are to:

- Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered
- Perpetuate migratory bird, inter-jurisdictional fish, and marine mammal populations
- Conserve a diversity of fish, wildlife, and plants
- Conserve and restore, where appropriate, representative ecosystems of the United States, including the ecological processes characteristic of those ecosystems
- Foster understanding and instill appreciation of fish, wildlife, and plants, and their conservation, by providing the public with safe, high quality, and compatible wildlife-dependent public uses including hunting, fishing, wildlife observation and photography, and environmental education and interpretation

Fulfilling the Promise

A yearlong process involving teams of Service employees who examined the Refuge System within the framework of Wildlife and Habitat, People and Leadership culminated with “Fulfilling the Promise: The National Wildlife Refuge System” (USFWS 1999), a vision for the National Wildlife Refuge System. The first-ever Refuge System Conference in Keystone, Colorado in October 1998, was attended by every refuge manager in the country, other Service employees, and scores of conservation organizations. Many “Promises Teams” formed to develop strategies for implementing the 42 recommendations of the conference report. Information from such teams as Wildlife and Habitat, Goals and Objectives, Strategic Growth of the Refuge System, Invasive Species, and Inventory and Monitoring helped guide the development of the goals, strategies and actions in this CCP.

Refuge Planning and Management Guidance

The Improvement Act directs the Service to monitor the status and trends of fish, wildlife, and plants on each refuge and maintain the biological integrity, diversity, and environmental health of each refuge and the System (601 FW 3).

The Service refuge planning policy (602 FW 3) also guides the development of a CCP. The planning process calls for development of a vision statement, goals, objectives, and strategies. Goals and objectives are the unifying elements of successful refuge management. They identify and focus management priorities, provide a context for resolving issues, guide specific projects, provide rationale for decisions, and provide the connection between management actions and the refuge purpose, System mission, and other policies.

The vision broadly reflects what the refuge should be or what the Service hopes to do, based primarily upon the System mission, refuge purposes, and other mandates. Because the vision may take several decades to achieve, it typically will remain in place 15 years or more. Goals narrow the vision into

general, supporting management directions. Under each goal, objectives direct management into incremental and measurable steps toward achieving the goal. Strategies are the specific tools or actions to accomplish the objectives. Strategies tend to be flexible, and may change frequently. Objectives also may change, but only if it becomes clear over time, through monitoring and evaluation, that the objectives would not further the goals they support. Often, more specific strategies and schedules in step-down management plans will be necessary to implement some of them.

The Improvement Act also directs the Secretary of the Interior to facilitate six compatible, wildlife-dependent recreational activities as priority general uses of the Refuge System. Those are hunting, fishing, wildlife observation and photography, and environmental education and interpretation. For a use to be compatible, it must not materially interfere with the purposes of a refuge or detract from the mission of the Refuge System. Each refuge manager determines which public uses are compatible, based on sound professional judgment. That is, a decision that is consistent with the principles of fish and wildlife management and administration, available science and resources, and adherence with law. Compatibility determinations must be in writing, must identify the anticipated effects of the proposed use on refuge resources, and include stipulations to mitigate those effects. See appendix B for compatibility determinations for the Missisquoi Refuge.

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. It provides refuge managers with a process for evaluating the best management direction to prevent the additional degradation of environmental conditions and to restore lost or severely degraded environmental components. It also provides guidelines for dealing with external threats to the biological integrity, diversity, and environmental health of a refuge and its ecosystem (601 FW 3). See appendix J for more details on the Integrity Policy, how we used it to determine priority resources of concern, and how that lead to the development of habitat goals and objectives at the Missisquoi refuge.

Appropriate Refuge Uses Policy

This 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). Appendix B further describes the Appropriate Refuge Uses Policy and describes its relationship to the CCP process.

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 Refuge Improvement Act is the key legislation regarding management of public uses and compatibility. The compatibility requirements of the Refuge Improvement Act were adopted in the USFWS Final Compatibility Regulations and Final Compatibility Policy, published October 18, 2000 (Federal Register, Vol. 65, No. 202, pp. 62458-62496). This Compatibility Rule changed or modified Service regulations contained in chapter 50, parts 25, 26, and 29 of the Code of Federal Regulations (USFWS 2000). The compatibility determinations for Missisquoi refuge can be found in appendix B along with additional information on the process. To view the policy and regulations online, visit <http://policy.fws.gov/library/00fr62483.pdf>.

Wildlife-Dependent Recreation Policy

The Improvement Act defines and establishes that compatible wildlife dependent recreational uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) are the priority general public uses of the Refuge System and will receive enhanced and priority 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. We are incorporating this policy as Part 605, chapters 1–7, of the Fish and Wildlife Service Manual.

Other Legal Mandates

Although Service and Refuge System policy and each refuge purpose provide the foundation for management, the way we administer national wildlife refuges must also comply with a variety of other Federal laws, executive orders, treaties, interstate compacts, and regulations pertaining to the conservation and protection of natural and cultural resources. Our “Digest of Federal Resource Laws of Interest to the Service,” which lists them, can be accessed at <http://laws.fws.gov/lawsdigest/indx.html>.

Chapter 4 of the Draft CCP/EA, “Environmental Consequences,” specifically evaluated our compliance with the Clean Water Act, Clean Air Act, the National Historic Preservation Act, the Archeological Resources Protection Act, and the Endangered Species Act (ESA).

National and Regional Plans and Conservation Initiatives

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.

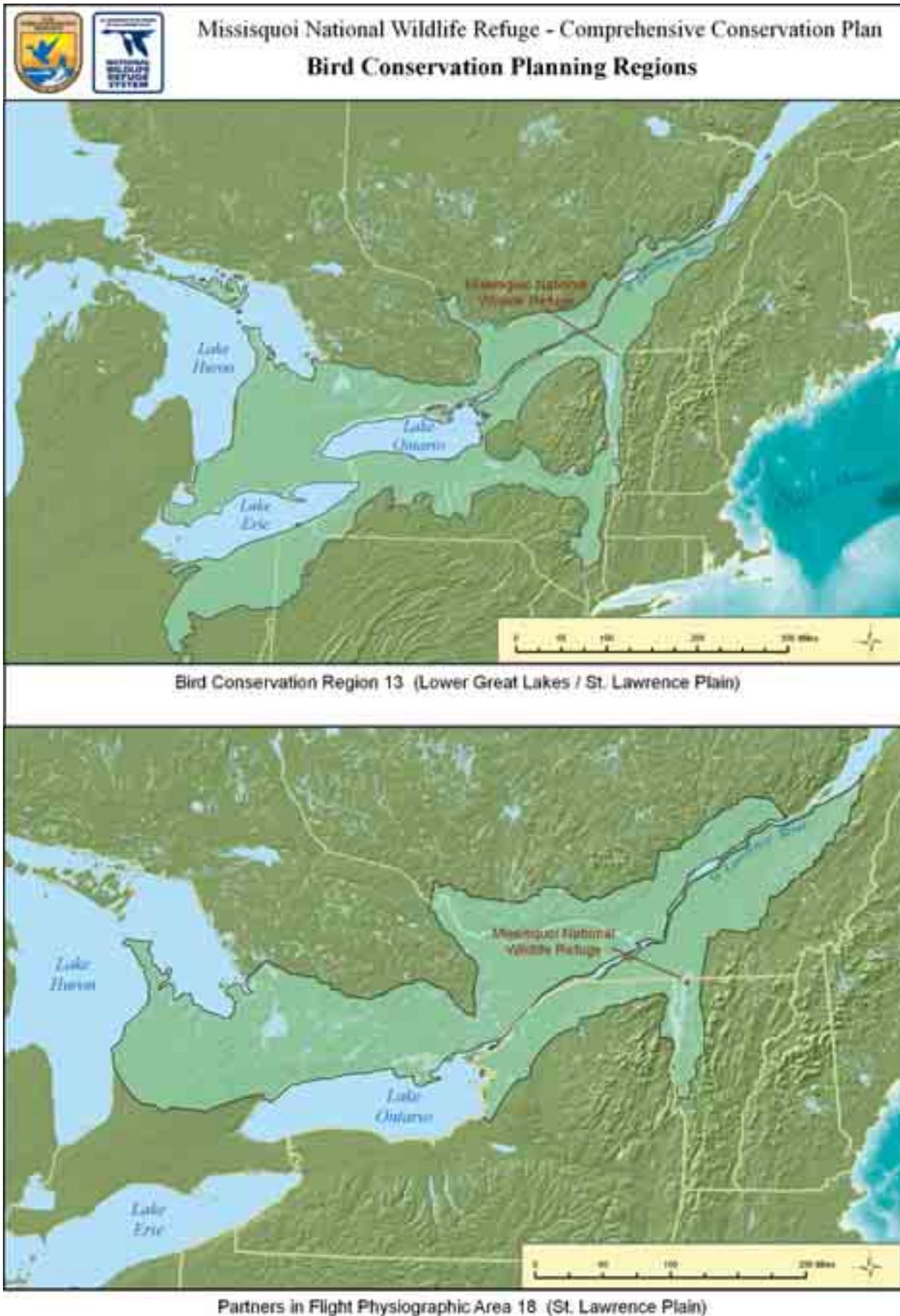
North American Bird Conservation Initiative (NABCI)

The NABCI brings together the individual land bird (Partners in Flight), 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. All bird conservation partnerships reduce 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. This CCP uses the priorities in the BCR 13 preliminary plan as well as guidance from the individual bird plans. Visit <http://www.nabci-us.org/> for more information on the NABCI.

Missisquoi Refuge lies in BCR 13, Lower Great Lakes/St. Lawrence Plain (map 1-2). BCR 13 encompasses the vast, low-lying lake plain region surrounding Lakes Erie and 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 important lakeshore habitats and associated wetlands, this region originally was covered with a mixture of oak-hickory, northern hardwood, and mixed-coniferous forests. Although once dominated by forests, the landscape now is dominated by agriculture interspersed with wetlands and remnant forest stands. Today, nearly 95 percent of the original habitat types have been lost to agriculture and urban development. BCR 13 plays a critical role in providing important staging and migrating habitat for birds in the spring and fall (Hartley et al. Draft 2006). The BCR 13 draft plan is now being reviewed and a final draft will be posted when complete on the ACJV publications page at the following link: <http://www.acjv.org/resources.htm>

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 (USFWS and CWS 1986). The plan was updated in 1998 and again in 2004 to emphasize strengthening its biological foundation, using a landscape planning approach, and expanding



Bird Conservation Region 13 (Lower Great Lakes / St. Lawrence Plain)

Partners in Flight Physiographic Area 18 (St. Lawrence Plain)

partnerships (USFWS and CWS 2004). Its implementation is accomplished at the regional level, in 11 Joint Venture Habitat Areas in the United States and four in Canada: one stretches across the United States—Canada border. Partnerships involve federal, state and local governments, tribal nations, local businesses, conservation organizations, and individual citizens for protecting habitat. By 2004, NAWMP partners had invested more than \$3.2 billion to protect, restore, or enhance more than 13.1 million acres of habitat. More information on the NAWMP is available at <http://www.fws.gov/birdhabitat/nawmp/nawmphp.htm>.

The Missisquoi Refuge lies in the Atlantic Coast Joint Venture (ACJV), one of the original joint ventures formed under the NAWMP and 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 that strong focus on waterfowl, the ACJV mission has evolved to include the conservation of habitats for all birds. The ACJV is working on integrated planning efforts in eight BCRs. Focus areas, which are specific, important geographic areas with joint venture regions, were identified and mapped for waterfowl and are being developed for other migratory birds within each BCR. Those focus areas are discrete, distinguishable habitats or habitat complexes that are regionally important for one or more priority waterfowl species during one or more life history stages. Missisquoi Refuge is a sub-focus area within the extensive Lake Champlain Focus Area of Vermont and New York, highlighting the refuge's importance for waterfowl. Visit <http://www.acjv.org> for more information.

North American Waterbird Conservation Plan

The waterbird plan is 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 continent-wide planning and monitoring, national-state-provincial conservation action, regional coordination, and local habitat protection and management (Kushlan et al. 2002). Regional planning information is being prepared for the Mid-Atlantic New England Working Group (MANEM).

We used the plan 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.nawcp.org>. For additional information, visit <http://www.fws.gov/birds/waterbirds/manem/>

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

The shorebird plan is a partnership across the United States 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, business-related sectors, researchers, educators, and policy makers. The plan was closely coordinated with NAWMP and Joint Venture staff, as well as the Partners In Flight and North American Waterbird Plan teams as they concurrently developed their revised national plans. Those 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 U.S. Shorebird Plan (Brown et al. 2001) identifies three primary objectives:

- 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

- Identify the principles and practices upon which local, regional and national management plans can effectively integrate shorebird habitat conservation with multiple species strategies
- Design an integrated strategy for increasing public awareness and information concerning wetlands and shorebirds

Regional plans, including the North Atlantic 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 (appendix C) and in considering the value of the refuge for migrating shorebirds, particularly during years of low water levels on Lake Champlain. The national plan can be accessed at <http://shorebirdplan.fws.gov/USShorebird.htm>, and the regional plan at <http://www.fws.gov/shorebirdplan/regionalshorebird/regionalplans.htm>.

Partners In Flight (PIF) Landbird Conservation Plans

In 1990, PIF was conceived 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 migrating birds has since expanded to include all land birds. You can view the PIF Landbird Conservation Plan at: http://www.partnersinflight.org/cont_plan/default.htm

Initially, PIF developed draft conservation plans within “physiographic areas”; Missisquoi Refuge lies in PIF Area 18 – the St. Lawrence Plain (Rosenberg 2000). PIF developed a set of science-based rules to evaluate the conservation status of all bird species, using a species’ population size, distribution, population trend, threats, and regional abundance objectively to identify regional and continental conservation priorities. Those rules were adapted, and are now being used at the BCR level to identify bird conservation priorities and opportunities (refer to map 1-2). In developing our habitat goals and objectives, we referred to its draft plan, now online at http://www.blm.gov/wildlife/plan/pl_28_10.pdf.

Lake Champlain Basin

“Opportunities for Action: An Evolving Plan for the Lake Champlain Basin,” a pollution prevention, control, and restoration plan, was first endorsed in October 1996 by the governors of New York and Vermont, the Province of Quebec, and the regional administrators of the U.S. Environmental Protection Agency (EPA). Updated in 2003 (Lake Champlain Steering Committee 2003), the plan is available online at <http://www.lcbp.org/viewofa.htm>.

The plan identifies several critical environmental problems and issues in the Lake Champlain Basin that require action:

- High phosphorus levels and algal blooms in parts of the Lake, including Missisquoi Bay
- Toxic substances, such as polychlorinated biphenyls (PCB’s) and mercury, resulting in fish consumption advisories
- Impacts to fish and wildlife from nuisance non-native aquatic species
- Wetland loss
- Habitat fragmentation
- Public access issues
- Recreational use conflicts

- Loss of cultural and archeological resources

Implementing the recommendations in the plan requires partnerships and a watershed and ecosystem approach. Many of those environmental issues affect the Missisquoi Refuge, which is an important partner in helping to implement the plan.

Lake Champlain Ecosystem Team

The USFWS Lake Champlain Ecosystem Team works to protect enhance and conserve fish and wildlife resources in the Lake Champlain watershed for public benefit by managing Service lands, supporting fish and wildlife restoration, providing technical expertise in fish and wildlife conservation and management, enhancing interagency cooperation and partnerships, and better informing the public about fish and wildlife resource issues. The team, a group of conservation and research professionals from various organizations working in the Lake Champlain Basin, attempts to approach conservation issues with an appreciation of the entire ecosystem and address conservation needs considering sustainability and landscape-level aspects of the ecosystem (see <http://www.fws.gov/r5lcfwro/>). The refuge, as a member of that team, exchanges its expertise with that of other members, and receives guidance on issues important in refuge management.

The Governor's Clean and Clear Action Plan

Vermont's Governor Jim Douglas is promoting this plan, initiated in the fall of 2003, to improve the water quality of Lake Champlain. It focuses on reducing phosphorous loading, stopping non-point source pollution, developing comprehensive river management programs, managing storm water runoff, and controlling erosion at construction sites. It supports the Agricultural Best Management Practices Program, Conservation Reserve Enhancement Program, Better Back Roads Program, Wetland Restoration Program, the advancement of Watershed Planning and the involvement of citizens in the Vermont Lay Mentoring Program. The Vermont legislature supports the plan, and provides funds annually to tackle those initiatives. For more information, visit <http://www.anr.state.vt.us/cleanandclear/index.htm>.

Missisquoi Bay Watershed Planning

Buttressed now by the development of the Governor's Clean and Clear Action Plan, local citizen groups, landowners, towns, and public agencies have worked for many years to reduce pollution in the Missisquoi River and its watershed. Actions include stabilizing stream banks, improving municipal wastewater treatment, and adopting better road maintenance and farming practices. The State of Vermont is building on those efforts by facilitating a collaborative planning process for the watershed. It brings together homeowners, farmers, local officials, business people, and other concerned citizens to determine how best to protect and restore water quality in the Missisquoi Bay and its watershed. The watershed planning process formally began with a series of public forums early in 2005. They invited citizens to voice their concerns about water quality and their ideas for addressing them. The top concerns were:

- Impacts of excessive phosphorus and the resulting algal blooms in Missisquoi Bay and Lake Carmi
- Soil erosion from stream banks, cropland, construction, and roads
- Phosphorus in runoff from developed and agricultural land
- Phosphorus and bacteria from wastewater sources, including failing shoreline septic systems
- Lack of water quality monitoring to identify source areas and track progress in pollution control
- Lack of funding, coordination, and prioritization for water quality improvement activities

- General lack of public awareness of how everyone's actions affect water quality
- The presence and effects of pollutants other than phosphorus (e.g., mercury and pesticides)
- Loss of the working landscape (farm and forest) and sensitive animal habitat to development
- Impacts of the bridge causeway (and other causeways) on water quality in Missisquoi Bay
- Declines in fishing and suitable fish habitat

A watershed council consisting of a diverse mix of stakeholders from within the watershed is meeting to address those and other issues. The council will develop a series of action strategies for protecting high-quality waters in the watershed and restoring those that are not meeting State standards. For more information and to read summaries of each forum, visit http://www.anr.state.vt.us/dec/waterq/planning/htm/pl_missisquoi.htm.

Invasive Species Management Partnership

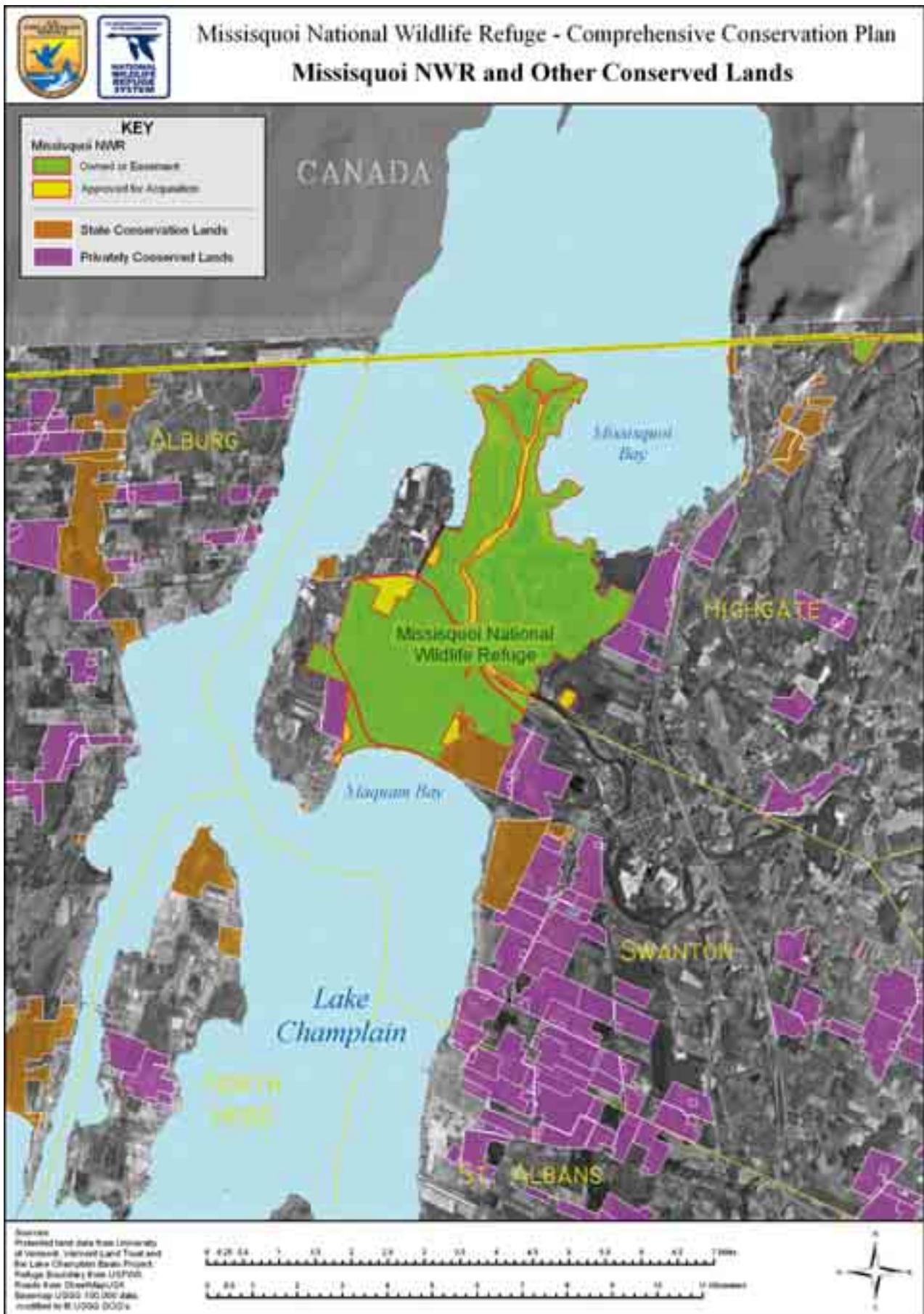
The Missisquoi Refuge staff is collaborating with several Federal, State, municipal, and nongovernmental partners to develop a network of interested members who will provide informational and educational materials and conduct strategic projects designed to curtail the advance of exotic invasive plant species in the Lake Champlain watershed. The Nature Conservancy (TNC) proposed the partnership, modeled after other successful weed management units established in the country. The partners first met in December 2005 to develop a vision and mission statement describing what the partnership is trying to achieve. The mechanism of how the group will interact with the public, units of government, landowners and others, and fund projects and materials, is still being developed. The current partnership includes representatives primarily from the Vermont side of Lake Champlain. It includes the U.S. Forest Service, Natural Resource Conservation Service (NRCS), TNC, the Vermont Fish and Wildlife Department (VT FWD), Department of Forests and Parks, Winooski Park District, Agency of Transportation, U.S. Fish and Wildlife Service, Lewis Creek Association, and private plant nursery businesses. The makeup of the group likely will change and grow as the group focuses its efforts and develops objectives for the watershed.

Vermont State Wildlife Action Plan

In 2001, Congress established a new annual appropriation to State wildlife agencies, first called the Wildlife Conservation and Restoration Program, and later, the State Wildlife Grants Program. Each state was eligible for those funds based on a commitment to develop a "comprehensive wildlife conservation strategy," by October 1, 2005. The State Wildlife Action Plan (WAP) addresses the full array of wildlife, although the focus is on "species of greatest conservation need." The WAP for Vermont is not solely a Fish and Wildlife Department plan, but also a "blueprint for wildlife conservation in Vermont," promoting broad involvement in implementing conservation strategies. The Missisquoi Refuge is a partner with the State in helping to develop and implement the plan. Specifically for the CCP process, because Vermont just submitted its WAP to the Service for approval, we used the list of "species of greatest conservation need" in developing refuge habitat management goals and objectives and where possible are contributing to Vermont wildlife conservation priorities (see chapter 4 and appendix C).

Refuge Purposes and Land Acquisition History

The Refuge Headquarters and Visitor Contact Station is located in Swanton, Vermont. The Missisquoi Refuge was established in 1943 "...for use as an inviolate sanctuary, or any other management purposes, for migratory birds" under the Migratory Bird Conservation Act. It encompasses 6,592 acres in the Towns of Highgate and Swanton in Franklin County, Vermont (refer to map 1-3). We acquired a succession of lands after 1943 under the provisions of the Migratory Bird Conservation Act, Migratory Bird Hunting and Stamp Act, and other authorities.



The refuge also owns in fee a 262-acre parcel known as the Westville Unit in Westville, New York (map 3-2). In addition, the refuge holds several conservation easements, including the Rock River easement (map 3-3), which we obtained through the Farmers Home Administration debt-restructuring program for farmers.

Historically, our land acquisition funds come from two sources: the Land and Water Conservation Fund, appropriated annually by Congress, and the Migratory Bird Conservation Fund, replenished primarily through the sale of Federal duck stamps to migratory waterfowl hunters and other conservationists. The Service purchases important mainland habitats and nationally significant wetlands within approved acquisition boundaries from willing sellers at fair market value as funds become available. Annual expenditures for refuge land acquisition recently have averaged \$36,300/year.

Table 1.1. History of Acquisition at Missisquoi Refuge.

Tract Number	Tract Name	Acquired Date	Acquired Acres**	Acquisition Authority
5	Clark, Julian B., et al.	02/04/1943	114.39	Migratory Bird Conservation Act
5a	Clark, Julian B., et al.	02/04/1943	1,467.76	Migratory Bird Conservation Act
5b	Clark, Julian B., et al.	04/27/1949	135.13	Migratory Bird Conservation Act
5c	Clark, Julian B., et al.	12/27/1961	453.92	Migratory Bird Conservation Act
9	Duval, George E.	03/10/1948	105.51	Migratory Bird Conservation Act
13	Cheney, Ila F.	07/24/1948	118.19	Migratory Bird Conservation Act
10	Tabor, Cora M.	08/25/1955	692.40	Migratory Bird Conservation Act
10a	Tabor, Cora M.	08/25/1955	184.70	Migratory Bird Conservation Act
10b	Tabor, Cora M.	08/25/1955	104.30	Migratory Bird Conservation Act
10b-l	Tabor, Cora M.	08/25/1955	0.07	Migratory Bird Conservation Act
4	Robert, Patrick, et al.	09/15/1955	141.10	Migratory Bird Conservation Act
15	Casey, Arthur T.	08/01/1956	79.50	Migratory Bird Conservation Act
15b	Casey, Arthur T.	08/01/1956	248.75	Migratory Bird Conservation Act
23	Boomhower, Albridge	01/08/1958	11.30	Migratory Bird Conservation Act
21	Donaldson, Glenna, et al.	01/21/1960	121.65	Migratory Bird Conservation Act
16	Carman, John A.	06/26/1961	40.51	Other
16a	Carman, John A.	06/26/1961	29.21	Other
16a-l	Carman, John A.	06/26/1961	32.12	Other
25	Bushey, Royal C.	06/26/1961	77.85	Migratory Bird Conservation Act
22	Brown, Donald W.	05/07/1963	443.02	Migratory Bird Conservation Act
22a	Brown, Donald W.	05/07/1963	78.60	Migratory Bird Hunting and Stamp Act
12	Prouty, Charles D.	09/28/1971	98.80	Migratory Bird Conservation Act
12-l	Prouty, Charles D.	09/28/1971	15.20	Migratory Bird Conservation Act
14	The Nature Conservancy	05/28/1976	655.00	Migratory Bird Conservation Act
14a	The Nature Conservancy	05/28/1976	202.00	Migratory Bird Conservation Act
19	Comolli, Edward J., et al.	05/17/1984	188.00	Migratory Bird Conservation Act
14b	The Nature Conservancy	04/12/1994	235.00	Migratory Bird Conservation Act
14c	The Nature Conservancy	04/13/1994	264.50	Other
26	Frazier Estate, Irene	11/20/1996	8.00	Migratory Bird Conservation Act
14d	The Nature Conservancy	03/30/1998	82.00	Migratory Bird Conservation Act
14e	The Nature Conservancy	04/12/2000	93.00	Migratory Bird Conservation Act
28a	Trust For Public Land	03/01/2004	39.00	Migratory Bird Conservation Act
36	David Cross	04/04/2006	10.1	Migratory Bird Conservation Act
TOTAL			6,570.58*	

* This number is our official acreage total from the Division of Realty. For Tract #21 (originally 153.42 acres), we disposed of 31.77 acres in exchange for tracts 16a and 16a-1.

**All acreages round to the nearest whole number; and represent U.S. Geological Survey (USGS) land acres above the mean high water mark.

Missisquoi Refuge Vision Statement

“The Missisquoi River delta is known as an important international resource for the people of the United States and Canada. The Missisquoi Refuge is recognized for its role in maintaining the ecological integrity of the river delta, providing breeding, staging, and migration habitat for thousands of waterfowl and other fish and wildlife. Education, research, and wildlife-dependent recreational opportunities are available, insofar as they are compatible with Refuge health and protection. Refuge staff partner with local, state, and federal agencies, local organizations and communities, and individuals to sustain a healthy Lake Champlain ecosystem for current and future generations.”

“The future of the Missisquoi Refuge and the sustained integrity of the river delta ecosystem relies on continued understanding of the past and present biological processes and human influences that created and maintain this large wetland complex. The cultural resources at the Refuge provide valuable insight into the history and way of life of native peoples. The Refuge is a welcoming destination for our neighbors



Tom Ramsay/USFWS

Mallard and Brood

and other visitors seeking to enjoy and learn about the history and wildlife of the Missisquoi River delta and the National Wildlife Refuge System.”

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 on a 5-to-10 year revision schedule. Some require additional NEPA analysis, public involvement, and compatibility determinations before they can be implemented. National Wildlife Refuges in BCR 13 are working together on developing their HMPs.

Table 1.2. Step-Down Management Plan Schedule for Missisquoi Refuge.

Step-Down Management Plan	Date Completed/ Updated	Anticipated Date Completion/Update
Habitat Management Plan (HMP)		2008
Visitor Services Plan	1981	2011
Cultural Resources Management Plan		2011
Hunt Plan		To be included in Visitor Services Plan
Trapping Plan	1989	
Wildlife Inventory and Monitoring Plan	1986	
Fire Management Plan	1987	
Law Enforcement Plan	1993	
Safety Program and Operations Plan		1995 draft
Fishery Management Plan		1997 draft
Continuity of Operations Plan		1999 draft
Water Management Plan	1986	To be integrated into HMP
Grassland Management Plan	1986	To be integrated into HMP

Refuge Goals

The purpose of the CCP is to provide the refuge with a 15-year management plan consistent with Service policies and legal mandates that will achieve the following six goals. We developed these goals after considering refuge purposes, Service and Refuge System missions, our vision, and the mandates, plans, and conservation initiatives described above. These goals are intentionally broad, descriptive statements of purpose.

- Goal 1 Maintain the ecological integrity of the Missisquoi River delta to ensure a healthy and diverse river and wetland ecosystem providing a full range of natural processes, community types, and native floral and faunal diversity.**
- Goal 2 Provide diverse upland habitats for Federal trust species including migratory birds and other species of conservation concern in all seasons.**
- Goal 3 Provide high quality education and interpretative programs to promote an understanding and appreciation for the conservation of fish and wildlife and their habitats, as well as the role of the Refuge in conserving the Missisquoi River delta.**
- Goal 4 Increase appreciation and stewardship of the Missisquoi River Delta and the Lake Champlain Basin by providing compatible, positive, wildlife-dependent recreation including wildlife observation and photography, hunting, and fishing in accordance with the National Wildlife Refuge System Improvement Act of 1997.**
- Goal 5 Preserve the cultural and historical resources on the Refuge for current and future generations and to sustain an appreciation of the past.**
- Goal 6 Foster cooperative partnerships and actions to promote fish and wildlife conservation in the Lake Champlain Basin and Missisquoi River Watershed.**