Chapter 2

USFWS

Refuge trails in the Winter

The Planning Process

- The Comprehensive Conservation Planning Process
- Planning Issues
- Issues Outside the Scope of this Project

The Comprehensive Conservation Planning Process

Service policy establishes an eight-step planning process that also facilitates compliance with NEPA (602 FW 3), as illustrated in figure 2.1. Our planning policy and CCP training materials describe each step in detail. Although the figure suggests those steps are discrete, two or three steps can happen concurrently. For more details on the planning process, please visit *http://policy.fws.gov/602fw3.html*.

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

Figure 2.1. The Comprehensive Conservation Planning process and its relationship to the National Environmental Policy Act

Initial Planning

We began preparing the draft CCP/EA in 1998. Initially, we focused on collecting information on natural resources and public use. We also developed a vision statement, preliminary refuge goals, and the preliminary issues this plan would address. We compiled a mailing list of organizations and individuals to ensure that we were contacting an array of interested parties.

Public Scoping

We announced the location, dates, and times of three public scoping meetings in Swanton, St. Albans, and Burlington in local newspapers and special mailings in 2000. More than 100 people attended those meetings, which we held to let people know what the Service was doing to manage the Missisquoi Refuge, and to elicit their input on topics of interest to them.

In fall 2000, we distributed copies of our "Issues Workbook" to more than 600 people, to help collect their ideas, concerns, and suggestions on important issues associated with managing the refuge. We distributed the workbook to everyone on our mailing list, those who attended public meetings, and anyone who subsequently requested one. The workbook asked what they valued most about the refuge, their vision for the future of the Missisquoi River and Missisquoi Bay, the Service role in that future, and any other refuge issues they wanted to raise. We received 60 completed copies of the workbook in return.

In spring 2001, we distributed a "Planning Update" that summarized those responses (see appendix E). The responses from the workbooks and public meetings helped us formulate the issues that relate to resource protection and public use, and helped us develop the draft alternatives. We briefed the regional chief and regional office and refuge staff on the results of the public scoping meetings, and presented similar briefings to the Lake Champlain Ecosystem Team, the Commissioner, Director of Wildlife, and Waterfowl Team Leader of the VT FWD, and the district staff of Senator Patrick Leahy.

CCP Development

In 2002, the refuge staff revised goals, objectives, and strategies based on comments received from the public and our resource management partners. The preparation of chapter 1, "The Purpose of and Need for Action," chapter 3, "Affected Environment," of the draft CCP/EA and the inventory phase of the Wilderness Review began in 2002 and 2003. Staffing changes at the regional office and other refuge priorities necessitated a pause in the planning process.

We restarted the CCP/EA in December 2004. The core planning team consisted of the refuge staff, regional office planning staff, a regional biologist, and one member from the VT FWD. The extended planning team included additional resource professionals from the Lake Champlain Fish and Wildlife Resources Office in Essex Junction, Vermont and program specialists from the Vermont Department of Natural Resources.

The core planning team met every 1 to 2 months in 2005 and early 2006 to refine and develop objectives and strategies for each goal of the two draft alternatives. The issues identified during the public scoping and the analysis of the refuge's physical, biological, and cultural environment provided the foundation for that development.

The habitat objectives and strategies are based on several informative analyses and discussions around key resource issues. To identify the highest priority habitats and associated wildlife species we evaluated BCR 13 species priorities, breeding bird survey trend data, site capability at the refuge, and regional landscape conditions. That led to a thorough discussion on the distribution and amount of early successional habitat to be maintained as grassland or shrub land or allowed to succeed naturally to floodplain forest. See Appendix J for a thorough outline of the information used to determine priority resources of concern for the Refuge.

On June 6, 2005, the CCP planning team met with David Capen and Zoe Richards of UVM to discuss the management of the great blue heron rookery, cormorants, and floodplain forest habitat on Shad and Metcalfe islands. On July 7, 2005, the planning team toured the Maquam Bog with Ian Worley of UVM and Eric Sorenson of the Vermont Natural Heritage Program to discuss the ecology and management of the bog. See summaries of these discussions in appendix G.

In March 2007, we released a draft CCP/EA for a 30-day public review and comment. In addition, we held one public meeting on March 31st. We summarize that public meeting, the public comments we received, and our responses to those comments in appendix L. In some cases, our responses resulted in modifications of our preferred alternative (alternative B in the draft CCP/EA). Those included additions, corrections, or clarifications which we have incorporated into this final CCP.

Our Regional Director has signed a Finding of No Significant Impact (FONSI), which certifies that this final CCP has met agency compliance requirements, will achieve refuge purposes, and help fulfill the refuge system mission (appendix M) It also documents his determination that implementing this CCP will not have a significant impact on the human environment and, therefore, an Environmental Impact Statement(EIS) is not required.

We must formally revise this CCP every 15 years, or earlier, if conditions affecting the refuge have changed significantly. We will periodically monitor the plan to ensure that its strategies and decisions are being accomplished. We will use the data collected in routine inspections or programmatic evaluations to continually update and adjust management activities.

We will make these documents available to all interested parties. Implementation can begin immediately.

Table 2.1. CCP Core Planning Team.

Name	Job Title, Organization
Joe Bertrand	Maintenance Mechanic, USFWS, Missisquoi Refuge
Jennifer Casey	Assistant Regional Refuge Biologist, USFWS, Lake Umbagog NWR
Bill Crenshaw	Wildlife Biologist, VT FWD
David Frisque	Refuge Operations Specialist, USFWS, Missisquoi Refuge
Lindsay Krey**	Assistant Planner, USFWS, Northeast Regional Office
Carl Melberg	Land Acquisition Planner, USFWS, Northeast Regional Office
Eileen Nunez	Visitor Services Specialist, Missisquoi Refuge
Pam Rooney*	Supervisory Engineer, USFWS, Northeast Regional Office
Rick Schauffler	Regional GIS Specialist, USFWS, Great Bay NWR
Ellen Snyder	Wildlife Consultant, Ibis Wildlife Consulting
Lisa Swainbank	Administrative Support Assistant, Missisquoi Refuge
Mark Sweeny	Refuge Manager, USFWS, Missisquoi Refuge
Alison Whitlock**	Wildlife Biologist, USFWS, Northeast Regional Office
Robert A. Zelley	Wildlife Biologist, USFWS, Missisquoi Refuge

**Involved in planning from 1998-1999*
***Involved in planning from 2000-2002*

Table 2.2. Other Contributors to CPP Preparation.

Name	Job Title, Organization
David Capen	Research Professor, University of Vermont (UVM)
John Fellows	Volunteer, USFWS, Northeast Regional Office
Shelley Hight	Archaeologist, USFWS, Northeast Regional Office
Everett Marshall	Biologist/Information Manager, Vermont Nongame & Natural Heritage Program
Lelaina Marin	Assistant Planner, USFWS, Northeast Regional Office
Gloria McCahon	Intern, USFWS, Northeast Regional Office
Zoe Richards	Research Associate, UVM
Eric Sorenson	Natural Community Ecologist, Vermont Nongame and Natural Heritage Program
David Tilton	Project Leader, USFWS Lake Champlain Fish and Wildlife Resources Office
Ian Worley	Professor in Botany, UVM

Section 7 Review

Section 7 of the ESA requires all federal agencies to consult with the Service to ensure that any actions will not jeopardize the continued existence of any federal-listed species or adversely modify designated critical habitats. The refuge is requesting a section 7 review by our Ecological Services office in Concord, New Hampshire. The refuge has no known federal-listed plants, animals, or critical habitats, so we anticipate no effect on listed species or habitats.

Planning Issues

The core planning team, our state or other partners or the public generated the following issues addressed in this CCP.

Management of the Missisquoi River Delta

The Missisquoi River Delta is the largest wetland complex in the Lake Champlain Basin. Over 50 percent of the waterfowl that use the lake during fall migration (late August through mid-November) are found in this wetland ecosystem. The diversity and uniqueness of its flora and fauna are critical components of the Northern Champlain region. We need to consider protecting such unique natural communities as the Maquam Bog, extensive wild rice beds, and dwindling riparian and floodplain forests. Sedimentation of wetland "potholes" and associated backwaters and sloughs is a concern, and marsh management and restoration should consider waterfowl as well as other wildlife.

The protection of various wildlife habitats from development and the placement of lands in public trust are important to, and appreciated by, our partners and the general public. Service policy outlines procedures for considering additional lands for protection as part of the National Wildlife Refuge System. In preparing this CCP, we did not request approval from the Director, through the preparation of a Conservation Proposal, to study lands for inclusion

USFWS

Agricultural field and recreational path along Rt. 236, adjacent to Missisquoi River up-river from Refuge.

into the boundary of the Refuge. This is a necessary step prior to initiating a public process for land acquisition. Interest remains strong in the local area for additional protection efforts. We have outlined strategies in the "General Management" section of chapter 4, that sets the stage for requesting Director Approval to study an expansion of the refuge.

Runoff from residential, agricultural, and industrial sources affects the delta. Because the refuge is located at the mouth of the river, it receives the full impact of any runoff. Pollutants, invasive species, and other concerns in Missisquoi Bay also affect the refuge. We must work to combat these threats to the refuge's ecological integrity while managing its' important wildlife habitats

Non-Native Invasive Species

Nuisance, non-native aquatic invasive plants and animals are one of the biggest problems in the Lake Champlain Basin. Non-native organisms can displace native species, degrade wetlands and other natural communities, and reduce natural diversity and wildlife habitat values. Non-native plants out-compete native species for light, water, and nutrient resources. Invasive species can also limit recreational activities and substantially affect the economy by preventing or restricting access to infested areas by boaters, anglers, or swimmers.

The refuge staff is concerned that, once invasive plants have become established, they are expensive and labor-intensive to eliminate; they are able to establish easily, reproduce prolifically, and disperse readily, making their eradication difficult. Preventing new invasions is extremely important for maintaining biological diversity and native plant populations. Examples of aquatic nuisance species in Lake Champlain include alewife, sea lamprey, zebra mussel, white perch, Eurasian water milfoil, purple loosestrife, phragmites, and water chestnut. Water milfoil and other invasive aquatic plants are of particular concern, because they are displacing natural beds of submerged aquatic vegetation (SAV). SAV beds are critical foraging habitat for the thousands of waterfowl that use the refuge and the bay during migration.

We have not surveyed the refuge for the presence of invasive species in upland habitats, although it appears that few if any are present now. Patches of Japanese knotweed do grow on the refuge. In the last few years, we have applied the herbicide Rodeo™ to control Japanese knotweed.

Water Quality

The degradation of water quality in the Missisquoi Bay and river from sedimentation and nutrient loading is a major concern expressed by many people and organizations in the region. The Lake Champlain Basin Program and the Missisquoi Bay Watershed Plan, among other initiatives, are documenting myriad water quality problems, and are also identifying and implementing solutions. Phosphorus is a nutrient essential for plant growth, but too much phosphorus in water causes algal blooms and excessive aquatic plant growth. Those plants and the water quality problems they cause when they decompose can harm fish and other organisms. Phosphorus levels are elevated in many parts of Lake Champlain, including Missisquoi Bay. Nuisance algal conditions exist nearly half of the time in those areas, and blue-green algae has become extremely problematic in the summer in Missisquoi Bay and other northern parts of the lake.

Other water quality concerns include increased sedimentation caused by upstream land uses that erode stream banks or increase runoff. Much more needs to be done to maintain or restore water quality for fish and wildlife populations in the delta. Because those issues extend well beyond refuge boundaries, any improvements in water quality will require broad partnerships and coalitions.

Upland Habitat Management

Most of the Missisquoi Refuge is wetlands or open water (92 percent). However, 535 acres support upland habitats important for many nesting and migratory

songbirds and other wildlife. Thus far, upland management on the refuge has focused on maintaining fields for grassland nesting birds and creating habitat for woodcock. Several of the mowed fields are small and do not now support grassland nesting birds. We will identify the fields that provide quality grassland habitats, and continue to manage them accordingly.

Management of Fish and Wildlife "Trust Resources"

Our federal trust resources include migratory birds, federal-listed endangered and threatened species, inter-jurisdictional fishes, wetlands, and certain marine mammals. Many wildlife species of concern depend on refuge wetlands and are currently a focus of habitat management. Waterfowl species such as black duck, wood duck and mallard, as well as other marsh-dependent species such as American bittern and black tern are a few of the species of conservation concern. Other species such as great blue heron, which occupy a large nesting colony (the largest in Vermont), and an increasing double-crested cormorant population, may require specific species management attention.

Inventory, Monitoring, and Research Needs

The Improvement Act requires us to monitor the status and trends of fish, wildlife, and plants on each refuge. The refuge staff is challenged each year by the staffing, funding, and logistical requirements of an effective resource monitoring and inventory program. The staff must make difficult choices regarding priorities because of limited available resources, which can vary widely from one year to the next. Unfortunately, the refuge budget does not include a dedicated source of permanent funding for carrying out important habitat and population inventory and monitoring. We rely on competitive sources of funding, such as Challenge Grants, Cooperative Agreements, and the National Fish and Wildlife Foundation to supplement Service funding. The uncertain availability of funding from year to year has always hampered long-term planning at the refuge.

For example, partnerships with universities and colleges or other conservation organizations can support Service inventory and monitoring priorities, and we can explore more of those possibilities. UVM, VT FWD, Audubon Vermont, and Lake Champlain Fish and Wildlife Resources Office are important partners in research on the refuge. That research needs to expand to better guide wildlife and habitat management decisions and actions. Monitoring the efficacy of marsh management and wildlife responses was identified as a high priority. More baseline information on migratory birds, reptiles, amphibians, and invertebrate is needed to determine trends for migratory birds and other wildlife.

Special Designation Areas

As part of the CCP process we evaluated the potential for special designation areas on refuge lands. Appendix A is the result of our evaluation, including a review of existing and potential research natural areas (RNAs), wilderness, and wild and scenic river designations. Please refer to the "Special Designation Areas" section of chapter 4 for additional information.

Balancing Public Uses

The Improvement Act identifies six priority public uses for refuges: hunting, fishing, wildlife observation, wildlife photography, and environmental education, and interpretation. They are to receive enhanced consideration in refuge planning and opportunities for visitors to engage in these activities should be facilitated, to the extent they are compatible with the Refuge System mission and refuge purposes. Service policy (Refuge Manual Chapter 8, 8 RM, 9.1, 4/82) states that, with few exceptions, non-wildlife-dependent recreation will be de-emphasized and should be phased out where it currently exists. Specifically mentioned in the policy as non-wildlife-dependent are swimming, sunbathing, surfing, motorized boating, jogging, and bicycling. Activities are allowed to continue if the refuge manager determines they are compatible with the purpose for which the refuge was established. All recreation activities must be compatible with the purposes for which the refuge was established.

Many public comments we received during the scoping session mentioned public use as the most important issue facing the area. The responses split between people who were concerned about the overuse of the refuge and those who wanted to see more areas opened for public use, particularly hunting and fishing. Some conflicts have emerged between different user groups, in part because of the popularity of the refuge for outdoor recreation.

Quality Refuge Experiences

Missisquoi Refuge is easily accessible from Route 78, a major travel corridor in the region, and via Lake Champlain and the Missisquoi River. The refuge is also close to the Canadian border. Those geographic conditions, combined with the popularity of the refuge for outdoor recreation, present some unique challenges for the refuge staff in maintaining safe, quality experiences for refuge visitors as well as staff.

Some of the public management issues facing the refuge include:

- Illegal dumping
- All-terrain vehicles and snowmobiles, which are not permitted on the refuge
- Vandalism, including graffiti
- Dogs off leash
- Hunting and fishing violations
- Immigration and border issues, such as drug trafficking and alien smuggling

Issues Outside the Scope of this Project

The public or the planning team brought up the following issues during the scoping process. In some instances, the Service does not have regulatory or jurisdictional authority over the issue. Other issues may be covered under other Service programs, initiatives, or planning projects. Chapter 4 of the draft CCP/EA, "Environmental Consequences," addressed some of the concerns implicit in these issues. However, all of these issues fall outside the stated purpose and need for action in this CCP and, therefore, fall outside its scope of analysis.

West Swanton Bridge

The current construction of a new bridge between West Swanton and Alburg and proposals to remove the existing causeway has generated heated discussions about potential impacts on the Eastern spiny softshell turtle (*Trionyx spiniferus*). Although that species appears on the Vermont Endangered Species list as threatened, it is not federally listed. A significant portion of the spiny softshell population at this end of Lake Champlain over-winters at the site of the new bridge. They also bask on the riprap of the causeways leading to the present bridge. Not only is there a risk of the construction phase of the new bridge disturbing turtles and displacing them from their winter habitat, but also, the proposed removal of all or parts of the old causeway could affect basking activity.

The VT FWD, which has jurisdiction in this matter, has been working with the various agencies and contractors to protect the turtle. Some of the public support the removal of the causeway, assuming that could improve water flow in the Bay and lead to flushing excess phosphorus. Research indicates that removing the causeway would change phosphorus loads by 1 percent or less, while likely harming the spiny softshells.

The refuge is not directly involved in that project, as it is off-refuge and involves a state-listed but not federal-listed species. Some turtles bask and forage on the refuge during the warmer summer months, but we have not determined whether suitable habitat for either nesting or wintering exists on the refuge.

Dredging the Missisquoi River

Periodically, the idea of dredging the Missisquoi River arises, especially in a year of low water, when recreational boaters have trouble navigating its shoals. During the historically drier months of late July and August and sometimes into October, the water gets so shallow on some shoals that only boats that draft 6 inches or less can pass those areas, most notably on a quarter-mile stretch of river near the old refuge headquarters and at the mouths of the three main branches of the river. Shallow conditions also occur at the mouth of Dead Creek, but dredging it has not been suggested.

Those shoals also block ice flows during the spring thaw, and cause ice dams and occasional flooding upstream near the old refuge headquarters and nearby private residences and camps. Dredging the river would require coordinating a study of the feasibility, environmental impacts, and wetland permit requirements of any dredging proposal, including dredge disposal sites, among at least these agencies:

- the U.S. Army Corps of Engineers, which has primary jurisdiction in such matters;
- the U.S. Coast Guard, which has jurisdiction on this navigable portion of the river;
- the Environmental Protection Agency;
- the U.S. Fish and Wildlife Service; and,
- the Vermont Agency of Natural Resources.

The temporary and seasonal inconvenience to recreational boaters caused by the buildup of sedimentation will probably not justify measures that could have serious environmental impacts or be relatively short-lived, very expensive and of doubtful effectiveness. Dredging the Missisquoi River is neither the desire nor the responsibility of the Service but, if it were seriously proposed, the Service would play a key role in identifying and determining the perceived deleterious environmental impacts of such a proposal on refuge habitats and wildlife.

Swanton Dam

The Swanton Dam, first constructed in 1782, spans the entire width of the Missisquoi River in the Town of Swanton. This dam is off-refuge and outside Service authority. Historically, the dam diverted water to sawmills and gristmills. Discussions have begun to determine the environmental and economic feasibility and level of community support for removing the Swanton Dam to restore the natural flow of the river.

Our recent study concludes that some of the best walleye and sturgeon spawning habitat in Lake Champlain occurs on the Missisquoi River above the Swanton Dam. Spawning substrate for walleye and lake sturgeon is not a limiting factor in this river. However, the quality of the spawning habitats above and below the dam varies considerably with stream flow, water depth, and velocities during the spring spawning period. Although spawning habitat is present below the dam, it is not of sufficient quality to support walleye or sturgeon reproduction. Spawning habitat above the dam provides better habitat capable of expanding the potential reproduction of both species as well as other fish species using the river. Although installing fish ladders and other fish passage devices at the dam is possible, they generally deliver water at velocities too strong for such weak swimmers as walleye and sturgeon. Reaches of the river above the dam now provide excellent habitat for a large variety of freshwater mussels and species such as the brook lamprey. Alterations to the dam may affect those species of special interest in the State of Vermont.

Accumulating sediments behind the dam are of particular interest to the refuge. Altering or removing the dam may release sediment carrying nutrients or accumulated harmful chemical elements such as heavy metals, pesticide residue, etc. into the lower reaches of the river, the refuge, and Missisquoi Bay. Should the sediment contain harmful elements, they could affect wildlife populations and habitats. We recommend sampling the sediment behind the dam before any release.

USFWS

Swanton Dam