Chapter 1

J Norton/USFWS

Black Branch Falls on the Nulhegan Basin Division

Purpose of, and Need for, Action

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Introduction

The U.S. Fish and Wildlife Service (Service, we) has developed this final Comprehensive Conservation Plan (CCP) and Environmental Impact Statement (EIS) for the Silvio O. Conte National Fish and Wildlife Refuge (Conte Refuge, refuge). Congress authorized the refuge in 1991 through the Silvio O. Conte National Fish and Wildlife Refuge Act (Public Law 102-212; 105 Stat. 1655; Conte Refuge Act). The refuge is part of the National Wildlife Refuge System (Refuge System). Named in honor of Silvio O. Conte, the late Congressman who represented Massachusetts' First Congressional District from 1959 until his death in 1991, Conte Refuge was established in the 7.2 million-acre Connecticut River watershed (watershed) in Connecticut, Massachusetts, New Hampshire, and Vermont to conserve native fish, plants, and wildlife (map 1.1). Appendix K includes the full text of the Conte Refuge Act. The Service officially created Conte Refuge through a Record of Decision (ROD), Final Action Plan, and Final Environmental Impact Statement (FEIS) in 1995 (USFWS 1995).

From its inception, Conte Refuge has represented an important evolution for the Service in terms of the purpose, scope, and management of a national wildlife refuge. It was the first refuge in the Refuge System with a boundary that encompassed a large ecological landscape; that is, a major river's whole watershed, and with mandated conservation objectives that reached beyond refuge administrative units to affect the entire watershed (USFWS 1995). Congressman Conte and the other authors of the establishing legislation recognized that the resources of the Service alone could never meet the full scope and scale of the conservation needs for the entire watershed (Conte Refuge Act of 1991). Those authors emphasized that the key to success would lie in creating partnerships, most notably with the four states' natural resource agencies, with other Federal agencies, and with regional and community organizations and individuals. Their vision was to seek wide support and initiate broad-based efforts through partnerships to achieve meaningful conservation action, including the protection of Federal trust resources so vitally important to our agency's mission. This landscape-scale, partnership-based approach to achieving conservation was prescient for the Refuge System. The approach is now established in the framework for the Refuge System's bold new vision which is articulated in "Conserving the Future: Wildlife Refuges and the Next Generation" (USFWS 2011) and subsequent implementation documents (*http://americaswildlife.org*; accessed August 2016).

The emphasis on partnerships across the watershed remains the underpinning of this final CCP/EIS as we look toward Conte Refuge's future. Partnerships are essential to all that we do. The ultimate goal is for Conte Refuge to be an integral component of the natural, cultural, and economic fabric of the diverse communities in the watershed. To convey our intent, early in the process we developed as the mission for Conte Refuge…"Work in partnership with others to inspire stewardship, magnify achievements, and celebrate shared successes that enhance, nurture, and protect the natural, cultural, and sustainable economic richness of the Connecticut River and its watershed on public and private land."

Our existing partnerships are diverse in scope and reflect the refuge's influence in the watershed. One highlight includes our partnership with the Friends of the Silvio O. Conte National Fish and Wildlife Refuge (Friends of Conte), which is comprised of more than 70 national, regional, and local conservation and environmental advocacy organizations. Other key partnerships include our collaborations across the watershed with the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) offices, and respective state's fish and wildlife agencies. A list of our partnerships is included as appendix N.

Map 1.1. Location of the Connecticut River Watershed and the Service's Northeast Region (Region 5)

The Connecticut River Watershed and Refuge's Context

The Connecticut River has had a storied human and ecological history. The present-day Connecticut River formed after the last ice-age and since that time humans have depended on it for their livelihood. The first people to inhabit the Connecticut River Valley were Paleo-Indians who hunted caribou, woolly mammoth, and other cold-adapted animals. Over time, as the climate became drier and warmer, native peoples continued to rely on the river and associated wetland areas for settlements, travel, hunting, gathering, fishing, and horticulture. During colonial times, its 410 miles were a highway from Long Island Sound to the Canadian border for fur traders. Others sought its bountiful fisheries and wildlife, its deep, fertile soil, hydropower from its waters, its beauty as inspiration for art, and its timber for shipbuilding and crafts (Levin 2009). For additional information on the history of the Connecticut River, see chapter 3.

The current-day watershed retains many of the cultural, demographic, and political characteristics acquired at the time of its earliest habitation and development by European immigrants. It also maintains its diversity of natural resources and range of habitat types–from coastal estuaries in the south, to rich agricultural soils in the middle, and to alpine terrain in the north–that represent an unusually wide variety when compared with other refuges in the Refuge System. Understanding the history and diverse cultures of this iconic American landscape is instructive to capitalizing on the opportunities and challenges that face us as we pursue conservation action. Within the 7.2 million-acre watershed, over 1.8 million acres have some form of permanent protection, which we describe as the conserved lands network (map 1.2). Those conserved lands include the refuge and tracts owned by state and local governments, local and national non-governmental organizations, and other Federal agencies. The refuge is currently comprised of ten divisions and eleven units totaling 37,000 acres (as of February 2016; map 1.3). The current approved acquisition authority is 97,830 acres, based on the 1995 ROD/FEIS and subsequent amendments to expand certain divisions pursued through subsequent National Environmental Policy Act (NEPA) compliant decisions. A summary of those acres in chapter 4, table 4.5, represented by alternative A. Chapter 3 provides a detailed history of land acquisition. The refuge footprint encompasses rural and urban communities throughout the watershed where political bodies, state agencies, and individual residents have vested interests in how refuge activities–from land protection to environmental education, recreation, and community partnerships–affect their work and daily lives. Refuge staff are developing cooperative relationships with a diverse array of municipal and community constituents who will be key in the success or failure of an appropriation for a needed refuge initiative.

The Final CCP/EIS Structure

This final CCP/EIS combines two documents required by Federal law: a CCP required by 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), and a final EIS required by NEPA of 1969. NEPA requires a thorough analysis be made of a reasonable range of alternatives, including the proposed action and no action. It also requires that we analyze the socioeconomic, biological, physical, and cultural consequences of implementing each alternative.

In August 2015, we distributed a draft CCP/EIS for public review and comment. This final CCP/EIS is structured similarly. It also presents four management alternatives which represent a range of different ways to achieve the refuge's purposes and four goals related to conservation, environmental education, recreation, and partnerships (see more on purposes and goals below). Generally, the distinction between the alternatives lies in their proposed management objectives and strategies which range in how well they achieve the refuge purposes and goals over the next 15 years.

Map 1.2. Conserved Lands in the Connecticut River Watershed

Map 1.3. Existing Refuge Ownership

This map reflects refuge ownership as of February 2016. aFor the most recent boundary files, contact refuge headquarters.

Early in the development of alternatives, it became clear that because of the geographic scope and scale of the refuge's legislative boundary and the limited staff and other refuge resources available, it was important to prioritize where we propose to direct our attention. To this end, we introduce in this document two tiers of priority areas of interest for refuge staff to focus their time and resources. The first tier we refer to as "Conservation Partnership Areas" (CPAs). CPAs are areas within the watershed where we propose refuge staff use their resources to facilitate and support the great conservation, education, and recreation work led by others on other ownerships. The second tier we refer to as "Conservation Focus Areas" (CFAs). CFAs are areas of particularly high importance and significance to the Service, typically nested within CPAs, where we propose refuge staff take the lead role in conservation, education, and recreation actions. Any future land acquisition for the refuge would be focused in CFAs. These concepts are explained in more detail in chapter 4 under our summary of alternative B.

NEPA establishes that the required "no-action" alternative can be either (1) taking no management action or (2) not changing current management (Bass et al. 2001). In this final CCP/EIS, alternative A is the latter and simply means current management would continue. Alternative A also serves as the basis for comparing and contrasting the other action alternatives. We define current management direction as that which is outlined in the 1995 ROD and Final Action Plan and FEIS, as amended by subsequent NEPA documents detailed in chapter 3.

The final CCP will guide the refuge's management over the next 15 years. Once approved, the CCP will become the new master plan for the refuge, setting out goals, objectives, and strategies organized by four major categories of management activities: wildlife and habitat conservation; environmental education, outreach, and interpretation; recreation; and partnerships. The CCP also identifies the Service's best estimate of future needs. It will detail program levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning and program prioritization. CCPs do not constitute a commitment for staffing increases, operational and maintenance increases, or funding for future land acquisitions.

The final CCP will replace the 1995 Final Action Plan. Review and comment by the public and refuge partners on this final CCP/EIS is an essential prerequisite to developing a final CCP/EIS, which will also be distributed for public review and used in the ultimate selection and approval of an alternative to implement by our Regional Director.

This final CCP/EIS document has 7 chapters, 15 appendixes that provide supporting documentation, a glossary of terms, list of acronyms used, list of common and scientific names, and a bibliography. Below we describe what the reader can expect in each chapter.

The remainder of chapter 1 explains the purpose of, and need for, preparing a CCP and EIS for Conte Refuge. It also presents the regional context and project analysis area we considered in developing this plan, an overview of the refuge's establishment history, the refuge's legislated purposes, and our vision and four refuge goals.

Chapter 2–The Planning Process: This chapter explains the planning steps in developing this final CCP/EIS; describes the influences of other national, regional, ecosystem, and state plans; and presents the regulations, policies, and laws covering units of the Refuge System. Its last section is a summary of the

issues, concerns, and opportunities that were raised during the planning process and explains how they are addressed in this plan.

Chapter 3 – Affected Environment: This chapter describes the physical, biological, historic, and human environment generally for the watershed, followed by details of what is known about those resources on refuge lands. It describes the threats posed by climate change and land use changes, and how dynamic influences have and will affect management outcomes.

Chapter 4 – Description of Alternatives, Including the Service-preferred Alternative: This chapter presents the four management alternatives evaluated in detail (alternatives A, B, C, and D) and relates the actions proposed to meet the refuge's purposes and goals, and respond to key issues, concerns, and opportunities. Briefly described, the four alternatives are as follows:

Alternative A: Current Management
This is the "No Action" or "No Change" alternative that NEPA requires as a baseline to which all other alternatives are compared. Current habitat and visitor services management activities on existing refuge lands would continue. Existing partnerships would continue to be supported. There would be no increase in the refuge's land acquisition authority of 97,830 acres which has been primarily focused on acquiring 65 scattered Special Focus Areas (SFAs) as detailed in the 1995 ROD, FEIS and Final Action Plan, as amended.

Alternative B: Consolidated Stewardship
Similar to alternative A, under alternative B, we would continue to conserve resources and provide visitor services on existing refuge lands. However, this alternative would also direct and concentrate additional staff and resources toward facilitating and supporting partnerships and management activities across ownerships in a network of biologically determined CPAs (described in more detail in chapter 4) throughout the watershed. Another change from alternative A is that future refuge land protection on up to 97,772 acres would be focused on seeking opportunities from willing sellers within high conservation value CFAs (described in more detail in chapter 4), instead of SFAs.

Alternative C: The Preferred Alternative–Enhanced Conservation Connections and Partnerships
Under alternative C, the refuge would build off alternative B to support and facilitate partnerships and management activities; however, it would occur in an expanded CPA network. Thus, we would engage in conservation activities on more acres, and on more and different types of ownerships in the watershed. In addition, we would seek an expanded authority to acquire up to 197,337 acres for the refuge from willing sellers within a larger CFA network than proposed in alternative B. The expanded networks of CPAs and CFAs would allow for greater flexibility and opportunity in working with partners to achieve common landscape-scale conservation goals.

Alternative D: Conservation Connections Emphasizing Natural Processes
Under alternative D, there would be a focus on reducing the human footprint on the landscape and promoting natural habitat functions and processes. Generally, less active habitat and visitor services management would occur, except those needed for priority restoration activities. Visitor services programs would emphasize backcountry, low density, walk-in opportunities. This alternative also proposes to further expand the CPA and CFA networks included in alternative C up to 231,307 acres.

Chapter 5 – Environmental Consequences: This chapter evaluates how the environment in the watershed may be affected (i.e., the foreseeable consequences), both positively and adversely, by management actions proposed under each of the four alternatives.

Chapter 6 – Consultation and Coordination with Others: This chapter addresses a key element of NEPA and Service planning policy by describing the public and partner involvement used throughout the planning process.

Chapter 7 – List of Preparers: This chapter provides a list of members of the CCP Core Team, other Service and state personnel, and others who assisted in developing this final CCP/EIS.

Purpose of, and Need for, Action

This final CCP/EIS was developed in the context of a changing landscape. The watershed's natural environment, the influences of societal and land use changes, and the implications of climate change, have all affected the refuge setting since the 1995 establishing documents for the refuge were approved. This CCP is designed to address those changes and establish management and protection of valuable natural resources into the future, a future where continued change is even more likely to occur.

Thus, the ***purpose*** of this final CCP/EIS is to establish strategic management direction to ensure that our management of the refuge will best integrate the areas of concern listed below. Our use of the term "strategic" means approaches that are ecologically sound and sustainable in light of physical and biological change, and are practical, viable, or economically realistic, and responsive to the following three areas of concern:

1. Abides by, and contributes to, the Service and Refuge System missions, legal mandates, Executive and Secretarial Orders, and Service and Refuge System policies. We provide a description of the Service and Refuge System missions, legal mandates, specific orders, and policies relevant to this planning process in chapter 2.

2. Helps meet the refuge's legislated purposes, vision, and CCP goals. The refuge's purposes, vision, and goals are listed below. The vision statement broadly interprets the refuge purposes and is an inspiring statement of the desired future for the refuge. The refuge goals articulate that desired future condition further and provide a framework for developing management objectives and strategies under each alternative.

3. Addresses key issues, including the concerns of the Service, other Federal and State agencies, and the public. Interest in the future management of Conte Refuge is widespread. The concerns and interests of our partners, local communities, and interested members of the public are diverse. Through our scoping and outreach, coupled with our understanding of the particular threats and challenges to conservation in the watershed, and the need to incorporate the best available scientific and technical information, we have identified seven key issue categories to focus on in this CCP and address through objectives and strategies under each alternative. We provide additional details on these issue categories in chapter 2:

   - Landscape-level land conservation and resource protection.
   - Habitat management.
   - Species management.
   - Public uses.
   - Socioeconomic factors.
   - Community relations and partnerships.
   - Administration (e.g., budget, staffing, and facilities).

The ***need*** for a CCP on this refuge is great due to landscape and demographic changes in the watershed, shifts in refuge management priorities due to the expanded refuge land base, and new opportunities for refuge management, new partnerships, and the Service's adoption of new policies and major initiatives since refuge establishment. In addition, the economy and patterns of land use and land ownership in local communities are changing. The pressures for public use and access on existing and new refuge lands across the watershed have continued to increase. Climate change and natural processes have also altered, and will continue to alter, the refuge and watershed environment. For example, record-setting temperatures, ice and snowstorms, tornados, and flood events have occurred and significantly affected habitats in recent years. The CCP is needed to help ensure that the refuge continues to conserve the Connecticut River watershed's fish, wildlife, and ecosystems in the face of climate change and these other pressures. Also, when Conte Refuge was established in 1995, a fundamental concept was that refuge ownership would be limited to smaller SFAs scattered throughout the watershed, with a particular emphasis on federally listed and state-listed species. Since that time, conservation priorities and opportunities have resulted in a different configuration of Service acquisition. Support has increased for investments of land in the conservation estate for plants, fish, wildlife, and people.

Another need for a CCP is because, with the exception of invasive species control, limited active habitat management was detailed in the 1995 plan. Refuge staff are currently working on habitat restoration and management activities that would benefit from strategic direction. In addition, the 1995 Final Action Plan (USFWS 1995) identified some partnership programs and infrastructure with the Service taking the lead that are no longer feasible while other partnerships and program emphases have emerged. Over the last 10 years, we have continually evaluated administrative and visitor facilities, including their locations, accessibility, and functionality, to ensure the best customer service possible, resulting in some differences from what was proposed in 1995.

One major Service initiative that is influencing refuge management is the agency's concerted shift to operating under a Strategic Habitat Conservation (SHC) planning framework (USFWS 2008). This framework guides the Service in identifying, planning, implementing, and monitoring conservation priorities and activities. Relating to refuges, this planning framework and subsequent guidance, recommends steps to identify priority species, develop outcome goals for these species, design actions that allow refuge management to meet these goals by strategically addressing issues and threats to priority species, and–most importantly–implement the actions, measure their results, and adapt the actions as necessary to produce better outcomes. All of these steps have a solid basis in using sound scientific principles. Monitoring, evaluation, and adaptive management is required as part of this framework to ensure our actions protect and restore the ecological integrity of refuge and watershed resources, and do not result in additional degradation of environmental conditions.

Bill Thompson

Cedar waxwing

In summary, the final CCP will detail strategic management direction for the refuge for 15 years, by:

(1) Stating clearly the desired future conditions for refuge habitat, wildlife, visitor services, staffing, and facilities through presentation of goals, objectives, and strategies.

(2) Explaining concisely to state agencies, refuge neighbors, visitors, partners, and other stakeholders the reasons for management actions.

(3) Ensuring that refuge management conforms to the policies and goals of the Refuge System and legal mandates.

(4) Ensuring that present and future public uses on refuge lands are appropriate and compatible.

(5) Providing long-term continuity and consistency in management direction.

(6) Justifying budget requests for staffing, operations, and maintenance funds.

The CCP will serve as an important means of conveying the vision and priorities for Conte Refuge to our partners, watershed communities, and interested and affected individuals to encourage successful integration of Service priorities with partner priorities. Our hope is that creative and diverse coalitions will stimulate and maintain the vital momentum necessary to meet the conservation challenges and explore opportunities in the watershed.

Regional Context and Project Analysis Area

As stated in the "Introduction," it is essential to understand the geographical, ecological, and socioeconomic setting of the watershed, and the refuge's context within it, to fully relate the actions proposed in this final plan. The regional context for our analysis is the entire Connecticut River watershed (map 1.1). The watershed encompasses the heart of New England, covering 11,000 square miles — or 7.2 million acres. This river serves as the border between Vermont and New Hampshire and bisects Massachusetts and Connecticut. The river originates in Canada just north of Fourth Connecticut Lake in Pittsburg, New Hampshire, eventually emptying into Long Island Sound in Old Saybrook, Connecticut, after traveling 410 miles (CRWC 2012).

There is considerable diversity in both ecological and socioeconomic terms within the watershed, which influences opportunities and capabilities both on and off refuge lands. Along its length, the river flows through well-recognized landscapes–the Northern Forest of Vermont and New Hampshire; the Upper Valley of those same two states; the Pioneer Valley of Massachusetts, including Springfield, Massachusetts; the Tobacco Valley of Connecticut; and the urban corridor that stretches from Hartford, Connecticut, to Long Island Sound. It also includes the eastern slopes of the Green Mountains in Vermont and the Berkshires in Massachusetts, and the western slopes of the White Mountains in New Hampshire. Over 2.3 million people live in the watershed, with the majority of the population in its southern reaches. Its largest cities include Hartford, Connecticut (population 124,775), and Springfield, Massachusetts (population 153,060) (U.S. Census 2013).

The watershed boundary serves as the context for evaluating the physical, ecological, and socioeconomic relationship of the refuge and its management activities to regional resources of concern, and the communities within the watershed (CRWC 2009). The land ownership, land use, or management patterns in this political, social, and ecological environment affect our management of refuge lands. Of particular note, map 1.2 depicts the regional land conservation network in and around the watershed. Many prominent land-based partners

cooperate in that network (appendix N). Greater detail on the project area and environment is provided in chapter 3.

Refuge Establishment History

As discussed in the "Introduction," the refuge was legislated by Congress through the 1991 Conte Refuge Act and was created by the Service in 1995 with completion of a ROD, FEIS, and a Final Action Plan (USFWS 1995). A refuge becomes established into the Refuge System once its first parcel of land is acquired. Conte Refuge was established on October 3, 1997, when the Connecticut River Watershed Council (CRWC) donated Third Island in Deerfield, Massachusetts, to the Service. We highlight the refuge's land acquisition history in chapter 3.

In 1996, even though there was no land base yet for the refuge, the Service began a competitive challenge cost-share program (USFWS 1995). This was a unique program that provided matching grants to selected applicants who wished to accomplish education, research, inventory, or management projects that would further refuge purposes. For example, funding for projects to conduct invasive species control in critical habitat or wetlands areas was a major interest. Unfortunately, the refuge challenge cost-share program was discontinued after 2001 due to the growing needs to use operational funds to support the refuge land base.

Also early in the refuge's development was the focus on establishing cooperatively run education centers — four as prescribed by the Conte Act, which we have interpreted as one in each state. In 2002, two cooperative education centers opened their doors: the Great North Woods Interpretive Center in Colebrook, New Hampshire, and the Conte Refuge Education Center at the Montshire Museum of Science in Norwich, Vermont. In 2003, a third major cooperatively run visitor facility opened as the Great Falls Discovery Center in Turners Falls, Massachusetts. Our Friends groups were instrumental in developing and supporting these facilities.

Refuge Purposes

The 1991 Conte Refuge Act created the specific refuge purposes listed below. Refuge purposes guide management priorities and actions on refuges. The legislated purposes for the Conte Refuge are as follows:

- To conserve, protect, and enhance the Connecticut River populations of Atlantic salmon, American shad, river herring, shortnose sturgeon, bald eagles, peregrine falcons, osprey, black ducks, and other native species of plants fish and wildlife.
- To conserve, protect, and enhance the natural diversity and abundance of plant, fish, and wildlife species, and the ecosystem upon which these species depend within the refuge.
- To protect species listed as endangered or threatened, or identified as candidates for listing, pursuant to the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et seq.).
- To restore and maintain the chemical, physical, and biological integrity of wetland and other waters within the refuge.
- To fulfill the international treaty obligations of the United States relating to fish, wildlife, and wetlands.
- To provide opportunities for scientific research, environmental education, and fish and wildlife-oriented recreation and access to the extent compatible with the other purposes stated in this section.

Forest, Nulhegan Basin Division

Sharon Lindsey

Refuge Vision

This vision statement was developed by the planning team and is intended to capture the essence of what is important as we look to the future about refuge resources and activities, and to excite and motivate people to action. The vision should also reflect the refuge's purposes and goals. We developed the following vision statement with those considerations in mind.

> *The Connecticut River is treasured by all for its majesty and significance in supporting diverse aquatic and terrestrial plant and animal life along its winding 410-mile passage through urban and rural communities in New Hampshire, Vermont, Massachusetts, and Connecticut. Working with our partners, we are inspired to protect and enhance the natural and cultural richness throughout the watershed, especially on lands and waters entrusted to our agency as the Silvio O. Conte National Fish and Wildlife Refuge.*
>
> *Together with our partners, we design, support, and implement strategic conservation actions across the watershed, and communicate conservation needs and successes through extensive outreach and education programs. On refuge lands, and in our conservation partnership areas, we offer visitor programs and activities that promote an appreciation of the Connecticut River watershed as an intact, interconnected, and healthy ecosystem. Visitors respond to this greater awareness by becoming active stewards of the watershed's natural and cultural resources. Through our Urban Partnership Program, we are promoting the relevancy of conservation to healthy communities. Our actions exemplify the Service's vital role in conserving the Connecticut River watershed and the refuge's important contribution to the mission of the National Wildlife Refuge System.*

Refuge Goals

Goals are designed to direct management priorities toward achieving the refuge's vision and legislative purposes, and contribute to the Refuge System's mission. Goals are succinct, descriptive, broad statements of the desired future condition of a refuge, and comprise the whole of the refuge's effort in pursuit of its vision. Goals lay the foundation from which all refuge activities arise as they provide

the platform upon which the more measurable and time sensitive objectives and strategies are developed (USFWS 2004).

Our planning team developed these four goals after reviewing the refuge purposes, the mission of the Service and Refuge System, our proposed vision, and the mandates, plans, and conservation strategies mentioned above. We also updated these goals based on input from the public and our partners.

Goal 1. Habitat Conservation

Promote the biological diversity, integrity, and resiliency of terrestrial and aquatic ecosystems within the Connecticut River watershed in an amount and distribution that sustains ecological function and supports healthy populations of native fish, wildlife, and plants, especially Federal trust species of conservation concern, in anticipation of the effects of climate, land use, and demographic changes.

This goal supports the purposes of the Conte Refuge Act related to the protection of important wildlife and associated habitats that are of special concern. The act's purposes highlighted the protection and conservation of migratory fish, migratory birds, threatened and endangered species, and native fish and wildlife across the watershed. That charge to protect this diversity is immense with the many species which occur here, including approximately 59 mammals, 250 birds, 22 reptiles, 23 amphibians, 142 fish, 1,500 invertebrates; and, approximately 3,000 plants (USFWS 1995). The Conte Refuge Act purposes also noted the urgency to protect and enhance the natural diversity and abundance of the ecosystems upon which these species depend in the watershed, and to restore and maintain the chemical, physical, and biological integrity of wetlands and other waters within the refuge. A foundation of this goal involves the use of scientific research, and inventory and monitoring programs to support management decisions.

Diverse habitats in the watershed include:

- Internationally important tidal wetlands and riverine habitats valuable to migratory and resident fish, freshwater mussels, and other aquatic species.
- Floodplain forests and other riparian habitats valuable to migrating songbirds, waterfowl, and many other species of plants and animals.
- Old field grasslands, sandplains, and agricultural fields valuable to grassland-nesting birds and other species.
- A wide variety of forest types, including large areas of relatively unfragmented northern forest types, valuable to nesting migrant interior forest birds, as well as many other plant and animal species.

Forests are the dominant land cover type and are increasing as abandoned agricultural lands revert to forest cover. Generally, the forests in the northern section of the watershed are northern hardwood (maple–beech–birch) at lower elevations and coniferous (spruce–fir) at higher elevations (and more northerly latitudes). Stretching southward into Massachusetts, the northern hardwoods are intermixed with red and white pine. An oak–hickory forest predominates in the lower reaches of the watershed. Other upland plant communities include grasslands maintained for pastures, hayfields, airports, and retired landfills; shrubby fields which occur as abandoned fields experiencing plant succession; orchards; and cultivated fields.

Restoring and maintaining the integrity of wetlands and other waters is specifically mentioned in the refuge's purposes. The watershed contains approximately 257,000 acres of wetlands, representing 3.6 percent of its area.

Goal 2. Education, Outreach, and Interpretation
Inspire residents and visitors to actively participate in the conservation and stewardship of the exceptional natural and cultural resources in the Connecticut River watershed, and promote a greater understanding and appreciation of the role of the Silvio O. Conte National Fish and Wildlife Refuge in conserving those resources.

This goal supports the purposes of the Conte Refuge Act to provide opportunities for environmental education. Using a network of education centers, exhibits, and programming, refuge personnel and partners introduce visitors to watershed fish, wildlife, and habitats, and emphasize the value of species and habitat diversity, and habitat connectivity. Through partnerships and targeted outreach, educators try to motivate specific groups of citizens to tackle tough problems like controlling invasive plants, improving water quality, and minimizing habitat fragmentation in the face of a changing climate and land use patterns. Interpreters work with teachers and students to enrich their visits and their own curricula using an array of entertaining, interactive, and informational material, media, and formats. The refuge also has a mobile visitor center, the Watershed on Wheels Express (WoW Express). The WoW Express allows refuge staff and volunteers to bring interpretive and environmental educational experiences directly to the 396 communities within the watershed.

Goal 3. Recreation
Promote high quality, public recreational opportunities in the Connecticut River watershed that are complementary between ownerships and provide regional linkages, with emphasis on promoting wildlife-dependent activities that connect people with nature in the outdoors.

This goal supports the purposes of the Conte Refuge Act to provide opportunities for fish and wildlife oriented recreation and access to the extent compatible with the other purposes stated in this section. Many of the refuge's existing divisions and units provide opportunities for hunting and fishing according to state regulations. In addition, visitors may view and photograph wildlife while driving on gravel roads (Nulhegan Basin Division), hiking on nature trails (Nulhegan Basin, Pondicherry, and Fort River Divisions) or using wheelchair accessible trails (Nulhegan Basin, Pondicherry, and Fort River Divisions) that include overlooks, interpretive displays, and informational kiosks. Also, all refuge divisions and all but three of the refuge units are open to one or more of the priority public uses (Wissatinnewag, Saddle Island, and Dead Man's Swamp units are closed to the public to protect sensitive resources, and the Mount Tom Unit is closed due to public safety and vandalism concerns).

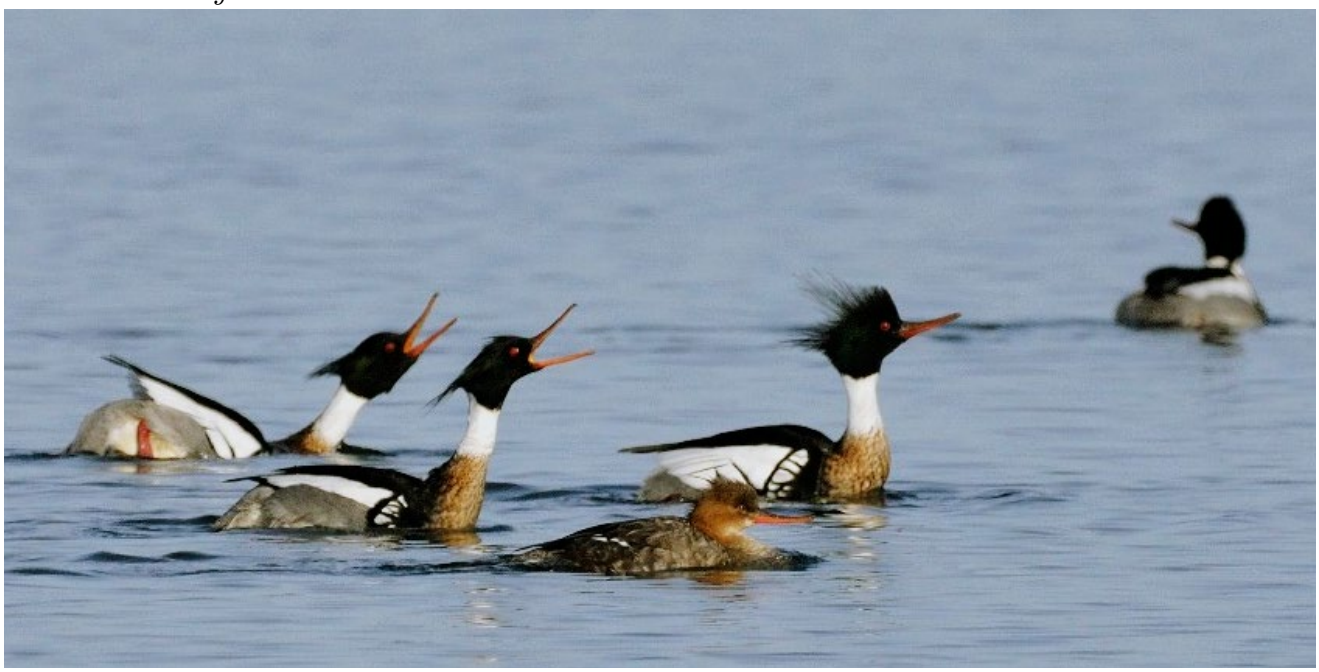
Goal 4. Partnerships to Conserve and Enjoy the Connecticut River Watershed
Enhance the conservation, protection, and stewardship of natural and cultural resources, and promote wildlife-dependent recreation, throughout the Connecticut River watershed by initiating, supporting, and promoting partnerships with other Federal, State, and local agencies, Tribal governments, and private organizations.

While this goal is listed fourth, it is by no means lowest in priority. We present this goal last to illustrate how significant partnerships are to implementing the priority actions we describe in goals 1 through 3 in chapter 4 and appendix A. In fact, it is very important to us that we convey that our partnerships underpin all that we do. We recognize daily the critical importance of working with diverse and extensive partnerships to achieve the purposes of the refuge, as well as support the compatible and complementary missions, goals, and objectives of our partners.

Refuge personnel maximize beneficial effects across the landscape by working with public and private landowners and other partners on a variety of research, inventory, habitat improvement, and education projects. Partnerships often are established and nurtured by refuge management with state environmental and wildlife agencies in Vermont, New Hampshire, Massachusetts, and Connecticut, other Federal agencies such as NRCS, and with a host of non-governmental conservation organizations, many of whom comprise the Friends of Conte. Since its inception, the refuge has contributed funds to at least 170 grants within the watershed for habitat restoration, research, surveys, environmental education, and outreach with hundreds of partners large and small. Examples of these partners include the University of Massachusetts, Vermont Institute of Natural Science, Roaring Brook Nature Center, University of Connecticut, Woodstock Conservation Commission, and Cromwell Fish and Game Club.

We strive to do the best we can with the staff and funds allotted, but always need help to do more. Volunteers provide vital assistance in refuge offices, education centers, and afield on refuge land and in the greater watershed. There are several Friends groups that work tirelessly to assist: the Friends of Conte, the Friends of Nulhegan Basin Division, the Friends of the Great Falls Discovery Center, and the Friends of Pondicherry Division. Additional Friends groups are forming at the Fort River, Salmon River, and Blueberry Swamp Divisions. Members of these groups generously donate their time and enthusiasm working on a wide variety of projects that contribute to their division in the form of conservation, education, and recreation initiatives and accomplishments. The partnership between the Friends groups and refuge staff is a relationship that thrives on a balance between the preferences and abilities of the Friends members and the needs of the refuge resources. In addition, the refuge staff have been actively working within subwatershed-based invasive species partnerships in the watershed. Such partnerships, generally termed Cooperative Invasive Species Management Areas (CISMAs) currently exist in the upper watershed, Ottauquechee, Upper White, Westfield, Upper Farmington, and Eightmile watersheds and are making considerable progress in creating surveys, control plans, and raising awareness about invasive species among landowners and target audiences.

Red-breasted mergansers



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