



U.S. Fish & Wildlife Service

John Hay National Wildlife Refuge

*Comprehensive Conservation Plan
June 2010*

John Hay NWR shoreline along Lake Sunapee
Erin Victory/TCI



This goose, designed by J.N. “Ding” Darling, has become the symbol of the National Wildlife Refuge System.

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

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



U.S. Fish & Wildlife Service

John Hay National Wildlife Refuge

Comprehensive Conservation Plan

June 2010

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U.S. Fish & Wildlife Service

John Hay National Wildlife Refuge

Comprehensive Conservation Plan

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Refuge Vision Statement

John Hay NWR is a unique setting and destination in the Lake Sunapee region. It is situated between the lake and a larger network of conserved forestland extending throughout Sunset Hill. Together with adjacent conservation lands, Refuge forests provide important habitat for migratory birds and other forest wildlife in the midst of increased development in the region. The Refuge provides an extensive, undeveloped shoreline, as well as public ownership, amidst the predominantly privately developed lake community. We will continue to maintain its unique character within the context of the region, and provide important habitat for wildlife.

John Hay NWR provides a valuable mature forest ecological component to this larger network of conserved forest lands. Through local and state partnerships, it contributes to the natural resource management and environmental education opportunities in the region. The Refuge supports large majestic trees exemplary of a mature northern pine and hardwood forest habitat that complement the younger, more diverse and actively-managed lands of its adjacent conservation partners. The Refuge will continue to contribute to the biological integrity and diversity of the Atlantic northern forest and Lake Sunapee region.

The John Hay NWR showcases the legacy of the late statesman John Hay and honors the wishes of his daughter-in-law, Alice Hay, who donated the land for the conservation of migratory birds. It provides a special place where people come to experience the beauty of the undeveloped Lake Sunapee shoreline and the majestic Atlantic northern forest. Together with our partners, we will continue to provide increasing opportunities for outreach to the community and a broad array of visitors to raise awareness about the Refuge's wildlife stewardship mission, and the broader network of conserved lands in the region.

John Hay National Wildlife Refuge

Comprehensive Conservation Plan *June 2010*

Abstract

Type of Action:	Administrative
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This Comprehensive Conservation Plan (CCP) for the John Hay National Wildlife Refuge is the culmination of a planning effort involving the New Hampshire Fish and Game, local partners, refuge neighbors, private landowners, and the local community. The CCP establishes 15-year management goals and objectives for wildlife and habitat, public use and access, and administration and facilities. This document also contains eight appendices that provide additional information supporting our analysis.

This plan includes an array of management actions that, in our professional judgment, work best toward achieving the purposes of the refuge, our vision and goals for those lands, and goals in state and regional conservation plans. We recommended Alternative B from the draft CCP/Environmental Assessment (EA) to our Regional Director as the best alternative for managing this refuge over the next 15 years. He selected it for development into this final CCP.

Through implementation of this plan, we will focus on making improvements to our visitor services through the addition of seasonal on-site staff, fishing as an approved public use, and a minor expansion of our trail system on the refuge. Our biological program will be enhanced through partnerships that will increase our ability to conduct surveys and long-term monitoring.

Table of Contents

Chapter 1	The Purpose of and Need for Action	
	Introduction.....	1-1
	The Purpose of and Need for the Proposed Action	1-2
	The Service and the Refuge System Policies and Mandates Guiding Planning.....	1-4
	Conservation Plans and Initiatives Guiding the Project.....	1-10
	Refuge Establishing Purposes and Land Acquisition History	1-16
	Refuge Administration.....	1-17
	Refuge Operational Plans (“Step-down plans”)	1-17
	Refuge Vision Statement	1-18
	Refuge Goals.....	1-19
Chapter 2	The Planning Process	
	The Comprehensive Conservation Planning Process.....	2-1
	Issues, Concerns and Opportunities	2-2
Chapter 3	Refuge and Resource Descriptions	
	Introduction.....	3-1
	Physical Environment.....	3-1
	Major Historical Influences Shaping Landscape Vegetation	3-2
	The Cultural Landscape Setting and Land Use History	3-6
	Current Climate	3-9
	Air Quality	3-11
	Water Quality	3-12
	The Regional Socio-Economic Setting.....	3-14
	Refuge Administration.....	3-16
	Refuge Natural Resources	3-22
	Refuge Biological Resources.....	3-27
	Refuge Visitor Services Program.....	3-31
	Archaeological, Historical and Cultural Resources	3-33
Chapter 4	Management Direction and Implementation	
	Introduction	4-1
	Relating Goals, Objectives and Strategies	4-1
	General Refuge Management.....	4-1
	Refuge Goals, Objectives, and Strategies	4-11
Chapter 5	Consultation and Coordination with Others	
	Introduction.....	5-1
	Planning to Protect Land and Resources	5-1
	Partners Involved in Refuge Planning	5-2
	Contact Information.....	5-2
	Planning Team	5-3
	Other Service Program Involvement.....	5-3
	List of Preparers.....	5-3

Glossary & Acronyms

Glossary.....	Glos-1
Acronyms	Glos-11

Bibliography	Biblio-1
---------------------------	-----------------

Appendices

Appendix A: Species and Habitats of Conservation Concern Known or Suspected on the Refuge	A-1
Appendix B: Compatibility Determinations and Findings of Appropriateness	B-1
Appendix C: Wilderness Review	C-1
Appendix D: Refuge Operations Needs (RONS) and Service Asset Maintenance Management Systems (SAMMS).....	D-1
Appendix E: Staffing Charts.....	E-1
Appendix F: Summary of Public Comments and Service Responses	F-1
Appendix G: Finding of No Significant Impact (FONSI).....	G-1

List of Figures

Figure 1.1. The NEPA Planning Process	2-1
---	-----

List of Tables

Table 1.1. History of land transactions at the John Hay Refuge.....	1-17
Table 3.1. Census Data-Population Changes (1990-2007).....	3-15
Table 3.2. Census Data-Employment by Sector	3-15
Table 3.3. Sample of Special Use Permits since 1989.....	3-21
Table 3.4. Tree species abundance by percent basal area by Management Unit (MU) on the Refuge.....	3-24
Table 3.5. Present number of acres of each Refuge habitat type	3-26
Table 3.6. BCR 14 priority species on the Refuge or project area	3-28
Table 3.7. Estimated number of total visitors to The Fells (2,195) that also visited the Refuge, by activity: October 2007 to March 2008.....	3-32
Table A.1. Birds of Conservation Concern Known or Suspected on the Refuge	A-1
Table A.2. Mammals of Conservation Concern Known or Suspected on the Refuge.....	A-5
Table A.3. Fish of Conservation Concern Known or Suspected on the Refuge	A-6
Table A.4. Amphibians and Reptiles of Conservation Concern Known or Suspected on the Refuge	A-7
Table A.5. Plants of Conservation Concern Known or Suspected on the Refuge	A-8
Table A.6. Plant Communities of Conservation Concern Known or Suspected on the Refuge.....	A-9
Table C.1. John Hay NWR Wilderness Review Finding Summary.....	C-5

List of Tables (Continued)

Table D.1. Proposed Refuge Operations Needs Projects (RONS) for the John Hay National Wildlife Refuge.....	D-1
Table D.2. Projects currently backlogged in the SAMMS database FY09 for John Hay NWR	D-2
Table D.3. New projects proposed for SAMMS database for John Hay NWR.....	D-2

List of Maps

Map 1-1. John Hay NWR Refuge Boundary	1-3
Map 1-2. Location of John Hay National Wildlife Refuge.....	1-5
Map 3-1. Conserved Land around Lake Sunapee Watershed	3-2
Map 3-2. John Hay NWR Management Units	3-25
Map 3-3. Locations of Bird Conservation Region 14 and Partners in Flight Region 27.....	3-29
Map 4-1. Public Use.....	4-13
Map B-1. Locality of John Hay National Wildlife Refuge.....	B-18
Map B-2. Existing and proposed public use facilities on Refuge.....	B-19
Map C-1. Wilderness Inventory Area.....	C-6

Chapter 1



Erin Victory/TCI

Lake Sunapee shoreline

The Purpose of and Need for Action

- Introduction
- The Purpose of and Need for the Proposed Action
- The Service and the Refuge System Policies and Mandates Guiding our Planning
- Conservation Plans and Initiatives Guiding the Project
- Refuge Establishing Purposes and Land Acquisition History
- Refuge Administration
- Refuge Operational Plans (“Step-down plans”)
- Refuge Vision Statement
- Refuge Goals

Introduction

The John Hay National Wildlife Refuge (NWR, Refuge) was established as a migratory bird and wildlife reservation. It lies on the shores of Lake Sunapee, on the lower slopes of Sunset Hill, one of several hills rising east of the lake, and primarily consists of upland habitat, with forests classified as transition hardwood-conifer.

In 1972, Alice Hay donated the 164-acre summer estate of John Hay, her father-in-law, to the U.S. Fish and Wildlife Service (USFWS, Service, we, our), retaining two life-use reservations. John Hay was a politician and statesman, known for his service to his country as a personal secretary to President Abraham Lincoln, as Ambassador to Great Britain for President William McKinley, and as Secretary of State for Presidents McKinley and Theodore Roosevelt. The life-use reservations consisted of a 21-acre tract for her children, John Hay and Adele Hay Fath, and the other was the remaining 143-acre tract for herself. The 143-acre tract was turned over to the Service in 1987, upon the death of Alice Hay, and the 21-acre tract was turned over to the Service in 1998 when John Hay and Adele Hay Fath relinquished their life use reservations.

From 1987 to 2008, the Refuge was managed by several partners including the New Hampshire State Parks and then The Fells, a non-profit organization dedicated to maintaining the John Hay estate. In 2008, the Refuge transferred 84 acres containing the estate buildings and grounds to The Fells and retained approximately 80 forested acres on the shores of Lake Sunapee in Newbury, New Hampshire as the John Hay National Wildlife Refuge. In exchange for this land transfer, 727 (+/-) acres were appended to Umbagog NWR.

Refuge property extends to the normal high water line. Therefore, when we refer to Service ownership, or describe shoreline Refuge management actions, we generally mean those areas above the normal high water line. The Refuge encompasses its entire approved acquisition boundary (Map 1-1).

This comprehensive conservation plan (CCP) for the Refuge is required by the National Wildlife Refuge System Administration Act of 1996, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law(PL) 105-57; 111 Stat. 1253; Improvement Act). An EA, required by the National Environmental Policy Act of 1969 (42 United States Code (USC) 4321 et seq., 83 Stat. 852; NEPA), was issued for public review in combination with the draft CCP in February 2010.

Following the public review of the CCP, our regional director decided on the components of this final CCP to guide Refuge management decisions over the next 15 years. We will use the CCP to promote understanding of and support for Refuge management among state agencies in New Hampshire, our conservation partners, tribal governments, local communities, and the public.

Chapter 1 explains the purpose of and need for preparing a CCP, and sets the stage for four subsequent chapters and seven appendices. Specifically, it

- defines our planning analysis area,
- presents the need for and purpose of the actions proposed,
- presents the mission, policies and mandates affecting the development of the plan,
- identifies other conservation plans we used as references,
- lists the purposes for which the Refuge was established and its land acquisition history, and
- clarifies the vision and goals that drive refuge management.

Chapter 2, “The Planning Process,” describes our planning process and its compliance with NEPA regulations, and identifies public issues or concerns that surfaced as we developed the plan.

Chapter 3, “Refuge and Resource Descriptions,” describes the physical, biological, and human environments of the Refuge.

Chapter 4, “Management Direction and Implementation,” presents current and future management actions and their objectives and strategies for meeting Refuge goals and addressing public issues.

Chapter 5, “Consultation and Coordination with Others,” summarizes how we involved the public and our partners in the planning process. Their involvement is vital for the future management of this Refuge and all national wildlife refuges.

Seven appendices, a glossary with acronyms, and a bibliography (literature cited) provide additional documentation and references to support our narratives and analysis.

The Purpose of and Need for the Proposed Action

We developed a CCP for the Refuge that, in the Service’s best professional judgment, best achieves the purposes, goals and vision of the Refuge and contributes to the mission of the National Wildlife Refuge System (NWRS, Refuge System), adheres to the Service’s policies and other mandates, addresses identified issues of significance, and incorporates sound principles of fish and wildlife science.

The *purpose* of adopting a CCP for this Refuge is to accomplish the following goals:

Goal 1. Contribute to the biological diversity and integrity of the Atlantic northern forest in the larger context of the Lake Sunapee region and Connecticut River watershed by protecting, enhancing, and restoring the Refuge’s habitats, with an emphasis on breeding, migrating, and wintering birds.

Goal 2. Promote natural resource conservation, stewardship, the mission of the National Wildlife Refuge System, and enjoyment of the John Hay Refuge by providing high-quality, compatible, wildlife-dependent public use opportunities on Refuge lands and neighboring conserved lands and waters.

Goal 3. Communicate and collaborate with local communities, federal and state agencies, The Fells, and conservation organizations throughout the Lake Sunapee region to promote natural resource conservation, stewardship, and the mission of the National Wildlife Refuge System.

The *need* for a CCP is manifold. First, the Improvement Act requires us to write CCPs for all national wildlife refuges by 2012 to help fulfill the mission of the Refuge System. New policies to implement the strategic direction in the Improvement Act have developed since the Refuge was established. A CCP incorporates those policies and develops strategic management direction for the Refuge for 15 years, by:

- stating clearly the desired future conditions for refuge habitat, wildlife, visitor services, staffing, and facilities;
- explaining concisely to state agencies, refuge neighbors, visitors, partners, and other stakeholders the reasons for management actions;
- ensuring that refuge management conforms to the policies and goals of the Refuge System and legal mandates;

Map 1-1



- ensuring that present and future public uses are appropriate and compatible;
- providing long-term continuity and direction for refuge management; and,
- justifying budget requests for staffing, operating, and maintenance funds.

Second, this Refuge lacks a master plan to implement that strategic management direction and guide our decisions. The environment of the Refuge has changed since 1972. Most notably, the Refuge has decreased in size from the original 164 acres to approximately 80 acres, allowing the Service to focus its efforts on fulfilling the purpose of the Refuge beyond maintaining the estate buildings and grounds. The economy and patterns of land use and land ownership in local communities are changing. The pressures for public use and access have continued to increase. New ecosystem and species conservation plans have been developed that bear directly on refuge management. The priority of habitat management and restoration to control invasive plants has grown. We also must evaluate the need for administrative and visitor facilities, including their locations, to ensure the best customer service possible. Finally, as responsible stewards of federal lands, conveying our vision and priorities for the Refuge to our partners, local communities, and interested and affected individuals is imperative.

Regional Context

The Refuge sits on the shores of Lake Sunapee, the fifth largest lake in the state of New Hampshire at 4,090 acres (Map 1-2). This lake and the surrounding hills form the headwaters of the Sugar River which emanates from the western shore of the lake in the Town of Sunapee. The Sugar River flows west for 27 miles, along Route 103, eventually draining into the Connecticut River west of Claremont. Both Lake Sunapee and the Sugar River are part of the Connecticut River watershed. The Connecticut River is the largest river system in New England, with a watershed of 7.2 million acres across four states (Map 1-2).

The Service and the Refuge System: Policies and Mandates Guiding Planning

The U.S. Fish and Wildlife Service and its Mission

As part of the Department of the Interior (DOI), the Service administers the National Wildlife Refuge System. The Service mission is “*Working with others, to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.*”

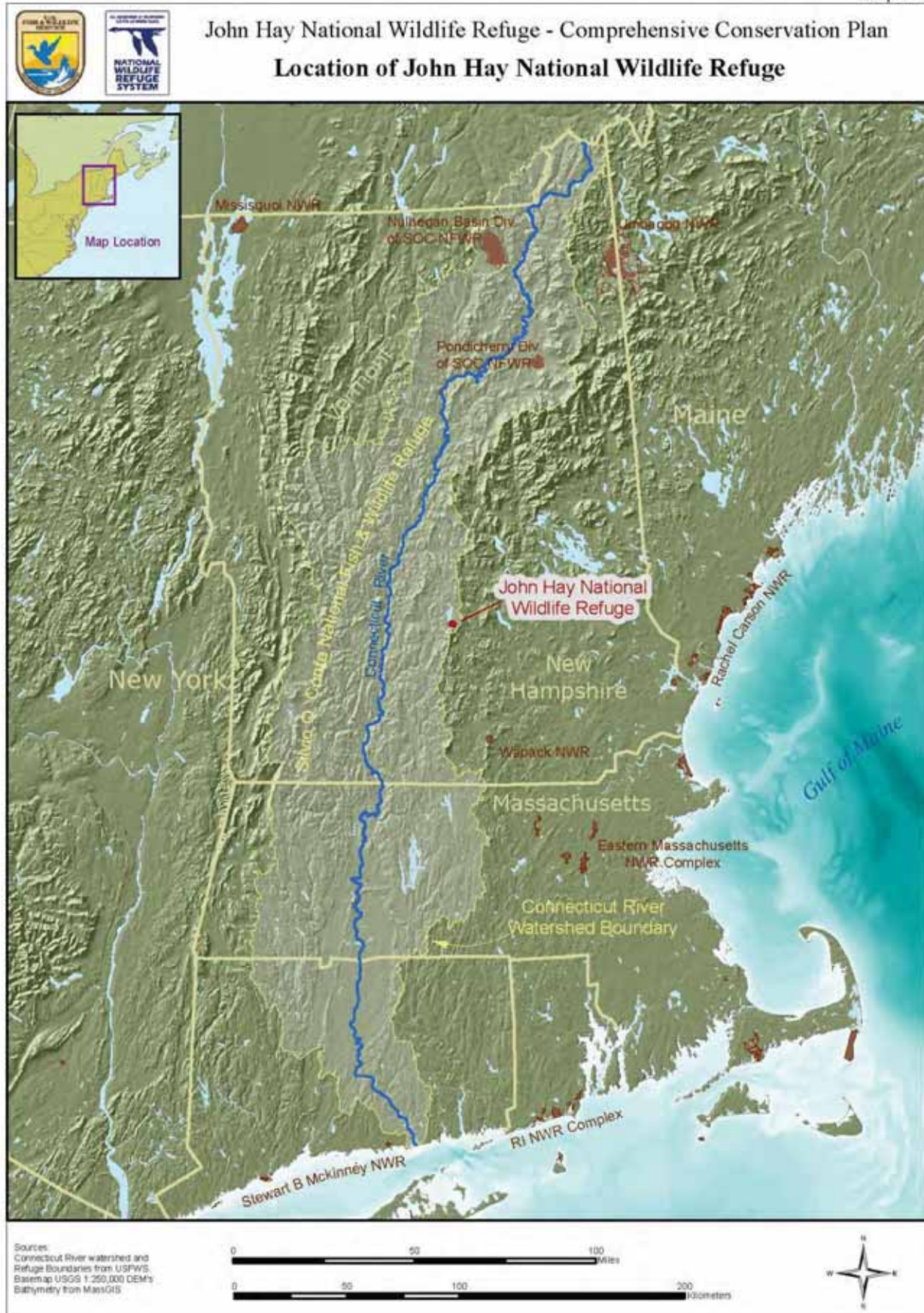
Congress entrusts to the Service the conservation and protection of these national natural resources: migratory birds and fish, federal-listed endangered or threatened species, inter-jurisdictional fish, wetlands, certain marine mammals, and national wildlife refuges. We also enforce federal wildlife laws and international treaties on importing and exporting wildlife, assist states with their fish and wildlife programs, and help other countries develop conservation programs.

The Service Manual, <http://www.fws.gov/policy/manuals/>, includes internal directives on implementing authorities. We publish special directives that affect the rights of citizens or the authorities of other agencies separately in the Code of Federal Regulations (CFR); the Service Manual does not duplicate them (see 50 CFR 1–99 at <http://www.gpoaccess.gov/cfr/index.html>).

The National Wildlife Refuge System and its Mission and Policies

The Refuge System is the world’s largest collection of lands and waters set aside specifically for the conservation of wildlife and the protection of ecosystems. More than 550 national wildlife refuges and 37 wetland management districts encompass more than 150 million acres of lands and waters in all 50 states and several island territories. Each year, more than 40 million visitors hunt, fish, observe and photograph wildlife, or participate in environmental education and interpretation on refuges.

Map 1-2



In 1997, President Clinton signed into law the National Wildlife Refuge System Improvement Act (16 USC 668dd(a)(2)). That act establishes a unifying mission for the Refuge System, a new process for determining the compatibility of public uses on refuges, and requires us to prepare a CCP for each refuge. The act states that the Refuge System must focus on wildlife conservation. It also states that the mission of the Refuge System, coupled with the purpose(s) for which each refuge was established, will provide the principal management direction on that refuge. The mission of the Refuge System is

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

—National Wildlife Refuge System Improvement Act

The Refuge Manual contains policy governing the operation and management of the Refuge System that the Fish and Wildlife Service Manual does not cover, including technical information on implementing refuge policies and guidelines on enforcing laws. You can review that manual at <http://www.fws.gov/policy/manuals/part.cfm?series=600&seriestitle=LAND%20USE%20AND%20MANAGEMENT%20SERIES>.

These are a few noteworthy policies instrumental in developing this CCP.

Policy on the National Wildlife Refuge System Mission, Goals and Purposes

This policy (601 FW 1) sets forth the Refuge System mission noted above, how it relates to the Service mission, and explains the relationship of the Refuge System mission and goals, and the purpose(s) of each unit in the Refuge System. In addition, it identifies the following Refuge System goals.

- Conserve a diversity of fish, wildlife, and plants;
- Develop and maintain a network of habitats;
- Conserve those ecosystems, plant communities, and wetlands that are unique within the United States;
- Provide and enhance opportunities to participate in compatible, wildlife-dependent recreation; and,
- Help to foster public understanding and appreciation of the diversity of fish, wildlife, and plants and their habitats.

This policy also establishes management priorities for the Refuge System.

- Conserve fish, wildlife, and plants and their habitats;
- Facilitate compatible wildlife-dependent recreational uses; and,
- Consider other appropriate and compatible uses.

Policy on Refuge System Planning

This policy (602 FW 1, 2, 3) establishes the requirements and guidance for Refuge System planning, including CCPs and step-down management plans. It states that we will manage all refuges in accordance with an approved CCP that, when implemented, will help:

- achieve refuge purposes;
- fulfill the Refuge System mission;

- maintain and, where appropriate, restore the ecological integrity of each refuge and the Refuge System;
- achieve the goals of the National Wilderness Preservation System and the National Wild and Scenic Rivers System; and,
- conform to other applicable laws, mandates, and policies.

That planning policy provides step-by-step directions and identifies the minimum requirements for developing all CCPs. Among them, we are to review any existing special designation areas such as wilderness and wild and scenic rivers, specifically address the potential for any new special designations, conduct a wilderness review, and incorporate a summary of that review into each CCP (602 FW 3).

Policy on the Appropriateness of Refuge Uses

Federal law and Service policy provide the direction and planning framework for protecting the Refuge System from inappropriate, incompatible or harmful human activities and ensuring that visitors can enjoy its lands and waters. This policy (603 FW 1) provides a national framework for determining appropriate refuge uses to prevent or eliminate those that should not occur in the Refuge System. It describes the initial decision process the refuge manager follows when first considering whether to allow a proposed use on a refuge. An appropriate use must meet at least one of the following four conditions.

1. The use is a wildlife-dependent recreational use as identified in the Improvement Act.
2. The use contributes to fulfilling the Refuge purpose(s), the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the Improvement Act became law.
3. The use involves the take of fish and wildlife under State regulations.
4. The use has been found to be appropriate after concluding a specified findings process using 10 specific criteria included in the policy.

Policy on Compatibility

This policy (603 FW 2) complements the appropriateness policy. The refuge manager first must find a use appropriate before undertaking a compatibility review of that use. If the proposed use is not appropriate, the refuge manager will not allow it, and a compatibility determination is unnecessary. However, the refuge manager must evaluate an appropriate use further, through a compatibility determination. The direction in 603 FW 2 provides guidance on how to prepare a compatibility determination. Other guidance in that chapter follows.

- The Improvement Act and its regulations require an affirmative finding by the refuge manager on the compatibility of a public use before we allow it on a national wildlife refuge.
- A compatible use is one “that will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge.”
- The act defines six wildlife-dependent uses that are to receive enhanced consideration on refuges: “hunting, fishing, wildlife observation and photography, and environmental education and interpretation.”
- The refuge manager may authorize those priority uses on a refuge when they are compatible and consistent with public safety.

- When the refuge manager publishes a compatibility determination, it will stipulate the required maximum reevaluation dates: 15 years for wildlife-dependent recreational uses; or, 10 years for other uses.
- However, the refuge manager may reevaluate the compatibility of a use at any time: for example, sooner than its mandatory date, or even before we complete the CCP process, if new information reveals unacceptable impacts or incompatibility with refuge purposes (603 FW 2.11, 2.12).
- The refuge manager may allow or deny any use, even one that is compatible, based on other considerations such as public safety, policy, or available funding.

Policy on Wildlife-dependent Public Uses

Part 605 Chapter 1 of the manual presents specific guidance on implementing direction, including the following criteria for a quality, wildlife-dependent recreation program:

1. promotes safety of participants, other visitors, and facilities;
2. promotes compliance with applicable laws and regulations and responsible behavior;
3. minimizes or eliminates conflict with fish and wildlife population or habitat goals or objectives in an approved plan;
4. minimizes or eliminates conflicts with other compatible wildlife-dependent recreation;
5. minimizes conflicts with neighboring landowners;
6. promotes accessibility and availability to a broad spectrum of the American people;
7. promotes resource stewardship and conservation;
8. promotes public understanding and increases public appreciation of America's natural resources and our role in managing and conserving these resources;
9. provides reliable/reasonable opportunities to experience wildlife;
10. uses facilities that are accessible to people and blend into the natural setting; and,
11. uses visitor satisfaction to help to define and evaluate programs.

Policy on Maintaining Biological Integrity, Diversity, and Environmental Health

This policy (601 FW 3) 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 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 restore lost or severely degraded components of the environment. It also provides guidelines for dealing with external threats to the biological integrity, diversity, and environmental health of a refuge and its ecosystem.

Other Mandates

Although Service and Refuge System policy and the purpose(s) of each refuge provide the foundation for its management, other federal laws, executive orders, treaties, interstate compacts, and regulations on conserving and protecting natural and cultural resources also affect how we manage refuges. Our "Digest

of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service” describes many of them at <http://www.fws.gov/laws/lawsdigest/index.html>.

Federal laws require the Service to identify and preserve its important historic structures, archaeological sites, and artifacts. NEPA mandates our consideration of cultural resources in planning federal actions. The Improvement Act requires the comprehensive conservation plan for each refuge to identify its archaeological and cultural values.

The Antiquities Act of 1906 as amended (PL 59-209; 34 Stat. 225; 16 USC 431-433) is the earliest and most basic legislation for protecting cultural resources on Federal lands. It provides misdemeanor-level criminal penalties to control unauthorized uses. Appropriate scientific uses may be authorized through permits, and materials removed under a permit must be permanently preserved in a public museum. The 1906 Act is broader in scope than the 1979 Archaeological Resources Protection Act, which partially supersedes it. Uniform regulations at 43 CFR Part 3 implement the Act.

The Historic Sites, Buildings and Antiquities Act (16 USC 461–462, 464–467; 49 Stat. 666) of August 21, 1935, popularly known as the Historic Sites Act, as amended by Public Law 89–249, approved October 9, 1965, (79 Stat. 971), declares it a national policy for the first time to preserve historic sites and objects of national significance, including those located on refuges. It provides authorization to the Secretary of the Interior through the National Park Service to conduct archaeological surveys, and to designate, acquire, administer, protect, and purchase properties of historic significance. Among other things, National Historic and Natural Landmarks are designated under the authority of this act, which are eventually incorporated into the National Historic Register under the 1966 National Historic Preservation Act.

The Archaeological and Historic Preservation Act (16 USC 469–469c; PL 86–523), approved June 27, 1960, (74 Stat. 220) as amended by Public Law 93–291, approved May 24, 1974, (88 Stat. 174) carries out the policy established by the Historic Sites Act (see above). It directs federal agencies to notify the Secretary of the Interior whenever they find that any alteration of terrain caused by a federal or federal-assisted licensed or permitted project may cause the loss or destruction of significant scientific, prehistoric or archaeological data. This expands the number of federal agencies responsible for carrying out this law. The act authorizes the use of appropriated, donated or transferred funds for the recovery, protection and preservation of that data.

The National Historic Preservation Act of 1966 (16 USC 470–470b, 470c–470n), PL 89–665, approved October 15, 1966 (80 Stat. 915) and repeatedly amended, provides for the preservation of significant historical properties (buildings, objects and sites) through a grant-in-aid program to the states, and establishes State Historic Preservation Offices. It establishes a National Register of Historic Places and a program of matching grants under the existing National Trust for Historic Preservation (16 USC 468–468d). This act establishes an Advisory Council on Historic Preservation, which became a permanent, independent agency in Public Law 94–422, approved September 28, 1976 (90 Stat. 1319). The act created the Historic Preservation Fund. It directs federal agencies, and any state, local, or private entity associated with a federal undertaking, to conduct a Section 106 Review, or to identify and assess the effects of their actions on items or sites listed or eligible for listing on the National Register. Most significantly, this act established that archaeological preservation was an important and relevant component at all levels of modern society, and it enabled the federal government to facilitate and encourage archaeological preservation, programs and activities in the state, local, and private sectors.

The Archaeological Resources Protection Act (16 USC 470aa–470ll; PL 96–95) approved October 31, 1979, (93 Stat. 721), referred to as ARPA, largely supplanted the resource protection provisions of the Antiquities Act of 1906 for archaeological items. ARPA establishes detailed requirements for issuance of permits for any excavation for or removal of archaeological resources from federal or Native American lands. It also provides detailed descriptions of prohibited actions, thereby strengthening enforcement capabilities. It establishes more severe civil and criminal penalties for the unauthorized excavation, removal, or damage of those resources; for any trafficking in those removed from federal or Native American land in violation of

any provision of federal law; and for interstate and foreign commerce in such resources acquired, transported, or received in violation of any state or local law.

Native American Graves Protection and Repatriation Act of 1990, as amended (PL 101-601; 104 Stat. 3048; 25 USC 3001 et seq.) establishes rights of Indian tribes and Native Hawaiian organizations to claim ownership of certain cultural items, including human remains, funerary objects, sacred objects, and objects of cultural patrimony, held or controlled by Federal agencies and museums that receive Federal funds. It requires agencies and museums to identify holdings of such remains and objects, and to work with appropriate Native Americans toward their repatriation. Permits for the excavation and/or removal of cultural items protected by the act require Native American consultation, as do discoveries of cultural items made during Federal land use activities. The Secretary of the Interior's implementing regulations are at 43 CFR Part 10.

The Service also owns and cares for museum properties. The most common are archaeological, zoological, botanical collections, historical photographs, historic objects, and art. Each refuge maintains an inventory of its museum property. Our museum property coordinator in Hadley, Massachusetts, guides the refuges in caring for that property, and helps us comply with the Native American Grave Protection and Repatriation Act and federal regulations governing federal archaeological collections. Our program ensures that those collections will remain available to the public for learning and research.

Other resource laws also are integral in developing a CCP. The Wilderness Act of 1964 (16 USC 1131–1136; PL 88–577) establishes a National Wilderness Preservation System (NWPS) that is composed of federally owned areas designated by Congress as “wilderness areas.” The act directs each agency administering designated wilderness to preserve the wilderness character of areas within the NWPS, and to administer the NWPS for the use and enjoyment of the American people in a way that will leave those areas unimpaired for future use and enjoyment as wilderness. The act also directs the Secretary of the Interior, within 10 years, to review every roadless area of 5,000 acres or more and every roadless island (regardless of size) within National Wildlife Refuge and National Park systems for inclusion in the National Wilderness Preservation System. Service planning policy requires that we evaluate the potential for wilderness on refuge lands, as appropriate, during the CCP planning process (610 FW 1).

The Wild and Scenic Rivers Act of 1968, as amended, selects certain rivers of the nation possessing remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values, preserves them in a free-flowing condition, and protects their local environments. Service planning policy requires that we evaluate the potential for wild and scenic rivers designation on refuge lands, as appropriate, during the CCP planning process.

Chapter 4 in the draft CCP/EA, “Environmental Consequences,” evaluated this plan’s compliance with the acts noted above, and with the Clean Water Act of 1977 as amended (33 USC 1251, et seq.; PL 107–303), the Clean Air Act of 1970 as amended (42 USC 7401 et seq.), and the Endangered Species Act (ESA) of 1973 (16 USC 1531–1544), as amended. Finally, we designed the draft CCP/EA to comply with NEPA and the Council on Environmental Quality (CEQ) Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500–1508).

Conservation Plans and Initiatives Guiding the Project

Strategic Habitat Conservation

The Service has a goal of establishing and building capacity for science-driven landscape conservation on a continental scale. Our approach, known as Strategic Habitat Conservation, applies adaptive resource management principles to the entire range of species, groups of species, and natural communities of plants and animals. This approach is founded on an adaptive, iterative process of biological planning, conservation



© Len Medlock

Chestnut-sided warbler

design, conservation delivery, monitoring, and research. The Service is refining this approach to conservation in a national geographic framework. We will work with partners to develop national strategies to help wildlife, with a focus on declining species populations, adapt in a climate-changed world. This geographic frame of reference will also allow us to more precisely explain to partners, Congress and the American public why, where, and how we target resources for landscape-scale conservation and how our efforts connect to a greater whole.

Birds of Conservation Concern 2008 Report

The Service developed this report (USFWS 2008a) in consultation with the leaders of ongoing bird conservation initiatives and such partnerships as Partners In Flight (PIF), the North American Waterfowl Management Plan (NAWMP) and Joint Ventures, the North American Waterbird Conservation Plan (NAWCP), and the U.S. Shorebird Conservation Plan. It fulfills the mandate of the 1988 amendment to the Fish and Wildlife Conservation Act of 1980 (100 PL 100–653, Title VIII), requiring the Secretary of the Interior, through the Service, to “identify species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973.”

The report contains 46 lists that identify bird species of conservation concern at national, regional, and landscape scales. It includes a principal national list, regional lists corresponding to the regional administrative units of the Service, and species lists for each of the 35 bird conservation regions (BCRs) designated by the North American Bird Conservation Initiative (NABCI) in the United States, and two additional BCRs we created to fulfill the purpose of the report that include island “territories” of the United States. NABCI defined those BCRs as ecologically based units in a framework for planning, implementing, and evaluating bird conservation. We hope those national and regional reports will stimulate federal, state, and private agencies to coordinate, develop, and implement integrated approaches for conserving and managing the birds deemed most in need of conservation. This is one of the plans we used in identifying species of concern in Appendix A and developing management objectives and strategies in Goal 1. The report is available on line at http://library.fws.gov/Bird_Publications/BCC2008.pdf. The Refuge lies in the Atlantic Northern Forest (BCR 14). Of the 29 bird species on the list for BCR 14, two species, wood thrush (*Hylocichla mustelina*), and Canada warbler (*Wilsonia canadensis*), breed on the Refuge.

North American Waterfowl Management Plan (update 2004) and Atlantic Coast Joint Venture Implementation Plan (ACJV 2005)

Originally written in 1986, the NAWMP describes a 15-year strategy among the United States, Canada, and Mexico to restore and sustain waterfowl populations by protecting, restoring, and enhancing habitat. The plan committee, including representatives from each nation, has modified the 1986 plan twice to account for biological, sociological, and economic changes that influenced the status of waterfowl and the conduct of cooperative habitat conservation. The most recent modification, in 2004, (NAWMP 2004) updates the needs, priorities, and strategies for the next 15 years, increases stakeholder confidence in the direction of its actions, and guides partners in strengthening the biological foundation of North American waterfowl conservation. You may review the plan at <http://www.fws.gov/birdhabitat/NAWMP>. To convey goals, priorities, and strategies more effectively, NAWMP 2004 is comprised of two separate documents: Strategic Guidance and Implementation Framework, the former for agency administrators and policy makers who set the direction and priorities for conservation. The latter includes supporting technical information for use by biologists and land managers.

The plans are implemented at the regional level in 14 habitat Joint Ventures and three species Joint Ventures: Arctic goose, black duck, and sea duck. Our project area lies in the Atlantic Coast Joint Venture (ACJV), which includes all the Atlantic Flyway states from Maine to Florida and Puerto Rico. The waterfowl goal for the Atlantic Coast Joint Venture is “*Protect and manage priority wetland habitats for migration, wintering, and production of waterfowl, with special consideration to black ducks, and to benefit other wildlife in the joint venture area.*”

In 2005, a revision of the original ACJV Implementation Plan (ACJV 2005) was completed. The ACJV 2005 plan presents habitat conservation goals and population indices for the ACJV consistent with the NAWMP update, provides status assessments of waterfowl and their habitats in the joint venture, and updates focus area narratives and maps for each state. That document is intended as a blueprint for conserving the valuable breeding, migration and wintering waterfowl habitat present within the ACJV boundary based on the best available information and the expert opinion of waterfowl biologists from throughout the flyway. You may review the ACJV 2005 at <http://www.acjv.org/resources.htm>.

The Black Duck Joint Venture plan also relates to our project. Black ducks (*Anas rubripes*) can be found in the nearshore waters and along the Refuge shoreline, primarily during the breeding and migration seasons. The Black Duck Joint Venture Plan, Final Draft Strategic Plan (USFWS and CWS 1993) can be viewed at <http://www.pwrc.usgs.gov/bdjv/>.

We used these plans in identifying species of concern in Appendix A, and in developing management objectives and strategies under Goal 1. Although the Refuge does not support sizeable, suitable habitat for breeding or wintering waterfowl, the undisturbed lakeshore may be important for migrating waterfowl such as black duck, mallard (*Anas platyrhynchos*), and wood duck (*Aix sponsa*).

Atlantic Northern Forest Bird Conservation Region (BCR 14) Implementation Plan (Dettmers [revised 2006])

The Refuge lies in the Atlantic Northern Forest BCR 14 which provides important resources for migratory birds whose ranges span the western hemisphere. Northern temperate forests are characteristic of this BCR, including northern hardwoods and mixed deciduous-coniferous habitat types. Lake Sunapee is part of the more than 3 million acres of freshwater habitat that provides crucial resources for many migrating birds as they journey from their breeding sites in the north to non-breeding sites in Mexico, Central America, the Caribbean, and South America.

Unfortunately, most of the lands in BCR 14 have been altered from their historic condition. Urban development and agriculture dominates much of the landscape. The loss or degradation of habitat, particularly early successional forests (e.g., by fragmentation, development, and invasive species), are the greatest threats to bird populations in BCR 14. The Implementation Plan identifies the bird species and

habitats in greatest need of conservation action in this region, activities thought to be most useful to address those needs, and geographic areas believed to be the most important places for those activities. This plan is meant to start a regional bird conservation initiative of partners across BCR 14 communicating their conservation planning and implementation activities to deliver high-priority conservation actions in a coordinated manner. You may view the BCR 14 Blueprint at http://www.acjv.org/documents/BCR_14_%20Blueprint.pdf.

We used this plan in identifying species of concern in Appendix A, and in developing management objectives and strategies under Goal 1. The Refuge supports several species of concern on the BCR 14 list: American woodcock (*Scolopax minor*), wood thrush, veery (*Catharus fuscescens*), yellow-bellied sapsucker (*Sphyrapicus varius*), American redstart (*Setophaga ruticilla*), black-throated-blue warbler (*Dendroica caerulescens*), eastern wood-pewee (*Contopus virens*), purple finch (*Carpodacus purpureus*), chestnut-sided warbler (*Dendroica pennsylvanica*), Canada warbler, blackburnian warbler (*Dendroica fusca*), black-throated-green warbler (*Dendroica virens*), brown creeper (*Certhia americana*), and ovenbird (*Seiurus aurocapillus*). The abundance and distribution of each of these species on the Refuge varies over time depending on the habitat conditions.

North American Waterbird Conservation Plan (Version 1, 2002)

This plan (Kushlan et al. 2002) is the result of an independent partnership among individuals and institutions with the interest in and responsibility for conserving water birds and their habitats. The plan is just one element of a multi-faceted conservation program. Its primary goal is to ensure that the distribution, diversity, and abundance of populations and habitats of breeding, migratory, and non-breeding water birds are sustained or restored throughout the lands and waters of North America, Central America, and the Caribbean. It provides a framework for conserving and managing colonially nesting water-dependent birds. In addition, it will facilitate continent-wide planning and monitoring, national, state, and provincial conservation, regional coordination, and local habitat protection and management. The plan may be accessed at http://www.pwrc.usgs.gov/nacwcp/pdfs/plan_files/introduction.pdf.

In 2006, the Mid-Atlantic New England Working Group developed the Waterbird Conservation Plan for the Mid-Atlantic/New England/Maritimes (MANEM) Region (MANEM Waterbird Working Group 2006). This plan is being implemented between 2006 and 2010. It consists of technical appendices on (1) waterbird populations including occurrence, status, and conservation needs, (2) waterbird habitats and locations within the region that are crucial for waterbird sustainability, (3) MANEM partners and regional expertise for waterbird conservation, and (4) conservation project descriptions that present current and proposed research, management, habitat acquisition, and education activities. Summarized information on waterbirds and their habitats provides a regional perspective for local conservation action. You may access the plan at <http://www.fws.gov/birds/waterbirds/manem/index.html>.

The Refuge's extensive shoreline provides potential waterbird habitat, especially during migration. Although little shorebird or wading bird use has been documented, this plan was used to help frame the habitat goals and objectives. We used this plan in identifying species of concern in Appendix A, and in developing management objectives and strategies under Goal 1.

Partners In Flight Bird Conservation Plans

In 1990, PIF began as a voluntary, international coalition of government agencies, conservation organizations, academic institutions, private industries, and citizens dedicated to reversing the population declines of bird species and "keeping common birds common." The foundation of PIF's long-term strategy is a series of scientifically based bird conservation plans using physiographic areas as planning units.

The goal of each PIF plan is to ensure the long-term maintenance of healthy populations of native birds, primarily non-game birds. The plan for each physiographic area ranks bird species according to their conservation priority, describes their desired habitat conditions, develops biological objectives, and

recommends conservation measures. The priority ranking factors in habitat loss, population trends, and the vulnerability of a species and its habitats to regional and local threats.

Physiographic Area 27—Northern New England (Hodgman and Rosenberg 2000). Our project area lies in Physiographic Area 27, the Northern New England Region. We referred to this plan in developing our list of species of conservation concern in Appendix A, as well as our habitat objectives and strategies under Goal 1. Specifically two of the priority habitats and their associated species occur on the Refuge or have potential to occur there: northern hardwood-mixed forest (wood thrush, Canada warbler, blackburnian warbler, black-throated-blue warbler) and early successional forest (chestnut-sided warbler). This plan can be accessed at http://www.blm.gov/wildlife/plan/pl_27_10.pdf.

Partners in Amphibian and Reptile Conservation, National State Agency Herpetological Conservation Report (Draft 2004)

The combination of wetland and upland habitats on the Refuge, although small in size, provides potential habitat for declining herpetofauna of the region. The wood turtle (*Glyptemys insculpta*) and blue-spotted salamander (*Ambystoma laterale*) are two species of conservation concern in the region that could potentially occur on the Refuge (Appendix A).

Partners in Amphibian and Reptile Conservation (PARC) was created in response to the increasing, well-documented national declines in amphibian and reptile populations. Many consider it the most comprehensive effort in herpetofaunal conservation. PARC members come from state and federal agencies, conservation organizations, museums, the pet trade industry, nature centers, zoos, the power industry, universities, herpetological organizations, research laboratories, forest industries, and environmental consultants. Its five geographic regions—Northeast, Southeast, Midwest, Southwest, and Northwest—can focus on national and regional challenges in herpetofaunal conservation. Regional working groups allow for region-specific communication. The Northeast working group has developed “Model State Herpetofauna Regulatory Guidelines” which we consulted as we developed our strategy, this document can be found at (<http://www.pwrc.usgs.gov/neparc/products/modelherpregs.htm>).

The National State Agency Herpetological Conservation Report (NHCR) is a summary report (PARC 2004) sponsored by PARC that provides a general overview of each state wildlife agency’s support for reptile and amphibian conservation and research through September 2004. It lists amphibian and reptile species of concern for each state. Each state report was compiled in cooperation with its agency’s lead biologist on herpetofaunal conservation. That report can be accessed at <http://www.parcplace.org/documents/PARCNationalStates2004.pdf>. Its purpose is to facilitate communication among state agencies and partner organizations throughout the PARC network to identify and address regional and national herpetological priorities.

PARC intends to expand the scope of the NHCR to include other states, provinces, and territories. It will include other state agencies that are supporting herpetofaunal conservation and research, such as transportation departments, park departments, and forest agencies. The next NHCR report will integrate a list of the Species of Conservation Concern into each state’s comprehensive conservation wildlife strategy (see below).

New Hampshire Wildlife Action Plan (October 2005)

In 2002, Congress created the State Wildlife Grant Program (SWG), and appropriated \$80 million in state grants. The purpose of the program is to help state and tribal fish and wildlife agencies conserve fish and wildlife species of greatest conservation need. The funds appropriated under the program are allocated to each state according to a formula that takes into account its size and population.

To be eligible for additional federal grants, and to satisfy the requirements for participating in the SWG program, each state and U.S. territory was charged with developing a statewide “Comprehensive Wildlife Conservation Strategy” and submitting it to the National Advisory Acceptance Team by October 1, 2005.

Each plan must address eight required elements, and each plan is to identify and focus on “species of greatest conservation need,” yet address the “full array of wildlife” and wildlife-related issues, and “keep common species common.”

The New Hampshire plan (New Hampshire Fish and Game Department (NH FGD) 2005), commonly referred to as the New Hampshire Wildlife Action Plan (NH WAP), resulted from that charge. It creates a vision for conserving New Hampshire’s wildlife and stimulates other states, federal agencies, and conservation partners to think strategically about their individual and coordinated roles in prioritizing conservation.

In addressing the eight elements below, the NH WAP helps supplement the information we gathered on species and habitat occurrences and their distribution in our area analysis, and helps us identify conservation threats and management strategies for species and habitats of conservation concern in the CCP. The expertise convened to compile this plan and its partner and public involvement further enhance its benefits for us. We used the NH WAP in developing our list of species of concern in Appendix A, and the management objectives and strategies for Goal 1. These are its eight elements:

1. information on the distribution and abundance of species of wildlife, including low and declining populations as the state fish and wildlife agency deems appropriate, that are indicative of the diversity and health of the state’s wildlife;
2. descriptions of locations and relative condition of key habitats and community types essential to the conservation of species identified in element 1;
3. descriptions of problems that may adversely affect species identified in element 1 or their habitats, and priority research and survey efforts needed to identify factors which may assist in restoration and improved conservation of these species and habitats;
4. descriptions of conservation actions necessary to conserve the identified species and habitats and priorities for implementing such actions;
5. plans proposed for monitoring species identified in element 1 and their habitats, for monitoring the effectiveness of the conservation actions proposed in element 4, and for adapting those conservation actions to respond appropriately to new information or changing conditions;
6. description of procedures to review the plan at intervals not to exceed 10 years;
7. plans for coordinating, to the extent feasible, the development, implementation, review, and revision of the plan strategy with federal, state and local agencies, and Native American tribes that manage significant areas of land and water within the state, or administer programs that significantly affect the conservation of identified species and habitats; and,
8. plans for involving the public in the development and implementation of plan strategies.

The State of New Hampshire completed its final WAP, with no changes from its draft, in October 2005. You may view it at http://www.wildlife.state.nh.us/Wildlife/wildlife_plan.htm.

Other Information Sources

We also consulted the plans and resources below as we refined our management objectives and strategies, especially those with a local context.

Continental or National Plans

- National Wetlands Research Center Strategic Plan: 2010-2015. (U.S. Geological Survey (USGS) 2009); available at <http://www.nwrc.usgs.gov/about/5-year-plan.htm>

- National Audubon Society Watchlist (National Audubon Society 2007); available at <http://web1.audubon.org/science/species/watchlist/>
- Ducks Unlimited's International Conservation Plan (Ducks Unlimited 2005); available at <http://www.ducks.org/Conservation/ConservationPlan/1516/InternationalConservationPlan.html>

Regional Plans

- Management Plan for the Lake Sunapee Watershed (Sunapee Area Watershed Coalition (SAWC) 2008); available at <http://www.sunapeewatershed.org>

State Plans

- New Hampshire Outdoors 2008-2013 Statewide Comprehensive Outdoor Recreation Plan (SCORP; New Hampshire Office of Energy and Planning 2007); available at http://www.nh.gov/oep/programs/recreation/SCORP_2008-2013/index.htm
- New Hampshire Forest Resources Plan (New Hampshire Division of Forests and Lands 1995); available at <http://www.ceinfo.unh.edu/Pubs/ForPubs/NHFRP01.pdf>
- New Hampshire's Changing Landscape (Society for the Protection of New Hampshire Forests 2005); available at <http://forestsociety.org/research/research-projects.asp#nhcl>
- Regional Forest Management Plan for Fee Ownership in Vermont, New Hampshire, Maine, Massachusetts, and Connecticut. (New England Forestry Foundation 2006); available at <http://www.newenglandforestry.org/sustainable/rfmp.pdf>

Local Plans

- Town of Newbury, NH Townwide Conservation Plan (Poole 2008)
- Vision 2020: The Fells Master Plan (The Fells 2006)

Individual Species Plans

- American Woodcock Conservation Plan (Kelley et al. (eds) 2008); available at <http://timberdoodle.org/>
- Canada Warbler Population Status, Habitat Use, and Stewardship Guidelines for Northeastern Forests. (Lambert and Faccio 2005).; available at <http://www.vinsweb.org/assets/pdf/CAWAreport05.pdf>
- Eastern Brook Trout: Status and Threats (Trout Unlimited 2006); available at <http://www.easternbrooktrout.org/publications.aspx>

Refuge Establishing Purposes and Land Acquisition History

The Refuge was established in 1972 via a donation from Alice Appleton Hay to the Service for the following purposes and under the following authorities.

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

“...for public use as an inviolate sanctuary for migratory birds, as a migratory bird and wildlife reservation to be known as the John Hay National Wildlife Refuge, and for other conservation purposes consistent therewith.” (Deed between Alice Appleton Hay and the U.S. Government, December 11, 1972)

Map 1-1 above depicts the current Refuge boundary. Table 1.1 below summarizes the land acquisition history of the Refuge.

Table 1.1. History of Land Transactions at the John Hay Refuge

<i>Year</i>	<i>Acres</i>	<i>Land Transaction</i>
1972	164	Donation by Hay family
2008	84	Land exchange with The Fells
Total Refuge Acres	80	

Refuge Administration

We administer the John Hay Refuge as part of the Silvio O. Conte National Fish and Wildlife Refuge Complex (Conte Complex, Refuge Complex), which also includes the Stewart B. McKinney National Wildlife Refuge (McKinney NWR) located in Connecticut. The Refuge Complex headquarters is located in Sunderland, Massachusetts.

This Refuge Complex now has 12.5 permanent staff including a project leader, two refuge managers, two wildlife refuge specialists, two outdoor recreation planners, two biologists, a forester, an administrative support assistant, and two park rangers (law enforcement), one of which is shared with Umbagog National Wildlife Refuge which spans the border of New Hampshire and Maine. Temporary staff positions include two student trainees located at the Sunderland Headquarters and the Nulhegan Basin Division, a forestry technician at the Pondicherry Division, and two park rangers (interpretation) at the Sunderland Headquarters and the Great Falls Discovery Center. The Refuge Complex sponsors Youth Conservation Corps crews at McKinney NWR, the Fort River Division, the Pondicherry Division, the Mohawk River Division, and the Nulhegan Basin Division. In addition, the Refuge Complex hires seasonal technicians, and brings on a number of volunteers and interns each year during the field season. The number of these short-term positions varies, but typically is about 10, distributed among McKinney NWR (six), Sunderland headquarters (one), Nulhegan Basin Division (one) and Great Falls Discovery Center (two).

Refuge Operational Plans (“Step-down Plans”)

Refuge planning policy lists more than 25 step-down management plans that may be required on refuges. Those plans contain specific strategies and implementation schedules for achieving refuge goals and objectives. Some plans require annual revisions; others require revision every 5 to 10 years. Some require additional NEPA analysis, public involvement, and compatibility determinations before we can implement them. The only approved step-down plans are Fire Management Plans for Nulhegan Basin and Pondicherry divisions, a Visitor Services Plan for the Nulhegan Basin Division, and a Hunt Plan for the Pondicherry Division. Chapter 4 provides more information about the additional step-down plans needed and their schedule for completion.

We plan to complete the following step-down plans (see Chapter 4). Additional plans may be required depending on the alternative selected for the final CCP.

- Habitat Management Plan (HMP), which we will immediately begin working on following CCP approval
- Annual Habitat Work Plan (AHWP), annually after CCP approval
- Inventory and Monitoring Plan (IMP), within 2 years of CCP approval
- Visitor Services Plan, within 3 years of CCP approval
- Law Enforcement Plan, within 3 years of CCP approval
- Safety Plan, within 3 years of CCP approval
- Fire Plan, within 5 years of CCP approval
- Facilities and Sign Plan, within 5 years of CCP approval
- Integrated Pest Management Plan (IPM), within 5 years of CCP approval

Refuge Vision Statement

Our planning team developed this vision statement to provide a guiding philosophy and sense of purpose in the CCP.



Aerial view of the Refuge and The Fells

John Hay NWR is a unique setting and destination in the Lake Sunapee region. It is situated between the lake and a larger network of conserved forestland extending throughout Sunset Hill. Together with adjacent conservation lands, Refuge forests provide important habitat for migratory birds and other forest wildlife in the midst of increased development in the region. The Refuge provides an extensive, undeveloped shoreline, as well as public ownership, amidst the predominantly privately developed lake community. We will continue to maintain its unique character within the context of the region, and provide important habitat for wildlife.

John Hay NWR provides a valuable mature forest ecological component to this larger network of conserved forest lands. Through local and state partnerships, it contributes to the natural resource management and environmental education opportunities in the region. The Refuge supports large majestic trees exemplary of a mature northern pine and hardwood forest habitat that complement the younger, more diverse and actively-managed lands of its adjacent conservation partners. The Refuge will

continue to contribute to the biological integrity and diversity of the Atlantic northern forest and Lake Sunapee region.

The John Hay NWR showcases the legacy of the late statesman John Hay and honors the wishes of his daughter-in-law, Alice Hay, who donated the land for the conservation of migratory birds. It provides a special place where people come to experience the beauty of the undeveloped Lake Sunapee shoreline and the majestic Atlantic northern forest. Together with our partners, we will continue to provide increasing opportunities for outreach to the community and a broad array of visitors to raise awareness about the Refuge's wildlife stewardship mission, and the broader network of conserved lands in the region.

Refuge Goals

We developed these goals after considering the vision statement, the purposes for establishing the Refuge, the missions of the Service and the Refuge System, and the mandates, plans, and conservation initiatives above. These goals are intentionally broad, descriptive statements of purpose. They highlight elements of the vision for the Refuge that we will emphasize in its future management. The biological goals take precedence; but otherwise, we do not present them in any particular order. Each offers background information on its importance.

Goal 1. Contribute to the biological diversity and integrity of the Atlantic northern forest in the larger context of the Lake Sunapee region and Connecticut River watershed by protecting, enhancing, and restoring the Refuge's habitats, with an emphasis on breeding, migrating, and wintering birds.

Goal 2. Promote natural resource conservation, stewardship, the mission of the National Wildlife Refuge System and enjoyment of the John Hay Refuge by providing high-quality, compatible, wildlife-dependent public use opportunities on Refuge lands and neighboring conserved lands and waters.

Goal 3. Communicate and collaborate with local communities, federal and state agencies, The Fells, and conservation organizations throughout the Lake Sunapee region to promote natural resource conservation, stewardship and the mission of the National Wildlife Refuge System.

Chapter 2

Erin Victory/TCI



Autumn on the Refuge

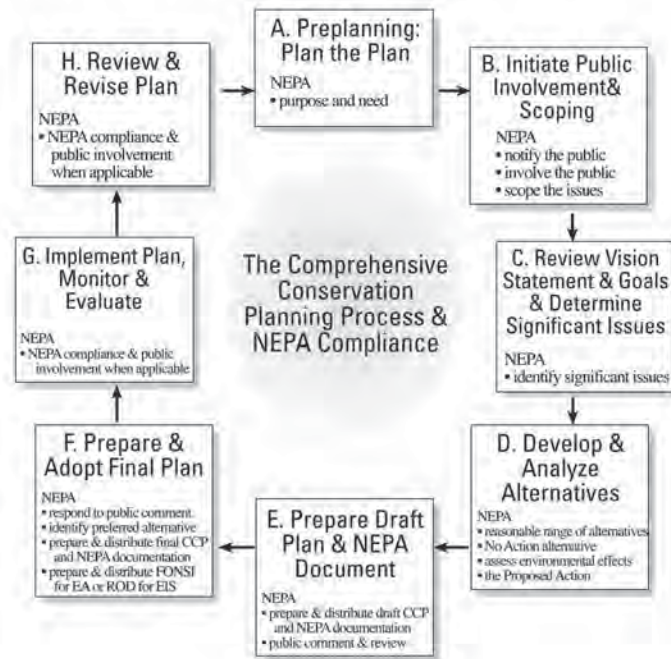
The Planning Process

- The Comprehensive Conservation Planning Process
- Issues, Concerns and Opportunities

The Comprehensive Conservation Planning Process

Service policy (602 FW 3) establishes an eight-step planning process that also facilitates compliance with NEPA (Figure 2.1). Our planning policy and CCP training course materials describe the eight steps in detail. We followed the process depicted below in developing the draft CCP/EA.

Figure 2.1. The NEPA planning process.



In August 2008, we began to prepare for developing a CCP by collecting information on Refuge resources and conducting a forest inventory. We convened our core team in September, which consists of Refuge staff, regional planning staff, and a representative of the NH FGD. We discussed management issues, drafted a vision statement and goals, and compiled a project mailing list of known stakeholders, interested individuals, organizations, and agencies. We also submitted a *Federal Register* Notice of Intent to begin the CCP process. We initiated all of those steps as part of “Step A: Preplanning.”

In September 2008, we started “Step B: Initiate Public Involvement and Scoping.” We distributed a newsletter to approximately 50 individuals, organizations, and agencies, announcing we were beginning the planning process and the upcoming public meeting in October.

On October 9, 2008 we held both the stakeholder and public scoping meetings in Newbury, NH, to identify public issues and concerns, share our draft vision statement and tentative goals, describe the planning process, and explain how people could become involved and stay informed about the process. Those meetings helped us identify the stakeholder and public concerns we would need to address in the planning process. We announced their locations, dates, and times in local newspapers, and in the planning update newsletter. Three people attended the public meeting. This meeting was followed by a month-long

comment period where we continued to receive public and partner issues and concerns through email, letters, and comment form submission.

Our next planning team meeting was held in mid-December where we worked on “Step C: Review Vision Statement, Goals, and Identify Significant Issues”, and “Step D: Develop and Analyze Alternatives.” We compiled and analyzed various management alternatives to serve as the foundation for developing the draft CCP/EA. In February 2009, we posted on our website a summary of the public and partner meetings, provided an update on CCP activities, and summarized the key issues we would address in this CCP.

In winter 2009/2010, we distributed a newsletter summarizing the three management alternatives we analyzed in detail for the CCP/EA. That completed Step D.

The draft CCP/EA represented “Step E: Prepare Draft Plan and NEPA document.” On February 18, 2010, we published a Notice of Availability in the *Federal Register* announcing our release of the draft for a 30-day period of public review and comment. During that comment period, we also held public meetings to obtain your comments. We received them by regular mail, electronic mail, or at the public meetings. After the comment period ended, we reviewed and summarized all of the comments we received, developed our responses, and published them in Appendix F to this final CCP.

Once we prepared the final CCP, we submitted it to our Regional Director for approval. He determined that it warrants a Finding of No Significant Impact (FONSI; see Appendix G), and he found its analysis adequate to issue a decision at that same time. We will announce his final decision by publishing a Notice of Availability in the *Federal Register*, where we will also notify people of the availability of the final CCP. That will complete “Step F: Prepare and Adopt a Final Plan.”

Then “Step G: Implement Plan, Monitor and Evaluate” can begin. As part of “Step H: Review and Revise Plan,” we will modify or revise the final CCP as warranted following the procedures in Service policy (602 FW 1, 3, and 4) and NEPA requirements. Minor revisions that meet the criteria for categorical exclusions (550 FW 3.3C) will require only an environmental action memorandum. As the Improvement Act and Service policy stipulate, we will review and revise the CCP fully every 15 years.

Issues, Concerns and Opportunities

We define an issue as “any unsettled matter requiring a management decision.” That can be an “initiative, opportunity, resource management problem, threat to a resource, conflict in use, or a public concern.” Issues arise from many sources, including our staff, other Service programs, state agencies, other federal agencies, our partners, neighbors, user groups, or Congress. One of the distinctions among the proposed management alternatives in the draft CCP/EA is how each addressed those issues. The following summary provides a context for the issues that arose during the scoping process.

Habitat and Species Management

National wildlife refuges primarily serve the conservation of wildlife and habitats. That is our highest priority, and serves as the foundation for all that we do. Many refuges were established for a very specific purpose, such as protecting a particular species or habitat. Based on the establishing purpose for this Refuge and the stipulations for its donation, the primary justification for creating it was to protect a regionally important avian migration, nesting, and feeding area.

How best to protect, restore, and/or enhance the history and purpose of the Refuge is an important issue we address in the CCP. We heard a consistent theme that whatever management actions we decided to take, they should not impinge upon the establishing purpose of providing a migratory bird and wildlife reservation. Other concerns expressed were that changes to current management (e.g., minimal habitat management, and the no-hunting policy) were not felt to reflect the original wishes of the Hay family by

commenters, and they preferred a conservative approach to refuge management. It was desired that this minimal level of management be maintained also to minimize storm water runoff, thereby helping to prevent further increases in phosphorus levels in the lake, an increasing concern in the Lake Sunapee watershed. Given the site potential for Native American and early historic archaeological resources on the Refuge, it was recommended that any management activities take the potential impacts on these resources into consideration.



Erin Victory/TCI

Outflow of Beech Brook

Beech Brook, the only notable stream running through the Refuge, was an important issue during scoping. This brook is a reference stream for water quality in the entire Lake Sunapee watershed, and provides important habitat for brook trout, and a movement corridor for wildlife. Likewise, the undeveloped shoreline was a major concern, as the combined, unaltered shoreline of the Refuge and The Fells is about three-quarters of a mile in length. It was desired that management actions taken in the future would take these resources into consideration to minimize impacts.

Most of the Refuge acreage is upland habitat. Many migratory birds of conservation concern depend on those upland habitats when breeding, wintering, or migrating. There was some concern that whichever habitat type was emphasized, that it would not impact the Refuge's purpose as a migratory bird reservation. There seemed to be consensus that we can best accomplish our management objectives in partnership with state agencies and local organizations. The alternatives in Chapter 2 of the draft CCP/EA analyzed different habitat management priorities.

The following key issues and concerns arose concerning habitat and species management.

- How can we manage habitat for migratory birds that most effectively fulfills the establishing purpose of the Refuge?
- In what ways can we minimize impacts of any management activities to protect the 3,100 feet of undeveloped Refuge shoreline?
- How can we protect, restore, or enhance the riparian corridor along Beech Brook, and in-stream water quality to maintain its utility as a reference stream for the Lake Sunapee watershed?
- How can we strive to balance both the cultural heritage (i.e., large white pines) of the forest character and the legacy of minimal management by the Hay family?
- How does the Refuge fit into the greater landscape context of the region, and how can we complement that larger context with our management activities on the Refuge or coordinate management with our local conservation partners?
- What steps can be taken prior to any ground-disturbing management activities to protect potential sites of archaeological importance?

Public Use/Community Relations

Our goal is to become an integral part of the socioeconomic health and quality of life of the communities we affect. The challenge for us is to understand the visions of the respective communities and our role in them while adhering to our mission. We also need to determine how best to nurture and cultivate the mutually beneficial relationships we have developed using the resources we have available.

During public scoping, we heard that the Hay family estate and current Refuge were an important part of the history and culture of the community. In addition, the aesthetic value was a high priority. Many were not favorable towards management actions that may alter its current state or level of use. The addition of a dock or pier and wider trail was thought to potentially encourage use and thus diminish the experience for some. It was suggested that inclusion of a hunting season on the property would create conflicts among users, and would be contrary to the Hay's perceived wishes. Partnerships with adjacent land owners could be a way to balance priority wildlife-dependent use with maintaining a familiar level of use of the Refuge.

Other opportunities for partnerships included educational programming, resource interpretation, and coordination of land management activities across the landscape.

In response to those comments and the issues below, our alternatives (described in Chapter 2 of the draft CCP/EA) evaluated additional wildlife-dependent recreational opportunities, and proposed measures to promote Service visibility, community understanding, and support for Refuge programs.

The following are key issues or concerns about public uses and community relations that arose during public scoping.

- How can we balance increased public use of the Refuge while minimizing user impacts in the future, and how might adding an Americans with Disabilities Act-compliant trail help to accomplish this?
- What are the impacts of public use on Beech Brook, and how can we minimize these impacts?
- What staffing levels are needed to meet our goals of increasing our on-site interpretation, and education and outreach programs to reach a wider audience?
- How do we effectively conduct education and outreach to explain Refuge rules, regulations, and our policies on rafting, and shoreline use?
- What partnership opportunities exist to increase the number and quality of educational programs, interpretation, and outreach?
- Can our partners assist us in fulfilling the six priority public uses on adjacent conserved lands?

Chapter 3



Barry Parrish/USFWS

Woods Road

Refuge and Resource Descriptions

- Introduction
- Physical Environment
- Major Historical Influences Shaping Landscape
Vegetation
- The Cultural Landscape Setting and Land Use History
- Current Climate
- Air Quality
- Water Quality
- The Regional Socio-Economic Setting
- Refuge Administration
- Refuge Natural Resources
- Refuge Biological Resources
- Refuge Visitor Services Program
- Archaeological, Historical and Cultural Resources

Introduction

This chapter describes the physical, biological, and sociological environment of the John Hay Refuge. We begin with the physical landscape, the setting of the Refuge and our project area, including historical information, followed by Refuge administration and programs and then, descriptions of specific Refuge resources.

Physical Environment

Watershed

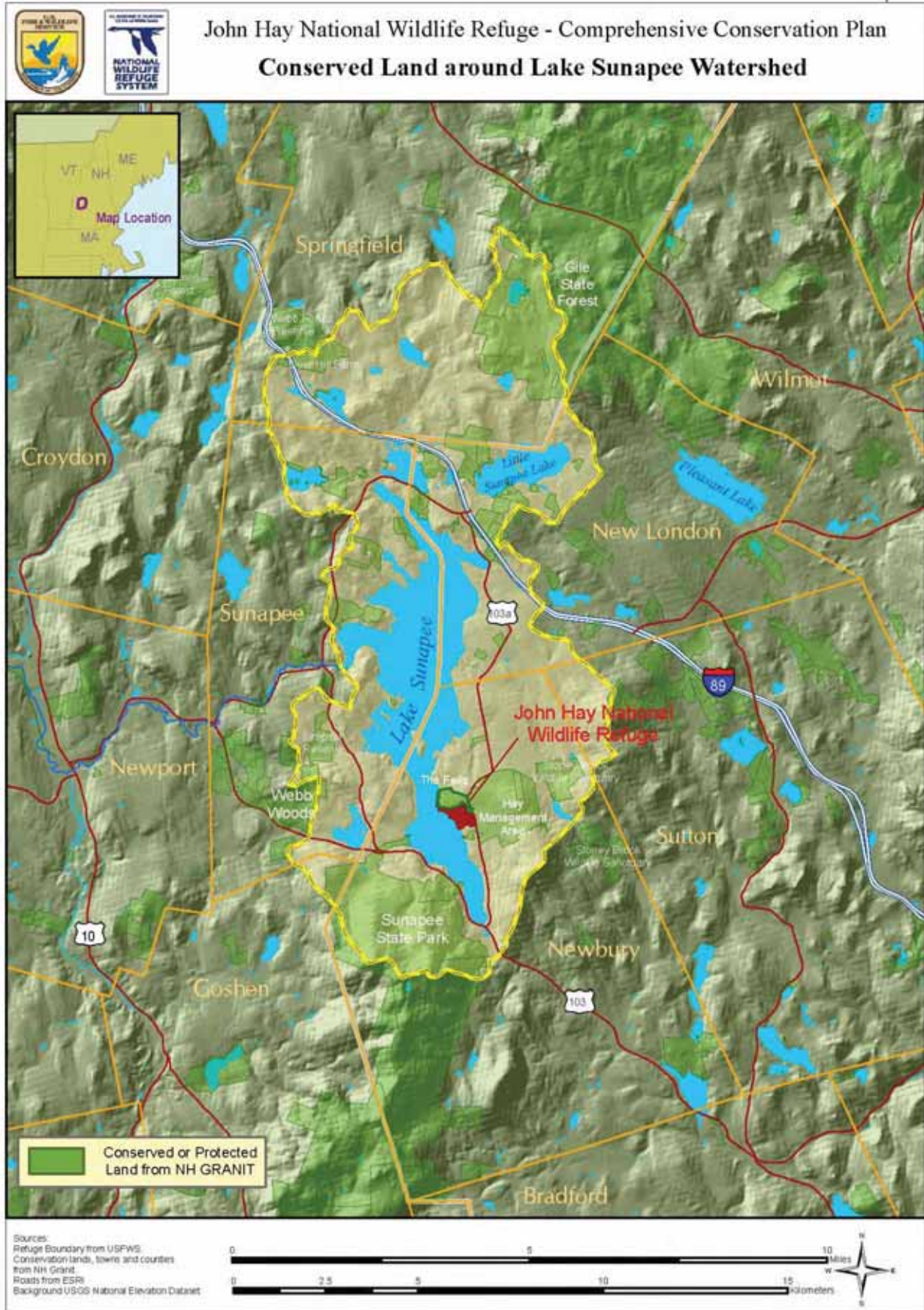
Our project area is part of the Lake Sunapee watershed, a drainage basin of 30,947.74 acres encompassing parts of Merrimack and Sullivan counties (SAWC 2008; see Map 3-1). This watershed is part of the Southern Upland Watersheds grouping in New Hampshire (NH FGD 2005), comprising 23 percent of the state's total area. Lake Sunapee is one of three lakes in this grouping larger than 1000 acres. Watersheds in this category are characterized as moderate, lacking the extremes of elevation or gradient found in other groupings, and by a higher percentage of hills and side slopes and higher natural acidity.

Developed land represents 3.3 percent of the total land area in Southern Upland Watersheds, or moderate-south watersheds, while 78 percent remains unfragmented. Conserved lands make up 19 percent of the total area, and there is a higher percentage of agriculture than in other areas of the state (5.1 percent; NH FGD 2005; see Map 3-1). These conserved lands around Lake Sunapee include the Refuge, The Fells, the Hay Reservation (Forest Society) across Route 103A from the Refuge, Stoney Brook Wildlife Sanctuary (NH Audubon) on Sunset Hill, and Sunapee State Park, among others. An array of habitat types within this watershed grouping support species such as Atlantic salmon (*Salmo salar*), bald eagle (*Haliaeetus leucocephalus*), common loon (*Gavia immer*), eastern brook trout, lake trout (*Salvelinus namaycush*), osprey (*Pandion haliaetus*), and wood turtle. While no critical threats have been identified for this watershed grouping at this time, acid deposition and non-point source pollution could pose problems in the future (NH FGD 2005).

These Southern Upland watersheds contain the major tributaries for larger river systems like the Merrimack and Connecticut Rivers (NH FGD 2005). One of these tributaries, the Sugar River, is part of the 11,000 square mile Connecticut River drainage basin. The headwaters for the Sugar River start at the outflow of Lake Sunapee in the Town of Sunapee, and then flow 27 miles west before meeting the Connecticut River west of the town of Claremont. Though the entire Connecticut River watershed is 7.2 million acres across four states, our project area comprises only 80 acres on the southeastern shores of Lake Sunapee in the Town of Newbury.

Notable Physiographic and Landform Features

Geomorphic regions or “physiographic provinces” are broad-scale subdivisions based on terrain texture, rock type, and geologic structure and history. Our project area lies in the New England Upland section of the Appalachian Highlands delineated by the USGS (2003; <http://tapestry.usgs.gov/physiogr/physio.html>). The New Hampshire Department of Fish and Game refers to that region as the Sunapee Uplands (NH FGD 2005). This glaciated subsection is characterized by isolated hills and peaks of hard, resistant rock (mostly granite) commonly referred to as monadnocks (Sperduto and Nichols 2004). Granite, gneiss, and schist underlie this plateau (Poole 2008). Numerous small lakes and narrow valley streams are scattered throughout the area. John Hay Refuge lies on the lower slopes of Sunset Hill, one of several hills rising east of Lake Sunapee.



Major Historical Influences Shaping Landscape Vegetation

Estimating what the historic natural vegetation types were, how they were distributed, and what ecological processes influenced them prior to major, human-induced disturbance, can help us evaluate future management options. However, many ecologists caution against selecting one point in time, and instead, recommend evaluating the “historical range of variation” for each habitat type.

According to noted ecologist Robert Askins of Connecticut College, “This approach recognizes that the proportions of grassland, shrub land, young forests, and old-growth forests have shifted constantly over the past few thousand years as the climate changed and people have modified the land by hunting, burning, and farming. Preserving the biological diversity of any region requires a range of habitat types, including those created by natural disturbances. If there are no natural or artificial disturbances generating grassland, shrub land, and young forest, then not only will early succession obligates be in trouble, but so will mature forest specialists that use early succession habitats at key points in their life cycles. Only large public lands like refuges, parks, preserves can sustain the full range of early succession and forest habitats, so in most regions land managers will need to cooperate to ensure that these habitats are adequately represented across the regional landscape” (Askins 2000).

A brief summary of influences on natural vegetation patterns across the landscape follows.

Glaciation

New Hampshire, like all of New England, was covered by the Laurentide ice sheet during the last glacial maximum (LGM), approximately 21,000 to 18,000 years before present (YBP). The effect this had on the geology and topography of New Hampshire was significant. Huge amounts of bedrock and soil were scoured, smoothed and redistributed, glacial erratics were deposited many miles from their origin, and many lakes and ponds, including lakes Winnepesaukee and Massabesic, now have irregular basins as a result of glacial advancement (Potter 1994).

In conjunction with glacial advance and retreat, sea level rose and fell. At LGM, much of what is now the submerged continental shelf along the New England coast was exposed dry land because much of the world’s water was locked up in continental ice sheets. It is estimated that worldwide sea levels were lower than today by 85-130 meters (279 to 427 feet; Pielou 1991). As the ice sheets retreated, sea levels gradually rose. In addition, the earth’s crust was slowly rebounding from the heavy weight of ice, but not as fast as sea levels were rising. This caused coastal flooding along the coast as far south as Boston (Jorgensen 1971). In New Hampshire, there is evidence that sea levels encroached as far inland as Kingston, Lee, and Rochester (Potter 1994). By about 12,000 YBP the coastline between the Bay of Fundy and Cape Cod was much as it is now (Pielou 1991).

As the ice retreated, the landscape showed the immediate effects. Drumlins composed of glacial till were deposited as the ice retreated and kettle hole lakes and ponds were formed from freestanding melting blocks of glacial ice. Perhaps most significantly, proglacial lakes were formed as a result of the voluminous meltwater coming off the ice sheets, and in some cases were up to 200 miles in length, spanning what are now Connecticut, Massachusetts, Vermont and New Hampshire (Potter 1994, Pielou 1991, Jorgensen 1971). Keene and Concord were also sites of smaller proglacial lakes. In the White Mountains, glacial cirques, or steeply rounded basins, and valleys were transformed by glaciation (Jorgensen 1971). New Hampshire today is known for its stony soils, developed from the deposition of glacial till comprised of clay, silt, sand, cobbles, and boulders. It covers approximately 85 percent of the state (Potter 1994).

The advance and subsequent retreat of the glacier, and changing climate had a profound impact on the local biota. With the advance of the glacier, many northern species were locally displaced and subsisted in southern areas of refugia. The retreating glacier marked a period of time when much of the physical environment was in a constant state of flux. Climatic factors such as temperature, precipitation, humidity, and atmospheric carbon dioxide were fluctuating. The earth’s crust was rebounding at the same time that

sea levels were rising, and the local hydrology was still in a dynamic state. The glacier itself was directly altering the landscape as it retreated by depositing till, boulders, isolated slabs of ice that melted to form kettle hole ponds, and by forming proglacial lakes as a result of the voluminous meltwater pouring off the retreating glacial front (Williams 2002, Jackson et al. 2000, Prentice et al. 1991). Combined, these factors made for ever-changing conditions as plant and wildlife species attempted to recolonize the area.

As the climate changed, so did the landscape. By approximately 13,000-10,000 YBP, New England's proglacial lakes drained and formed terraces or "delta plains" which proved excellent sites for human habitation due to their well-drained soils, proximity to waterways and position above the floodplain (Jorgensen 1971, Potter 1994). The basins themselves often became the site of wetlands, connected by small streams and ponds. By 7,000 YBP, major rivers throughout the region reached their present channels due to the isostatic rebound of the earth's crust, after several thousand years of widely meandering courses. Hence, the present-day alluvial floodplain began to develop (Potter 1994).

Vegetation was influenced not only by climate, but also by the changing landscape. Proglacial lakes and changing drainage systems posed an initial barrier to species colonization, but also a fertile bed for plants once the water was gone (Pielou 1991). Strong winds created dunes, and carried soil and seeds (Jorgensen 1971, Pielou 1991). The thin layer of rocky glacial till required time to form deeper, moister soil suitable for certain species of plants.

Initially, tundra-like vegetation was established and persisted for several thousand years until it was eventually replaced by forested communities. Rates of recolonization vary by tree species according to the specific habitat requirements of each. Recently, it has been shown that regional temperature and moisture levels working in concert may better explain the variability in the post-glacial phytogeography in New England, than temperature alone.

By 14,600 YBP spruce (*Picea sp.*) populations were prevalent in New England and they persisted until 11,600 YBP when white pine became the dominant taxa, replacing spruce during a drier, warmer climatic period. Hemlock, beech and birch increased by about 8,200 YBP, replacing the white pine after a concurrent rise in moisture availability. Hemlock, a more mesic species, experienced a population crash around 5,400 YBP. Originally thought to have been due to the first recorded occurrence of a pathogen, recent evidence indicates that its decline took place during a drier microclimate which may also have been a factor. Deciduous species such as hickory (*Carya sp.*) and chestnut (*Castanea dentata*) were much slower to reach New England, 6,000 YBP and 3,000 YBP respectively. This was likely due to regionally cooler temperatures and lower moisture levels than today (Shuman et al. 2004, Shuman et al. 2005).

Present day forests, consisting of hemlock, beech and yellow birch, were beginning to establish by 8,000 YBP. Sea-levels reached their present day levels by approximately 3,000 YBP, and by 4,000 YBP a fluctuating climate began that was characterized by cooler, wetter conditions than today, which persisted until the late 19th century (Potter 1994).

More Contemporary Influences on Vegetation Patterns

Natural disturbances vary across New England, depending on geographic location, forest type, and local conditions. For example, hurricane damage is greater on exposed versus sheltered slopes, lightning fires are more frequent on exposed ridges and on sandy versus loamy soils, and shallow root systems make softwoods vulnerable to wind-throw, particularly on shallow and poorly drained soils.

Historically, a general gradient of decreasing disturbance frequencies extends from coastal regions to interior uplands and mountains. In pre-settlement times, coastal oak-pine regions likely had more than 10 percent in early successional forest conditions, while interior northern hardwoods had one percent to three percent of young forest. The proportion of young forest in spruce swamps and spruce flats may have been as high as seven percent. Northern hardwood and mixed woods may have higher proportions of early

successional stages today than in pre-settlement times, based on disturbance patterns (Lorimer and White 2003).

Native insects and disease, ice storms, droughts, floods, landslides, and avalanches have caused minor and major disturbances. For example, spruce budworm (*Choristoneura fumiferana*) periodically affects millions of acres of spruce-fir forest in northern New England and southern Canada, and the 1998 ice storm damaged forests, particularly hardwoods, across 12 million acres in northern New England (DeGraaf and Yamasaki 2001). Lorimer and White (2003) depict hurricane frequencies as varying from 85 years in southeastern New England, 150 years through central Massachusetts and the southeast corner of New Hampshire, to 380 years or more in northern New England. Lorimer (1977) estimated catastrophic disturbances from fire and wind throw at intervals of 800 and 1,150 years, respectively. In contrast, small gap disturbances were frequent in our forests, and may have occurred at scales smaller than what are currently delineated as “stands” today (Seymour et al. 2002).

In the 19th century, the climate began a general warming trend that continues today (Potter 1994). Tracking annual average temperatures over the past hundred years or so (1895-2007), New Hampshire shows a calculated trend of +1.96 degrees F (<http://nhclimateaudit.org/index.html>). Contemporary forests on the Refuge are classified as transition hardwood conifer, consistent with this latitude, elevation, and current climate. This is characterized by the presence of beech, yellow birch, sugar maple, hemlock, white pine and red oak, and is typical for mid-elevation sites between 2,000-4,000 feet, and occasionally as low as 1,000 feet.



Erin Victory/TCI

Hemlock and sugar maple along the shore

A recent forest inventory on the Refuge indicates that contemporary forest stands have developed from what was old-field habitat (former farmland) through natural processes (LaPointe 2008). The Hay family, after taking ownership in the 1890's conducted very little forest management. Stand structure is uneven, however, with at least three age classes present. This is at least partially explained by the losses incurred during the 1938 hurricane, for which wind speeds on Mount Washington recorded 100 mph. Though specific losses on the Refuge are unknown it is estimated that half of New Hampshire's white pines were lost, and that the timber blow down was equivalent to 10 years worth of a normal cut for the state (Scotti 2003). A second age class on the Refuge is roughly 70 years old as a result. Other wind events and lightning strikes, and possibly insects and disease are small disturbances that have helped to create variability in age classes.

We describe in the next section some of the human activities that caused the current vegetation composition.

The Cultural Landscape Setting and Land Use History

Early Native American and European Influences

The earliest evidence of human settlement in New Hampshire is approximately 11,000 YBP by the Abenaki, or “People of the Dawnland” (NH Folklife Learning Center (NH FLC) 2004). The Abenaki people are a local group of the Algonquin Indians that share the Abenaki language, and can be further subdivided into bands including the Penacook, Winnepesaukee, Pigwacket, Sokoki, Cowasuck, and Ossipee (NH FLC 2004). At least twenty-three prehistoric sites including settlements and roadways have been found on New Hampshire’s sandy terraces formed by the drainage of pro-glacial lakes (Potter 1994; see above).

The Archaic Period (9,000-2,700 YBP) was characterized by seasonal movements of the Abenaki across the region, and a dependence on hunting, gathering, and fishing to survive (State History Guide (SHG) 2008). Later during the Woodland Period (2,700-350 YBP), semi-permanent villages were established and communities developed that centered on trading. Clay beds were used for pottery, and bow and arrow technology dominated this time period (SHG 2008, Potter 1994). It was during this time that slash-and-burn agriculture began.

By the time of the Contact Period (350-250 YBP), New England Indians affected their environments minimally, but in different ways. To the south, life was based on agriculture with hunting and fishing used to supplement these stores in winter. In the north, life was dependent on hunting and fishing year-round. Due to the limitations and the intensive work involved in acquiring resources, population densities remained relatively low throughout the region. Throughout New England, there was an estimated Indian population of 70,000-100,000 by 1600, with the majority being in the southern, agriculture-based societies (Cronon 1983). Both societies held the village as the central organizing unit, and both societies were highly mobile. In this way too, they minimized their impacts on the land.

Southern New England Indians burned areas to clear woody debris, and planted crops of maize, beans, and squash. They used the same fields for 8-10 years until they became nutrient depleted, and then moved to other sites. Hunting, primarily bear and deer, and fishing, was emphasized during parts of the year when crop stores were running low or depleted. During the winter, the larger summer camps were often broken up into smaller units to be able to spread farther across the landscape to better utilize available resources. In addition, winter camps were often in different areas because by that time, fuel resources were depleted (Cronon 1983).

Northern New England Indians were more dependent on hunting and fishing year-round, because shallow, rocky soils limited agricultural production. They existed in smaller units to maximize resource utilization. Travel for them was primarily on waterways in birch-bark canoes, and fire was not used as much to clear forest understories or to create openings.

Researchers agree that the historical record offers clear evidence of use of fire by Native Americans (Foster and Motzkin 2003, DeGraaf and Yamasaki 2001). Fire was not only a tool for clearing land for agriculture, but was also a way to keep the forest understory clear to facilitate travel and hunting. However, Foster and Motzkin (2003) suggest that little historical evidence exists for the widely accepted idea that extensive areas of openland (grasslands, shrublands, heathlands) existed in pre-settlement times. Their research of pollen records indicates that the landscape was dominated by mature forest with localized patches of upland grasslands and shrublands before European arrival. Low-intensity natural disturbances including wind, ice and insects were frequent and local, while higher-intensity large-scale disturbances including hurricanes, tornadoes, and insect epidemics were infrequent. Beavers (*Castor canadensis*) created extensive wet meadow habitat, although there is no evidence that large grazing animals would have maintained open areas in the uplands (Foster and Motzkin 2003). They suggest an emerging view that the native populations were mobile and practiced shifting agriculture, creating a mosaic of forest ages, but not extensive areas of cleared land.

The 1600's brought the first European settlers to what is now known as New Hampshire. Throughout this period and beyond, settlers made use of the abundant resources New Hampshire had to offer. Whereas the philosophy of the Indians was to be mobile and diversify, and thereby ensure the continuation of the resources on which they depended, the philosophy of the colonists was significantly different. Their philosophy centered on a permanent village or town, and a fixed landscape in and around it, and so the landscape changed accordingly (Cronon 1983).

Land was cleared for farming, fuel, housing, and other facets of colonial life. Wood products emerged from New Hampshire's forests as one of the first exports, including pine for the masts of the Royal Navy, and oak for ships and casks (Garvin 1999). In fact, New Hampshire and Maine were the centers of commercial lumbering, where a variety of valuable species including white pines as large as four to six feet in diameter and 120-200 feet tall could be found (Cronon 1983). The uses for wood in villages as well as for export became evident as great tracts of forests dwindled and species such as cedars and pines were not recovered, but often replaced with hardwood species.

Trade between the colonists and Indians was economically important to both. As demand increased for furs and skins, and as introduced diseases began to reduce Indian populations, the ecosystem began to change. The fire regime once used by Indians to maintain a variety of successional habitats was changing because there their populations were declining, and the encroachment of colonial settlements throughout the landscape prevented it (Cronon 1983). Forests began to mature and change in composition, and available local wildlife species began to change. In addition, the heavy demand on wildlife for trading reduced populations of species like bear, wolf, turkey, deer, and beaver.

The 1800's witnessed the demise of many forest wildlife species in New England from the loss of habitat (forest clearing), bounty and market hunting, millinery trade, and natural history specimen collecting (Foster et al. 2002). Mountain lion (*Puma concolor*), gray wolf (*Canis lupus*), elk (*Cervus elaphus canadensis*) and caribou (*Rangifer tarandus*) were extirpated by the mid-1800s or early 1900s, and only the gray wolf recently returned to the region in small numbers in Maine. Other forest species declined, including moose (*Alces alces*), black bear, beaver, wild turkey (*Meleagris gallopavo*) and pileated woodpecker (*Dryocopus pileatus*). Heath hen (*Tympanuchus cupido cupido*), passenger pigeon (*Ectopistes migratorius*), great auk (*Alca impennis*), Labrador duck (*Camptorhynchus labradorius*), and sea mink (*Mustela vison mastodon*) became extinct at the hand of humans during the same period (DeGraaf and Yamasaki 2001, Foster et al. 2002). In contrast, grassland species such as meadowlark (*Sturnella magna*), bobolink (*Dolichonyx oryzivorus*), upland sandpiper (*Bartramia longicauda*), and woodchuck (*Marmota monax*) increased as hayfields and pastures expanded during the early 19th century (Foss 1992, Foster and Motzkin 2003).

By 1830, 80 percent of New Hampshire's land was in cultivation. In the 1840's, New Hampshire's granite stores were being mined for building materials. The ice of New Hampshire's lakes were cut into huge blocks and transported into the cities to keep foods "refrigerated" (Garvin 1999). In the mid-19th century, the focus shifted from a resource-based economy to an industrial-based economy. This was in large part due to the hydroelectric power generated by damming large rivers, lakes, and streams. By 1870, the New Hampshire textile industry was internationally recognized, and this demand for labor increased the immigrant population in the late 19th and early 20th centuries (Garvin 1999). This shift to industrialization lead to a reduction in farming throughout the state, as people abandoned their farms in favor of work in the cities.

It was no different along the shores of Lake Sunapee. Historic deeds indicate that in the 1850's and 1860's, the lands eventually acquired by John Hay for his summer estate were a collection of working farms. These typically consisted of 100 to 400 acres (they seem to have increased in size overall between 1850 and 1860 from around 100 acres up to 400 acres), farm animals including sheep, cows, oxen, horses and pigs, and cash crops including wheat, rye, oats, corn, wool, peas, beans, potatoes, orchard products, butter, cheese, maple sugar, honey and meat. As urban industry grew in New Hampshire, the next generation of would-be farmers chose instead to leave the farm for the cities, or left farming in New England for farming in the

Midwest so that by the 1880's, many of these farms were sold. For those that stayed, there was a noticeable shift in agriculture, from the cash crops mentioned above to a focus on forest (timber, maple sugar) and orchard products, except what crops and animals were necessary for subsistence (Brockway 1988).

In response to the widespread abandonment of farms, the New Hampshire state government capitalized on the state's natural beauty and partnered with a number of farmers and business owners to pitch the state as a scenic destination. Targeting those who had lived in New Hampshire and moved away, and wealthy urbanites, the state flourished under programs that touted the state as a place of rest and relaxation (Garvin 1999). It was during this period that John Hay began purchasing farms along the shore of Lake Sunapee.

Deed transactions indicate that John Hay acquired his land from 1888 through 1900, combining approximately seven farms, or portions of these farms, along the eastern shore of Lake Sunapee and the western slope of Sunset Hill totaling 976 acres. One of these deed transactions was for several portions of the Rowe farm, one of which was 126 acres along Lake Sunapee, and is the location of the Refuge today. The Fells, as Hay's summer estate house came to be known, was built between 1888 and 1895, and by 1896, the Hay's had settled in for the summers (Brockway 1988). The moniker "The Fells" was aptly chosen by Hay because it is a Scottish term meaning "rocky upland pasture". Hay kept much of the estate as a working farm, presumably continuing the established agricultural practices on the lands he acquired; open rocky fields around the house were sheep pastures, with sheep pens east of the house, and there are references in correspondences between Hay and his caretaker, Durgin, of hay and orchard production (Brockway 1988). Dairy farming and maple sugaring were also in operation (Historic Landscape Committee 1993). Woodlots were scattered along the hillside affording views of the lake from the house.

Cultural Influences over the past 100 years

The efforts in the late 1800's to market New Hampshire's abandoned farms as summer retreats for the wealthy urban families of New York City and Boston proved successful. This launched New Hampshire's second largest industry at the beginning of the 20th Century: tourism (Garvin 1999).

After farm abandonment escalated in the early 1900s, grassland species ebbed, while species of thickets, brushlands, and young forests surged (Litvaitis 2003). Populations of black bear, bobcat (*Lynx rufus*), and broad-winged hawks (*Buteo platypterus*) increased. At the same time, intense logging followed by intense fires and heavy rains continued to wreck havoc on forest habitat and associated wildlife species in northern New England (Foss 1992; DeGraaf and Yamasaki 2001). The young hardwood forests that emerged in the 1920s and 1930s, after the old-field pine harvests, provided premier habitat for ruffed grouse and American woodcock (DeGraaf and Yamasaki 2001). Continued forest maturation caused those early successional species to decline to levels approaching pre-settlement levels (Litvaitis 2003).

Nearly all the forest species that were extirpated or decimated have re-colonized the region. Some species arrived for the first time more recently. Eastern coyotes (*Canis latrans*) were first sighted in northern Maine in the 1930s, in Vermont and New Hampshire in the 1940s, and in Massachusetts in the 1950s (DeGraaf and Yamasaki 2001). DeGraaf and Yamasaki (2001) reported three major trends in New England's wildlife: forest species are increasing (e.g., bear, beaver, deer, wild turkey, pileated woodpecker), grassland and shrubland species are declining (e.g., bobolink, upland sandpiper, whip-poor-will (*Caprimulgus vociferous*)), and many southern species are expanding their ranges northward (e.g., Carolina wren (*Thryothorus ludovicianus*), northern cardinal (*Cardinalis cardinalis*), mockingbird (*Mimus polyglottos*), Virginia opossum (*Didelphis virginiana*)). A few species, such as raven (*Corvus corax*), fisher, and moose are expanding southward. A group of species remains regionally extirpated, including mountain lion, although lynx (*Lynx canadensis*) have returned to northern Maine and New Hampshire (DeGraaf and Yamasaki 2001).

The Refuge itself was under the care of the Hay family from the late 1800's to the late 1900's. After John Hay died in 1905, his wife Clara deeded the estate to their son Clarence. This era under Clarence and his wife Alice was markedly different than previous due to two factors: Alice's discomfort by the rustic,

uncultivated pastoralism of the farm and Clarence's naturalist tendencies. They expanded the overall acreage of the estate, as well as the buildings and gardens around the main house. Sheep may have grazed the pastures near the house up until 1915, when photographs still show the appearance of well-maintained pasture land. It was in 1915 that potatoes were planted in the lawns north and west of the house, in a practice commonly thought to divest the rocks and weeds from the soil to create a suitable substrate for lawn, which was established the following year. The grounds around the main house were cultivated and transformed into extensive formal and informal gardens. In the 1930s, farm buildings were constructed for Clarence Hay south of the house for dairy farming, and a road was created that ran from the house through the woods to access this site. This is what is now referred to as the "Woods Road". Some farming continued on the property until the 1940's, until it was no longer financially viable. Beyond the estate house and immediate grounds, the rest of the 1,000 acres were minimally managed and reverted to forestland (Brockway 1988).



Erin Victory/TCI

Hay estate house

In 1960, the Hays donated 675 acres of forested land east of Route 103A to the Forest Society. In 1972, Alice Hay, the daughter-in-law of historical figure John Hay, donated the remaining 164 acres along the shores of Lake Sunapee to the U.S. Fish and Wildlife Service, with two life-use reservations. Upon her death in 1987, her life-use reservation of 143 acres was turned over to the Service, and in 1998 the second life-use reservation of 21 acres was relinquished by her children, John Hay and Adele Hay Fath. This combined acreage contained all of the original estate buildings and grounds, as well as some additional forested land.

In 2008, approximately 84 acres containing the estate buildings and grounds were officially transferred to The Fells, a 501c(3) organization that has cared for and maintained the property since 1996. They continue to maintain the gardens and buildings, which are open for tours, and they provide programs to members of the public. Today, the John Hay National Wildlife Refuge consists of approximately 80 acres of upland forest.

Current Climate

General Climate Description

New Hampshire has a moist continental, mid-latitude climate with warm to cool summers and cold winters. Daily and seasonal temperatures can vary widely, depending on proximity to the ocean, mountains, lakes, or rivers. Winter is typically cold with average temperatures ranging around 19 degrees Fahrenheit. The cold temperatures and humidity bring heavy, water-laden snow to all parts of the state. Nearby Mount Sunapee Ski Area receives an average of 100 inches of snow. Average summer temperatures are around 68 degrees Fahrenheit.

Global Climate Change

Global climate change is a significant concern to the Service and to our partners in the conservation community. Scientists are predicting changes in temperature, precipitation, soil moisture and sea level, all of which could adversely affect ecological systems. We expect that species ranges will generally shift northward or toward higher elevations as temperatures rise, but responses likely will be highly variable and species-specific. Under those rapidly changing conditions, migration, not evolution, will determine which species are able to survive (NH FGD 2005). Species that cannot migrate will suffer the most. For example, plants, mussels, and amphibians are more vulnerable to shifts in temperature that may affect their ability to survive, grow, and reproduce.

According to the NH Fish and Game Department, many of New Hampshire's habitats and species of conservation concern would be deleteriously impacted by climate change. In particular, air and water temperatures, storm frequency and intensity, and precipitation patterns would be the primary causal agents of change in New Hampshire. Climate change models predict an elevation in temperature for New England by 6.0-10.0 degrees Fahrenheit over the next century, which would cause a distributional shift in species and habitats to the north (NH FGD 2005). Already it has been documented that average winter air temperatures, and freeze-free periods have increased while the duration of lake ice and snow depth have decreased.

On the Refuge, exact changes are unknown due to the uncertainty in emissions levels over the next century, and the individualistic responses to climatic fluctuations by each species. Hemlock, for example, is a mesic species found throughout the Refuge and along Beech Brook that provides dense shade and thus a cooling effect on stream temperatures. Habitat conditions under high emissions levels over the next century would likely not support hemlock at the Refuge, and its replacement by deciduous species would not provide its dense streamside shade, resulting in an increase in stream temperature for Beech Brook (Frumhoff et al. 2007). Eastern brook trout and other cold water species utilizing Beech Brook might be replaced by warmer water species.

In addition, the shorter duration of winter and the warmer winter temperatures could lead to a northward expansion of invasive pest species such as the hemlock wooly adelgid (*Adelges tsugae*). In 2000, it was first detected in Portsmouth, New Hampshire and has been identified in other southern New Hampshire communities since then (<http://extension.unh.edu/news/new72204.htm>). If there is any critical threshold at present, for example in average winter temperature and duration, that would prevent this pest species from continuing to spread northward, those safeguards would no longer apply in New Hampshire in the projected warming trend. Therefore, even if hemlock does persist on the Refuge under a lower emissions scenario, climatic factors could change enough so that it could become vulnerable to other threats including this pest species (Frumhoff et al. 2007). Other tree species like sugar maple could experience a large range contraction under high emissions scenarios, but red maple is thought to have a chance of persisting given its apparent adaptability over the last century.

Individual forest tree species are expected to respond individually as habitat conditions change, and this could result in species assemblages that do not resemble forests common today. Forest composition is expected to change as individual species respond to the changing climate, the degree to which varies depending on whether a high or low emissions scenario prevails over the next century (Frumhoff et al. 2007). The forest communities that characterize New Hampshire, consisting of northern and high elevation species like spruce, fir (*Abies sp.*), sugar maple, and aspen (*Populus sp.*) will shift north (NH FGD 2005). What is currently a predominantly mixed northern hardwood-conifer forest on the Refuge is likely to shift to a forest more indicative of the central hardwood region dominated by oak and hickory. This would mean that the forest species characteristic of the vibrant autumnal New England landscape, the beech-birch-maple forest species found on the Refuge, would shift northward (U.S. Environmental Protection Agency (US EPA) 1997).

Water temperatures in general could increase as a result of warmer ambient air temperatures, and this could also increase rates of evaporation (US EPA 1997). This coupled with no estimated increase in summer precipitation could mean that Beech Brook would run drier in the summer months, and Lake Sunapee could see lower lake levels. Wildlife species would be impacted as a result of climate change, as well. The changing forest composition could mean a decrease in suitable habitat for many bird species now characteristic of Refuge forests. Species including the black-capped chickadee (*Poecile atricapillus*), rose-breasted grosbeak (*Pheucticus ludovicianus*), purple finch (New Hampshire's state bird), American goldfinch (*Carduelis tristis*) and Northern oriole (*Icterus galbula*) are projected to see decreases in abundance throughout the state, under both high and low emissions scenarios in the next century (Frumhoff et al. 2007).

Throughout New Hampshire, terrestrial wildlife dependent upon present day forest communities and climatic factors will likely shift northward as well as more northern latitudes become more suitable to their habitat requirements. Species such as the Canada lynx and American marten (*Martes Americana*), dependent on snow depth and frequency, would move northward, and species such as the northern bog lemming (*Synaptomys borealis*), moose, and snowshoe hare (*Lepus americanus*) would no longer be endemic to New Hampshire (NH FGD 2005).

These, of course, are just some of the postulated consequences of climate change in northern New England, and there are many factors to take into account. To address these issues associated with climate change, Newbury is one of the 164 towns in New Hampshire that has passed the New Hampshire Climate Change Resolution. By passing this resolution, towns are able to go on record to publicly support actions by the President and Congress to address climate change issues

(<http://www.carboncoalition.org/community/index.php>). In addition, the state's Climate Task Force released the Climate Change Action Plan (NH DES 2009) that details how the state will address emissions and other factors contributing to climate change

(http://des.nh.gov/organization/divisions/air/tsb/tps/climate/action_plan/index.htm).

Air Quality

The NH DES monitors levels of ozone and particle pollution from several stations in New Hampshire for attainment or exceedance of the National Ambient Air Quality Standards (NAAQS) set by the US EPA. These standards are reviewed every five years by the US EPA and may be changed due to new scientific information. It is incumbent upon each state to ensure these standards are met and maintained. In the case of an exceedance of these standards, pollution control strategies are implemented, and once the standards are attained, a plan is developed to maintain that standard in such a way that incorporates future economic and emissions changes.

There are 20 air quality monitoring stations across New Hampshire. They range from the Lake Francis Dam in Pittsburg at the northernmost location, south to Nashua, and as far east as Appledore Island in Rye. Not all of these stations monitor all air quality indicators. For example, only two of these twenty stations monitor carbon monoxide, and thirteen monitor ozone (McDougall 2008). There are no air quality monitoring stations in near proximity to the Refuge, however, there is one located in Claremont, sixteen miles to the west.

According to the US EPA, New Hampshire is well below the primary and secondary NAAQS levels for carbon monoxide, sulfur dioxide, nitrogen dioxide, and coarse particulate matter, but has not fared as well with ozone and fine particulate matter (McDougall 2008). Fine particulate matter is classified as anything smaller than 2.5 microns. Two of the nine fine particulate monitoring stations, located in Keene and Nashua, recorded relatively high numbers compared to the other seven stations, but were still below the primary NAAQS for their annual weighted arithmetic means (McDougall 2008). The Claremont station did

record some days in exceedance of the NAAQS standard, but its annual weighted arithmetic mean was well below the NAAQS primary standard as well.

In 2007, two of the thirteen stations monitoring ozone were in violation of the 8-hour NAAQS (McDougall 2008). A violation occurs when an exceedance of the NAAQS has been averaged over three years at the same site. These two locations were at the Seacoast Science Center in Rye, and at the Pack Monadnock Summit in Hillsborough County. The 8-hour standard for ozone, 0.080 parts per million (ppm) established in 1997, has been lowered beginning in 2008 to 0.075 ppm. The two sites previously mentioned were in violation of both standards. The site at Claremont, however, was not in exceedance of 1997 standards, but was reported in exceedance of 2008 standards for a total of 5 days (McDougall 2008).

New Hampshire has an average of ten days per year with air quality officially classified as unhealthy (Underhill 2004). This is due in large part to exceedances in ozone and fine particulate matter. This results in a designation of non-attainment of the NAAQS by the US EPA for parts of New Hampshire, which is located in the southeastern portion of the state. Currently, the 8-hour ozone standard non-attainment zone extends from the coastline northwest as far as the towns of Rochester, Hookset, Goffstown, Amherst, Milford, and Brookline (<http://des.nh.gov/organization/divisions/air/do/asab/ozone/index.htm>). Until 2005, a 1-hour ozone standard was enforced and the non-attainment zone encompassed the entire 8-hour standard non-attainment zone, and extended further north and west as far as the towns of New Durham, Danbury, Newbury, Antrim, Hannock, and New Ipswich (<http://des.nh.gov/organization/divisions/air/do/asab/ozone/index.htm>). John Hay NWR, located in Newbury, was included in the former 1-hour standard non-attainment zone, meaning that an average of 10 days per year, air quality is classified as unhealthy at the Refuge. Since 2005, the 1-hour ozone standard has been revoked, and only the 8-hour ozone standard remains in effect.

Ozone is a respiratory irritant that can reduce the overall function of the lungs, cause asthma attacks, and aggravate chronic lung diseases. It also inhibits vegetation growth, and is often found in higher concentrations far downwind from the origination of the precursors that react to form it. From 92 percent to 100 percent of the pollution that causes these unhealthy air quality days comes from areas outside New Hampshire (Underhill 2004). New Hampshire is currently working to reduce state emissions, and with neighbors, to increase overall air quality.

Water Quality

Summary of the General Condition of the Lake Sunapee Watershed

The entire Lake Sunapee watershed covers 30,947.74 acres in southwestern New Hampshire, and spans the towns of Goshen, New London, Newbury, Springfield, Sunapee, and Sutton (SAWC 2008). Lake Sunapee is found in USGS hydrologic unit (HUC) 01080104—Upper Connecticut-Mascoma Watershed spanning the Vermont-New Hampshire border (http://cfpub.epa.gov/surf/huc.cfm?huc_code=01080104).

There are thirteen lakes and ponds within the Lake Sunapee watershed ranging in surface area from 9.9 acres at the smallest to 4,088.4 acres at the largest (McAlvin Pond and Lake Sunapee, respectively). Three hundred wetland units have been identified in the watershed, comprising a total of 3.6 percent of the total area, though few of them are permanently protected from development (SAWC 2008).

Over the last 20 years, development around the lake has increased by 24 percent, and impervious surfaces comprise 28 percent of the 250 foot buffer zone around the lake, which exceeds the 10 percent value considered to be the threshold at which water quality begins to decline (SAWC 2008). These two factors indicate an increase in human activity, and provide a likely explanation for the increase in phosphorus levels over the last 18 years by more than 50 percent. The Sunapee Area Watershed Coalition monitors Lake Sunapee for water quality (see section on Long Term Trends below), and they have stated they would like to maintain phosphorus levels at or below 0.008 milligrams per Liter (mg/L), considered to be indicative of an

oligotrophic lake system (SAWC 2008). Oligotrophic lakes are typically cold, clear and deep, with low concentrations of plant nutrients (i.e., phosphorus) and therefore have low algal production, and can be good sources of drinking water. Overall, the water quality of Lake Sunapee is good, and it is increasingly important to maintain monitoring efforts as human uses are increasing around the region, and particularly around Lake Sunapee.

Point Source Pollution

Point sources include any municipal, commercial and industrial activities requiring a permit, as these have a known origination (SAWC 2008). In 1977, the Sugar River was the site of a fish kill due to a release of sulfuric acid into the river, and the subsequent drop in pH levels. Since then, in large part due to the Clean Water Act, conditions have generally improved to meet state standards (NH FGD 2005). More recently, the Sugar River was associated with a Brownfield Site in Newport at an old woolen mill that was being used as a storage site for used oil. Clean up began in 1999 to remove approximately 9,500 gallons of hazardous materials and 2,500 gallons of non-hazardous materials, and to address the petroleum-soaked oil surrounding above-ground storage tanks

(<http://des.nh.gov/organization/divisions/waste/hwrb/sss/brownfields/index.htm>).

Non-Point Source Pollution

Non-point pollution sources for the Lake Sunapee Watershed have been identified as: site development and lot conversion, agriculture, recreation on and around the water, residential land use, transportation corridors, storm water management and utility right-of-ways. The impacts of these activities could alter the local hydrology, or introduce sediment, chemicals and waste into the water system (SAWC 2008).

Sediments

Lakes undergo several natural processes that determine its trophic level, or “age.” Sedimentation is one of these processes, and has an impact on a lake’s turbidity, or clarity, which is one measure of water quality. Erosion is the natural process by which this happens, but human alterations of the landscape, such as development and agriculture, can increase rates of sedimentation. This can lead to an increase in turbidity. Turbidity, in turn, affects light penetration, water temperature and subsequently, dissolved oxygen content which can have a negative affect on the fisheries (SAWC 2008). Erosion control, steep slope protection, and buffers are important tools that can help mitigate increased rates of sedimentation.

State-reported Impaired Waters in the Lake Sunapee Watershed

In 2008, the NH DES released the 305(b)/303(d) Surface Water Quality Report. It combines both the 305(b) Water Quality Assessment and the 303(d) Report on Impaired Waters for each river basin. The NH DES compiled those reports and submitted them to the US EPA and Congress, to satisfy the federal reporting requirements under section 305(b) of the Clean Water Act. In New Hampshire, all lakes and ponds are listed as impaired due to a statewide fish consumption advisory as a result of increased mercury levels in fish tissue

(http://iaspub.epa.gov/tmdl_waters10/waters_list.control?state=NH&p_cycle=2006&huc=01070002).

Water quality is monitored by the NH DES and its partners throughout the state through VLAP and the Volunteer Rivers Assessment Program (VRAP). The Lake Sunapee Protective Association is part of the VLAP program, monitoring fifty sites throughout the Lake Sunapee watershed. They have conducted both physical/chemical and biological analyses through their Water Quality Laboratory at Colby-Sawyer College (<http://www.lakesunapee.org/>).



Erin Victory/TCI

View across Lake Sunapee from Refuge shore

Of the suite of factors monitored through these programs, waterbodies within the Lake Sunapee watershed were found to be slightly acidic, which may be attributable to natural processes of decomposition by bacteria, but were still suitable for aquatic life (SAWC 2008). It should be noted that the mean pH for surface waters of lakes and ponds in New Hampshire is slightly acidic (6.6). In addition, most were found to be only moderately vulnerable to acidic input (Acidic Neutralizing Capacity), indicating a capacity to withstand some acidic deposition.

Measures of phosphorus throughout the watershed, on the other hand, do show some cause for concern. While deep spot monitoring locations in Lake Sunapee still indicate low levels of phosphorus and an oligotrophic condition, some of the near-shore sampling locations show elevated levels, some greater than 25 micrograms per liter ($\mu\text{g/L}$), which is considered excessive (SAWC 2008). Continued monitoring of the tributaries, particularly around precipitation events, may help to pinpoint the origination and to quantify phosphorus loading. One of these monitored tributaries, Beech Brook, flows through the Refuge. The reach above the Refuge, east of State Highway 103A serves as the biological control for Lake Sunapee due to the brook's high water quality.

The Sugar River has been monitored as part of the VRAP program. Results from 2000-2002 showed that the Sugar River met the state criteria for Class B waters in terms of dissolved oxygen and turbidity levels all three years, but fell below these standards in pH levels (NH FGD 2005). There is currently no readily available explanation for this, other than that it is located in a region with higher natural acidity. Acidic precipitation is another potential factor.

The Regional Socio-Economic Setting

Socio-economic Factors: Regional Economic Setting

Lake Sunapee and the Mount Sunapee ski resort make Newbury a destination for outdoor recreationists. John Hay's selection of The Fells for the family vacation retreat foreshadowed the recreational importance of this area a century later. The Refuge contributes to outdoor recreation by providing opportunities for wildlife observation and photography, environmental education, and interpretation.

Town of Newbury

The town covers 35.8 square miles of land and 2.3 square miles of water, and includes seven villages (Blodgett Landing, Edgemont, Mount Sunapee, Pine Cliff, South Newbury, Box Corner, and Chalk Pond). Newbury is governed by a Select Board, has a full-time police department, and a part-time fire department. Elected boards and commissions include planning, zoning, library, cemetery, and trust funds.

The population has increased substantially since the 1990 census, rising more than twice as much as Merrimack County and the state (Table 3.1).

Table 3.1. Census Data - Population Changes (1990 – 2007).

<i>Municipality</i>	<i>1990</i>	<i>2007</i>	<i>Percent Change</i>
Newbury	1,351	2,076	54
Merrimack County	120,618	148,274	23
New Hampshire	1,109,252	1,315,828	19

Economy

The Newbury economy is service-oriented, catering in large part to those coming to the area for outdoor recreation. Table 3.2 shows that most of the workforce is engaged in the service industry. That number has increased substantially, both in terms of employees and wages, from 1994 to 2007 (NH Economic and Labor Market Bureau, NH Employment Security 2008; <http://www.nh.gov/nhes/elmi/htmlprofiles/newbury.html>). In contrast, the town supports a minimal number of industrial jobs, which have declined in the past decade. The government workforce also increased, but less so than service industries. The largest employers are Mount Sunapee Resort (150+ employees or 12 percent of the workforce), Mount Sunapee Best Western (25 or 1.6 percent), and Baker Hill Golf Club (20+ or 2 percent), all of which are service-oriented. These data confirm the importance of tourism and recreation to the local economy. In fact, service wages make up 79 percent of the total town wage base.

Table 3.2. Census Data - Employment by Sector (NH Economic and Labor Market Information Bureau, NH Employment Security 2008).

<i>Employment Sector</i>	<i>Number of Employees 1994</i>	<i>Number of Employees in 2007</i>	<i>Percent Change</i>	<i>Total Annual Salary 1994*</i>	<i>Total Annual Salary 2007*</i>	<i>Percent Change</i>
Goods Producing Industries	23	30	30	\$577,668	\$843,960	46
Service Providing Industries	158	499	216	\$2,440,152	\$8,796,372	260
Government (Local, State, Federal)	25	59	136	\$526,500	\$1,527,864	190
Unemployed	24	31	29			

*Calculated from average weekly data of workforce numbers and wages.

Tax Revenue Base

Public ownership of the Refuge has had an effect on the local property tax base because the Service does not pay a traditional property tax. In lieu of this, an annual revenue sharing payment, authorized by the Refuge Revenue Sharing Act of 1935 (16 USC 715s), as amended, has been made to the Town of Newbury since the Refuge was established.

Nationally, the Service has made revenue sharing payments to towns with refuges since 1935. Funding, derived from revenues earned on refuges for the sale of refuge products and privileges, are collected and pooled across the country, then disbursed on a uniform basis to local taxing authorities where national wildlife refuge land is located. There are three formulas used to calculate the payment to the local taxing authority:

1. Seventy-five cents per acre;
2. Twenty-five percent of the annual net receipts; or
3. Three-fourths of one percent of market value.

Payments to Newbury, New Hampshire are based on the last of these methods. The 2008 refuge revenue sharing payment to Newbury was \$11,609 or 41.9 percent of full entitlement due to shortfalls in refuge-generated receipts and supplementary Congressional appropriations.

These payments are intended to help offset property tax losses in communities due to land acquisition and property ownership by the Service. For revenue sharing purposes, property values are based on the real estate appraisal for the first five years following a land transaction. Refuge properties are reappraised on a five-year schedule to keep payments current with the fair market value.

Refuge Administration

Refuge Establishment and Land Acquisition

The Refuge was donated to the Service on December 11, 1972, by Alice Hay. Two deeds separated the estate into two life-use reservations. The first was a 143-acre parcel including the main house, which contained a life-use reservation for Mrs. Hay. The second deed for a 21-acre parcel included a lakeshore cottage, boat house, and dock and provided a life-use reservation on that tract for Clarence and Alice Hay's children, John Hay and Adele Hay Fath.

Mrs. Hay passed away March 19, 1987. Her life-use on 143 acres of the estate terminated at that time, initiating management by the Service. Her children turned their life-use over to the Service in 1999. Since then, the Service has worked with a number of public and private entities to manage the property and facilities. From 1993 to 1996, New Hampshire State Parks operated the Refuge under a MOU. In 1996, a non-profit organization called The Fells was formed, dedicated to the continuance of on-site education, short- and long-term programming objectives, and oversight of daily operations (see section on Partnerships below). Under a MOU signed in 1997, they assumed responsibility to manage 62 acres that includes the gatehouse, main house, nursery, gardens, lawns, and roads. They also oversaw public visitation, interpretation, education, and staffing.

The mismatch of the nation's premier wildlife management agency being responsible for an historic estate over the past 36 years has been evident. The Service has limited resources and expertise available to conserve and rehabilitate historic structures. The buildings need to be maintained and the Service has not had sufficient resources to stem the normal damages caused by age and decay. The Fells, the friends group

at the John Hay National Wildlife Refuge, also has an interest in conserving the estate, but its ability to generate revenues from the property was limited by federal and national wildlife refuge policies.

In 2008, a land transfer was completed that gave The Fells the title to approximately 84 acres of Refuge property to include the buildings, gardens, parking lot, and access road. In exchange, the Service acquired a 727 acre (+/-) tract of land that has an equal or greater appraised price with higher wildlife values for addition to the Umbagog National Wildlife Refuge headquartered in Errol, New Hampshire.

The Service retained title to the southern half of the original Refuge comprising approximately 80 acres. We will continue to manage this area located south of the house as the John Hay National Wildlife Refuge. This portion of the estate has better wildlife habitats and opportunities for wildlife-dependent public uses.

The John Hay Refuge is bounded on the east by NH Route 103A, to the north by property formerly owned by John Hay but now owned by The Fells, to the west by Lake Sunapee, and to the south by a private landowner. The Refuge is contiguous except for a small 0.10 acre island located a short distance from the shoreline near the northwestern corner of the contiguous tract.

The Silvio O. Conte NFWR Complex and Staffing

Administratively, the Refuge has been an unstaffed satellite station of the Great Bay National Wildlife Refuge and more recently, the Silvio O. Conte National Fish and Wildlife Refuge Complex, headquartered in Sunderland, MA. The lack of on-site staff has limited our ability to facilitate, manage, monitor, or evaluate public uses. Refuge Complex staff share the responsibility of managing the three refuges in the complex. The Refuge manager is responsible for determining how to distribute staff time to accomplish priority work.

Funding

The funding for the John Hay Refuge is embedded in the budget for the Silvio O. Conte National Fish and Wildlife Refuge. Operational funding also known as base funding includes salaries, supplies, fuel, travel, and all other operational activities (wildlife and habitat surveys and management) that are not funded by special projects. Our annual funding fluctuates according to the number and size of the projects funded that year (e.g., vehicle or equipment replacement, visitor service enhancements, and facility improvements). In 2008, the Conte NFWR Complex base funding was \$1,143,857, and project funding was \$250,528.

Refuge Facilities and Maintenance

At the present time, the only property the Refuge has to maintain are the boundary signs, the Refuge entrance sign, and the Ecology Trail. Otherwise, the Refuge has no facilities or vehicles to maintain. As part of an agreement with The Fells, we jointly use the parking area located at the estate. With the implementation of this CCP, we will be establishing a kiosk at the parking lot trailhead, increasing signage for the Refuge, and sharing space at the gatehouse for proposed Refuge staff.

Refuge step-down plans

No step-down plans are currently in place at the Refuge.

Findings of Appropriateness and Compatibility Determinations

Below are the compatibility determinations to date for the Refuge, all of which were deemed compatible. These were approved when the Hay estate was managed as part of the Refuge, and as such allowed for opportunities such as bicycling and picnicking on the estate grounds. Since 2008, with the completion of the land transfer, the estate is no longer managed as a part of the Refuge. The compatibility determinations for photography, environmental education, and wildlife observation need to be updated because they expired on September 2, 2009. Compatibility determinations for the remaining public uses have already lapsed. These latter uses need to undergo an appropriateness evaluation, and if the use is found to be appropriate, a new



Interpretive station along the Ecology Trail

compatibility determination. Chapter 1 describes these two decision processes in detail. See also the discussion below on special use permits.

- MOU with State of New Hampshire—9/2/94
- Photography—9/2/94
- Picnicking—9/2/94
- Jogging/Walking—9/2/94
- Hiking/Backpacking—9/2/94
- Environmental Education-Non-staff Conducted—9/2/94
- Bicycling—9/2/94
- Snowshoeing and Cross Country Skiing—9/3/94
- Wildlife Observation—9/3/94

Partnerships

Since 1989, the Refuge has combined its resources with others to form a wide array of outstanding partnerships. Some partners have joined us to create public programs, operate the Refuge, and restore the estate buildings and gardens, and to secure funding for maintenance and restoration. Naming all that we have worked with over the past several decades to advance common conservation objectives would be difficult. However, we should recognize at least some for their longevity and significant contributions.

The Fells, John Hay National Wildlife Refuge Friends Group

When American writer and diplomat John M. Hay (1838-1905) first established his summer home on the shores of Lake Sunapee, he named it “The Fells”, a Scottish word meaning “rocky, upland pasture”. In 1996, a friends group was established to assist the Refuge with the care and maintenance of the estate buildings and grounds, and took on this name. Originally intended to assist the Refuge in securing funds for

estate and grounds maintenance and providing education programs, The Fells now owns the estate and immediate grounds, after a land transfer in 2008. Its mission is to “stimulate appreciation of the environment, horticulture and the significance of the past by preserving and sharing the Hay family’s historic lakeside summer home” (The Fells 2006). They accomplish this through five primary areas of concern: environmental conservation, protection of historic structures and setting, horticultural excellence, educational programs, and community outreach.



Karen Terwilliger/TCI

The Fells sign

The Main House, built in the cottage style in 1891 and enlarged in 1897, was transformed into a 22-room Colonial Revival house in 1915 and is listed on the National Register of Historic Places. The 22-room Colonial Revival mansion is open seasonally for historic guided tours and the nature and hiking trails are open year-round, dawn to dusk. Hay's son Clarence inherited the property and along with his wife Alice Appleton Hay, transformed the rock pasture into extensive formal and informal gardens. The gardens include a 100-foot perennial border, masses of rhododendrons, formal rose terrace, hillside rock garden, and a Japanese water lily pool, with views of Lake Sunapee. An entrance fee is collected for tours of the house and the gardens. The Fells is also rented out for weddings and other events.

Their membership includes over 1000 individual households, 10 inns, hotels and bed and breakfasts, and 23 participating libraries. Fifteen people sit on their Board of Directors, and meet once every other month. Since their inception, The Fells have played a critical role in operating the Refuge by staffing and maintaining the property, conducting educational programs, and partnering with local entities to secure resources for projects. The Fells group continually grows in membership, stature, and effectiveness.

Refuge Operation

Throughout the history of the Refuge, we have worked with local and state organizations to operate the Refuge. The New Hampshire State Parks, the Society for the Protection of New Hampshire Forests, and The Fells as well as volunteers have been instrumental in their efforts to provide visitor services and to maintain the estate and grounds. Through their efforts, work has been done at the main house to the restroom facilities and roof, to rehabilitate the collapsed carriage house, and to renovate the gatehouse into a headquarters through funds donated by the Lake Sunapee Protective Association. They have also provided educational programs to the public, interpretation, fund-raising, and staffing.

Historic Preservation

Many national, regional, state and local organizations have contributed to the preservation and maintenance of the estate and grounds. These include the National Park Service, New Hampshire State Parks, Lake Sunapee Protective Association, The Historic Landscape Committee, National Garden Conservancy, and The Fells, along with several volunteer committees. Politicians like current U.S. Senator and former

Governor Judd Gregg and former Senator Warren Rudman have appropriated funding for restoration. Governor Gregg established the John Hay Commission to promote protection of the historic facilities, engage in fund-raising activities for The Fells, and accept contributions on behalf of the state. All of these entities have helped to secure funding for projects, develop plans to guide projects, have restored, repaired or renovated structures, and have maintained the historic character of the gardens and vista of the estate. As a result, the estate buildings, grounds, and gardens were listed in the National Register of Historic Places in 1999.

State Agencies and Commissions

State agencies and commissions have proven to be invaluable resources and have greatly benefited the Refuge through their assistance and partnerships. In 1992, The John Hay Commission was created by Governor Judd Gregg, as previously mentioned, to assist in the protection of the estate through fund-raising, promotion, and the ability to accept contributions. From 1993 to 1996 the New Hampshire State Parks (State Parks) operated the Refuge under a MOU with the Service, offered educational programs through the Forest Society and completed work on the main house restrooms and installed a new roof. Within the last decade, Senator Gregg has also secured over one million dollars to help with renovations to the main house, carriage house and gatehouse.

The Refuge Complex has a long standing cooperative relationship with the NH FGD. This partnership involves a diversity of habitat and wildlife management programs and activities. It includes coordination on hunting, fishing, law enforcement, habitat and species inventory and monitoring, and visitor services and educational programming.

Volunteer Program

Since the inception of the John Hay NWR, volunteers have played a critical role in Refuge operation. Starting in 1989, with the formation of a volunteer advisory committee for the Refuge, volunteers also eventually formed the Historic Landscape, Historic Preservation, and Education committees to assist at the Refuge and help provide guidance to managing and maintaining the grounds and gardens.

With the formation of The Fells, many of these responsibilities were folded into their operations. Since then, volunteers have been instrumental in contributing to the maintenance of the historic buildings, gardens and also in providing environmental education and interpretation. In 2007 and 2008, prior to the land exchange with The Fells, volunteers contributed 7,725 and 3,800 hours respectively attributed to Hay estate visitation. The 2008 numbers include the period of time from October 1, 2007 through March 25, 2008 when the land exchange was completed. Other volunteer activities over the same time periods totaled 260 hours in 2007 and 160 hours in 2008 for time spent on habitat and wildlife, maintenance, cultural resources, and environmental education. The amount of volunteer time for the Refuge is expected to decline substantially because the Service no longer owns the Hay estate infrastructure where a majority of the activities occur.

Community Outreach

To date, a lack of Refuge funding and staffing has precluded our ability to provide sustained community outreach. With the implementation of this CCP, we intend to add on-site Refuge staff, which will enable us to expand our visitor services programs, including outreach, by reaching out to local communities with programs and to participate in community events.

Special Use Permits, including Research

Special use permits are issued to individuals, organizations, and agencies that request the use of Refuge facilities or resources beyond what is available to the public. In order to ensure that wildlife disturbance is minimized, special conditions and restrictions are identified for each request, and we evaluate each request individually. Table 3.3 identifies some of the permits we have issued since 1989. You may obtain additional details from the Refuge headquarters. We support research activities on the Refuge, when they are

compatible with the Refuge purposes, and help us gain knowledge and understanding to benefit our management goals and objectives.

Table 3.3. Sample of special use permits since 1989.

<i>Year Issued</i>	<i>Permittee</i>	<i>Purpose</i>
1989	Society for the Protection of New Hampshire Forests	To hold a reception, and lead a guided tour for up to 30 people of the estate and grounds
1990	Friends of John Hay NWR	To conduct a birding tour of the refuge for the local chapter of the Audubon Society of NH
1990	New London Garden Club	To receive a tour of the gardens lead by the grounds caretaker
1990	Dave Anderson	To hold a reception, and lead a guided tour for up to 90 people of the estate and grounds
1990	Society for the Protection of New Hampshire Forests	Conduct a series of programs and guided tours of the buildings, gardens and woods trail system
1990-1991	Dave Anderson	To remove fallen trees and limbs near roads and trails and to maintain appearance of property
1993	Emily Ayers	To hold a wedding reception for up to 140 guests at the estate
1997	Friends of John Hay NWR	Provide programs on historic structure interpretation, cultural and natural history, formal garden planting and maintenance, backyard landscaping for wildlife, seminars for school educators, and for maintenance and protection of the buildings, grounds, and gardens.
2000-2001	Friends of John Hay NWR	To store a kayak near boat house for the Friends and LSPA to assist in the prevention of aquatic invasive plant species like milfoil and water chestnut.
2007	The Fells	Host a one-day kids fishing event on the shore of Lake Sunapee

Dr. Thomas G. Barnes/USFWS



Purple finch

Refuge Natural Resources

Physical and Vegetation Resources

Soils—General description

Soils at the Refuge and in the uplands of this region are typically shallow and stony. “The Fells”, the name John Hay gave his estate, was particularly appropriate, as this is a Scottish term meaning “rocky upland pasture.” According to the Merrimack-Belknap county soil surveys (still in progress, http://www.nh.nrcs.usda.gov/Soil_Data/), the Refuge is made up of Moosilauke (3-8 percent slopes) and Skerry (3-8 percent slopes, and 8-15 percent slopes) fine sandy loams, as well as Tunbridge-Lyman-Becket complex (8-15 percent slopes) soils. These can all be found at elevations from 250-2,940 feet, and on hillslopes, with the exception of the Moosilauke which can most commonly be found in drainageways.

These soils are all listed as very stony, and range from nearly level ground to rounded hillsides, from poorly to excessively drained soils, and from 20 to 80 inches in depth to restrictive feature (bedrock), and are found in glaciated uplands. The Town of Newbury is north of the mesic/frigid line in New Hampshire, which is an indicator of soil temperature; soils north of this line are classified as having a frigid temperature regime, or an annual mean soil temperature less than 47 degrees Fahrenheit (http://www.nh.nrcs.usda.gov/Soil_Data/attribute_data/mbss.html).

Refuge Vegetation

Upland Forest Habitats

The Refuge is composed of uplands classified as transition hardwood-conifer forests (Sperduto and Nichols 2004). The northern hardwood forest formation is generally characterized by species with distributions corresponding to the eastern deciduous forest, although more northern species are often present, which is the case at the John Hay Refuge (Table 3.4).

The Refuge forest is a product of old field succession, where the former farm fields and pastures of the mid 1800’s, and in some locations the early 1900’s, gradually reverted back to a forested condition over the last century. The era of land use under Clarence and Alice Hay, which marked most of the twentieth century, was one that was characterized by little management beyond the house and immediate grounds. Thus the forests throughout the property were left virtually unmanipulated as a whole. The possible exception to this



Understory beech

is a few small areas where naturalized plantings of trees and shrubs remain near once-used roads and along the Beech Brook stream corridor as shade trees for farm animals (Garvin and Graney 1999). As a result of this philosophy of minimal forest management, natural processes are the predominant force that shaped the Refuge forest and many mature, large diameter trees abound on the property (LaPointe 2008).

These natural processes have also resulted in at least three age classes identified on the Refuge. In October 2008, the Service completed a forest inventory. As part of this process, trees throughout the Refuge were cored, and results ranged from 67 to 155 years in age. One age class in particular is quite marked, and represents the effects of the 1938 hurricane (LaPointe 2008). This event resulted in areas where trees were completely blown down, and other areas where there was only partial removal of trees, with root sprouting evident (Garvin and Graney 1999). Regeneration has resulted in this younger age class nearing 70 years of age. Other age classes are a result of smaller, localized disturbances due to lightning and wind events (LaPointe 2008).

The Refuge forest is essentially lacking a shrub understory, and crown closure is almost complete (71-100%). Regeneration is consistent with this almost complete crown closure, and the majority of the species (75%) are shade tolerant sugar maple, beech, and hemlock. These species will likely persist in the understory for some time, until natural disturbances create openings and release them. They represent a late stage of natural forest succession called a climax forest (LaPointe 2008).

This 2008 inventory delineated five different forest management units based on similarities in species composition, structure, and topography (Map 3-2). The forest is approximately 71 percent hardwoods and 29 percent softwoods. The dominant tree species (by percent basal area) are hemlock (28%), white pine (12%), red maple (11%), sugar maple (10%), white ash (*Fraxinus americana*; 10%), Northern red oak (9%), American beech (7%), white (paper) birch (5%), yellow birch (3%), and aspen (2%). Other species scattered in the forest include red spruce (*Picea rubens*), basswood (*Tilia americana*), American elm (*Ulmus americana*), and red pine (*Pinus resinosa*). Tree species abundance (by percent basal area) varies by stand type, which is summarized in Table 3.4 (Lapointe 2008).

There are many features that provide a unique character to this forest. Two tree species are found on the Refuge that are at the limits of their respective ranges. Black gum (*Nyssa sylvatica*), typically a more southern species, is found in a small stand along the lakeshore, and red spruce is a more northern species found on the Refuge as well. As mentioned previously, the Refuge forest is very mature and contains many old, large diameter trees. There are some hemlock and spruce trees over 200 years old. More typical, however, are the large old white pines. These are perhaps 150 years old or more, and are found throughout the property, but are more concentrated near the lakeshore and along Beech Brook corridor. These “supracanopy” trees are sometimes used by perching bald eagles and osprey (D. Anderson, pers. comm.), and are a unique cultural feature appreciated by the local community.

Table 3.4. Tree species abundance by percent basal area by Management Unit (MU) on the Refuge (LaPointe 2008).

	<i>MU 1</i>	<i>MU 2</i>	<i>MU 3</i>	<i>MU 4</i>	<i>MU 5</i>
Hemlock	19%	52%	14%	13%	9%
White pine	--	6%	--	30%	6%
Red maple	3%	5%	7%	29%	--
Sugar maple	13%	7%	--	7%	29%
White ash	19%	5%	21%	5%	19%
Northern red oak	19%	2%	30%	1%	28%
American beech	15%	8%	--	4%	3%
White birch	3%	3%	14%	9%	3%
Yellow birch	3%	--	7%	--	--
Aspen	3%	2%	7%	--	3%

Upland Meadow and Early Successional Habitat

There are two small areas on the property that are open, or early successional, habitat. The first, a 1.4 acre field or meadow, is located on the southern end of the Refuge adjacent to private property in Management Unit 5. This has been maintained over the years by this Refuge neighbor through mowing, and provides habitat for American woodcock and other wildlife that utilize meadows.

In addition, a one-acre viewshed, or linear corridor, has been established between the Hay's main house on The Fells property to the lake to recreate the scenic and cultural views from the house. This cuts a slightly southeast-oriented rectangular swath through the Refuge forest in Management Unit 2. As a part of the land exchange in 2008, when The Fells obtained ownership of the northern 84 acres of the original property, there was an easement placed on this corridor that enables The Fells to continue its maintenance.

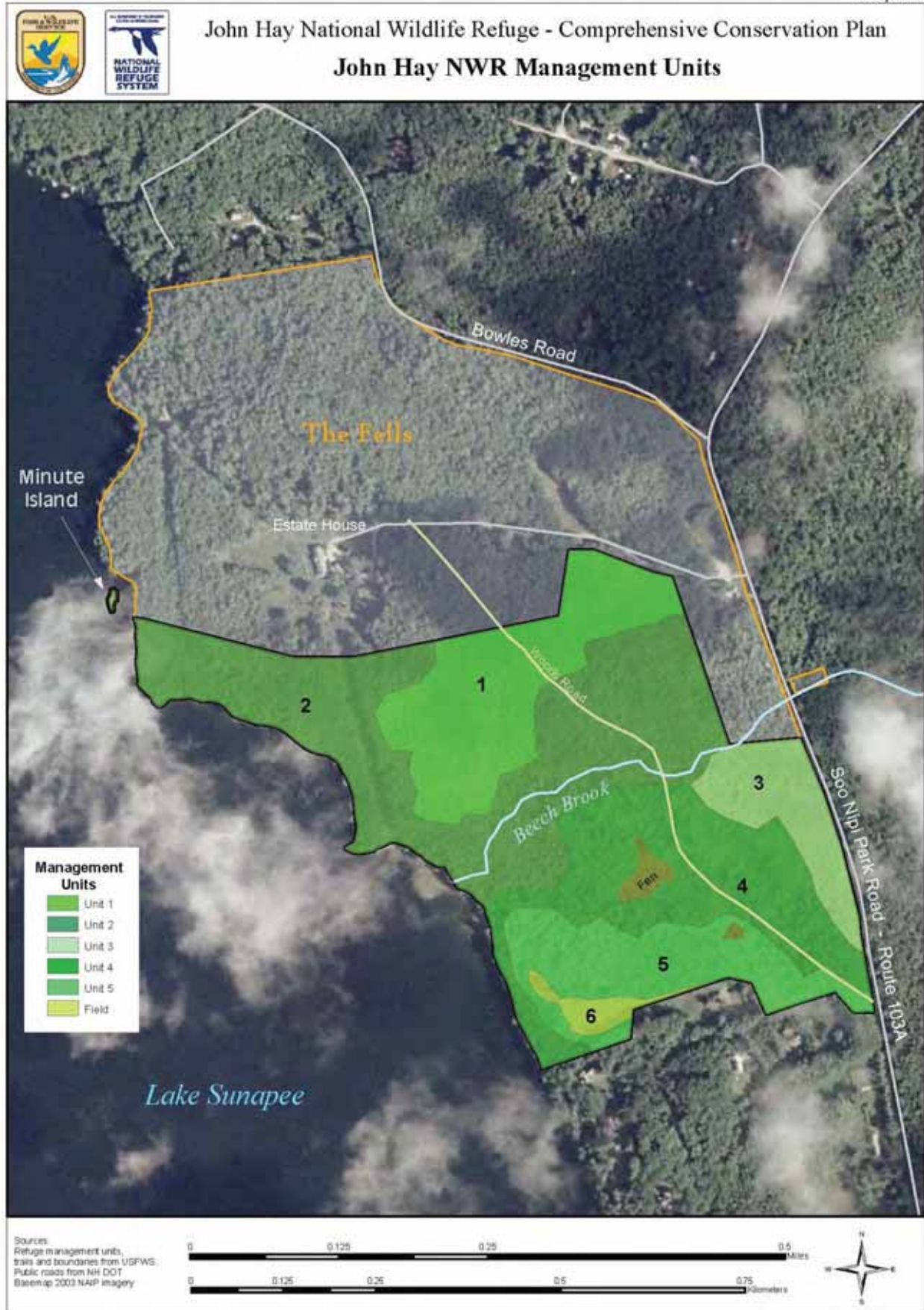
Upland Wetland, Aquatic, and Riparian Habitats

Although the Refuge is primarily upland, it has several important aquatic habitats. These include the 3,100 feet of undisturbed shoreline along Lake Sunapee and the 0.1 acre Minute Island that is just off-shore. Beech Brook (so named by the Hays; also called Bartlett Brook) runs east to west through the Refuge for approximately 1,750 feet before it discharges into the lake. There is also an intermittent stream associated with one of the fens. The riparian habitats along the brook and the lakeshore are mostly forested, and some of the trees along the brook are the oldest on the Refuge. These are likely the remnant pasture trees referenced earlier established to provide shade for farm animals. Because the entirety of this stream is on conserved lands (emanating near the top of Sunset Hill on Forest Society property), it is remarkably uninfluenced by many of the anthropogenic factors that detract from stream health and water quality. Therefore, it has been used as a reference stream for the entire Lake Sunapee watershed water quality monitoring program by the Lake Sunapee Protective Association, which has a monitoring station just east of Route 103A on Forest



Erin Victory/TCI

Beech Brook



Society property. Route 103A crosses over the brook and provides the divisor between Forest Society property and the Refuge. Route 103A is the primary threat to the water quality of Beech Brook due to road run-off, which is an increasing concern in the region.

Other aquatic habitats include two fens located on the Refuge in Management Units 4 and 5, typified by red maple and black ash (*Fraxinus nigra*). The larger fen, approximately 0.75 acre, is characterized by stunted trees, mossy hummocks, and ferns. It is fairly saturated and likely fed by spring water. The smaller of the two, at 0.1 acre, is also likely fed by spring water. This one is associated with an intermittent stream with black ash more predominant (T. LaPointe, pers. comm.).

One vernal pool was located on the Refuge during the habitat inventory. Because this was found in the autumn, how well it functions as a vernal pool and what species it supports is not presently known. The initial assessment indicated that it may be a result of human modification, as it looked unnatural in its surroundings. The presence of other vernal pools is not known at this time; no others were found during the inventory and given the soils and topography of the Refuge, others are not expected (La Pointe 2008).

Table 3.5. Present number of acres of each Refuge habitat type.

<i>Refuge Habitat Types</i>	<i>Refuge Acres</i>
Forest (including 1 acre of fen habitat)	77.65
Field	1.40
TOTAL	80

Federal- and State-Listed Species

Though there are no known federally-listed plants on the Refuge, the Loesel's twayblade, also called the fen orchid, does occur in the vicinity of the Refuge and is state-listed as threatened (Poole 2008). This species is an herbaceous perennial of the orchid family and is associated with fens and bogs, and cool moist ravines. It is primarily found in the Northeast and upper Midwest into Canada (http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=220007680).

Unique and Significant Natural Plant Community Types

There are two exemplary natural community types within the Town of Newbury. These are: circumneutral cliff, which had a historical occurrence, and rich red oak rocky woods. While these are not necessarily associated with the Refuge proper, the rich red oak rocky woods community does occur in the vicinity of Sunset Hill, which rises just east of the Refuge (Poole 2008).

Invasive Plants

The presence of invasive plants can have a major adverse impact on the biological integrity, diversity and environmental health of refuges and other natural areas. Though we have not conducted an exhaustive search of the Refuge, Japanese barberry is the only terrestrial invasive plant species documented to date. More information is needed to verify this, and to examine the extent and potential impacts there might be on the Refuge.

Though not technically part of the Refuge, aquatic invasive species can still have a negative impact on near-shore habitat and is worth mentioning given the 3,100 feet of Refuge shoreline, and associated Beech Brook. Variable milfoil (*Myriophyllum heterophyllum*) is the only invasive aquatic plant species documented in Lake Sunapee, and was discovered through the LSPA Weed Watcher's program in 2001 (NH DFG 2005,

<http://www.lakesunapee.org/>). It has been contained to a two acre area in Georges Mills. Thirty teams of volunteers patrol the 26.2 miles of Lake Sunapee shoreline three times per summer looking for invasive aquatic species, and the LSPA has initiated a boat wash program to prevent the spread of invasive species from other lakes coming in on boats.

Refuge Biological Resources

Many of the species listed for the Refuge below came from French (1972), Culp (1987), and Moses (1998). Additional sources of biological information are cited where appropriate.

Federal-listed endangered or threatened species

No federal-listed species have been documented on the Refuge and there is no federal critical habitat designated within the Refuge.

Birds

The mix of transitional forest, fields, and proximity to Lake Sunapee result in a variety of bird species that use the Refuge year-round. Breeding bird surveys on the Refuge and adjacent conservation land owned by the Society for the Protection of New Hampshire Forests and Audubon Society of New Hampshire have confirmed 77 species, including fifteen warblers (Tolman et al. 1994, Quinn 1995). Of the total suite of birds found here, the wood thrush, Canada warbler, and American woodcock are identified as Highest Priority species for BCR 14 (Map 3-3). Within the PIF physiographic area 27 (northern hardwood forest-mixed forest) blackburnian warbler and black-throated-blue warbler are also priorities (Map 3-3).

In developing this CCP, we compiled a list of species of conservation concern for the project area, which includes birds on the NH WAP list, the BCR 14 Plan 2007, the PIF Area 27 plan list, the Atlantic Coast Joint Venture Plan, and our regional Birds of Conservation Concern list (Appendix A).

Songbirds

Based on breeding bird surveys conducted in 2001 and 2002 (Quinn 2001, Suomala 2002), as well as incidental observations, we have documented 72 species on the Refuge property. Nine of these species are listed as Highest Priority or High Priority by the Atlantic Northern Forest Joint Venture (Table 3.6).

Raptors

Raptors that have been documented breeding on the Refuge or have been seen near the Refuge include the red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), broad-winged hawk, northern goshawk (*Accipiter gentilis*), Cooper's hawk (*Accipiter cooperii*; state-listed threatened), and sharp-shinned hawk (*Accipiter striatus*). The northern goshawk is a species of greatest conservation need in New Hampshire. Two other diurnal raptors of conservation concern occasionally use the Refuge during migration. These are the osprey (state-listed threatened) and bald eagle (federally-delisted in 2007, state-listed as threatened; D. Anderson, pers. comm.).

Nocturnal raptors documented either on the Refuge, or on the Hay Reservation include the great-horned owl (*Bubo virginianus*), barred owl (*Strix varia*), and northern saw-whet owl (*Aegolius acadicus*). Though eastern screech owl (*Otus asio*) has not been confirmed on either property, it is likely to be found there (D. Anderson, pers. comm.).

Table 3.6. BCR 14 priority species on the Refuge or project area.

<i>Species</i>	<i>Breeding, Wintering or Migrating Status on the Refuge</i>	<i>Priorities</i>
Wood thrush	B	Highest
Veery	B	High
Yellow-bellied sapsucker	B	High
Eastern wood pewee	B	High
Black-throated blue warbler	B	High
American redstart	B	High
Canada warbler	B	Highest
Chestnut-sided warbler	B	High
Purple finch	B, W	High

B=Breeding, W=Wintering

Waterfowl

Three species of waterfowl have been documented on the Refuge through breeding bird surveys or incidental observations. These are the mallard, American black duck, and wood duck. Although the Refuge does not support breeding or winter habitat for waterfowl, the undisturbed shoreline is likely valuable during migration, and later in the breeding season as broods are foraging. All three are designated a High Continental Priority in the Atlantic Coast Joint Venture – Waterfowl Implementation Plan Revision (2005; http://www.acjv.org/acjv_publications.htm). A common merganser (*Mergus merganser*) family has also been seen on the lake.

Shorebirds

The American woodcock has been documented on the property, typically in association with the southern 1.4 acre meadow, and is listed as a Highest Priority species in the North Atlantic Regional Shorebird Plan (<http://www.fws.gov/shorebirdplan/RegionalShorebird/downloads/NATLAN4.doc>). The species is morphologically classified in the *Scolopacidae*, or “Sandpiper” family of birds, however, it prefers upland open field and early successional forest habitats. This is a species of regional concern, as it is experiencing declines throughout its range (Kelley et al. (eds) 2008).



Richard Baetson/USFWS

American woodcock

Map 3-3



Fish and other Aquatic Species

Fish species documented on the Refuge include rainbow smelt and eastern brook trout. These two species are typical of cold water lakes and both spawn in or near the outflow of Beech Brook. They are considered species of greatest conservation need in New Hampshire, as both species have shown population declines as a result of overharvesting, barriers to reaching spawning grounds, sedimentation, and water quality (NH FGD 2005). Conservation of native eastern brook trout is a priority for the Service (<http://www.easternbrooktrout.org/index.html>). The New Hampshire Fish and Game Department has supplemented natural brook trout populations in many streams with hatchery stock for the last 100 years.

Mammals

Mammals typical of upland woods and fields are found on the property: white-tailed deer, black bear, mink, short- and long-tailed weasel (*Mustela erminea* and *Mustela frenata*, respectively), raccoon (*Procyon lotor*), red fox (*Vulpes vulpes*), river otter, muskrat (*Ondatra zibethicus*), fisher, snowshoe hare, gray and red squirrels (*Sciurus carolinensis* and *Tamiasciurus hudsonicus*, respectively), porcupines (*Erethizon dorsum*), eastern chipmunk (*Tamias striatus*), striped skunk (*Mephitis mephitis*), star-nosed mole (*Condylura cristata*) and numerous species of mice, voles, and shrews. White-footed (*Peromyscus leucopus*), deer (*Peromyscus maniculatus*) and woodland jumping (*Napaeozapus insignis*) mice, southern red-backed voles (*Clethrionomys gapperi*), water shrew (*Sorex palustris*) and short-tailed shrew (*Blarina brevicauda*) have all been documented on Hay Reservation property owned by the Forest Society across Route 103A from the Refuge. Although not confirmed, gray fox (*Urocyon cinereoargenteus*) bobcats and coyote probably wander onto the Refuge as well (C. Bridges, pers. comm.; D. Anderson, pers. comm.).

Amphibians and Reptiles

No detailed surveys have been completed, but wood frogs and spotted salamanders reside on the Refuge. The wood turtle and blue-spotted salamander are listed as two species of concern in the region that could potentially occur on the Refuge (Appendix A).

Invertebrates

Arthropods, including insects, are so vital to the functioning of the earth's biological and nutrient cycles that, if all were to disappear, humanity would probably fade within a few months, and mammals, reptiles and birds would go extinct about the same time (Wilson 1992). This group serves vital functions as pollinators, detritivores (aiding in the decomposition of matter and returning nutrients to the soil), and as a prey base to insectivorous mammals, reptiles, fish and birds. Despite their importance to functioning ecosystems, no formal invertebrate surveys have been conducted on the Refuge. Presumably, a rich diversity of terrestrial insects such as spiders, beetles, ants, dragonflies, butterflies, moths, flies, wasps, and bees exist on the Refuge, as well as ticks, chiggers and mosquitoes.

Insect Pests

Currently, there is no data on insect pests at the Refuge.



Steve Shively/USFS

Spotted salamander

Refuge Visitor Services Program

Priority Wildlife-Dependent Recreational Uses

We identify below the current opportunities on the Refuge for engaging in four of the six priority public uses of national wildlife refuges permitted at John Hay NWR: wildlife observation, wildlife photography, environmental education and interpretation. These four are available to visitors at the Refuge and can take place anywhere on the Refuge.

There are two trails that run through the Refuge. One is the 0.9 mile interpretive Ecology Trail that begins at The Fells gatehouse and winds through the diverse Refuge habitats before ending at The Fells main estate house. Officially dubbed the John Hay II Forest Ecology Trail, it was created by Tudor Richards along with Refuge staff to honor John Hay II, regional author. This is a dirt path that can be narrow and rocky at times, crosses Beech Brook, and then parallels Beech Brook very closely until they both reach the lake. It is a self-guided interpretive trail, with a brochure corresponding to numbered markers highlighting and describing notable natural features of the Refuge. Wildlife viewing and photography tend to be concentrated along this trail and on the shore of Lake Sunapee. Most interpretation, however, is offered through occasional organized classes conducted by The Fells, LSPA and the Forest Society among other partners at the John Hay estate.

The other trail is actually a former drive through the woods used by the Hay family for access to the working farm south of the estate house. Named the Woods Road, it is about 0.5 miles in length from Route 103A heading northwest to the gravel drive running between The Fells gatehouse and main house. The Service access gate is located on Woods Road at the junction with Route 103A, and was used in the past by the Service for management access. Only a portion of this road is traversable by vehicle; near the center of this road, where the Ecology Trail crosses it, there is a sign indicating that no motorized vehicles are permitted beyond that point towards The Fells.

Environmental education is associated with the classroom at the gatehouse, although outdoor classes take advantage of the wide variety of plants in the gardens, the lakeshore, and the interesting forest features. The majority of people visiting the Refuge are there to see the estate and learn more about John Hay. The Fells help meet these demands by providing public programs and workshops on historical, architectural, and landscaping aspects of the Hay estate.

We have not conducted formal surveys of annual Refuge visitation, despite our desire to do so. However, we have data representing numbers of visitors by activity over the course of six months from visitor contacts at The Fells gatehouse, program attendance, and observations by our partners at The Fells.

The visitor numbers to The Fells in Table 3.7 represent the period of October 1, 2007, through March 25, 2008, when the estate and grounds were exchanged to The Fells. From this data we estimated that the visitors participating in wildlife observation, photography, environmental education, and interpretation, also visited the Refuge. This provided an estimate of 1,805 visitors to the Refuge during the six month period.

Most people travel to the site to see the estate and gardens, learn about John Hay and his family, or attend workshops and classes offered by The Fells. The only developed visitor service facility on the Refuge is the Ecology Trail. We do not have good estimates of the number of people that use the trail, nor do we know how many visitors walk through the Refuge off the trail. We expect visitation at the Refuge to increase in the coming years commensurately with statewide and regional trends, and our planned development of an additional trailhead and interpretive efforts. However, an increase in Refuge visitation does not necessarily mean there will be more total visitors to the Refuge and The Fells combined. It is more likely that a larger proportion of visitors to The Fells will take advantage of an improved nature trail on the Refuge.

Table 3.7. Estimated number of total visitors to The Fells (2,195) that also visited the Refuge, by activity: October 2007 to March 2008.

<i>Activity</i>	<i>Visitors</i>
Freshwater Recreational Fishing (One-time Special Use Permit)	25
Wildlife Observation	1,500
Nature Photography	30
Environmental Education Programs On-site	150
Interpretative Programs On-site	100
Total	1,805

Other Public Use Activities

Activities not allowed

In determining compatibility of public uses of the Refuge, many were deemed compatible on The Fells estate and grounds, but need to be re-evaluated to reflect the current acres of Refuge property. As part of this CCP, compatibility determinations were conducted to evaluate the possibility for these activities in the context of the mission of the Refuge, public safety, and feasibility (see Appendix B). We also have to assess appropriateness for any non-priority uses.

Law enforcement concerns

Most visitors respect the Refuge rules and regulations on public uses and activities. However, some choose not to. Those who have been in violation of Refuge policies have done so by bringing dogs onto the Refuge, beaching boats and rafts, using the beach area as a restroom. Since the Refuge was established, we have not allowed those activities for the following reasons.

- First, those activities are not wildlife-dependent recreational uses, as defined by the Refuge Improvement Act of 1997, nor are they necessary for the safe, practical, or effective conduct of a compatible priority public use.
- Second, they are likely to cause the disturbance of wildlife in important habitats. Specifically, because these activities tend to be along the shoreline, they can affect waterfowl and other waterbirds that frequent Lake Sunapee near the Refuge and repetitive use degrades the shoreline and habitats.
- Finally, they are likely to interfere with other visitors engaging in compatible priority public uses.

Though the Refuge does not have a full time law enforcement officer at this time, the Silvio O. Conte National Fish and Wildlife Refuge Complex does have officers on staff that can patrol the Refuge on an as-needed basis. We also can work with the Town of Newbury and the NH Marine Patrol and NH Department of Fish and Game to help monitor the Refuge and enforce our rules and regulations.

As part of this CCP, we will increase our efforts towards community outreach and education of Refuge policies. This includes additional signage for property delineation and to post rules and regulations,

particularly on the beaches. It also includes working with town marinas to create awareness of Refuge beach policies for boaters accessing the Refuge in this manner. By creating awareness through education, we hope to decrease incidents of unauthorized activities on the Refuge.

Archaeological, Historical and Cultural Resources

The John Hay Refuge and The Fells has national importance as the summer home of John Hay during the time he was ambassador to Great Britain and Secretary of State (1891-1905) and is the only remaining residence associated with Mr. Hay's adult life. The property also has local prominence as an excellent and virtually unaltered example of an early twentieth century summer estate. In recognition of its importance, the estate and gardens were listed on the National Register of Historic Places in 1999.

The one-acre viewshed through the Refuge maintained by The Fells has cultural importance, as it represents a connection of the estate to the larger region. The area around the house today is much different from during the Hay's tenure on the property, as forest is now the dominant feature on the landscape and has begun to extend closer to the main house and grounds. Maintaining this vista, then, becomes of greater import as a critical component in the overall appreciation of the site and in establishing the context of the surrounding landscape (Historic Landscape Committee 1993).

Another feature of the Refuge that has cultural importance is the presence of the large white pines and other mature trees. These legacy pines are impressive landscape features that are remnants of the historic landscape and help tell the story of land use over time. They are also testimony of the Hay's minimalist land management philosophy on the majority of their property during the twentieth century.

No formal archaeological surveys of the Refuge property have been conducted to date. However, according to the NH SHPO, the Refuge has high site potential for both Native American and early historic period archaeological resources. Its proximity to the lake and associated rivers and streams are likely places for Native American and early European settlements.



Erin Victory/TCI

The Fells viewshed

Chapter 4

Erin Victory/TCI



Opening in the Refuge canopy

Management Direction and Implementation

- Introduction
- Relating Goals, Objectives and Strategies
- General Refuge Management
- Refuge Goals, Objectives and Strategies

Introduction

This CCP includes an array of management actions that, in our professional judgment, work towards achieving the refuge purpose, the vision and goals for the refuge, and State and regional conservation plans. In our opinion, it effectively addresses the key issues identified in Chapter 2. We believe it is reasonable, feasible and practicable.

In all program areas, this CCP will enhance the quality and sustainability of current compatible activities, develop long-range and strategic step-down plans, and promote partnerships.

Relating Goals, Objectives, and Strategies

The Refuge goals are intentionally broad, descriptive statements of the desired future condition of Refuge resources. By design, they define the targets of our management actions in terms more prescriptive than quantitative. They also articulate the principal elements of the Refuge purposes and our vision statement, and provide a foundation for developing specific management objectives and strategies.

The objectives are essentially incremental steps toward achieving a goal; they further define management targets in measurable terms. Typically, they provide the basis for determining strategies that are more detailed, monitoring Refuge accomplishments, and evaluating our successes. “Writing Refuge Management Goals and Objectives: A Handbook” (USFWS 2004a) recommends writing “SMART” objectives that are: (1) Specific; (2) Measurable; (3) Achievable; (4) Results-oriented; and (5) Time-fixed.

Where possible, we incorporated the principles of Strategic Habitat Conservation in the development of our objectives and strategies. According to the National Ecological Assessment Team (NEAT 2006), “This approach focuses on the ability of the landscape to sustain species as expressed in measurable objectives. Developing a strategy to attain a biological outcome, such as a population objective, requires documented and testable assumptions to determine whether the objective is met.” Not only will this approach ensure refuges are contributing to the National Wildlife Refuge System and USFWS mission and goals in a strategic, standardized, and transparent way, but also refuges can ensure that they contribute to local and regional conservation priorities and goals as well (USFWS 2008b).

A rationale accompanies each objective to explain its context and importance. We will use the objectives to write the Refuge step-down plans, which we describe later in this chapter.

The strategies for each objective are the specific or combined actions, tools, or techniques we may use to achieve the objective. The list of strategies in each objective represents the potential suite of actions we may implement. We will evaluate most of them further as to how, when, and where we should implement them when we write our Refuge step-down plans. We will measure our successes by how well our strategies achieve our objectives and goals.

General Refuge Management

We primarily developed our management direction hierarchically, from goals to objectives to strategies. However, we also found that some important actions either relate to multiple goals or represent general administrative or compliance activities. We present those below.

Assessing Refuge Staffing and Administration Needs

Our proposals in this document do not constitute a commitment for staffing increases, or funding for operations, maintenance, or future land acquisition. Congress determines our annual budgets, which our

Washington headquarters and regional offices distribute to the field stations. Chapter 3 presents our current levels of staffing and operating and maintenance funds for the Refuge. We describe below activities pertaining to staffing, administration, and operations: some are new; others are ongoing. Implementing them supports all our Refuge goals.

Permanent Staffing and Operational Budgets

Our objective is to sustain levels of annual funding and staffing that allow us to achieve Refuge purposes, as interpreted by the goals, objectives, and strategies in this CCP. While special project funds are potentially available, their flexibility is limited because we cannot use them for any other priority project that may arise, and they typically only have a one- to two-year duration. As an unstaffed satellite refuge, John Hay NWR does not have its own base budget, and is instead managed through the Silvio O. Conte National Fish and Wildlife Refuge (NFWR) budget.

In response to declines in operational funding nationwide, we developed the “Strategic Workforce Plan for the National Wildlife Refuge System in Region 5” (Phase 2; January 16, 2007) to support a new base budget approach. Its goal is a maximum of 75 percent of a refuge station budget to cover salaries and fixed costs, while the remaining 25 percent or more will be operating and maintenance funds. Our strategy is to improve the capability of each refuge manager to do the project work of the highest priority, and not to have a refuge budget tied up in inflexible, fixed costs. Unfortunately, in a level or declining budget environment, that also may have implications for the level of permanent staffing.

Appendix D lists our Refuge Operating Needs (RONS) and Service Asset Maintenance Management System (SAMMS) construction and maintenance projects currently listed in those databases, and indicate the regional and refuge ranking. We also included new projects not yet in the databases, which we propose to implement as part of this CCP. Once approved, if funding is not available, we will continue to seek alternate means of accomplishing our projects; for example, through collaborative partnerships, volunteers, challenge cost share grants or other partnership grants, and internships.

Within the guidelines of the new base budget approach, we will seek to achieve a level of staffing that will enable us to accomplish our highest priority projects. We propose additional temporary staff to provide depth in our visitor services programs (Appendix D). Appendix E identifies our plan for current and future staffing growth.

Facilities Construction and Maintenance

Maintenance will be focused on addressing basic trail upkeep, signage, and safety concerns. In addition, the Woods Road will be maintained in its present condition due to its historical value, as well as its utility in providing access to the Refuge for public safety and/or management concerns and actions. The southernmost section of the road will provide a limited amount of parking for anglers, along with informational signage. The current gate will be moved as needed to control vehicular access beyond the area intended for parking. The pipeline from the well house that crosses the Refuge through an easement will be maintained as-needed by The Fells. The addition of on-site staff under this CCP will most likely be situated at The Fells gatehouse.

We will construct an alternate route for the John Hay II Forest Ecology Trail (Ecology Trail) to allow visitors to return to the trailhead without entering The Fells' property. By constructing a trail section that returns to the trailhead entirely on Refuge property, visitors will be better informed of their options and can decide to continue on to The Fells property, for which there is admission, or to stay on the Refuge. Explanatory signage at the trailhead and at the point of entry to The Fells will be posted. Installation of a kiosk at the trailhead and interpretive and informational signs throughout the Refuge will be a priority to incrementally increase visitor awareness of Refuge resources. Included in this endeavor will be the addition of a spur trail to the fen and back, with informational signage on the ecology of fens. We will also continue to make progress toward improving access and visibility for visitors, including the installation of a footbridge(s) where stream crossing is a concern for public safety and stream health.



Karen Terwilliger/TCI

Brochure rack

Refuge Operating Hours

We will open the Refuge for appropriate and compatible public uses from official sunrise to sunset, seven days a week, to ensure visitor safety and protect Refuge resources. However, the Refuge manager does have the authority to issue a special use permit to allow access outside those periods. For example, we may permit access for research personnel at different times, or organized groups to conduct nocturnal activities, such as wildlife observation, or educational and interpretive programs.

Maintaining Partnerships

The Fells has been a close partner since 1996, initially established to assist the Refuge in the day to day operations and maintenance of the Hay estate and grounds, and to provide educational opportunities. Many of these activities have been conducted under a Memorandum of Understanding (MOU) with the Service. With the completion of the land exchange in 2008, the relationship between the Service and The Fells has changed and a new partnership agreement is needed to reflect this change. We will seek to establish a new partnership agreement that reflects the new tenets of our close partnership and that matches the cooperative spirit engendered in The Fells Master Plan (The Fells 2006). This will include recognizing the easement The Fells has on the viewshed corridor that is on Refuge lands, their commitment to maintaining it, the shared parking lot and proposed trailhead, educational programs, availability of workspace in the gatehouse for Service employees, and other facets that delineate our working relationship. We will continue to appreciate and rely on the assistance of The Fells organization to provide general on-site oversight, the point-of-contact for the Refuge, and collaboration on land management issues.

We will maintain the existing partnerships identified in Chapter 3. These relationships are vital to our success in managing all aspects of the Refuge, from managing habitats and protecting species, to outreach and education, and providing wildlife-dependent recreation. The Fells, NH FGD, Society for the Protection of New Hampshire Forests (Forest Society), and Lake Sunapee Protective Association (LSPA) have been particularly important and valued partners.

Implementing Adaptive Management

We will include flexibility in management to allow us to respond to new information, spatial and temporal changes, and environmental events, whether foreseen or unforeseen, or other factors that influence management. Our goal is to be able to respond quickly to any new information or events. The need for flexible or adaptive management is very compelling today because our present information on Refuge species and habitats is incomplete, provisional, and subject to change as our knowledge base improves. “Adaptive Management: The U.S. Department of the Interior Technical Guide” (Williams et al. 2009) promotes flexible decision-making, adjusting management in the face of uncertainties.

Adaptive management, as it relates to refuge management, promotes flexible decision-making through an iterative learning process that responds to uncertainties, new information, monitoring results, and natural variability in the ecosystems. It is designed to facilitate more effective decisions and enhanced benefits. At the refuge level, monitoring management actions and outcomes and key resources will be very important. The Refuge manager is responsible for changing management objectives or strategies as new information is acquired. Substantial changes from what we present in this CCP may warrant additional NEPA analysis and public comment. Minor changes will not, but we will document them in our project evaluation reports or annual reports.

Generally, we can increase monitoring and research that support adaptive management without additional NEPA analysis, assuming the activities, if conducted by non-Refuge personnel, are designated a Categorical Exclusion (Department of Interior Manual 516 DM 2.3A(2) and 516 DM 6, Appendix 1, January 16, 1997) and determined to be compatible by the Refuge manager in a compatibility determination.

Strategic Habitat Conservation

Strategic Habitat Conservation is a framework that utilizes adaptive management to redefine broad scale conservation from the general pursuit of conserving “more” habitat and species, to a more planned approach based on scientific data, at a landscape level, and in cooperation with partners. It starts with explicit, measurable objectives that are based on testable assumptions that can be evaluated, and is enacted through an iterative process of biological planning, conservation design, conservation delivery, assumption-driven research, and outcome-based monitoring. The goal is to set specific population objectives for species that are limited in some way by habitat (though this will be effective for other limiting factors as well), and to use targeted habitat management approaches to meet those objectives. Inherent in the process is a continual evaluation of biological outcomes and approaches, with the intent to adapt the overall conservation strategy to respond to changing circumstances and new information.

Protecting Land

The permanent protection of land is the keystone of wildlife and habitat conservation. Land brought into the Refuge System will be available forever to support fish, wildlife and plants. We can restore, enhance, or maintain the land owned by the United States and managed as part of the Refuge System to provide suitable conditions for priority species targeted for conservation, such as threatened or endangered species and those whose populations are in decline. The land we protect through conservation easements will never convert to uses that will remove permanently their value for fish and wildlife.

Though the Refuge encompasses the approved acquisition boundary, it is part of a regional matrix of conserved land. It is our goal to create new and enhance our existing conservation partnerships to both encourage and provide education about land conservation in the region.

To continue our progress toward our shared objectives in protecting land, we will employ the following, ongoing strategies.

1. Participate in local land protection meetings with partners to facilitate communication and cooperation.
2. Provide information to elected officials on land protection issues upon request.
3. Work with partners and landowners to encourage land conservation outside the Refuge boundary.
4. Keep communities around the Refuge informed about land protection issues through the distribution of outreach material and personal appearances by staff.



© Bill Nichols

Japanese barberry

Managing Invasive Species

The Refuge System has identified management to control the establishment and spread of invasive species as a national priority. This is a substantial problem that reaches across all habitat types. For the purposes of this discussion, we use the definition of invasive species contained in the Service Manual (620 FW 1.4E): “Invasive species are alien species whose introduction does or is likely to cause economic or environmental harm, or harm to human health. Alien species, or non-indigenous species, are species that are not native to a particular ecosystem. We are prohibited by Executive Order, law, and policy from authorizing, funding, or carrying out actions that are likely to cause or promote the introduction or spread of invasive species in the United States or elsewhere.”

Fortunately, the occurrence of invasive species on the Refuge is low. To date, only Japanese barberry (*Berberis thunbergii*) has been documented in two places on the property, although the Refuge has not completed a systematic survey. Our objective is to continue to work with our partners to monitor invasive species on the property. As staffing and funding allow, we will endeavor to prevent the establishment of new invasive species, and we will manage to control the spread of what does exist. For plant and animal invasive aquatic species, we will coordinate with LSPA and NH FGD for monitoring and treatment in nearshore Refuge habitat, and in Beech Brook. To the extent possible, we will physically remove invasive species where they are encountered.

In conjunction with the HMP and IMP, we will develop a list of species of greatest concern on the Refuge, identify priority areas in which to be vigilant, and establish monitoring and treatment strategies for invasive species in these areas. The Refuge will accomplish this through coordination with Conte Complex and regional staff, as well as our other partners including LSPA and NH FGD. Refer to the *National Wildlife Refuge System Invasive Species Management Strategy* released in May 2004 (USFWS 2004b) for additional tools, processes, and strategies. The 2004 report is complemented by a technical report issued in May 2005 by the U.S. Geological Survey (USGS) titled: *The Invasive Species Survey: A Report on the Invasion of the National Wildlife Refuge System* (USGS 2005). These reports together give both a status review and a management strategy for combating invasive species. In addition, we will stay abreast of Service policy revisions currently being reworked to facilitate implementation.

Integrated Pest Management

In accordance with 517 DM 1 and 7 RM 14, an integrated pest management approach will be utilized, where practicable, to eradicate, control, or contain pest and invasive species (hereafter collectively referred to as pests) on the Refuge. Biological or mechanical means will be considered first, before chemical means.

IPM will involve using methods based upon effectiveness, cost, and minimal ecological disruption, which considers minimum potential effects to non-target organisms and the Refuge environment. If deemed necessary, pesticide uses with appropriate and practical best management practices (BMPs) for habitat management will be approved for use on the Refuge where there likely would be only minor, temporary, and localized effects to non-target species and environmental quality based upon non-exceedance of threshold values in Chemical Profiles. Pesticides may be used on a refuge where substantial effects to species and the environment are possible (exceed threshold values) in order to protect human health and safety (e.g., mosquito-borne disease).

The Refuge's IPM program is one of the top ten step-down plans from the CCP prioritized by the Refuge. Once written, it will be on file at the Refuge Complex headquarters. It supplements both the CCP and HMP with documentation on how to manage invasive or pest species. Along with a more detailed discussion of IPM techniques, this documentation describes the selective use of pesticides for pest management on the Refuge, where necessary.

We will refine our control program to address the most critical problems first. We may adjust our priorities to reflect regional Service priorities, the availability of new information, or a new resource.

Monitoring and Abating Wildlife and Plant Diseases

The Service has not yet published its manual chapter on Disease Prevention and Control (701 FW 7). In the meantime, we derive guidance on this topic from the Refuge Manual and specific directives from the Director of the Fish and Wildlife Service or the Secretary of the Interior. The Refuge Manual (7 RM 17.3) lists three objectives for the prevention and control of disease.

1. Manage wildlife populations and habitats to minimize the likelihood of the contraction and contagion of disease.
2. Provide for the early detection and identification of disease mortality when it occurs.
3. Minimize the losses of wildlife from outbreaks of disease.

The Service published those objectives in 1982. Since then, in addition to diseases that cause serious mortality among wildlife, diseases transmitted through wildlife to humans have received more attention. One example is Lyme disease. In 2002, the Service published a Service Manual chapter (242 FW 5) on Lyme Disease Prevention to inform employees, volunteers, and national service workers about this disease, its prevention, and treatment.

Other serious wildlife diseases include avian influenza and chronic wasting disease. In addition to the diseases of wildlife, the Service will be attentive to the diseases that affect forest health. Human activities that dramatically alter the landscape, such as development and sprawl, forest fragmentation, new road and utility construction, agriculture, introduction of non-native invasive species, and transport of disease-bearing hosts through the landscaping trade, can weaken and degrade the quality of habitats, particularly of trees and forests. These actions will be coordinated through Conte Complex and regional staff, as well as through local partners including NH FGD, Forest Society, and others.

These are the general strategies for preventing or controlling disease.

1. Continue to conduct disease surveillance in conjunction with any fieldwork.

2. Cooperate with state agencies, particularly the New Hampshire Fish and Game Department, or New Hampshire Division of Forests and Lands, in conducting surveillance, providing access for sampling, and following protocols in the event of an outbreak.
3. Inform volunteers and others who work in the field about the dangers of Lyme disease and measures to avoid contracting it.
4. Work with partners to monitor Refuge forests for indicators of the increased occurrence of pests or disease. For example, note signs of physical damage, decay, weakening, sudden death, particularly of canopy and source trees of major host species, and changes in wildlife use of habitats, such as the absence of breeding birds that used to appear regularly, or changes in flowering or fruiting phenology.
5. Follow the protocols in national, state, and Refuge disease prevention and control plans.

Biological and Ecological Research and Investigations

The Refuge Manual and the Service Manual both contain guidance on conducting and facilitating biological and ecological research and investigations on refuges. In 1982, the Service published three objectives in the Refuge Manual for supporting research on units of the Refuge System (4 RM 6.2):

1. to promote new information and improve the basis for, and quality of, refuge and other Service management decisions;
2. to expand the body of scientific knowledge about fish and wildlife, their habitats, the use of these resources, appropriate resource management, and the environment in general; and,
3. to provide the opportunity for students and others to learn the principles of field research.

In 2006, the Service Manual provided supplemental guidance on the appropriateness of research on refuges: “We actively encourage cooperative natural and cultural research activities that address our management needs. We also encourage research related to the management of priority general public uses. Such research activities are generally appropriate. However, we must review all research activities to decide if they are appropriate or not as defined in section 1.11. Research that directly benefits refuge management has priority over other research.” (603 FW 1.10D (4))

All research conducted on the Refuge must be determined in writing to be both appropriate and compatible, unless we determine it to be an administrative activity. Research projects also must contribute to a need identified by the Refuge or the Service. The Refuge manager also may consider requests that do not relate directly to Refuge objectives, but to the protection or enhancement of native species and biological diversity in the region and that support the goals of recognized ecoregional conservation teams, such as the Atlantic Coast or Eastern Brook Trout Joint Ventures. We will generally approve special use permits that provide a direct benefit to the Refuge, or for research that will strengthen our decisions on managing natural resources on the Refuge.

Protecting Cultural Resources

As a federal land management agency, we are responsible for locating and protecting all historic resources: specifically, archaeological sites and historic structures eligible for listing or listed on the National Register of Historic Places. That applies not only to Refuge land, but also to land affected by Refuge activities, and includes any museum properties. The New Hampshire State Historical Preservation Office (NH SHPO) has indicated a high potential for archaeological sites to be on the Refuge. Considering the proximity to water (Lake Sunapee and Beech Brook), it is likely that prehistoric or historic sites could be discovered on the Refuge in the future.

We will evaluate the potential for impact on archaeological and historical resources as required, and will consult with the NH SHPO in program or project implementation, especially any ground disturbing

activities. These procedures will ensure that we comply with Section 106 of the National Historic Preservation Act. That compliance may require any or all of the following: a State Historic Preservation Records survey, literature survey, or field survey.

Providing a Wildlife-Dependent Recreational Program

The National Wildlife Refuge System Improvement Act of 1997 designated six priority public uses on national wildlife refuges: hunting, fishing, wildlife observation and photography, and environmental education and interpretation. The latter four are available as staffing and funding allows. Fishing will be allowed under this CCP as a new public use. Per the General Guidelines for Wildlife-Dependent Recreation, Fish and Wildlife Service Manual, 605 FW 1, we will strive to meet the following criteria for a quality wildlife-dependent recreation program:

1. promotes safety of participants, other visitors, and facilities;
2. promotes compliance with applicable laws and regulations and responsible behavior;
3. minimizes or eliminates conflict with fish and wildlife population or habitat goals or objectives in an approved plan;
4. minimizes or eliminates conflicts with other compatible wildlife-dependent recreation;
5. minimizes conflicts with neighboring landowners;
6. promotes accessibility and availability to a broad spectrum of the American people;
7. promotes resource stewardship and conservation;
8. promotes public understanding and increases public appreciation of America's natural resources and our role in managing and conserving these resources;
9. conserving these resources;
10. provides reliable/reasonable opportunities to experience wildlife;
11. uses facilities that are accessible to people and blend into the natural setting; and,
12. uses visitor satisfaction to help to define and evaluate programs.

Findings of Appropriateness and Compatibility Determinations

Chapter 1 describes the requirements for determinations of appropriateness and compatibility. Appendix B includes draft appropriateness and compatibility determinations to support the activities in this CCP, including a compatibility determination for fishing. We will allow only the activities determined appropriate and compatible as prescribed in Service policy 603 FW 1 and 2. As noted above, hunting, fishing, wildlife observation and photography, and environmental education and interpretation, when compatible, are the priority general wildlife-dependent uses of the National Wildlife Refuge System. According to Service policy 603 FW 1.3, these six wildlife-dependent recreational uses are determined to be appropriate, and therefore, do not require a separate Finding of Appropriateness. Service Manual 605 FW 1 states that these uses should receive preferential consideration in refuge planning and management before the refuge manager analyzes other recreational opportunities for appropriateness and compatibility.

Activities Not Allowed

We have received requests for non-priority, non-wildlife-dependent activities that we have never allowed on this Refuge. There are also some activities that were allowed when the Refuge included the Hay estate

buildings and grounds, but those determinations have expired. Those activities were determined compatible in 1994, but are now obsolete. The activities evaluated by the Refuge manager and determined not to be appropriate on Refuge lands, are: motorized vehicles of any kind, backpacking (i.e., to carry a pack containing gear and provisions to camp; however, hiking with a day pack is allowed), camping, picnicking (this refers to the traditional sense of the term and is not meant to prohibit people from eating food while engaged in approved activities), biking, jogging, pet dogs, horseback riding, or geocaching. Appendix B provides the appropriateness and compatibility documents that apply to new activities provided with this CCP, and outlines the Refuge manager's decision on the appropriateness of the activities above in accordance with the policy (see Chapter 1). Other ownerships nearby sufficiently provide most of those activities, so the lack of access on the Refuge does not eliminate those opportunities in the Lake Sunapee region. According to Service policy, (603 FW 1), if the Refuge manager determines a use is not appropriate, it can be denied without determining its compatibility.

Developing Refuge Operational Plans ("Step-down plans")

Service planning policy identifies 25 step-down plans that may be applicable on any given refuge. We have identified the 10 plans below as the most relevant to this planning process, and we have prioritized their completion, if they are not already developed. This CCP presents sections of the Refuge HMP that require public review; we will incorporate them into the final version of the HMP immediately after the approval of the final CCP.

We will also develop an AHWP and IMP as the highest priority step-down plan. We describe them in more detail below. To keep them relevant we will modify and update them as we obtain new information. This CCP schedules the completion of these step-down management plans.

- a HMP, which we will immediately begin working on following CCP approval (see discussion below)
- an AHWP, annually after CCP approval (see discussion below)
- a IMP, within 2 years of CCP approval (see discussion below)
- a Visitor Services Plan, within 3 years of CCP approval
- a Law Enforcement Plan, within 3 years of CCP approval
- a Safety Plan, within 3 years of CCP approval.
- a Fire Plan, within 5 years of CCP approval
- a Facilities and Sign Plan, within 5 years of CCP approval
- an Integrated Pest Management Plan, within 5 years of CCP approval
- a Fish plan, within 2 years of CCP approval

Habitat Management Plan

A HMP for the Refuge is the requisite first step toward achieving the objectives of Goal 1. For example, the HMP will incorporate the habitat objectives developed herein, and will identify "what, which, how, and when" actions and strategies we will implement over the 15-year period to achieve those objectives. Specifically, the HMP will define management areas and treatment units, identify the type or method of treatment, establish the timing for management actions, and define how we will measure success over the next 15 years. In this CCP, the goals, objectives, and list of strategies in each objective identify how we intend to manage habitats on the Refuge. We base both the CCP and HMP on current resource information, published research, and our own field experiences. We will update our methods, timing, and

techniques as new, credible information becomes available. As appropriate, we will incorporate the actions of this CCP into the HMP.

Annual Habitat Work Plan and Inventory and Monitoring Plan

The AHWP and IMP for the Refuge are also priorities for completion upon CCP approval. These plans also are vital for implementing habitat management actions and measuring our success in meeting the objectives. Each year, we will generate from the HMP an AHWP that will outline specific management activities for that year. The IMP will outline the methodology to assess whether our original assumptions and proposed management actions support our habitat and species objectives. We will prioritize our inventory and monitoring needs in the IMP. The results of inventories and monitoring will provide us with more information on the status of our natural resources and allow us to make more informed management decisions.

Conducting a Wilderness Review

The Refuge System planning policy requires that we conduct a wilderness review during the CCP process. The first step is to inventory all refuge lands and waters the Service owns in fee simple. Our inventory of this Refuge determined that no areas meet the eligibility criteria for a wilderness study area as defined by the Wilderness Act. Therefore, we did not analyze further the Refuge's suitability for wilderness designation. See Appendix C for the results of the wilderness review. The Refuge will undergo another wilderness review in 15 years as part of the next comprehensive conservation planning process.

Distributing Refuge Revenue Sharing Payments

As we describe in Chapter 3, we pay the Town of Newbury in New Hampshire annual refuge revenue sharing payments based on the acreage and the appraised value of Refuge lands in their jurisdiction. Those annual payments are calculated by a formula determined by, and with funds appropriated by, Congress. We will continue those payments in accordance with the law, commensurate with changes in the appraised market value of Refuge lands, and new appropriation levels dictated by Congress.

Additional NEPA Analysis

For all major federal actions, NEPA requires the site-specific analysis and disclosure of their impacts, either in an EA or in an EIS. Generally, those include the administrative actions listed in this chapter. Most of the actions proposed in the three alternatives and fully analyzed in the draft CCP and EA were described in enough detail to comply with NEPA, and would not require additional environmental analysis. Although this list is not all-inclusive, the following projects do not require additional NEPA analysis:

- the HMP, including its forest and meadow management programs;
- the IMP;
- addition of a trailhead kiosk or other educational trail improvements for visitor services;
- relocation of, or installation of a footbridge(s) on, the Ecology Trail that crosses and follows Beech Brook;
- addition of a small parking area on the Woods Road at the southeast corner of the Refuge;
- installation of a primitive foot trail from the above parking site to Lake Sunapee for fishing;
- addition of a primitive foot trail section to allow visitors to complete the Ecology Trail without entering onto The Fells property;
- addition of a primitive foot trail section to allow visitors to visit the fen;
- expanding or reducing priority public use programs;

- controlling invasive plants.

Refuge Goals, Objectives and Strategies

This CCP includes an array of management actions that, in our professional judgment, work best towards achieving the Refuge's purpose, vision, and goals, and will make an important contribution to conserving Federal trust resources of concern in northern New England forests, and maintaining the cultural heritage of the area. These goals, objectives and strategies most effectively address the key issues identified in Chapter 2. We believe it is reasonable, feasible, and practicable within the 15-year timeframe.

This management strategy builds upon the strong foundation of the conservation partnerships in the area and the conserved forest landscape to provide coordinated ecological and recreational management on the Refuge and describes a slightly more active forest management and visitor services component than current management over the next 15 years, as our levels of funding and staffing permit. We will continue our adaptive management approach of modifying actions based on new information with a constant effort to collect more and better data upon which to make management decisions. Chapter 3 presents the types of Refuge habitat, in Table 3.5 and Map 3-2.

Habitat Management

We will incorporate the principles of adaptive management, and specifically Strategic Habitat Conservation where possible, as habitat management is the primary tool in attaining population objectives under this framework. We will monitor the Refuge forest for change on a 10 to 15 year basis, conducting updated inventories and surveys, and use the principles of adaptive management to determine management actions, if any, at that time. We will incorporate a landscape-level approach in making management decisions to evaluate how the Refuge can complement landscape habitat diversity in compliance with the recommendations of regional conservation plans. Management actions will include relocating the Ecology Trail away from Beech Brook and/or installing a footbridge(s) at the stream crossing(s) to minimize negative ecological and water quality impacts. This will also address the safety issues associated with the current stream crossing, as it requires stepping across slippery rocks. We will also evaluate the need to mitigate impacts from human disturbances on the shoreline from near-shore rafting and unauthorized boat landings on the Refuge. We will continue to work with our partners to monitor forest health, water quality, visitor impacts and safety.



Barry Parrish/USFWS

Beech Brook stream crossing

The meadow acreage will be increased in size to total approximately 3.0 (+/-) acres, by either expanding the existing meadow or creating a new one, if a review of historical documents, maps, and the recent habitat inventory indicate that meadow habitat can be increased without impacting the mature forest component of the Refuge. Historical land uses on the Refuge resulted in open grassy habitat due to farming and pasturing, and this effort will seek to recreate some of that habitat available to species dependent upon open lands. We will continue to mow and mechanically maintain the newly expanded meadow to accomplish the desired habitat condition.

Inventories and Monitoring

The Service will initiate monitoring and inventory efforts through existing Service programs and partnerships such as NH FGD, NH Audubon, LSPA, The Fells, and other organizations and volunteers to

provide key information on federal trust resources commensurate with the necessary resources to accomplish them. We will target any alterations or additions to these ongoing surveys toward helping us better understand the implications of our management actions and ways to improve our efficiency and effectiveness. We will likely use habitat monitoring as a surrogate for evaluating the effects of our management on priority wildlife species. It is not feasible, considering the Refuge size, staffing and funding available for the Refuge, to monitor migratory bird populations on this 80-acre Refuge in a statistically reliable way. We will also continue to seek ways to reduce our management costs for establishing and maintaining forest and grasslands.

Visitor Services

We will expand existing opportunities for the four priority public uses already allowed, and establish a limited fishing program on the Refuge. This was evaluated simultaneously with the CCP/EA through compatibility and appropriateness assessments (Appendix B).

A seasonal visitor services specialist will be stationed at the Refuge during the summer, pending sufficient funds, allowing us to expand our visitor services program. This will include designing Refuge brochures, conducting interpretive programs, providing on-site presence to help monitor public use, and continuing to work with our partners to provide quality visitor experiences. Stand-alone signs interpreting wildlife and habitats, along with signs about the Service, National Wildlife Refuge System, the Connecticut River Watershed, and other relevant themes will be installed along the trail and/or the new trailhead kiosk. Once The Fells has moved their parking lot to its new and final location, we will establish a trailhead for the Ecology Trail and build a Refuge informational kiosk there (Map 4-2).

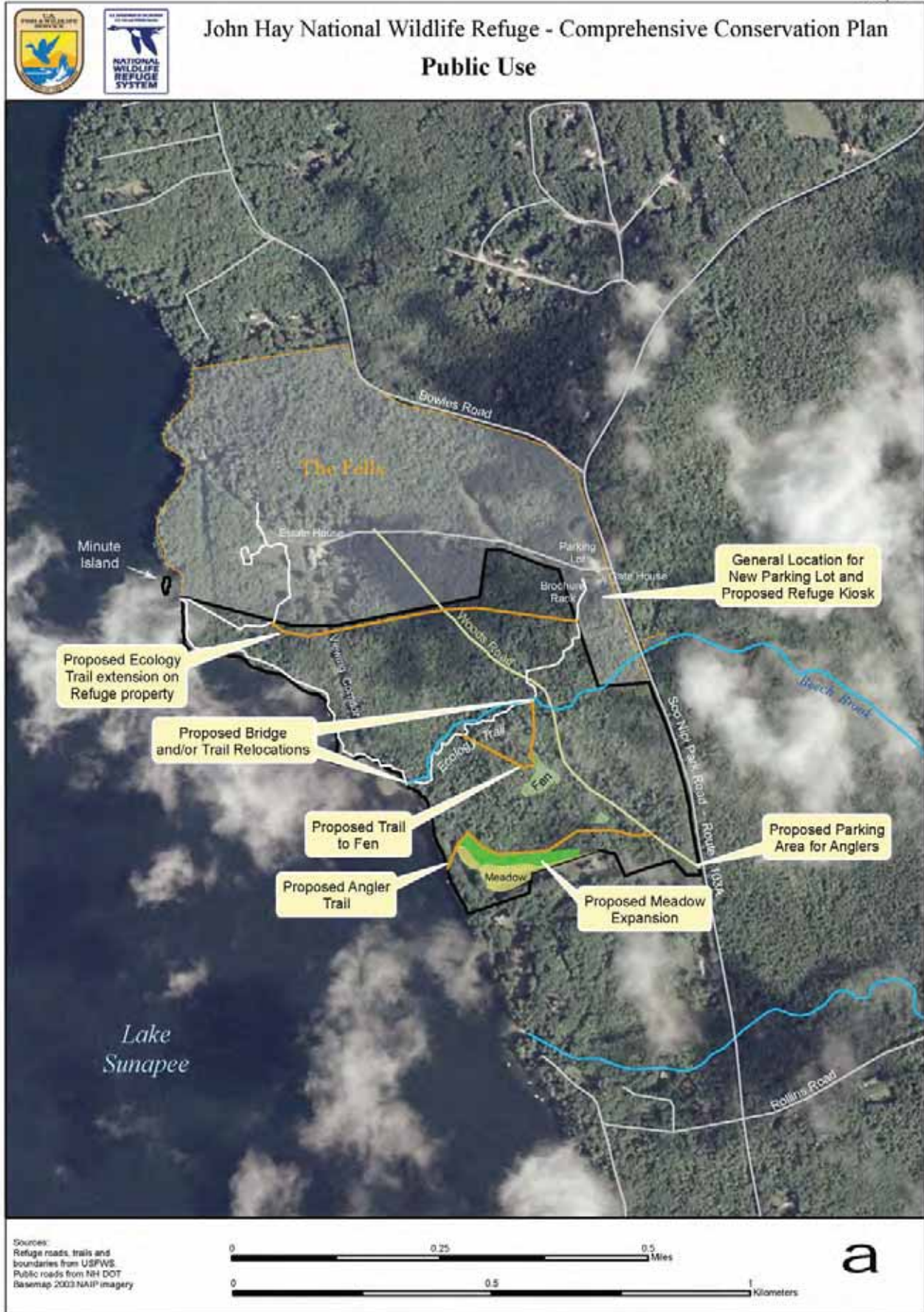
The section(s) of the Refuge trail that crosses and parallels Beech Brook will be relocated and/or replaced by a footbridge(s) to protect the stream channel and banks and improve visitor safety. Two additions to the Ecology Trail and a new trail for anglers will be installed. All three will be primitive, native surface trails similar to the existing Ecology Trail. These additions will include adding a spur trail from the Ecology Trail to the nearest fen and back to provide additional opportunities for interpretation and wildlife observation and photography. The second addition will loop the Ecology Trail back to the trailhead on Refuge property for visitors not wishing to enter The Fells property. The angler trail will provide access to the Lake Sunapee shoreline from the new angler parking site on the southern end of the Woods Road. This parking area will serve as the point of entry for anglers, will have informational signage, and will be limited to a small number of cars. The Refuge gate will be moved if necessary from its present location to accommodate a few cars, but will continue to prevent the use of motorized vehicles on the Refuge. Boundary signs will be posted on the Refuge shoreline.

In expanding opportunities for compatible outdoor recreational opportunities, we will strive to contribute to communities around the Refuge, both in terms of health and well-being, and economically. By offering places and programs where children and their parents can observe wildlife in natural settings, and actively participate through opportunities such as fishing, we will contribute to the growing national initiative to reconnect children with nature. Research has also shown that by offering places where visitors can enjoy watching birds and other wildlife, local economies benefit (http://training.fws.gov/library/Refuges/EconBen_refuges97.pdf). Benefits come in the form of increased sales by local businesses for food, lodging, fuel, and supplies and from associated tax revenues.

Refuge Administration

We intend to achieve a level of staffing that reflects the size of the Refuge and public use levels by adding a seasonal staff position as described in RONS (Appendix D). This seasonal visitor services specialist will be hired during the summer months (approximately Memorial Day to Labor Day) to better achieve Refuge goals for improving visitor experience and expanding public use programs. The Service will work with The Fells to locate this position in the gatehouse, to minimize costs and enhance collaboration. We will work

Map 4-1



with them to enhance Service visibility through signs and brochures to create awareness of Service presence and to interpret ecological and cultural aspects of the property at the contact point as appropriate and as resources allow. This staff person could provide coordination among the Conte Complex and regional Service program staff and partners for any new surveys, inventories, research, and monitoring efforts for priority resources that are initiated.

The MOU with The Fells will need to be updated with a new partnership agreement to reflect our collaborative partnership and similar goals for natural resource stewardship. This includes the use of The Fells parking lot, which is currently located on the north side of the gatehouse. This agreement will still apply if The Fells completes their plan to move this parking lot to the south side of the gatehouse to accommodate a larger number of cars. Maintenance on the Refuge will include maintaining boundary and regulatory signs, posting interpretive signs as necessary, and maintaining the Ecology Trail and proposed trail additions. Refuge law enforcement presence will be scheduled on an as-needed basis.

We will base any increases in staffing on available, permanent sources of funding, and will consider them in the context of regional and Refuge Complex priorities.

In the discussion that follows, we describe in detail the goals, objectives, and strategies that we will implement under this CCP.

Goal 1. Contribute to the biological diversity and integrity of the Atlantic northern forest in the larger context of the Lake Sunapee region and Connecticut River watershed by protecting, enhancing, and restoring the Refuge's habitats, with an emphasis on breeding, migrating, and wintering birds.

Objective 1.1 Forest Habitat

Over the next 15 years, allow natural processes (e.g., mortality, blow downs) to continue to shape the approximately 76 acres, assuming expansion of the existing meadow, of upland forest that may encourage natural regeneration and diversification of forest structure. This will benefit migratory and nesting birds of conservation concern in BCR 14 and NH WAP including, but not limited to, the Canada warbler and wood thrush. Any meadow expansion will not be at the expense of mature forest habitat.

Rationale

Transition hardwood-conifer forests, including the Refuge forest, are regionally common but important because they host a high proportion of the total population of many avian species of priority conservation concern. They mark the transition between central hardwood species to the south, and boreal forests to the north, and offer diverse species assemblages based on elevation, soil, and topographical characteristics. The Refuge forest is part of the Hemlock-Hardwood-Pine matrix forest as described by the NH WAP, and it is the most widely distributed forest type in the state of New Hampshire covering almost 50 percent of the state's land area (NH FGD 2005). Despite its abundance, it is listed as one of the state's most at-risk habitat types because of the threat of human development, and introduced species. The suppression of natural disturbance regimes, such as fire, has resulted in a forest dominated by older age classes (NH FGD 2005), and a loss of diversity in species composition and successional stages.

This lack of diversity in forest age and composition is cited by regional bird conservation plans, such as BCR 14 and PIF 27, to be a factor in the population declines of some high priority bird species. For example, the wood thrush, with 9.1 percent of its breeding population in BCR 14, has shown a steady decline of 2.49 percent per year between 1966 and 1999, and the Canada warbler, with 14 percent of its breeding population in BCR 14, has shown a decrease of 2.46 percent per year during the same time period (Dettmers [updated 2006]). Both of these species breed on the Refuge along with many other migratory species of regional conservation concern such as veery, yellow-bellied sapsucker, eastern wood-pewee, American redstart, and

purple finch. The recently published *The State of New Hampshire Birds* (Hunt 2009) also documented declines in Canada warbler and wood thrush populations.

The Canada warbler breeds in a range of habitat types including deciduous forested swamps, cool, moist, mature forest or streams and swamps with dense undergrowth, streamside thickets, and cedar bogs (Conway 1999). Although shrub-scrub is an important habitat component over some of its range, it may be of lesser importance in the Northeast. It nests on or near the ground, generally near water. Suitable habitat often has a layer of moss and an uneven forest floor; however, they may be less common in shrub wetlands (Conway 1999). On the White Mountain National Forest in New Hampshire and Maine they occur in northern hardwoods with a softwood understory (DeGraaf and Yamasaki 2001). In central Maine, Collins (1983) found the Canada warbler in forests with a high percent shrub cover (70%), moderate canopy cover (64%), and minor component of conifers in the canopy. Hagan and Grove (1999) suggest the species is likely adapted to natural tree fall gaps, hence their positive response to forest management that creates dense deciduous understory with some overstory remaining. The wood thrush prefers mature, moist, closed-canopy forest with a shrub-subcanopy understory, moist soil, and leaf litter (DeGraaf and Yamasaki 2001).



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Canada warbler

Overall conservation goals in BCR 14 are to increase the populations of both of these species by 50 percent. Habitat objectives for the BCR are a total of 29,417 hectares (approximately 72,660 acres) for Canada warbler at a density of 5.6 hectares (13.8 acres) per pair, and 502,273 hectares (1,240,614 acres) for wood thrush at a density of 5.0 hectares (12.4 acres) per pair (Dettmers [updated 2006]). For the wood thrush, population objectives under PIF 27 focus on stabilizing the current declining population trend at a minimum, and maintaining 250,000 breeding pairs (Hodgman and Rosenberg 2000). For the Canada warbler, overall PIF 27 population objectives are to maintain 20,000 breeding pairs (one to two birds per breeding bird survey (BBS) route; Hodgman and Rosenberg 2000). Differences in the population estimates for the same species between these two regional conservation plans are due in large part to the differences in land area included in each ecoregion. Both plans use BBS survey data and provide rough approximations of population size.

PIF has also provided state-level population objectives for birds of conservation concern in relevant physiographic areas. For New Hampshire, recommended objectives are to increase the state wood thrush population from an estimated 160,000 individuals to 240,000 individuals (Rosenberg 2004). For the Canada

warbler, Rosenberg (2004) recommends increasing the state population from an estimated 7,100 individuals to 11,000 individuals.

Limitations in Refuge resources and staff availability result in a lack of surveys and monitoring to adequately assess Refuge bird population densities and trend data, and this will likely remain unchanged. However, the Service has the responsibility for protecting migratory birds under international migratory bird treaties with Mexico and Canada, and to uphold the establishing purpose of the Refuge as a wildlife and migratory bird reservation. In fulfilling these mandates, the Refuge will strive to provide quality, mature forest habitat and to consider the needs of birds of conservation concern on a sub-regional or statewide scale according to the NH WAP, BCR 14, and PIF 27 conservation plans.

Furthermore, due to the fact that many northern hardwood forest-dependent species, including Canada warbler, respond positively to silvicultural practices, we open up the possibility to conduct more active forest management as needs arise and as staff availability and resources allow. By continuously evaluating the forest on a 10 to 15 year basis, and using the principles of adaptive management, we will be able to determine forest management priorities and actions to potentially promote suitable habitat for these and other species of conservation concern. This recurring forest inventory will also serve the dual purpose of creating baseline data and subsequent monitoring for potential changes due to climate change (e.g., cumulative factors including forest species composition, forest health, and exotic invasive species). Due to the size of the Refuge, it may be most effective to take a landscape level approach and tailor our forest management to habitat conditions in the region. We will continue to work with our partners, including Forest Society and state agencies (including NH FGD), to identify regional needs and appropriate management actions.

In addition to its regional importance, the current character of the Refuge forest is locally unique. Though predominately a result of old field regeneration, the forest is a mix of age classes and structural complexity that provide a diversity of wildlife habitat. Large, legacy white pines found on the southern end of the property are remnants of second-growth forests that germinated during the post-farm abandonment era in the mid-1800's. The hurricane of 1938 had a profound impact on New England, and locally reset forest stands that are now approximately 70 years old. Regeneration following other natural mortality events such as blow downs due to heavy winds and ice storms, and insects and disease has created within-stand age diversity. These features in combination with the location of the Refuge on the lake highlight its cultural and biological importance and we will continue to take this into consideration as a part of any forest management activities. Should a disturbance event such as a windstorm or wildfire reset a portion or all of the mature forest, the Refuge will likely allow habitat to recover through natural succession. We will, however, continue to work with our partners to monitor forest health and to determine appropriate responses to ice storms, heavy winds and other natural events that may alter the forest character.

There is an existing viewing corridor that runs slightly southeast from the Hay's main house, through the Refuge, to the lake. As a result of the land exchange, The Fells now have an easement that allows them to maintain it over time as a cultural resource. From a habitat standpoint this corridor functions as early successional forest habitat, important for species such as chestnut-sided warblers. We will work with The Fells to identify a treatment schedule that meets their needs while contributing beneficial diversity on the Refuge.

Strategies

Continue to:

- Eliminate trees that present safety hazards as needed where brought to the attention of the Service. These will be trees that have fallen or are leaning over the trail or other key visitor use areas to maintain safety and access. Hazard trees will be dropped and left in place to serve as

coarse woody debris used as foraging sites and cover by wildlife, and to replenish soil nutrients. On other areas of the Refuge, dead or dying trees will be left as part of the natural landscape.

- Respond to natural events that change forest structure, such as ice storm and wind damage to address safety and viewshed concerns (e.g., if a big windstorm left broken and toppled trees throughout sections of the Refuge forest, we will consider initiating salvage operations to clean up some of the debris, depending on the extent and severity of damage).
- Treat for disease and insect outbreaks as needed by working with state and local partners to prevent excessive losses on the Refuge or from affecting adjacent lands.

Within 1 year of CCP approval:

- Complete and implement an HMP.

Within 5 years of CCP approval:

- Work with The Fells to develop a treatment schedule for the viewing easement within the new partnership agreement that incorporates both scenic and wildlife habitat objectives.
- Develop rapid response protocols with partners to quickly detect and address invasive plant species, disease and insect outbreaks, and blow down events due to wind, ice and other natural occurrences.

Within 15 years of CCP approval:

- Initiate forest inventories on a 10- to 15-year recurring basis that will serve the dual purpose of establishing baseline information as well as a systematic method to detect potential impacts associated with climate change over time.
- Collaborate with partners including NH Audubon and NH FGD to conduct bird species inventories every 10 to 15 years to monitor species presence over time.
- Ensure that Refuge habitat complements the larger landscape composition and structure for priority species.

Accountability Measures

- Forest acreage by stand composition and structure, based on the forest inventory from 2008.
- Number of acres impacted by natural processes and the resultant compositional and structural changes.

Objective 1.2 Meadow Habitat

Within five years, if suitable sites are located, expand the current meadow up to a total of 3.0 (+/-) acres, depending on habitat and historical factors, to support species of conservation concern. This will include American woodcock and other migratory and breeding species dependent upon meadow for habitat. Suitable sites will have site conditions suitable for meadow establishment and be generally devoid of large trees. Any meadow expansion will not be at the expense of mature forest habitat.

Rationale

Historically, fields and other open lands were maintained through natural processes such as fire, extreme weather events, herbivory, and beaver activity (NH FGD 2005). Native Americans created and maintained localized grassy areas through the regular use of fire, and early European settlers created openings through timber and firewood harvesting, agriculture, and controlled burning (see Chapter 3). By the mid-

1800's, there were 2,248,659 acres of grassland throughout New Hampshire. Today, after the abandonment of farms, the suppression of natural events including fire, and the reversion of much of the land back to forest, there are approximately 252,047 acres of grassland in the state, and much of that is too intensively worked to be suitable for wildlife (NH FGD 2005).

Meadows are important to a number of species for breeding and foraging. In New Hampshire, these include reptile species such as the wood turtle and black racer (*Coluber c. constrictor*), a host of invertebrate species, and avian species including the American woodcock. A complete species inventory is needed for the Refuge, but American woodcock do use the existing meadow and have been documented on the Refuge during the breeding season.

Listed as a priority species of conservation concern in both BCR 14 and PIF 27, and as SGCN in New Hampshire, the American woodcock is facing declines range-wide due to habitat loss and degradation. Woodcock require several different habitat conditions that must be in close proximity to one another. These include clearings for their well-known courtship displays to attract females (singing grounds), large openings for night roosting, young second growth hardwoods (15 to 30 years) for nesting and brood-rearing and functional foraging areas (Sepik et al. 1981; Keppie and Whiting 1994). Research has shown that the quality of woodcock singing grounds is tied to the proximity of openings to forested habitats with a high density of understory vegetation that provides adequate cover for nesting and brood-rearing (Kelley et al. (eds) 2008). Functional foraging habitat for woodcock occurs on moist, rich soil dominated by dense shrub cover (75-90%); alder is ideal, although young aspen and birch are also suitable as feeding areas and daytime (diurnal) cover. Open meadow and early successional forest are two habitat types that are declining in New England.

Singing ground surveys for American woodcock have taken place throughout their range annually since the early 1970's. Over that period of time, these surveys have shown a steady decline of 1.9 percent per year in the eastern portion of their range. In addition, the national Wing-collection Survey, a collection of woodcock wings submitted by hunters that provides a ratio of immature birds per adult female in the harvest, has shown that recruitment is declining as well (Kelley et al. (eds) 2008).

In New Hampshire, American woodcock are distributed throughout the state, with the highest concentrations found in the west-central and southeast regions. Singing ground surveys (SGSs) have shown American woodcock numbers to be stable statewide (NH FGD 2005), however, BBS data show a regional decline of 6.37 percent per year (Dettmers [updated 2006]). The current estimate of singing male woodcock is approximately 13,255 in New Hampshire (Kelley et al. (eds) 2008).

According to the American Woodcock Conservation Plan (Kelley et al. (eds) 2008), overall conservation objectives for woodcock are to: (1) halt woodcock population declines by 2012 as measured by SGSs; (2) achieve positive population growth by 2022 as measured by SGSs; (3) halt decline of early succession habitat by 2012 as measured by the Forest Inventory Analysis system (FIA); and, (4) increase early succession habitat by 2022 as measured by the FIA. Many of the regional conservation plans advocate maintaining representative tracts of different forest habitat types throughout the landscape, providing a mosaic of available habitat for a number of different species requirements (Dettmers [updated 2006], Hodgman and Rosenberg 2000). In addition, the American Woodcock Conservation Plan (Kelley et al. (eds) 2008) advocates a mix of early successional habitat types that will provide adequate resources for the various requirements of this species. They estimated the amount of habitat needed in BCR 14 to re-establish former woodcock densities, and in New Hampshire, this totals approximately 269,000 acres (Kelley et al. (eds) 2008).

The location and history of the Refuge reflect land use changes throughout northern New England. Once cleared for farmland, it has slowly reverted back to forest, and today is primarily a mix of mature upland hardwood, white pine, and hemlock (*Tsuga canadensis*) species. Only 1.4 acres of meadow remains on the

Refuge. We will evaluate the Refuge in terms of historic levels of fields and other open land and potential effects to the existing mature forest habitat to determine whether we will increase the existing meadow acreage to benefit breeding woodcock on the Refuge, and other species that require meadow habitat. Our intent will be to avoid deleteriously impacting the mature forest component of the Refuge in creating this meadow. In addition, using our recently completed forest habitat inventory as a baseline, and evaluating the forest on a 10- to 15-year recurring basis, it may be possible to incorporate woodcock habitat recommendations as needed for nesting and brood rearing habitat in proximity to the existing or potentially expanded meadow. We will also work with our conservation partners to take a landscape level approach to early succession habitat management and evaluate conservation needs in a larger context.

Strategies

Continue to:

- Use mechanical treatments (e.g., mowing) once every two years after September 15th or as conditions warrant to retain a primarily herbaceous composition.

Within 5 years of CCP approval:

- Identify partnership opportunities to mow the field.
- Review historical records, maps, stone walls, and habitat inventory, and, as appropriate, consult with the Service's Regional Archaeologist and/or New Hampshire SHPO, to help determine whether there is an appropriate place to expand meadow acreage on the Refuge.

Within 15 years of CCP approval:

- Collaborate with partners including NH Audubon and NH FGD to conduct bird species inventories every 10 to 15 years to monitor species presence over time.

Accountability Measures

- Number of meadow acres.
- Frequency of treatments.

Objective 1.3. Wetlands Habitat

Over the next 15 years, protect and monitor Refuge wetlands for the benefit of amphibians and reptiles by completing at least one vernal pool species breeding survey within the next 15 years. In addition, continue to allow natural processes to influence fens, vernal pools, and other wetland habitats on the Refuge that may provide important breeding and foraging habitat for amphibians and reptiles of conservation concern identified in the NH Wildlife Action Plan, NE PARC, and other regional plans, such as spotted salamander.

Rationale

Wetland habitat on the Refuge includes two fens that total approximately one acre, and at least one vernal pool. These wetland communities are small, but no less important to many plants and animals of conservation concern. Vernal pools were categorized as one of the most at-risk habitat types in New Hampshire (NH FGD 2005). Though found statewide, they have no regulatory protection, are not well documented, and are therefore often overlooked during development projects. Oftentimes they are filled in or otherwise lost.

Vernal pools play a vital role in the life cycles of certain, sometimes rare, species. They are slight depressions in the ground that hold water for a period of time in the spring and summer before eventually drying out. A suite of species must lay their eggs in these ephemeral pools of water. The eventual drying of these pools during the growing season prevents predatory fish from becoming established. Vernal pool-obligate species include the spotted salamander, blue-spotted salamander, wood frog, and fairy shrimp. Other species, including Blanding's (*Emydoidea blandingii*) and spotted turtles (*Clemmys guttata*), use vernal pools for foraging and as staging areas for migration (NH FGD 2005).

The Refuge lacks adequate data to say with certainty the number of vernal pools on the Refuge, or what species they support. The one vernal pool documented thus far gave some indication that it may have been a result of human modification of the landscape (LaPointe 2008). More information on the hydroperiod and the presence of vernal pool-obligate species is needed to see what ecological role it serves on the Refuge. In addition, a more complete inventory of vernal pools throughout the Refuge needs to be conducted, though the soil types and topography indicate there may not be many more (LaPointe 2008).

In carrying out this objective, we will try to fill these knowledge gaps by conducting a thorough inventory of vernal pools on the Refuge, and georeferencing the location of any found. We will conduct at least one breeding species survey to evaluate the quality of the vernal pool(s) by the species utilizing them. We will work with the NH FGD to comply with state survey and reporting standards.

Fens, a type of peatland, are perennial wetland systems with a limited supply of ground and surface water that slowly decay organic matter over time resulting in a buildup of peat. They are similar to bogs in that they help to improve water quality, prevent flooding, and play a role in nitrogen and carbon cycling, but are generally less acidic, and support a more diverse animal and plant community because they have higher nutrient levels.

Often characterized by sedges, grasses, and wildflowers, they can support rare plant and animal species specifically adapted to the nutrient levels and pH conditions. According to the New Hampshire Natural Heritage Bureau (2010), there is one record of the state-threatened Loesel's twayblade, or fen orchid, associated with the John Hay NWR, and this species could very well be found in these habitats. A more thorough inventory needs to be conducted of these fens. Peatlands can be very diverse, and New Hampshire marks a transitional boundary between southern and northern fen habitat types. More information is needed about the type of fens on the Refuge and any at-risk species they support. As staff availability and resources allow, we will attempt to address these data needs.

Threats to these wetland communities include any activities that could alter the hydrology by changing water flow, or soil moisture holding capacity. In addition, any plant and animal species that depend upon fens for a part of their life cycle require intact surrounding upland habitat to protect the integrity of the wetlands, and for certain herpetofauna, to aid in dispersal. These factors will be taken into consideration for any forest management activities or meadow enhancements proposed on the Refuge. More information is needed regarding the impacts of road run-off, if any, given the distance between the wetlands and Route 103A.

Strategies

Continue to:

- Monitor to ensure that management activities including trail relocation do not adversely impact the fens.

Within 3 years of CCP approval:

- Inventory and georeference vernal pools on the Refuge, before any trail enhancement or habitat management is implemented.

Within 5 years of CCP approval:

- Coordinate with NH FGD for survey protocols and data submission to the NH FGD vernal pool database, and Reptile and Amphibian Reporting Program.

Within 10 years of CCP approval:

- Record the presence/absence of vernal pool-obligate species according to acceptable survey protocols.

Accountability Measures

- Number of vernal pool surveys.
- Number of vernal pools and fens on the Refuge.
- Number of species associated with vernal pools and fens.
- Total acreage of wetland habitats on the Refuge.

Objective 1.4 Riparian and In-stream Habitat

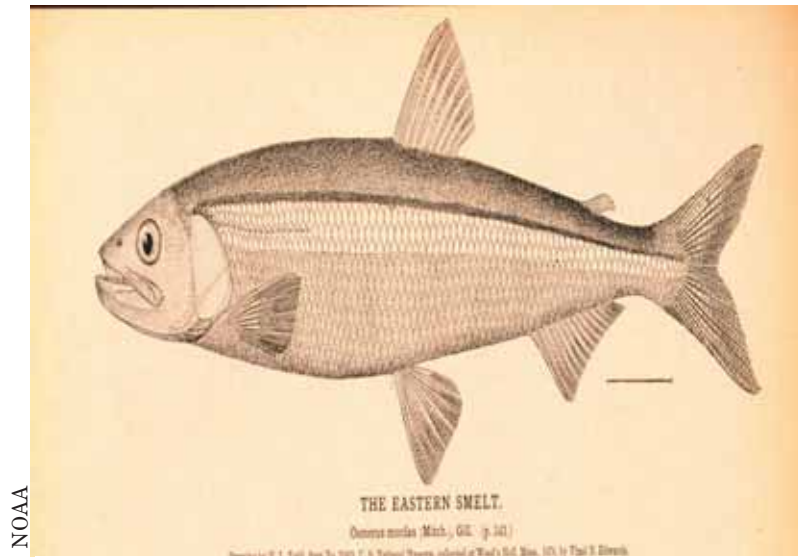
Within 5 years, evaluate the quality of the in-stream habitat and riparian corridor along approximately 1,750 feet of Beech Brook for species identified as conservation priorities, including eastern brook trout, by the Brook Trout Joint Venture and NH WAP plans.

Rationale

Originating on Sunset Hill, Beech Brook flows entirely through conserved forest land until it discharges into Lake Sunapee from the Refuge, and is therefore subject to minimal human impact. Route 103A, acting as the boundary between Forest Society property and the Refuge, crosses over the brook and poses a threat to it through run-off and sedimentation. Stormwater runoff poses a risk to the entire lake as phosphorus levels continue to increase at nearshore and tributary monitoring stations (SAWC 2008). As one of the tributaries to Lake Sunapee, LSPA has monitored Beech Brook, upstream from the Refuge, as part of its Volunteer Lake Assessment Program (VLAP) program for 18 years, and it consistently has one of the lowest levels of phosphorus and conductivity on the lake, two measures of human impacts. In addition, due to its high water quality, it has been used as the biological control for the lake (J. Fichter, pers. comm.). In addition, Beech Brook is reported to serve as an important migratory corridor for wildlife including black bear (*Ursus americanus*), mink (*Mustela vison*), otter (*Lutra canadensis*), and fisher (*Martes pennanti*; D. Anderson, pers. comm.).

The water quality of Beech Brook is exemplary in a region heavily influenced by human factors, and it has habitat characteristics that could support a native brook trout population. This trout is listed as SGCN by the state, and is also a species of regional conservation concern due to regional declines and local extirpations throughout its native range. According to the Eastern Brook Trout Joint Venture, most of New Hampshire has only qualitative data, but the state is one of a few with intact, self-sustaining wild brook trout populations (Trout Unlimited 2006). Though Beech Brook has not yet been surveyed by the NH FGD, anecdotal information does indicate the presence of brook trout in Beech Brook (D. Anderson, pers. comm.). Other tributaries to Lake Sunapee have been found to contain self-sustaining brook trout populations in

surveys conducted by the NH FGD (C. Bridges, pers. comm.). Whether or not this can definitively be said for Beech Brook needs to be determined before any further actions can be determined, and this will be accomplished through stream surveys in cooperation with our partners in the NH FGD.



Rainbow smelt

Rainbow smelt is another species associated with Beech Brook. An important forage base for many species, including land-locked salmon and lake trout, rainbow smelt are listed as SGCN in New Hampshire (NH FGD 2005). They are present in Lake Sunapee, and use the mouth of Beech Brook as a spawning area.

It is evident that the good water quality of Beech Brook provides excellent fish habitat on the Refuge and aids in understanding human impacts on the lake. We will strive to maintain these qualities under any management action. We will continue to rely on LSPA to monitor Beech Brook as

part of their VLAP program, in particular for impacts due to acid deposition and increases in phosphorus from stormwater runoff. This continued water quality monitoring in addition to a stream survey will also serve the dual purpose of creating baseline data and subsequent monitoring for potential changes due to climate change or other anthropogenic-induced impacts (e.g., cumulative factors including species composition, water temperature, presence and levels of biological and chemical parameters, as well as exotic invasive species). Any forest management actions required to maintain forest health or public safety will follow best management practices to minimize impacts on the water quality of Beech Brook.

Strategies

Continue to:

- Continue to rely on LSPA to monitor Beech Brook and collect water quality data.

Within 1 year of CCP approval:

- Post the area around the mouth of Beech Brook with Refuge boundary signs.

Within 5 years of CCP approval:

- Relocate the Refuge's nature trail away from sensitive riparian areas and/or replace existing crossings with a footbridge(s) if it is found to negatively affect stream health or pose a safety threat to visitors.
- Assess the impacts of rafting, and other public use on the biological health and integrity of Beech Brook and manage to mitigate those impacts.
- Work with partners to assess the impacts of winter road treatments on the biological health and integrity of Beech Brook and mitigate any negative impacts.

Within 10 years of CCP approval:

- Partner with NH FGD to:
 - Conduct a baseline survey of in-stream habitats and fish;
 - Assess brook trout population structure;
 - Identify key habitats for brook trout.

Accountability Measures

- Brook trout population structure.
- Fish species richness of Beech Brook.
- Quality of brook trout habitat.
- Measurements of water quality.

Objective 1.5 Shoreline/Minute Island

Continue to protect the 3,100 feet of undeveloped Refuge shoreline and 0.1 acres of Minute Island by preventing public use activities that may pose threats to the biological integrity of these habitats.

Rationale

The Refuge and The Fells combined, own approximately three quarters of a mile of contiguous, undeveloped, relatively undisturbed shoreline on Lake Sunapee, and the Refuge owns Minute Island as well, just offshore. Nearing its northernmost distribution, a stand of black gum (*Nyssa sylvatica*) exists along the shoreline. These are uniquely natural features on the heavily residential and recreational lake, providing an aesthetic quality to the Refuge that enhances visitor experience. This undeveloped lakefront will have increasing importance as the area continues to grow in population and the housing and other infrastructure to support it.

The natural features of the town, including Lake Sunapee, will continue to draw both year-round and summer residents as well as day-use visitors. Newbury has already seen some impressive population growth, increasing from 509 year-round residents in 1970 to 1,702 in 2000, at a rate of 4.1 percent annually (Newbury Planning Board 2007). This is in comparison to a growth rate of 1.8 percent in Merrimack County and 1.7 percent in the state during the same time period. In addition, the 2000 summer population was estimated around 4,000 people. As the number of visitors and associated lake-use increases, so will impacts to the lake and shoreline.



Barry Parrish/USFWS

Minute Island

The undeveloped shoreline habitat provides a benefit to a wide array of species. The mouth of Beech Brook serves as a congregation area for spawning rainbow smelt, and waterfowl and wading birds use the habitat for cover and forage. More information is needed to assess habitat condition along the shoreline and we will make that a priority. With this baseline data, we will be able to evaluate any negative impacts from the practice of rafting watercraft offshore and associated increases in shoreline use, or from unauthorized boat landings. Any restoration needs will be determined as well. In addition, baseline data and subsequent monitoring of the shoreline could provide valuable data to

assessing impacts associated with climate change over time. We will continue to post boundary signs along the shoreline and work with our local conservation partners and NH Marine Patrol to monitor shoreline use.

Strategies

Continue to:

- Maintain Refuge boundary signs to prohibit boat landing on the Refuge shoreline or Minute Island.
- Deploy law enforcement officers to patrol the Refuge on select high-use days.
- Work with NH Marine Patrol to patrol the Refuge shoreline.

Within 1 year of CCP approval:

- Install boundary signs along the Refuge shoreline and Minute Island to facilitate enforcement actions on prohibited activities such as rafting, beaching of boats, and public access from the lake to minimize adverse impacts to the undeveloped shoreline and nearshore habitats.

Within 3 years of CCP approval:

- Hire a seasonal Visitor Services Specialist who will help monitor for shoreline policy compliance and shoreline condition from approximately Memorial Day to Labor Day.
- Increase awareness of Refuge boat landing policies by conducting outreach with town and local marinas by posting flyers.
- Assess baseline shore condition and evaluate the need for restoration.

Within 5 years of CCP approval:

- Evaluate the impacts, if any, of rafting/beaching water craft on the Refuge.

Accountability Measures

- Feet of disturbed shoreline and the underlying cause.
- Number of days law enforcement officers deployed to Refuge.
- Number of incidents reported.
- Number of signs posted or maintained.

Goal 2. Promote natural resource conservation, stewardship, the mission of the National Wildlife Refuge System and enjoyment of the John Hay Refuge by providing high-quality, compatible, wildlife-dependent public use opportunities on Refuge lands and neighboring conserved lands and waters.

Objective 2.1 Hunting

Maintain a year-round no-hunting policy on the Refuge over the next 15 years.

Rationale

The Improvement Act identifies hunting as a priority wildlife-dependent recreation and locally it is an established traditional resource use. Furthermore, hunting promotes public understanding and

appreciation of natural resources and their management on all lands and waters in the Refuge System. The John Hay Refuge is a relatively recent addition to the Silvio O. Conte NFWR Complex, having been previously managed under the Great Bay NWR Complex, and the Eastern Massachusetts NWR Complex. Current staffing and funding levels at the Conte Complex have thus far prevented our ability to assess if it is feasible to provide, monitor, or enforce quality hunting opportunities on the Refuge. Historically, hunting has not been allowed on the Refuge, and the addition of a general hunting program has the potential to lead to user conflicts due to the small size of the Refuge and the interconnected trail system between The Fells and the Refuge, if not appropriately managed. This trail system loops through roughly half of the Refuge and is used by both visitors to The Fells, as well as Refuge hikers. Hunting is allowed on Forest Society property across Route 103A, therefore there is adequate opportunity to enjoy this recreation in the local area. Under this CCP, we will continue to maintain our no-hunting policy.

Strategies

Continue to:

- Work with partners to monitor and enforce a no-hunting policy on Refuge property.
- Assign notifications of violation to a Refuge Law Enforcement Officer.

Within 3 years of CCP approval:

- Work closely with partners to make Refuge visitors aware that hunting is allowed on Forest Society property and other areas in the region.

Accountability Measures

- Reports of illegal hunting.

Objective 2.2 Recreational Fishing

Within two years of CCP approval, open the Refuge to sport fishing.

Rationale

The Improvement Act identifies fishing as priority wildlife-dependent public use. The act states, “compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the System.” Fishing promotes public understanding and appreciation of natural resources and their management on all lands and waters in the Refuge System. The recent addition of the John Hay Refuge to the Silvio O. Conte NFWR Complex, and our current staffing and funding levels have precluded our ability to consider the feasibility of fishing on the Refuge. We have utilized this CCP/EA as our opportunity to assess the feasibility of fishing on the Refuge (see Appendix B for the compatibility determination), and believe that with the cooperation of partners, including the NH FGD, a limited fishing program will be possible. Fishing at the Refuge will occur along Beech Brook and the Lake Sunapee shoreline.

Angler access will be restricted to the southeast corner where the Woods Road meets Route 103A. They will be allowed to park on a short section of the Woods Road that will accommodate a few vehicles. The placement of the current gate may or may not be adjusted, depending on the space available at present; however, in either case, motorized access to the Refuge will continue to be restricted beyond this parking area. We will work with the Town of Newbury and the New Hampshire Department of Transportation (NH DOT) to ensure that access to and from Route 103A meets highway safety standards. We also will consult with the NH SHPO on prior to any ground disturbing activities. Informational signs regarding fishing on

the Refuge will be posted in this small parking area. A new primitive foot trail will connect this parking area with the Lake Sunapee shoreline. Because of the heavy vegetation along the shoreline, it is anticipated that most fishing will be conducted from the lake waters, and therefore shoreline condition is not expected to be heavily impacted. However, as previously stated, we will monitor shoreline condition and may adjust public access to the shoreline should conditions warrant. Anglers will not be allowed to park in the parking lot adjacent to The Fells gatehouse, and signs will be posted to this effect.



Duane Raver/USFWS

Brook trout

Fishing from the lake will be under the jurisdiction of the state, and all fishing on the Refuge will follow state guidelines. Pursuant to the policies in 605 FW 3, we follow these guiding principles for fishing opportunities at the Refuge.

1. Effectively maintain healthy and diverse fish communities and aquatic ecosystems through the use of scientific management techniques;
2. Promote visitor understanding of, and increase visitor appreciation for, America's natural resources;
3. Provide opportunities for quality recreational and educational experiences consistent with criteria describing quality found in 605 FW 1.6;
4. Encourage participation in this tradition deeply rooted in America's natural heritage and conservation history; and
5. Minimize conflicts with visitors participating in other compatible wildlife-dependent recreational activities.

A limited fishing program of this scale should have little effect on the shoreline condition, as few anglers will be encouraged to park at any given time, a specific access point will be provided, and the heavy vegetation along the shoreline will likely necessitate that angling take place from the waters of Lake Sunapee. In addition, seasonal staff will be stationed on the Refuge and will provide on-site presence and oversight.

Strategies

Continue to:

- Monitor public use impacts to the shoreline and habitats associated with the angler trail once established.

Within 2 years of CCP approval:

- Coordinate with NH FGD, The Fells, local government officials, local conservation organizations, and the public to establish a fishing program.
- Establish a primitive foot trail from the angler parking area to the Lake Sunapee shoreline.
- Convert the southern-most section of the Woods Road into a limited parking area for anglers following consultation with the Town of Newbury, NH DOT, and NH SHPO.
- Install a gate to restrict vehicular access beyond the parking area.
- Install signs at the angler parking area explaining that it is the angler point of entry.
- Install signs at The Fells parking lot that explains that angler parking is not allowed.

Accountability Measures

- Number of angler-use days.

Objective 2.3 Wildlife Observation and Photography

Enhance quality wildlife observation and photography opportunities throughout the approximately 80 acres of the Refuge over the next 15 years by implementing trail improvements. These will include considerations for increasing public safety, minimizing adverse impacts to sensitive habitats, and providing greater access to the diversity of Refuge habitats, including one of the fens.

Rationale

Wildlife observation and photography are identified in the Refuge Improvement Act as priority public uses. Priority public uses are to receive enhanced consideration when developing goals and objectives for Refuges. Providing high quality opportunities (as defined in 605 FW 1.6) for the public to engage in these activities on the Refuge promotes visitor appreciation and support for programs.

Pursuant to the policies in 605 FW 4 and 5, we follow these guiding principles for wildlife observation and photography opportunities at the Refuge.

1. Provide safe, enjoyable, and accessible wildlife viewing and photography opportunities and facilities.
2. Promote visitor understanding of, and increase visitor appreciation for, America's natural resources.
3. Focus on providing quality recreational and educational opportunities, rather than quantity, consistent with Service criteria describing quality found in 605 FW 1 Part 1.10.
4. Minimize conflicts with visitors participating in other compatible, wildlife-dependent recreation.

Quality wildlife observation and photography opportunities are currently available on the Refuge. Additional opportunities will be provided through the creation of a Refuge brochure and/or fact sheets highlighting common wildlife and habitat. The existing crossings of the Ecology Trail at Beech Brook are affecting channel integrity and the slick footing presents a safety hazard to visitors. This will be addressed by installing a footbridge(s). The Ecology Trail will still highlight Refuge natural features and wildlife, and additional interpretive signs will be installed along the trail to describe other Refuge resources and ecological processes.

The Ecology Trail currently ends near the main house on The Fells property. Typically visitors return to the parking lot via the long estate driveway. This poses an administrative problem because The Fells charges an admission fee to enter their property. We will work with The Fells staff to design an alternative

route back to the parking lot that stays within the Refuge boundary, and will monitor any impacts from public use on habitats associated with this trail.

We will continue to work with The Fells, Forest Society, LSPA, and others to promote enjoyment and awareness of Refuge wildlife and habitats and those of adjacent conservation lands.

Strategies

Continue to:

- Maintain boundary signs.
- Monitor public use impacts to habitats associated with the Ecology Trail and trail additions.

Within 1 year of CCP approval:

- Create an alternative route extending the current Ecology Trail back to the trailhead within the Refuge boundary to provide an option for hikers who do not want to cross over onto The Fells property.

Within 2 years of CCP approval:

- Continue to authorize partners including The Fells through a new partnership agreement to maintain the trail as needed for safety.

Within 5 years of CCP approval:

- Relocate the trail away from sensitive habitats, including in-stream habitat, and to take advantage of wildlife/habitat observation opportunities.
- Install footbridges or some other improvement at stream crossings to promote public safety and environmental stewardship.
- Install interpretive signs along the trail that describe the wildlife, fish, plants and habitats, the Service, National Wildlife Refuge System, the Connecticut River Watershed, and the Refuge.
- Coordinate with The Fells, Forest Society, and NH Audubon and others to increase awareness of, and opportunities to experience, the diversity of habitats and associated wildlife observation experiences on the Refuge and adjacent conservation lands.

Within 10 years of CCP approval:

- Develop a trail extension from the Ecology Trail to one of the fens and back, with the addition of interpretive panels to provide information about the ecological role of fens.
- Install a kiosk and provide associated interpretive panels and a fact sheet listing common wildlife species and habitats in The Fells new parking lot. Should construction for The Fells proposed parking area take longer than 10 years, we will endeavor to install the kiosk and associated materials within two years of completion of the parking area.

Accountability Measures

- Number of participants using the Refuge.
- Number and type of interpretive signs installed.
- Length of the Ecology Trail that is relocated.
- Length of boundary line maintained.

Objective 2.4 Environmental Education and Interpretation

Over the next 15 years, conduct interpretive and environmental education programs and create informational materials that cumulatively reach 50 percent of the total visitors to The Fells between Memorial Day and Labor Day.

Rationale

Environmental education is a process designed to develop a citizenry that has the awareness, concern, knowledge, attitudes, skills, motivations, and commitment to work toward solutions of current environmental problems and the prevention of new ones. It is intended to address the audience's course of study, or curriculum, through directed materials, activities, programs, and products that also incorporate the Refuge's purpose and the mission of the National Wildlife Refuge System (605 FW 6). Interpretation is defined by the National Association of Interpreters as a communication process that forges emotional and intellectual connections between the interests of the audience and the inherent meanings in the resource. This occurs through activities, talks, publications, signs, audio-visual media, and exhibits (605 FW 7). Both are included in the six wildlife-dependent public use priorities within the Refuge System, according to the Refuge Improvement Act of 1997. Providing high quality environmental education and interpretation opportunities for the public on a refuge can: promote stewardship of natural resources; develop an understanding of the Refuge's purposes and the mission of the National Wildlife Refuge System; and, help raise awareness, understanding, and an appreciation of the role of the Refuge in northern New England forests and its contribution to migratory bird conservation. It also can garner support for other Refuge programs.

The addition of a seasonal visitor services specialist will enhance our ability to provide additional interpretive programs and materials. A priority for this position will be to increase the level of interpretation programming on the Refuge to provide greater opportunities for the public to learn about the Refuge's resources. Working with The Fells provides an opportunity to reach an audience not necessarily aware of the Refuge, its role in the Refuge System, or how it contributes to regional resource conservation and we will continue to partner with them to broaden our audience. The visitor services specialist will also continue to partner with The Fells, Forest Society, LSPA, NH FGD, and others to continue to provide a diversity of quality programs on the Refuge. The Fells Master Plan (The Fells 2006) includes environmental education in their goals, and we will continue to work with them in the spirit of cooperation from the old MOU and pursue a new partnership agreement. New interpretive signs will be added along the Refuge trails, and once The Fells completes the relocation of their parking lot, we will install a kiosk at the trailhead to provide interpretive information, maps and brochures, and to increase visibility of the Refuge.

Strategies

Continue to:

- Provide Refuge access to partners offering outdoor environmental education.
- Advertise events in local papers.

Within 2 years of CCP approval:

- Complete the new partnership agreement with The Fells as soon as possible, but no later than 2 years following CCP approval.

Within 3 years of CCP approval:

- Partner with others including The Fells, LSPA, Forest Society, and NH Audubon for educational programming and for materials distribution.
- If funding permits, hire a seasonal (i.e., Memorial Day through Labor Day) Visitor Services Specialist co-located with The Fells at the gatehouse or main house, who will:
 - Present interpretive programs about migratory birds and facets of management;
 - Conduct one teacher's workshop in the summer to facilitate environmental education use in the school year;
 - Lead interpretive walks on the Refuge;
 - Develop interpretive fact sheets for the Refuge, including a list of common Refuge wildlife and habitats.

Within 5 years of CCP approval:

- Design and install interpretive signs along the trail to replace the existing numbered interpretive stations.
- In coordination with partners, provide (additional) National Wildlife Refuge information at key sites.
- Provide educational materials and supplies to teachers in cooperation with our partners.

Within 10 years of CCP approval:

- Install a kiosk and provide associated interpretive panels and a fact sheet listing common wildlife species and habitats in The Fells new parking lot. Should construction for The Fells proposed parking area take longer than 10 years, we will endeavor to install the kiosk and associated materials within two years of completion of the parking area.

Accountability Measures

- Number and type of education and interpretive programs.
- Number of participants in environmental education and interpretation programs.
- Number of teacher's workshops conducted.

Goal 3. Communicate and collaborate with local communities, federal and state agencies, The Fells, and conservation organizations throughout the Lake Sunapee region to promote natural resource conservation, stewardship and the mission of the National Wildlife Refuge System.

Objective 3.1 Partner and Community Outreach

Continue to work closely with partners and increase community understanding and appreciation of the Refuge's importance to natural resource conservation and its contribution to the Refuge System, and garner additional support for Refuge programs, by meeting with partners at least once a year, and by conducting at least one community outreach program between Memorial Day and Labor Day.

Rationale

We rely heavily upon our partnerships given our limitations in staff and funding. It is of utmost importance for us to reach out and collaborate with our conservation partners in the region, including The Fells, Forest Society, NH FGD, LSPA and others, and to continue to facilitate communication regarding Refuge management, local conservation issues, and potential cooperative opportunities. We will continue to foster these partnerships. Historically, we have worked very closely with The Fells, and updating our partnership agreement will be a priority, as we share common goals and resources. For example, one of the tenets of The Fells strategic vision and mission is to instill environmental awareness and stewardship in visitors (The Fells 2006). With this partnership agreement, we have the opportunity to work cooperatively towards environmental conservation and public interaction with local natural resources.

It is particularly important that local residents understand, appreciate, and support the Refuge System mission and the Refuge's important contribution to that mission. It is through our partnerships that we strive to develop an effective outreach program targeted at local communities and residents who may be unaware that a national wildlife refuge is nearby. We will continue to develop and strengthen these partnerships and to collaborate with them for outreach. We will submit press releases and make announcements in The Fells newsletter if possible for Refuge accomplishments, special events, and major initiatives in cooperation with our partners to keep the community interested and informed about Refuge activities.

Strategies

Continue to:

- Work closely with The Fells and Forest Society to coordinate with their outreach efforts.
- Keep local communities informed about Refuge events and attractions through direct contacts and local and statewide publications.
- Issue news releases on important accomplishments, to advertise special events, and to announce major management initiatives, in cooperation with partners.



Forest Society property sign

Within 2 years of CCP approval:

- Complete the new partnership agreement with The Fells as soon as possible, but no later than 2 years following CCP approval.

Accountability Measures

- Partnership agreement with The Fells completed within 2 years.
- Annually meet with partners at The Fells.
- Number of newsletters and/or emails used to communicate with the public, including through The Fells.
- Number of news releases submitted.
- Number of local and statewide recreation and events publications/guides that include John Hay Refuge attractions and activities.

Objective 3.2 Outreach to Elected Officials

Over the next 15 years, inform elected officials about the Refuge purposes and management activities at least once a year, or as important issues arise.

Rationale

Gaining support from federal, state, and local elected officials is essential to meeting our goals. This can only happen when these elected officials are fully informed, and understand and appreciate the significant contribution of the Refuge to the Refuge System and the importance of federal trust resources in New Hampshire. The support of elected officials is integral for the continued funding and delivery of other resources necessary to achieve the goals and objectives of this plan. Our efforts to keep them informed will include meeting with the town select board once a year to provide annual Refuge updates, and continue to work with our partners to keep elected officials informed as issues arise. We will also make an effort to include elected officials in any outreach events held on the Refuge in collaboration with our partners.

Strategies

Continue to:

- Meet with town select board or a town-designated commission at least once a year to provide an update on Refuge activities.
- Meet with elected officials on as needed basis.
- Provide written or personal briefings for members of Congress, or their staff, as needed or as requested, to inform them about important Refuge issues.

Within 3 years of CCP approval:

- Invite federal, state, and local elected officials to attend and participate in outreach events held on the Refuge in cooperation with partners.

Accountability Measures

- Number of contacts with federal, state, and town officials.
- Number of outreach events attended by federal, state, and local officials.
- Annual meeting with town select board.

Objective 3.3 Intergovernmental Partnerships

Over the next 15 years, work to strengthen and enhance partnerships with federal, state, and local governmental agencies to fulfill mutual natural resource conservation goals.

Rationale

Present staffing and funding levels underscore the importance of creating and maintaining working partnerships with other governmental agencies to achieve Refuge goals, and to share expertise and resources. These agencies include NH FGD, NH Department of Environmental Services (NH DES), and NH Department of Resources and Economic Development (NH DRED). We will continue to foster these partnerships and facilitate communication regarding Refuge management, and conservation issues in the region, to enhance our ability to achieve these goals and objectives.

Strategies

Continue to:

- Coordinate with NH FGD and the Newbury Conservation Commission for resource management activities on or that may potentially affect the Refuge.
- Coordinate with NH FGD on fish and wildlife management facilitating close collaboration on biological, recreational, and law enforcement programs.
- Coordinate with the local governments in the Lake Sunapee Region.
- Coordinate water quality efforts and issues with NH DES (see Chapter 3) via the Lake Sunapee Protective Association.

Accountability Measures

- Number and types of collaborations pertaining to the Refuge with other government agencies.
- Number of contacts with governmental partners.

Chapter 5

Erin Victory/TCI



Red squirrel

Consultation and Coordination with Others

- Introduction
- Planning to Protect Land and Resources
- Partners Involved in Refuge Planning
- Contact Information
- Planning Team
- Other Service Program Involvement

Introduction

This chapter describes how we engaged others in developing the draft CCP/EA. In chronological order, it details our efforts to encourage the involvement of the public and conservation partners that include other federal and state agencies, county officials, civic groups, non-government conservation and education organizations, and user groups. It also identifies who contributed in writing the plan or significantly contributed to its contents.

A 30-day period for public review followed our release of the draft CCP/EA on February 18, 2010. During that period, we hosted an open-house public meeting near the Refuge to gather your opinions and answer your questions about our proposals. We weighed your responses carefully before we wrote this final CCP and our responses to the public comments we received are described in Appendix F.

According to Service policy, we must review and update our final CCP at least once every 15 years, or sooner, in response to important new information that would markedly change management direction or, our Director or Regional Director deem it necessary. If so, we will once again announce our revised planning and encourage your participation.

Planning to Protect Land and Resources

Our refuge planning began informally in August 2008 at an initial strategy meeting between the Refuge staff and regional planning staff. One major outcome of that first meeting was identifying individuals and agencies to contact for participation in the core planning team. We also established a preliminary meeting schedule for the planning team. Please contact the Refuge manager for additional details.

August 11, 2008: Letters are drafted to the NH FGD and other Service programs (Division of Migratory Birds and Ecological Services) inviting their participation in the core planning team. Coordination with NH FGD consists of emails and phone calls beginning in August 2008 as well as an official letter of invitation (sent on December 2, 2008).

September 5, 2008: The core planning team, consisting of Refuge and regional office planning staff, and a representative from NH FGD, meet adjacent to the Refuge at The Fells. We draft a vision statement, goals and objectives, identify preliminary issues, determine what additional resource information we need to collect and summarize, and discuss what other experts we should consult to help us address planning issues. We also schedule our partner and public scoping meetings.

September, 2008: We distribute a one page newsletter to approximately 50 people, organizations, and agencies to announce formally the beginning of the planning process and the upcoming public meeting in October, and send out press releases that are published in the Valley News and Intertown Record to announce the public meeting. Invitation letters are sent out to seventeen people representing ten local and state agencies and organizations of potential interest to the upcoming partner meeting in October.

October 9, 2008: We host both the partner and public meetings at the Newbury Town Hall, having published notices about the public meeting in two local newspapers, in the newsletter, and via The Fells electronic newsletter list. We also encouraged town officials from Newbury, Sunapee, and New London to post the meeting information on their bulletin boards, and to forward them to interested parties. Eight people representing five organizations were in attendance at the partner meeting, and three people signed in at the public meeting.

At each meeting, the draft vision, and goals and objectives are posted around the room, as well as the preliminary issues identified by the core planning team. A summary of the planning process is given, and people are encouraged to provide feedback to any of the presented items, or general concerns or issues they have about the Refuge. Comment forms are provided, and staff records comments on flip charts. People are notified that there is a one month comment period, closing on November 7, 2008.

December 11, 2008: The core planning team meets again at the NH FGD headquarters in Concord to identify key issues, and develop the strategies and alternatives for the document.

December 16, 2008: The Notice of Intent to initiate the CCP process for the Refuge is published in the *Federal Register*.

January-August, 2009: We update the website to summarize the public and partner meetings in October and the key issues identified at the December 2008 planning team meeting. We complete writing the five chapters and five appendices of the draft CCP.

September 2009—January 2010: The draft CCP goes through internal Service review.

February 2010: We prepare and issue the final draft CCP for public release. The Notice of Availability is approved by the Washington office, and published in the *Federal Register* on February 18, 2010. The public meeting is scheduled for the end of the month, but rescheduled due to adverse weather for March 11, 2010.

March – April 2010: We prepare the final CCP, review and respond to public comments (Appendix F), and submit the final CCP for internal Service review and approval. A FONSI is prepared and approved by the Regional Director (Appendix G).

Partners Involved in Refuge Planning

Refuge programs enjoy a great deal of support from outside the Service in many arenas: conducting biological surveys, enhancing public use and Refuge programs, restoring habitat, and protecting land. Our partnerships will continue to expand under the increasing interest in conserving refuge resources. During the past year, we contacted the following partners to apprise them of the planning process and encourage their involvement.

New Hampshire Fish and Game Department: Glenn Normandeau, Charlie Bridges, Judy Stokes, Michael Racine

The Fells: Karen Zurheide

Society for the Protection of New Hampshire Forests: Dave Anderson

Lake Sunapee Protective Association: June Fichter

Newbury Conservation Commission: Katheryn Holmes

New Hampshire Audubon: Phil Brown

Town of Newbury: Dennis Pavlicek, Donna Long

Town of Sunapee: Donna Nashawaty

Town of New London: Jessie Levine

New Hampshire Division of Historical Resources: Elizabeth Muzzey

Contact Information

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Planning Team

Andrew French, Project Leader, Silvio O. Conte National Fish and Wildlife Refuge

Barry Parrish, Wildlife Refuge Manager, Silvio O. Conte National Fish and Wildlife Refuge

Carl Melberg, Regional Natural Resource Planner, Planning Team Leader, USFWS Refuge System

Charlie Bridges, Wildlife Habitat and Diversity Program Administrator, Wildlife Diversity Division, NHFG

Other Service Program Involvement

Nancy McGarigal, Regional Natural Resource Planner, USFWS Refuge System

Rick Schauffler, Biologist/GIS Specialist, USFWS Refuge System

Sarah Bevilacqua, Outdoor Recreation Planner, Silvio O. Conte National Fish and Wildlife Refuge

Shelley Small, Cultural Resources Specialist, USFWS Refuge System

Thomas LaPointe, Refuge Forester, Silvio O. Conte National Fish and Wildlife Refuge

Susi von Oettingen, Endangered Species Biologist, USFWS New England Field Office

Graham Taylor, Project Leader, Great Bay NWR Complex

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Glossary and Acronyms

Erin Victory/TCI



John Hay II Ecology Trail

Glossary and Acronyms

Glossary

accessibility	the state or quality of being easily approached or entered, particularly as it relates to complying with the Americans With Disabilities Act
adaptive resource management	A process in which projects are implemented within a framework of scientifically driven experiments to test predictions and assumptions outlined within the comprehensive conservation plan. The analysis of the outcome of project implementation helps managers determine whether current management should continue as is, or whether they should modify it to achieve the desired conditions.
alternative	a reasonable way to fix an identified problem or satisfy a stated need [40 CFR 1500.2]
appropriate use	a proposed or existing use on a refuge that meets at least one of the following three conditions: 1. the use is a wildlife-dependent one; 2. the use contributes to fulfilling the refuge purpose(s), the System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the National Wildlife Refuge System Improvement Act was signed into law; or 3. the use has been determined to be appropriate as specified in section 1.11 of the act.
aquatic	growing in, living in, or dependent upon water
basin	the land surrounding and draining into a water body
best management practices	land management practices that produce desired results; usually describing forestry or agricultural practices effective in reducing non-point source pollution, like reseeding skidder trails or not storing manure in a flood plain
biological diversity or biodiversity	the variety of life and its processes and includes the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur
biological integrity	biotic composition, structure, and functioning at genetic, organism, and community levels comparable with historic conditions, including the natural biological processes that shape genomes, organisms and communities
bird conservation region	a geographic area, typically based on similar physiographic, climactic and ecological community types, used as an administrative tool to aid in the conservation of birds and their habitats
bog	a poorly drained area rich in plant residues, usually surrounded by an area of open water, and having characteristic flora; a type of peatland
breeding habitat	habitat used by migratory birds or other animals during the breeding season

candidate species	species for which we have sufficient information on file about their biological vulnerability and threats to propose listing them as threatened or endangered
canopy	A layer of foliage, generally the uppermost layer, in a forest stand. It can be used to refer to mid- or understory vegetation in multilayered stands. Canopy closure is an estimate of the amount of overhead tree cover (also canopy cover).
categorical exclusion [CE, CX, CATEX, CATX]	pursuant to the National Environmental Policy Act (NEPA), a category of Federal agency actions that do not individually or cumulatively have a significant effect on the human environment [40 CFR 1508.4] [42 USC 4321 et seq.]
CFR	the Code of Federal Regulations
community	the locality in which a group of people resides and shares the same government
community type	a particular assemblage of plants and animals, named for its dominant characteristic
compatible use	“The term ‘compatible use’ means a wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge.”—National Wildlife Refuge System Improvement Act of 1997 [Public Law 105-57; 111 Stat. 1253]
compatibility determination	a required determination for wildlife-dependent recreational uses or any other public uses of a refuge [50 CFR 26.41]
Comprehensive Conservation Plan	mandated by the Improvement Act, a document that provides a description of the desired future conditions and long-range guidance for the project leader to accomplish purposes of the refuge system and the refuge. CCPs establish management direction to achieve refuge purposes. [P.L. 105-57; FWS Manual 602 FW 1.4]
conifer	a tree or shrub in the phylum Gymnospermae whose seeds are borne in woody cones. There are 500–600 species of living conifers
conservation	managing natural resources to prevent loss or degradation; includes preservation, restoration, and enhancement
critical habitat	according to U.S. Federal law, the ecosystems upon which endangered and threatened species depend [16 USC Sec. 1532, p. 1726]
database	a collection of data arranged for ease and speed of analysis and retrieval, usually computerized
degradation	the loss of native species and processes due to human activities such that only certain components of the original biodiversity persist, often including significantly altered natural communities

disturbance	any relatively discrete event in time that disrupts ecosystem, community, or population structure and changes resources, substrate availability, or the physical environment
division	an administrative unit of the refuge defined by a geographic feature, usually a river or other body of water see biological integrity
early successional	species, assemblages, structures, and processes associated with pioneering natural communities that have recently experienced significant disturbance
ecological integrity	see <i>biological integrity</i>
ecological processes	a complex mix of interactions among animals, plants, and their environment that ensures maintenance of an ecosystem's full range of biodiversity. Examples include population and predator-prey dynamics, pollination and seed dispersal, nutrient cycling, migration, and dispersal
ecoregion	a territory defined by a combination of biological, social, and geographic criteria, rather than geopolitical considerations; generally, a system of related, interconnected ecosystems
ecosystem	a natural community of organisms interacting with its physical environment, regarded as a unit
endangered species	a Federal- or State-listed protected species in danger of extinction throughout all or a significant portion of its range [16 USC Sec. 1532, p. 1726]
endemic	a species or race native to a particular place and found only there
Environmental Assessment	(EA) a public document that discusses the purpose and need for an action, its alternatives, and provides sufficient evidence and analysis of its impacts to determine whether to prepare an environmental impact statement or a finding of no significant impact [40 CFR 1508.9] [42 USC 4321 et seq.]
environmental education	curriculum-based education aimed at producing a citizenry that is knowledgeable about the biophysical environment and its associated problems, aware of how to help solve those problems, and motivated to work toward solving them
environmental health	the composition, structure, and functioning of soil, water, air, and other abiotic features comparable with historic conditions, including the natural abiotic processes that shape the environment
Environmental Impact Statement	(EIS) a detailed, written analysis of the environmental impacts of a proposed action, adverse effects of the project that cannot be avoided, alternative courses of action, short-term uses of the environment versus the maintenance and enhancement of long-term productivity, and any irreversible and irretrievable commitment of resources [40 CFR 1508.11] [42 USC 4321 et seq.]

extinction	the termination of any lineage of organisms, from subspecies to species and higher taxonomic categories from genera to phyla. Extinction can be local, in which one or more populations of a species or other unit vanish but others survive elsewhere, or total (global), in which all the populations vanish
extirpated	status of a species or population that has completely vanished from a given area but that continues to exist in some other location
Federal land	public land owned by the Federal Government, including national forests, national parks, and national wildlife refuges
Federal-listed species	a species listed either as endangered, threatened, or a species at risk (formerly, a “candidate species”) under the Endangered Species Act of 1973, as amended
Federal-recognized Native American tribe	A group of Native American Indians recognized by the United States as an Indian Tribe. This recognition establishes a tribe as an entity with the capacity to engage in government-to-government relations with the United States, or individual states, and also as one eligible to receive federal services. Federal recognition is established as a result of historical and continued existence of a tribal government; by Executive Order or Legislation; and through the federal recognition process established by Congress.
fen	a grassy wetland with peat soils that have a basic pH (the opposite of acidic).
Finding of No Significant Impact	(FONSI) supported by an environmental assessment, a document that briefly presents why a Federal action will have no significant effect on the human environment, and for which an environmental impact statement, therefore, will not be prepared [40 CFR 1508.13] [42 USC 4321 et seq.]
fire regime	the characteristic frequency, intensity, and spatial distribution of natural fires within a given ecoregion or habitat
forest	land dominated by trees
fragmentation	the disruption of extensive habitats into isolated and small patches. Fragmentation has two negative components for biota: the loss of total habitat area; and, the creation of smaller, more isolated patches of habitat remaining.
glacial till	unsorted sediments directly deposited by a glacier, typically containing a mixture of clay, sand, gravel and boulders
grassland	a habitat type with landscapes dominated by grasses
habitat fragmentation	the breaking up of a specific habitat into smaller, unconnected areas. A habitat area that is too small may not provide enough space to maintain a breeding population of the species in question.
habitat conservation	protecting an animal or plant habitat to ensure that the use of that habitat by the animal or plant is not altered or reduced

habitat	the place where a particular type of plant or animal lives. An organism's habitat must provide all of the basic requirements for life, and should be free of harmful contaminants.
herpetofauna / herpetological	reptiles and amphibians; relating to reptiles and/or amphibians
hydrology	the science of waters of the earth: their occurrences, distributions, and circulations; their physical and chemical properties; and their reactions with the environment, including living beings
indigenous	native to an area
indigenous species	a species that, other than as a result of an introduction, historically occurred or currently occurs in a particular ecosystem
integrated pest management	(IPM) sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools in a way that minimizes economic, health, and environmental risks.
interpretive facilities	structures that provide information about an event, place, or thing by a variety of means, including printed, audiovisual, or multimedia materials [e.g., kiosks that offer printed materials and audiovisuals, signs, and trail heads.]
interpretive materials or programs	any tool used to provide or clarify information, explain events or things, or increase awareness and understanding of the events or things [e.g., printed materials like brochures, maps or curriculum materials; audio/visual materials like video and audio tapes, films, or slides; and, interactive multimedia materials, CD-ROM or other computer technology.]
invasive species	an alien species whose introduction causes or is likely to cause economic or environmental harm or harm to human health
invertebrate	any animal lacking a backbone or bony segment that encloses the central nerve cord
issue	any unsettled matter that requires a management decision [e.g., a Service initiative, an opportunity, a management problem, a threat to the resources of the unit, a conflict in uses, a public concern, or the presence of an undesirable resource condition]. A CCP should document, describe, and analyze issues even if they cannot be resolved during the planning process (FWS Manual 602 FW 1.4).]
kettle hole	a generally circular hollow or depression in an outwash plain or moraine, believed to have formed where a large block of subsurface ice has melted
landform	the physical shape of the land reflecting geologic structure and processes of geomorphology that have sculpted the structure
landscape	an aggregate of landforms, together with its biological communities
local agencies	generally, municipal governments, regional planning commissions, or conservation commissions

management alternative	a set of objectives and the strategies needed to accomplish each objective [FWS Manual 602 FW 1.4]
management plan	a plan that guides future land management practices on a tract
management strategy	a general approach to meeting unit objectives. A strategy may be broad, or it may be detailed enough to guide implementation through specific actions, tasks, and projects (FWS Manual 602 FW 1.4).
maritime	relating to the ocean
meadow	an area of grassland
Memorandum of Understanding	(MOU) a document that describes an agreement between partners where a set of expectations, actions, or commitments are agreed upon
migratory birds	species that generally migrate south each fall from breeding grounds to their wintering grounds and vice versa in the spring
mission statement	a succinct statement of the purpose for which the unit was established; its reason for being
mitigation	actions to compensate for the negative effects of a particular project [e.g., wetland mitigation usually restores or enhances a previously damaged wetland or creates a new wetland.]
monitoring	the process of collecting information to track changes of selected parameters over time
National Environmental Policy Act of 1969	(NEPA) requires all Federal agencies to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in planning and implementing environmental actions [Federal agencies must integrate NEPA with other planning requirements, and prepare appropriate NEPA documents to facilitate better environmental decision-making (40 CFR 1500).] [42 USC 4321 et seq.]
National Wildlife Refuge Complex (Complex)	an internal Service administrative linking of refuge units closely related by their purposes, goals, ecosystem, or geopolitical boundaries
National Wildlife Refuge System (System)	all lands and waters and interests therein administered by the Service as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, and other areas for the protection and conservation of fish and wildlife, including those that are threatened with extinction
native	a species that, other than as a result of an introduction, historically occurred or currently occurs in a particular ecosystem
native plant	a plant that has grown in the region since the last glaciation, and occurred before European settlement
natural disturbance event	any natural event that significantly alters the structure, composition, or dynamics of a natural community: e.g., floods, fires, and storms

non-native species	see <i>exotic species</i>
Notice of Intent	(NOI) an announcement we publish in the Federal Register that we will prepare and review an environmental impact statement [40 CFR 1508.22] [42 USC 4321 et seq.]
objective	A concise, quantitative (where possible) target statement of what a plan will achieve. The planners derive objectives from goals and they provide the basis for determining management strategies. Objectives should be attainable and time-specific.
obligate species	a species that must have access to a particular habitat type to persist
partnership	a contract or agreement among two or more individuals, groups of individuals, organizations, or agencies, in which each agrees to furnish a part of the capital or some service in kind (e.g., labor) for a mutually beneficial enterprise
payment in lieu of taxes	see Revenue Sharing Act of 1935, Chapter One, Legal Context
plant community	a distinct assemblage of plants that develops on sites characterized by particular climates and soils
preferred alternative	The alternative determined by the decision-maker that best achieves the refuge's purpose, vision, and goals; contributes to the Refuge System mission; addresses the significant issues; and is consistent with principles of sound fish and wildlife management.
protection	mechanisms that ensure land use and land management practices will remain compatible with maintaining species populations at a site
public	individuals, organizations, and non-government groups; officials of Federal, State, and local government agencies; Native American tribes, and foreign nations
public involvement	offering an opportunity to interested individuals and organizations whom our actions or policies may affect to become informed; soliciting their opinions. We thoroughly study public input, and give it thoughtful consideration in shaping decisions about managing refuges.
public land	land owned by the local, State, or Federal Government
rare species	species identified for special management emphasis because of their uncommon occurrence
refuge goals	"...descriptive, open-ended, and often broad statements of desired future conditions that convey a purpose but do not define measurable units."—Writing Refuge Management Goals and Objectives: A Handbook
refuge lands	lands in which the Service holds full interest in fee title or partial interest like an easement

Refuge Operating Needs System	(RONS) a national database which contains the unfunded operational needs of each refuge. We include projects required to implement approved plans, and meet goals, objectives, and legal mandates.
refuge purposes	“The terms ‘purposes of the refuge’ and ‘purposes of each refuge’ mean the purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a refuge, refuge unit, or refuge subunit.”—National Wildlife Refuge System Improvement Act of 1997
restoration	management of a disturbed or degraded habitat that results in the recovery of its original state [e.g., restoration may involve planting native grasses and forbs, removing shrubs, prescribed burning, or reestablishing habitat for native plants and animals on degraded grassland.]
riparian	referring to the interface between freshwater habitats and the terrestrial landscape
riparian habitat	habitat along the banks of a stream or river
runoff	water from rain, melted snow, or agricultural or landscape irrigation that flows over a land surface into a water body
scale	the magnitude of a region or process. Refers to both spatial size—for example, a (relatively small-scale) patch or a (relatively large-scale) landscape; and a temporal rate—for example, (relatively rapid) ecological succession or (relatively slow) evolutionary speciation
Service presence	Service programs and facilities that it directs or shares with other organizations; public awareness of the Service as a sole or cooperative provider of programs and facilities
shrublands	habitats dominated by various species of shrubs
socioeconomic	social and economic conditions and their interplay
species of concern	species not Federal-listed as threatened or endangered, but about which we or our partners are concerned
species richness	a simple measure of species diversity calculated as the total number of species in a habitat or community
stakeholder	individuals, groups, organizations, or agencies representing a broad spectrum of interests offering business, tourism, conservation, recreation, and historical perspectives.
State agencies	natural resource agencies of State governments
State-listed species	see “Federal-listed species”
status assessment	a compilation of biological data and a description of past, present, and likely future threats to a species

step-down management plan	a plan for dealing with specific refuge management subjects, strategies, and schedules, e.g., cropland, wilderness, and fire [FWS Manual 602 FW 1.4]
strategy	a specific action, tool, technique, or combination of actions, tools, and techniques for meeting unit objectives
succession	the natural, sequential change of species composition of a community in a given area
surface water	all waters whose surface is naturally exposed to the atmosphere, or wells or other collectors directly influenced by surface water
terrestrial	living on land
threatened species	a Federal-listed, protected species that is likely to become an endangered species in all or a significant portion of its range
tributary	a stream or river that flows into a larger stream, river, or lake, feeding it water
trust resource	a resource that the Government holds in trust for the people through law or administrative act. A Federal trust resource is one for which responsibility is given wholly or in part to the Federal Government by law or administrative act. Generally, Federal trust resources are nationally or internationally important no matter where they occur, like endangered species or migratory birds and fish that regularly move across state lines. They also include cultural resources protected by Federal historic preservation laws, and nationally important or threatened habitats, notably wetlands, navigable waters, and public lands like state parks and national wildlife refuges.
turbidity	refers to the extent to which light penetrates a body of water. Turbid waters are those that do not generally support net growth of photosynthetic organisms.
understory	any vegetation with canopy below or closer to the ground than canopies of other plants.
upland	dry ground (i.e., other than wetlands)
vernal pool	depressions holding water for a temporary period in the spring, and in which various amphibians lay eggs
vision statement	a concise statement of what the unit could achieve in the next 10 to 15 years
watershed	the geographic area within which water drains into a particular river, stream, or body of water. A watershed includes both the land and the body of water into which the land drains.
wet meadows	meadows located in moist, low-lying areas, often dominated by large colonies of reeds or grasses. Saltmarsh meadows are subject to daily coastal tides.

wetlands	lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. These areas are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted to life in saturated soil conditions.
wilderness study areas	lands and waters identified by inventory as meeting the definition of wilderness and being evaluated for a recommendation they be included in the Wilderness System. A wilderness study area must meet these criteria: 1. generally appears to have been affected primarily by the forces of nature, with the imprint of human substantially unnoticeable; 2. has outstanding opportunities for solitude or a primitive and unconfined type of recreation; 3. has at least 5,000 contiguous, roadless acres, or sufficient size to make practicable its preservation and use in an unimpaired condition [FWS Manual 610 FW 1.5 (draft)].
wildfire	a free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs on wildlands [FWS Manual 621 FW 1.7].
wildlife-dependent recreational use	a use of a national wildlife refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation (National Wildlife Refuge System Administration Act of 1966).
wildlife management	manipulating wildlife populations, either directly by regulating the numbers, ages, and sex ratios harvested, or indirectly by providing favorable habitat conditions and alleviating limiting factors.

Acronyms

ACJV	Atlantic Coast Joint Venture
ADA	Americans with Disabilities Act
AHWP	Annual Habitat Work Plan
ARPA	Archaeological Resources Protection Act
AWCP	American Woodcock Conservation Plan
BBS	Breeding Bird Survey
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
BMP	Best Management Practice
BP	Before Present
CCP	Comprehensive Conservation Plan
CD	Compatibility Determination
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FOA	Findings of Appropriateness
FONSI	Finding of No Significant Impact
HMP	Habitat Management Plan
IMP	Inventory and Monitoring Plan
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
LE	Law Enforcement
LGM	Last Glacial Maximum
LSPA	Lake Sunapee Protective Association
MA	Massachusetts
MANEM	Mid-Atlantic / New England / Maritimes
MOU	Memorandum of Understanding
MU	Management Unit
NAAQS	National Ambient Air Quality Standards
NABCI	North American Bird Conservation Initiative
NAWCP	North American Waterbird Conservation Plan
NAWMP	North American Waterfowl Management Plan
NCC	Newbury Conservation Commission
NECIA	Northeast Climate Impacts Assessment
NEPA	National Environmental Policy Act
NH	New Hampshire
NHCR	National State Agency Herpetological Conservation Report
NH DES	New Hampshire Department of Environmental Services
NH DRED	New Hampshire Department of Resources and Economic Development
NH FGD	New Hampshire Fish and Game Department
NH OEP	New Hampshire Office of Energy and Planning
NH RSA	New Hampshire Revised Statutes Annotated
NH SHPO	New Hampshire State Historical Preservation Office
NH WAP	New Hampshire Wildlife Action Plan
NMFS	National Marine Fisheries Service

NWPS	National Wilderness Preservation System
NWR	National Wildlife Refuge
NWRS	National Wildlife Refuge System
PARC	Partners in Amphibian and Reptile Conservation
PIF	Partners in Flight
PL	Public Law
RONS	Refuge Operating Needs
SAMMS	Service Asset Maintenance Management System
SAWC	The Sunapee Area Watershed Coalition
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SGCN	Species of Greatest Conservation Need
SGS	Singing Ground Surveys
SPNHF	Society for the Protection of New Hampshire Forests (also known as the Forest Society)
SWG	State Wildlife Grant Program
TWS	The Wildlife Society
USC	United States Code
US DOC	United States Department of Commerce
US DOI	United States Department of the Interior
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VLAP	Volunteer Lake Assessment Program
VRAP	Volunteer Rivers Assessment Program

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Barry Parrish/USFWS



Gate at junction of Woods Road and Route 103A

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Appendix A

Ian Shackleford/USFS



Wood turtle

Species and Habitats of Conservation Concern Known or Suspected on the Refuge

- Birds
- Mammals
- Fish
- Amphibians and Reptiles
- Plants
- Plant Communities

Table A.1. Birds of Conservation Concern Known or Suspected on the Refuge.

<i>Species</i>	<i>Status¹⁰</i>	<i>Federal Legal Status¹</i>	<i>NH Legal Status¹</i>	<i>NH Wildlife Action Plan²</i>	<i>NH Rarity Rank³</i>	<i>BCC 2008⁴</i>	<i>BCC National⁵</i>	<i>BCR 14: Atlantic Northern Forests</i>	<i>PIF⁶</i>	<i>NAWMP ACJV⁸</i>	<i>US SCP⁹</i>
American black duck	B			X						High	
American redstart	B							Moderate			
American woodcock	PB			X				Highest	I		4
Bald eagle	PB		E	X	S1	X	X		IV		
Bay-breasted warbler	M			X		X	X	Highest	I		
Bicknell's thrush	M		SC	X	S2S3B	X	X	Highest	I		
Black-throated blue warbler	B							Moderate	IIB		
Black-throated green warbler	B							Moderate	IIB		
Blackburnian warbler	B							Moderate	IIB		
Blue-winged warbler	PB					X	X	High			
Boreal chickadee	M							Moderate	IIA		
Brown thrasher	PB				S3						
Canada warbler	PB			X		X	X	Highest	I		
Cape May warbler	M				S3B			High	I		
Chestnut-sided warbler	B							High			
Common loon	PB		T	X	S3B			Moderate	IV		
Common merganser	B									Moderate Low	

Table A.1. Birds of Conservation Concern Known or Suspected on the Refuge (continued).

<i>Species</i>	<i>Status¹⁰</i>	<i>Federal Legal Status¹</i>	<i>NH Legal Status¹</i>	<i>NH Wildlife Action Plan²</i>	<i>NH Rarity Rank³</i>	<i>BCC 2008⁴</i>	<i>BCC National⁵</i>	<i>BCR 14: Atlantic Northern Forests</i>	<i>PIF⁶</i>	<i>NAWMP ACJV⁸</i>	<i>US SCP⁹</i>
Cooper's hawk	PB		T	X	S2B			High			
Eastern wood- peewee	B								IIA		
Mallard	PB										
Northern goshawk	B			X	S3					High (B), Moderate (NB)	
Northern parula	M							Moderate	IIB		
Olive-sided flycatcher	M					X	X	High	IIA		
Osprey	M		T	X	S2B				IV		
Ovenbird	B							Moderate			
Pileated woodpecker	B										
Purple finch	B			X				Moderate	IIA		
Red-shouldered hawk	PB		SC	X	S3						
Rose-breasted grosbeak	B							Moderate			
Ruffed grouse	PB			X				Moderate	IIA		
Rusty blackbird	M			X	S2	X	X	High			
Scarlet tanager	B										
Veery	B			X				High	IIA		
Wood duck	PB							Moderate			
Wood thrush	B			X		X	X	Highest	I		
Yellow-bellied sapsucker	B							Moderate	IIA		

1 Federal and State Legal Status Codes (under Federal & State Endangered Species Acts)

E = Federal or State Endangered

T = Federal or State Threatened

SC = State species of Special Concern (Administrative category without legal standing)

PT = Proposed Threatened

PE = Proposed Endangered

PN = Proposed None

PTB = Proposed threatened (breeding only)

PEB = Proposed Endangered (breeding only)

2 New Hampshire Wildlife Action Plan: Species of greatest conservation concern (NH FGD 2005)

3 New Hampshire Natural Heritage Inventory Rarity Ranks (NH FGD 2005, NatureServe 2009)

S1 = Critically imperiled.

S2 = Imperiled

S3 = Either very rare or uncommon, vulnerable

S4 = Widespread, abundant, apparently secure

S5 = Secure

SH = Historical.

B = Breeding

N = Non-breeding

Species included in table only if Srank < S3

4 Birds of Conservation Concern 2008 (Bird Conservation Region 14 List) (USFWS 2008)

5 Birds of Conservation Concern National List (USFWS 2008)

6 Partner's in Flight (PIF) Bird Conservation Plan for Eastern Spruce-Hardwood Forest: Physiographic Area 28 (Rosenberg and Hodgman 2000)

IA = High continental concern & high regional responsibility

IB = High continental concern & low regional responsibility

IIA = High regional concern

IIB = High regional responsibility

III = Additional Federal listed

IV = Additional State listed

7 North American Waterbird Conservation Plan (NAWCP) Categories of Conservation Concern (Kushlan et al. 2002)

Highly Imperiled: includes all species with significant population declines and either low populations or some other high risk factor.

High Concern: Species that are not Highly Imperiled. Populations of these species are known or thought to be declining, and have some other known or potential threat as well.

Moderate Concern: Species that are not Highly Imperiled or High Concern. Populations of these species are either a) declining with moderate threats or distributions; b) stable with known or potential threats and moderate to restricted distributions; or c) relatively small with relatively restricted distributions.

Species included in table only if > moderate

8 North American Waterfowl Management Plan (NAWMP), Atlantic Coast Joint Venture (ACJV) (ACJV 2005)

B = breeding species prioritization

NB = non-breeding species prioritization

Conservation Tier Priorities = Highest, High, Moderately High, Moderate, Moderately Low, Low

Species included in table only if priority moderate or higher

9 U.S. Shorebird Conservation Plan Codes (US SCP) (Brown et al. 2001, Clark and Niles 2000)

5 = Highly imperiled

4 = Species of high concern

3 = Species of moderate concern

2 = Species of low concern

1 = Species not at risk

Species included in table only if >3

10 Breeding Status

B = Breeds on Refuge

PB=Potentially Breeds on Refuge,

M=Migration

Table A.2. Mammals of Conservation Concern Known or Suspected on the Refuge.

<i>Species</i>	<i>Federal Legal Status¹</i>	<i>NH Legal Status¹</i>	<i>NH Wildlife Action Plan²</i>	<i>NH Rarity Rank³</i>
Black bear			X	S5
Moose			X	S5
White-tailed deer			X	S5

1 Federal and State Legal Status Codes (under Federal & State Endangered Species Acts)

E = Federal or State Endangered

T= Federal or State Threatened

SC= State species of Special Concern (Administrative category without legal standing)

PT = Proposed Threatened

PE= Proposed Endangered

PN= Proposed None

PTB= Proposed threatened (breeding only)

PEB= Proposed Endangered (breeding only)

2 N.H. Wildlife Action Plan: Species of greatest conservation concern (NH FGD 2005)

3 New Hampshire Natural Heritage Inventory Rarity Ranks (NH FGD 2005, NatureServe 2009)

S1 = Critically imperiled.

S2 = Imperiled

S3 = Either very rare or uncommon, vulnerable

S4 = Widespread, abundant, apparently secure

S5= Secure

SH = Historical.

B = Breeding

N = Non-breeding

Species included in table only if Srank < S3

Table A.3. Fish of Conservation Concern Known or Suspected on the Refuge.

<i>Species</i>	<i>Federal Legal Status¹</i>	<i>NH Legal Status¹</i>	<i>NH Wildlife Action Plan²</i>	<i>NH Rarity Rank³</i>
Brook trout			X	S5
Burbot			X	S5
Lake trout			X	S5
Northern redbelly dace			X	S5
Rainbow smelt	SC		X	S3

1 Federal and State Legal Status Codes (under Federal & State Endangered Species Acts)

E = Federal or State Endangered

T= Federal or State Threatened

SC= State species of Special Concern (Administrative category without legal standing)

PT = Proposed Threatened

PE= Proposed Endangered

PN= Proposed None

PTB= Proposed threatened (breeding only)

PEB= Proposed Endangered (breeding only)

2 N.H. Wildlife Action Plan: Species of greatest conservation concern (NH FGD 2005)

3 New Hampshire Natural Heritage Inventory Rarity Ranks (NH FGD 2005, NatureServe 2009)

S1 = Critically imperiled.

S2 = Imperiled

S3 = Either very rare or uncommon, vulnerable

S4 = Widespread, abundant, apparently secure

S5= Secure

SH = Historical.

B = Breeding

N = Non-breeding

Species included in table only if Srank < S3

Table A.4. Amphibians and Reptiles of Conservation Concern Known or Suspected on the Refuge.

<i>Species</i>	<i>Federal Legal Status¹</i>	<i>NH Legal Status¹</i>	<i>NH Wildlife Action Plan²</i>	<i>NH Rarity Rank³</i>
Blue-spotted salamander			X	S4
Wood turtle		SC	X	S3

1 Federal and State Legal Status Codes (under Federal & State Endangered Species Acts)

E = Federal or State Endangered

T= Federal or State Threatened

SC= State species of Special Concern (Administrative category without legal standing)

PT = Proposed Threatened

PE= Proposed Endangered

PN= Proposed None

PTB= Proposed threatened (breeding only)

PEB= Proposed Endangered (breeding only)

2 N.H. Wildlife Action Plan: Species of greatest conservation concern (NH FGD 2005)

3 New Hampshire Natural Heritage Inventory Rarity Ranks (NH FGD 2005, NatureServe 2009)

S1 = Critically imperiled.

S2 = Imperiled

S3 = Either very rare or uncommon, vulnerable

S4 = Widespread, abundant, apparently secure

S5= Secure

SH = Historical.

B = Breeding

N = Non-breeding

Species included in table only if Srank < S3

Table A.5. Plants of Conservation Concern Known or Suspected on the Refuge.

<i>Species</i>	<i>Federal Legal Status¹</i>	<i>NH Legal Status¹</i>	<i>NH Rarity Rank²</i>
Loesel's twayblade		T	S2

1 Federal and State Legal Status Codes (under Federal & State Endangered Species Acts)

E = Federal or State Endangered

T= Federal or State Threatened

SC= State species of Special Concern (Administrative category without legal standing)

PT = Proposed Threatened

PE= Proposed Endangered

PN= Proposed None

PTB= Proposed threatened (breeding only)

PEB= Proposed Endangered (breeding only)

2 New Hampshire Natural Heritage Inventory Rarity Ranks (NH FGD 2005, NatureServe 2009)

S1 = Critically imperiled.

S2 = Imperiled

S3 = Either very rare or uncommon, vulnerable

S4 = Widespread, abundant, apparently secure

S5= Secure

SH = Historical.

B = Breeding

N = Non-breeding

Species included in table only if Srank < S3

Table A.6. Plant Communities of Conservation Concern Known or Suspected on the Refuge.

<i>New Hampshire Exemplary Natural Community Type</i>	<i>NH Wildlife Action Plan¹</i>	<i>NH Natural Heritage Inventory State Rarity Rank²</i>
Rich red oak rocky woods	Talus slopes	S2S3

1 N.H. Wildlife Action Plan: Habitats of greatest conservation concern (NH FGD 2005)

2 New Hampshire Natural Heritage Inventory Rarity Ranks (NH FGD 2005, NatureServe 2009)

S1 = Critically imperiled.

S2 = Imperiled

S3 = Either very rare or uncommon, vulnerable

S4 = Widespread, abundant, apparently secure

S5= Secure

SH = Historical.

B = Breeding

N = Non-breeding

Species included in table only if Srank < S3

Sources for the Conservation Lists used for these tables:

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Appendix B

Eric Engbretson/USFWS



Brook trout

Compatibility Determinations and Findings of Appropriateness

■ Compatibility Determinations

- Wildlife Observation and Photography and Environmental Education and Interpretation
- Fishing
- Walking (Hiking), Snowshoeing and Cross Country Skiing

■ Findings of Appropriateness

- Walking (Hiking), Snowshoeing and Cross Country Skiing
- ATV, ORV and Motorbike Use
- Backpacking and Camping
- Bicycling
- Geocaching
- Horseback Riding
- Jogging
- Pet Dogs
- Picnicking

Compatibility Determination

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

REFUGE NAME: John Hay National Wildlife Refuge (Refuge) in Newbury, Merrimack County, New Hampshire.

DATE ESTABLISHED: The Refuge was established March 19, 1987 with the donation of 164 acres from the estate of Alice Hay.

ESTABLISHING AND ACQUISITION AUTHORITY: *Migratory Bird Conservation Act (45 Stat. 1222). The State Enabling Legislation Citation was the New Hampshire Revised Statutes Annotated 1955, title IX, Chapter 121, Section 1:1-1:8.*

REFUGE PURPOSE(S): The Refuge was established to be “exclusively for public use as an inviolate sanctuary for migratory birds, as a migratory bird and wildlife reservation..., and for other conservation purposes consistent therewith.” (Deed of Donation from Alice Hay to the United States of America, December 11, 1972).

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

DESCRIPTION OF USE:

(a) **What is the use? Is the use a priority public use?** The uses considered in this Compatibility Determination are Wildlife Observation and Photography, Environmental Education and Interpretation. These were established as priority public uses by Executive Order 12996 (March 25, 1996), and legislatively mandated by the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). These four uses are being considered in conjunction as related uses pursuant to 603 FS 2.12(A).

(b) **Where would the use be conducted?** The Refuge comprises approximately 80 acres of mostly upland forest habitats along the southeast shore of Lake Sunapee, Newbury, New Hampshire (see Maps 1-1 and 1-2). There is a single perennial stream, Beech Brook, that originates east of Route 103A and flows west across the Refuge, emptying into Lake Sunapee. Recent habitat inventories documented two fens, a vernal pool, and an intermittent stream. The entire Refuge would be open to wildlife observation and photography, environmental education, and interpretation (Map 2-2). In reality, most public uses are expected to be on or adjacent to the John Hay II Ecology Trail (Ecology Trail), along the shore of Lake Sunapee, and possibly on the Woods Road. A second trail, proposed for access to the lake shore from the southeast corner of the Refuge, would also be available for these uses. Visitors will have the opportunity to view, photograph and learn about a diverse array of wildlife and habitats including:

- Approximately 77 birds such as osprey (*Pandion haliaetus*; state-listed threatened) and bald eagles (*Haliaeetus leucocephalus*; federally-delisted in 2007, state-listed as endangered);
- A variety of mammals including white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), snowshoe hare (*Lepus americanus*), gray and red squirrels (*Sciurus carolinensis* and *Tamiasciurus hudsonicus*, respectively), and eastern chipmunks (*Tamias striatus*);
- Two amphibians, wood frog (*Rana sylvatica*) and spotted salamander (*Ambystoma maculatum*). Undoubtedly there are other amphibians and reptiles, however no formal surveys have been

completed;

- Several fish such as eastern brook trout (*Salvelinus fontinalis*) and rainbow smelt (*Osmerus mordax*);
- Numerous invertebrates; and,
- High quality habitats including mature eastern white pine (*Pinus strobus*), early forest succession, meadows, and a riparian corridor.

(c) When would the use be conducted? The Refuge would be open for wildlife observation and photography, environmental education and interpretation throughout the year. There is a long tradition of year-round visitation to the John Hay Refuge by outdoor enthusiasts who come to observe and photograph wildlife and their habitats. Others enjoy the beautiful view of Lake Sunapee from the Refuge shoreline. The Refuge has been open for these public uses since it was established in 1987, thus there is an established tradition of these wildlife-dependent, priority public uses.

Wildlife Observation and Photography, Environmental Education and Interpretation-related visitation is highest between Memorial Day and Labor Day. This coincides with the busy season at The Fells, from which most Refuge visitation is derived. People walking to the estate house on the gravel driveway from the parking lot can detour onto the Refuge via the Ecology Trail which begins and ends on the estate grounds (see Map 2-2). It is estimated that about 10 percent of visitors take advantage of this trail, although visitor numbers are not formally monitored.

Visitation during winter is lower because fewer people walk the estate grounds during cold, inclement weather. Off-season activities are commonly associated with programs and classes hosted by The Fells. Those related to native habitats, ecology, or wildlife often use the Refuge as an outdoor classroom.

The Refuge is open to the public from sunrise to sunset. After hours, a Special Use Permit is required.

d) How would the use be conducted? Typically, visitors park in The Fells' parking lot at the gatehouse and enter the Refuge on the Ecology Trail, which begins just behind the gatehouse. The trail ends on the lawn of the estate house (Map 2-2). An alternative is the Woods Road which begins near the southeastern corner of the Refuge and ends at the estate driveway. This access is not marked on the highway, so use is probably limited to those familiar with the Refuge. During summer, boaters anchor near the Refuge shoreline and swim or wade to the shore, particularly at the small sandy beach. Signs prohibiting access from the lake are posted; however, many are faded and no longer legible. This type of access would continue to be prohibited to limit impacts to the shoreline habitats.

Visitors would be allowed to travel on foot anywhere on the Refuge to observe, photograph, or study wildlife and habitats. Except for administrative purposes, motorized vehicles of any kind would be prohibited from the Refuge. Most use will be concentrated on the Ecology Trail because it affords a well-developed access with plastic yellow directional markers on trees. People wishing to experience more remote settings could do so by exploring the rest of the Refuge via Woods Road or by bushwhacking through forested habitats.

There are no facilities or staff to formally offer environmental education or interpretation to the public, so most visitation is self-guided. However, there are numbered posts along the trail that corresponds to a brochure available at the beginning of the trail, near the gatehouse. Stops provide information on wildlife, geology, habitats, and history. The Fells offers some interpreted nature hikes and outdoor class activities on the Refuge.

(e) Why is this use being proposed? Wildlife Observation and Photography, Environmental Education, and Interpretation are priority public uses as defined by Executive Order 12996 (March 25, 1996) and the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). These legitimate and appropriate

uses of a national wildlife refuge are generally considered compatible, as long as they do not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System (NWRS) mission or the purposes of the national wildlife refuge.

The Refuge has been available for these types of public uses since it was first acquired in 1987. Although not large in size, the 80 acres includes interesting wildlife and ecological features including large, mature white pine stands, black gum or tupelo trees (*Nyssa sylvatica*), and two fens. People have had the opportunity to enjoy this property in the past and continuing to allow these priority public uses complies with the intention of Congress and will not detrimentally affect refuge resources. From a larger perspective, the Refuge and the adjacent Hay Reservation owned by the Society for the Protection of New Hampshire Forests offers nearly 1,000 acres of contiguous conserved land available for public uses from the Lake Sunapee shoreline to the Sunset Hill ridgeline.

Allowing these priority wildlife-dependent uses to continue would enhance the opportunity of the Service to reach the public and maintain consistency in management. The public would be able to experience traditional recreation long associated with the area to better appreciate the wildlife resources and high quality habitats, and become better informed about the Refuge, the NWRS, and the U.S. Fish and Wildlife Service (Service).

AVAILABILITY OF RESOURCES: Sufficient Refuge resources in terms of personnel and budget are available to administer these uses. Although the Refuge is approximately two hours from the Sunderland, Massachusetts headquarters, personnel from The Fells keeps staff apprised of issues and opportunities. Conte staff will be responsible for on-site evaluations to resolve public use issues, monitor and evaluate impacts, maintain boundaries and signs, and meet with adjacent landowners and interested public, when necessary.

Annualized costs associated with the administration of Wildlife Observation and Photography, Environmental Education and Interpretation at the John Hay Refuge are estimated below:

Project Leader (GS-14) - Coordination with the State of New Hampshire, Congressional delegation and other interested parties (\$1,000).

Law Enforcement Officer (GS-9) – Patrols (\$1,200)

Outdoor Recreation Planner (GS-12) – Coordination with The Fells and seasonal staff (\$1,500)

Assistant Manager (GS-12) - On-site meetings with visitors, volunteers and other interested parties, infrastructure maintenance, and visitor use impact monitoring (\$1,500).

Seasonal Visitor Services Specialist (GS 7) – Stationed at the Gate House from Memorial Day to Labor Day. Handle daily operations and offer interpretive programs and environmental education (\$2,500).

Estimated Annual Costs = **\$7,700**

ANTICIPATED IMPACTS OF THE USE: Wildlife Observation and Photography, Environmental Education and Interpretation can result in positive or negative impacts to the wildlife resource. A positive effect of public involvement in these priority public uses will be a better appreciation and more complete understanding of the wildlife and habitats associated with northern New England ecosystems. This can translate into more widespread and stronger support for the Refuge, the NWRS, and the Service.

Direct Effects

Direct impacts are those where the activity has an immediate effect on wildlife. Anticipated direct impacts include disturbance to wildlife by human presence which typically results in a temporary displacement without long-term effects to individuals or populations. Based on historic use patterns most visitors

participating in these four priority public uses will stay on the existing developed Ecology Trail. Hiking off-trail through the forest in the spring through fall seasons can be difficult and unpleasant for some due to the number of biting insects, poor footing, and vegetative undergrowth. Effects should not be significant because the use generally will be spatially and temporally predictable (i.e., on the trail during daylight hours). Based on observations, off-trail use is limited primarily to the shoreline, with few indications that the interior forest is used by visitors. Although the habitat is in some respects high quality, it is not known to be essential to any wildlife at the John Hay Refuge.

Repeated visits to view rare or susceptible wildlife (e.g., nesting birds, spawning rainbow smelt) could pose a problem, although there is no indication that this has been an issue in the past. No species listed by the U.S. Fish and Wildlife Service as endangered or threatened are known from the Refuge, nor are there any wildlife concentration areas. However, five birds recognized by the New Hampshire Fish and Game Department as either endangered (bald eagle, *Haliaeetus leucocephalus*), or threatened (common loon, *Gavia immer*; osprey, *Pandion haliaetus*; common nighthawk, *Chordeiles minor*; and Cooper's hawk, *Accipiter cooperii*) are species that warrant additional consideration. Of these, the common loon would be unlikely to use the forested habitats on the Refuge. Minute Island potentially could serve as nesting habitat; however, there are no records of this occurring. Bald eagles and ospreys, are observed in the area during the summer, but have not nested on the Refuge to date. The large, overstory white pines offer suitable nest sites in close proximity to the lake. Cooper's hawks also could nest on the Refuge; but there are no records of this. Each of these birds can be affected by frequent human disturbance during the mating, nesting, or brood rearing seasons. There is no evidence that disturbance by people engaged in these four priority public uses are detrimentally affecting these or any other wildlife species. The Fells staff will be the best source of information regarding conflicts because they are on site nearly every day and communicate regularly with visitors. It will be important to monitor, evaluate, and, if necessary, manage public use patterns should impacts reach a level that impairs successful breeding.

Indirect Effects

Indirect impacts are those which ultimately, but not immediately affect wildlife. A good example would be repeated visitation that results in impacts to habitat. Habitat degradation could, through time, result in negative consequences to wildlife. Impacts to wildlife habitat are expected to be minimal and limited to the area immediately along the Ecology Trail and, to a lesser degree, the Woods Road. These routes have been in existence for many years and the only discernable impact is soil compaction on the paths. Effects resulting from a new angler access across the southern half of the Refuge would have similar limited impacts to wildlife because the number of visitors would be limited by the small (two to three vehicles) parking area.

People can be vectors for invasive plants when seeds or other propagules are moved from one area to another. Once established, invasives can out-compete native plants, thereby altering habitats and indirectly impacting wildlife. Fortunately, at this time, invasive plants are a minor problem at the Refuge. Invasive plants known on the Refuge include Japanese barberry (*Berberis thunbergii*). The threat of invasive plant establishment will always be an issue requiring annual monitoring, and when necessary, treatment; however, invasives seem to be manageable at the Refuge, thanks to the control efforts of The Fells and their volunteers.

Cumulative Effects

Effects that are minor when considered alone, but collectively may be important are known as cumulative effects. It appears that use of the Refuge is well within the acceptable capacities, based on observations by staff from the Refuge and The Fells. The only concerns noted to date were the two places where the Ecology Trail crosses Beech Brook and the shoreline beach.

The Fells estate and its historic significance is the primary draw for visitors. Refuge visitors tend to be a subset of these people who want to learn more about the forest habitats, its wildlife, and engage in one or

more of the four priority public uses under consideration. These uses have occurred on the Refuge since the time it became public property and there is no evidence that cumulatively, these uses have caused unacceptable impacts to the wildlife resource. Although a substantial increase in the cumulative impacts from public use is not expected in the near term, it will be important for staff to monitor use and respond if necessary to conserve the existing high quality wildlife resources.

No additional effects from Wildlife Observation and Photography, Environmental Education or Interpretation are anticipated. Impacts from the aggregate of public uses seem to be within acceptable limits as there is no evidence of resource degradation, except as noted above. Staff will monitor and evaluate the effects of public use in collaboration with The Fells and the other conservation partners in an effort to discern and respond to unacceptable impacts to wildlife and habitats.

PUBLIC REVIEW AND COMMENT:

DETERMINATION:

THIS USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS X

THIS USE IS NOT COMPATIBLE
(Check One)

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY: The following stipulations will be adopted to ensure compatibility:

Minimize or avoid negative impacts to wildlife and habitat:

1. Conte staff, in conjunction with The Fells and other volunteers, will monitor and evaluate public use impacts on the Refuge. Corrective actions will be initiated when necessary.
2. The visitors will be prohibited from harassing, baiting, and playing recorded or artificial wildlife calls and songs to attract wildlife (this does not necessarily apply to management activities).
3. Pertinent public use information and updates will be disseminated through The Fells, local media, posted in The Fells gatehouse, and, in the future, will be posted on the kiosk to be constructed in the relocated parking lot.
4. Refuge staff should develop and implement a monitoring program to assess visitor use impacts on wildlife and their habitats.
5. Use information gained from monitoring to appropriately modify programs and uses to ensure compatibility through an adaptive management system.

Visitor safety:

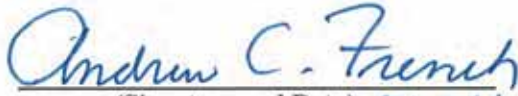
1. Address the safety concern posed by the undeveloped Ecology Trail crossings of Beech Brook. Options include installation of a footbridge(s) and/or trail relocation.
2. A shared Law Enforcement Officer is available to aid in providing for visitor safety, monitor compliance with laws and regulations, perform outreach to visitors, and provide feedback to management staff about visitor use and associated impacts that will help enable adaptive management.

Minimize or avoid conflicts between different types of uses:

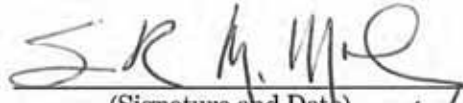
1. Make visitors aware of the priority status of Wildlife Observation and Photography, Environmental Education and Interpretation, Hunting, and Fishing on National Wildlife Refuges.
2. Use education and interpretation to explain the importance of wildlife and habitat management.

JUSTIFICATION: Wildlife Observation and Photography, Environmental Education and Interpretation are priority wildlife-dependent uses for the NWRs through which the public can develop an appreciation for fish and wildlife (Executive Order 12996, March 25, 1996 and The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57)). The Service's policy is to provide enhanced opportunities for these uses when compatible and consistent with sound fish and wildlife management and ensure that they receive enhanced attention during planning and management. All four have been ongoing activities at the Refuge for many years. Based on observations by Refuge staff and discussions with The Fells staff these priority wildlife-dependent uses should not materially interfere with or detract from the fulfillment of the NWRs mission or the purposes of the John Hay National Wildlife Refuge. On the contrary, adopting these uses will help the Refuge meet the intended purpose of a refuge "exclusively for public use as an inviolate sanctuary for migratory birds, as a migratory bird and wildlife reservation..., and for other conservation purposes consistent therewith." (Deed of Donation from Alice Hay to the United States of America, December 11, 1972).

Signature: Refuge Manager:


(Signature and Date) 06-11-10

Acting
Concurrence: Regional Chief:


(Signature and Date) 6/18/10

Mandatory 15-year re-evaluation date:

Compatibility Determination

USE: Fishing

REFUGE NAME: John Hay National Wildlife Refuge in Newbury, Merrimack County, New Hampshire.

DATE ESTABLISHED: The Refuge was established March 19, 1987 with the donation of 164 acres from the estate of Alice Hay.

ESTABLISHING AND ACQUISITION AUTHORITY: *Migratory Bird Conservation Act (45 Stat. 1222). The State Enabling Legislation Citation was the New Hampshire Revised Statutes Annotated 1955, title IX, Chapter 121, Section 1:1-1:8.*

REFUGE PURPOSE(S): The Refuge was established to be “exclusively for public use as an inviolate sanctuary for migratory birds, as a migratory bird and wildlife reservation..., and for other conservation purposes consistent therewith.” (Deed of Donation from Alice Hay to the United States of America, December 11, 1972).

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

DESCRIPTION OF USE:

(a) What is the use? Is the use a priority public use? The use considered in this Compatibility Determination is Fishing at the John Hay National Wildlife Refuge (Refuge). Fishing was identified as one of six priority public uses by Executive Order 12996 (March 25, 1996), and legislatively mandated by the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). This public use is being considered pursuant to 603 FW 2.12(A).

(b) Where would the use be conducted? The Refuge comprises approximately 80 acres of mostly upland forest habitats along the southeast shore of Lake Sunapee, Newbury, New Hampshire (see Maps 1-1 and 1-2). There is a single perennial stream, Beech Brook, that originates east of State Route 103A and flows west across the Refuge, emptying into Lake Sunapee. Recent habitat inventories documented two fens, a vernal pool, and an intermittent stream.

There are two areas that can support public fishing (Map 2-2). The first is Beech Brook. This small perennial stream has not been surveyed recently, but is known to support eastern brook trout (*Salvelinus fontinalis*). The second is the Lake Sunapee shoreline. The Refuge abuts the lake and anglers could fish from the shoreline or more likely from the shallows adjacent to the Refuge.

(c) When would the use be conducted? The Refuge would be open for fishing from sunrise to sunset in compliance with state rules annually published in the New Hampshire Fresh Water Fishing Digest. The 2009 digest includes a provision that closes all tributaries to Lake Sunapee, which includes Beech Brook, to fishing from October 16 through May 31. In addition, anglers are not allowed to use dip nets to harvest rainbow smelt (*Osmerus mordax*) at Lake Sunapee.

d) How would the use be conducted? This compatibility determination addresses fishing on or from Refuge lands. Fishable waters on the Refuge include Beech Brook west of State Route 103A and the Lake Sunapee shoreline. Fish management of Lake Sunapee proper is under the jurisdiction of the state. Game

fish that may be sought include brook trout in Beech Brook and the lake, landlocked salmon in the spring (*Salmo salar*), small mouth bass (*Micropterus dolomieu*), pickerel (*Esox niger*), and horned pout or brown bullhead (*Ameiurus nebulosus*).

A proposed angler parking area and access trail would be created on the southern end of the property, where Woods Road meets Route 103A. Here, a small parking area for two or three cars would be established, with access to both an angler trail heading west to the lake and Woods Road which provides access to the Ecology Trail and subsequently Beech Brook. Stream anglers would be able to fish the entire length of Beech Brook on the Refuge. People could fish from anywhere along the Refuge lakeshore. However, since much of the shoreline is thickly vegetated, anglers would most likely stand in the lake shallows adjacent to the Refuge shoreline. Fishing would not be allowed on Minute Island because of its small size and our concern for its limited habitat. It would be difficult to control the number of anglers, especially during weekends and holidays should it be available for fishing. Lake Sunapee boaters cannot beach their craft on the Refuge shoreline because of the potential impacts to the shore habitat. An example of this type of impact is a small (about 50 feet in width) beach on the Refuge that people use during the summer. We are concerned that this beach may be increasing in size due to repeated use.

Unauthorized introductions of both non-native and native fish can also significantly disrupt aquatic ecosystems and destroy natural fisheries. No fish of any species may be introduced onto the Refuge without appropriate state and refuge permits. This includes unused bait fish and eggs.

Loons, waterfowl, and other water birds may die of lead poisoning from swallowing lead fishing tackle. Many ducks and other water birds find food at the bottom of lake shallows. Most of these birds also swallow small stones and grit to aid in grinding their food. Some of the grit may contain lead from angling equipment. They also may ingest lead and other fishing tackle by consuming bait fish or escaped fish that still have fishing tackle attached. In New Hampshire, the use or sale of lead sinkers weighing one ounce or less and jigs (less than one inch along its longest axis) is prohibited.

At the discretion of the Refuge manager, some areas may be seasonally, temporarily, or permanently closed to fishing, if wildlife or habitat impacts or user conflicts are irresolvable. In cooperation with state fisheries biologists, we may manipulate the fisheries and/or habitat to promote or improve the fishery resource, if warranted. That may include changing fishing regulations (e.g., season dates, creel limits, methods of take), manipulating instream or streambank/shoreline habitat, or other actions deemed necessary to conserve fish habitat and promote a high quality recreational experience.

(e) Why is this use being proposed? Fishing is one of the priority public uses defined by Executive Order 12996 (March 25, 1996) and the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). This legitimate and appropriate use of a national wildlife refuge is generally considered compatible, as long as it does not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System (NWRS) mission or the purposes of the national wildlife refuge.

There are two distinct fishery resources on the Refuge (i.e., Beech Brook and the Lake Sunapee shore) that could afford anglers with recreational opportunities without adversely affecting other users or the natural resources. This would allow us to connect with a nontraditional audience at the John Hay Refuge to cultivate an understanding and support for the Refuge and the National Wildlife Refuge System.

AVAILABILITY OF RESOURCES: Sufficient Refuge resources in terms of personnel and budget are available to administer fishing at the Refuge. Although the Refuge is approximately two hours from the Sunderland, Massachusetts headquarters, personnel from The Fells keeps staff apprised of issues and opportunities. Conte staff will be responsible for on-site evaluations to resolve public use issues, monitor and evaluate impacts, maintain boundaries and signs, and meet with adjacent landowners and interested public, when necessary.

Annualized costs associated with the administration of fishing at the John Hay Refuge are estimated below:

Project Leader (GS-14) - Coordination with the State of New Hampshire, Congressional delegation and other interested parties (\$1,000).

Law Enforcement Officer (GS-9) – Patrols (\$1,200)

Outdoor Recreation Planner (GS-12) – Coordination with The Fells and seasonal staff, and production of a fishing flyer (\$1,500)

Assistant Manager (GS-12) - On-site meetings with visitors, volunteers and other interested parties, infrastructure maintenance, and visitor use impact monitoring (\$2,000).

Seasonal Visitor Services Specialist (GS 7) – Stationed at the Gate House from Memorial Day to Labor Day. Handle daily operations and monitor potential effects from angler use. (\$1,500)

Estimated Annual Costs = \$7,200

ANTICIPATED IMPACTS OF THE USE: Fishing can result in positive or negative impacts to the fishery resource. A positive effect of allowing angler access would be a better appreciation and more complete understanding of the fishery and water resources in the area. This can translate into more widespread and stronger support for the Refuge, the NWRs and the U. S. Fish and Wildlife Service (Service).

Direct Effects

Direct impacts are those that have an immediate affect. Fishing has not been allowed on the Refuge in the past, with the exception of limited fishing events authorized under a Special Use Permit. The remoteness of the small brook and shoreline could tempt some to exceed creel limits, but the Refuge overall is not sought out by most anglers, and probably would not be a draw to people intent on breaking the law. Refuge staff in conjunction with the New Hampshire Fish and Game Department will monitor fishing to ensure that use levels do not detrimentally impact resources. Staff at The Fells will also be a good source of information.

Anglers hiking to fishing spots could disturb wildlife; however, this would be a temporary effect of limited extent, not expected to cause a significant impact.

Indirect Effects

Indirect impacts are those which ultimately, but not immediately cause an effect. Habitat degradation is one possible indirect effect. Good fishing locations, if there are any, will get repeated use over time, and this could result in habitat degradation in the form of unplanned trails, stream bank sloughing, disturbance to shoreline vegetation, and increased sedimentation. Fishing is expected to be limited on the Refuge because the fishery resource is limited and anglers will have to walk in at least 0.2 miles.

People can be vectors for invasive plants when seeds or other propagules are moved from one area to another. Once established, invasives can out-compete native plants, thereby altering habitats and indirectly impacting wildlife. Fortunately, at this time, invasive plants are a minor problem at the Refuge. Invasive plants known on the Refuge include Japanese barberry (*Berberis thunbergii*). The threat of invasive plant establishment will always be an issue requiring annual monitoring, and when necessary, treatment; however, invasives seem to be manageable at the Refuge, thanks to the control efforts of The Fells and their volunteers.

Release of live bait can be problematic, if the species successfully gain a foothold. However, as previously discussed the introduction of live bait would be prohibited.

Cumulative Effects

Effects that are minor when considered alone, but collectively may be important are known as cumulative effects. Incremental increases in activities by people engaged in the variety of allowed uses on the Refuge could cumulatively result in detrimental consequences to wildlife, fish, and/or habitats. It appears that overall public use at the Refuge is well within acceptable capacities, based on observations by The Fells and Conte staff. Opening the Refuge to fishing is not expected to significantly increase visitation. Although a substantial increase in the cumulative impacts from public use is not expected in the near term, it will be important for staff to monitor use and respond, if necessary, to conserve the existing high quality wildlife resources.

No additional effects from public fishing are anticipated. Impacts from the aggregate of public uses seem to be within acceptable limits as there is no evidence of resource degradation. Staff will monitor and evaluate the effects of public use in collaboration with The Fells and the other conservation partners in an effort to discern and respond to unacceptable impacts to wildlife and habitats.

PUBLIC REVIEW AND COMMENT:

DETERMINATION:

THIS USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

 X

THIS USE IS NOT COMPATIBLE

(Check One)

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY: The following stipulations will be adopted to ensure compatibility:

Minimize or avoid negative impacts to wildlife and habitat:

1. Conte staff, in conjunction with The Fells, and other volunteers, will monitor and evaluate public use impacts on the Refuge. Corrective actions will be initiated when necessary.
2. Anglers will not be allowed to dig for bait on the Refuge.
3. Lead sinkers less than 1 ounce in weight and jigs less than 1 inch on the longest axis are prohibited on ponds.
4. Pertinent public use information and updates will be disseminated through The Fells, local media, posted in the gatehouse, and, in the future, will be posted on the kiosk to be constructed in the relocated parking lot.
5. Refuge staff should develop and implement a monitoring program to assess visitor use impacts on wildlife and their habitats.
6. Use information gained from monitoring to appropriately modify programs and uses to ensure compatibility through an adaptive management system.
7. Anglers may not use live bait fish on the Refuge.

Visitor safety:

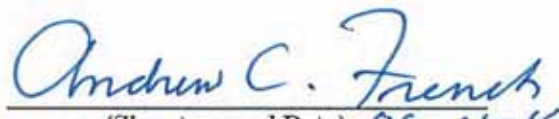
1. Address the safety concern posed by the undeveloped Ecology Trail crossings of Beech Brook. Options include installation of a footbridge and/or trail relocation.
2. A shared Law Enforcement Officer is available to aid in providing for visitor safety, monitor compliance with laws and regulations, perform outreach to visitors, and provide feedback to management staff about visitor use and associated impacts that will help enable adaptive management.

Minimize or avoid conflicts between different types of uses:

1. Make visitors aware of the priority status of Wildlife Observation and Photography, Environmental Education and Interpretation, Hunting, and Fishing on national wildlife refuges.
2. Use education and interpretation to explain the importance of wildlife and habitat management.

JUSTIFICATION: Fishing is a priority wildlife-dependent use for the NWRS through which the public can develop an appreciation for fish and wildlife (Executive Order 12996, March 25, 1996 and The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57)). The Service's policy is to provide expanded opportunities for wildlife-dependent uses when compatible and consistent with sound fish and wildlife management and ensure that they receive enhanced attention during planning and management. Fishing has not been an authorized public use at the Refuge in the past; however there are opportunities to allow regulated fishing on Beech Brook and along the Lake Sunapee shoreline. Both will be coordinated with the New Hampshire Fish and Game Department, other partners, and the public. Based on the available information public fishing should not materially interfere with or detract from the fulfillment of the NWRS mission or the purposes of the John Hay National Wildlife Refuge. On the contrary, adopting this use will help the Refuge meet the intended purpose of a refuge "exclusively for public use as an inviolate sanctuary for migratory birds, as a migratory bird and wildlife reservation..., and for other conservation purposes consistent therewith." (Deed of Donation from Alice Hay to the United States of America, December 11, 1972).

Signature: Refuge Manager:


(Signature and Date) 06-11-10

Acting
Concurrence: Regional Chief:


(Signature and Date) 6-18-10

Mandatory 15-year re-evaluation date:

Compatibility Determination

USE: Walking (Hiking), Snowshoeing, and Cross-Country Skiing

REFUGE NAME: John Hay National Wildlife Refuge (Refuge) in Newbury, Merrimack County, New Hampshire.

DATE ESTABLISHED: The Refuge was established March 19, 1987 with the donation of 164 acres from the estate of Alice Hay.

ESTABLISHING AND ACQUISITION AUTHORITY: *Migratory Bird Conservation Act (45 Stat. 1222). The State Enabling Legislation Citation was the New Hampshire Revised Statutes Annotated 1955, title IX, Chapter 121, Section 1:1-1:8.*

REFUGE PURPOSE(S): The Refuge was established to be "... a migratory bird and wildlife reservation." "exclusively for public use as an inviolate sanctuary for migratory birds, as a migratory bird and wildlife reservation..., and for other conservation purposes consistent therewith." (Deed of Donation from Alice Hay to the United States of America, December 11, 1972).

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

DESCRIPTION OF USE:

(a) **What is the use? Is the use a priority public use?** The uses considered in this compatibility determination are Walking (Hiking), Snowshoeing, and Cross-Country Skiing. These are not priority public uses defined by Executive Order 12996 (March 25, 1996), and legislatively mandated by the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). These uses are being considered in conjunction with related priority public uses pursuant to 603 FW 2.12(A).

(b) **Where would the use be conducted?** The Refuge comprises approximately 80 acres of mostly upland forest habitats along the southeast shore of Lake Sunapee, Newbury, New Hampshire (Maps 1-1 and 1-2). There is a single perennial stream, Beech Brook, that originates east of Route 103A and flows west across the Refuge, emptying into Lake Sunapee. Recent habitat inventories documented two fens, a vernal pool, and an intermittent stream. The entire Refuge (Map 2-2) would be open to Walking (Hiking), Snowshoeing, and Cross-Country Skiing. In reality, most of public uses are expected to be on or adjacent to the John Hay II Ecology Trail (Ecology Trail), along the shore of Lake Sunapee, and possibly on the Woods Road. An angler access trail proposed across the southern portion of the Refuge also would be available for these pedestrian activities. The uses under consideration are the means of accessing the Refuge to engage in the priority public uses of Fishing, Wildlife Observation and Photography, Environmental Education and Interpretation.

(c) **When would the use be conducted?** The Refuge would be open for pedestrian access throughout the year. There is a long tradition of year-round visitation to John Hay Refuge by outdoor enthusiasts who come to enjoy the Refuge. The Refuge has been open to pedestrian access, including the modes under consideration, since it was established in 1987.

Visitation is highest between Memorial Day and Labor Day, coinciding with the busy season at The Fells, from which most Refuge visitation is derived. Visitors to The Fells can access the Ecology Trail near The

Fells gatehouse or below the estate house (Map 2-2). During the winter visitors may don snowshoes or skis to explore the Refuge. It is estimated that about 10 percent of visitors take advantage of this trail, although visitor numbers are not formally monitored.

Visitation during winter is lower because fewer people are on the estate grounds during cold, inclement weather. The Refuge would be open to cross-country skiers and snowshoers in winter for wildlife-dependent recreational activities. Off-season activities are commonly associated with programs and classes hosted by The Fells. Those related to native habitats, ecology, or wildlife often use the Refuge as an outdoor classroom.

The Refuge is open to the public from sunrise to sunset. After hours, a Special Use Permit is required.

(d) How would the use be conducted? Typically, visitors park in The Fells' parking lot at the gatehouse and enter the Refuge on the Ecology Trail, which begins just behind the gatehouse. The trail currently ends on the lawn of the estate house (Map 2-2), though the addition of a trail extension would return to the trailhead within Refuge bounds. An alternative is the Woods Road which begins near the southeastern corner of the Refuge and ends at the estate driveway. This access is not marked on the highway, so use is probably limited to those familiar with the Refuge. A second developed trail is proposed across the southern portion of the Refuge to afford angler access to the lake. Once completed, this trail would be available to the pedestrian activities under consideration. During summer, boaters anchor near the Refuge shoreline and swim or wade to the shore, particularly at the small sandy beach. Signs prohibiting access from the lake are posted; however, many are faded and no longer legible. This type of access would continue to be prohibited to limit impacts to the shoreline habitats.

Visitors would be allowed to Walk (Hike), Snowshoe or Ski anywhere on the Refuge. Except for administrative purposes, motorized vehicles of any kind would be prohibited from the Refuge. Most use will be concentrated on the Ecology Trail because it is a well-worn path with yellow plastic directional signs on trees. People wishing to experience more remote settings could do so by exploring the rest of the Refuge via the Woods Road or by bushwhacking through forested habitats.

There are no facilities or staff to formally offer environmental education or interpretation to the public, so most visitation is self-guided. However, there are numbered posts along the trail that correspond to an interpretive brochure available at the beginning of the trail, near the gatehouse. Wildlife, geology, habitats, and/or history are interpreted at the stops. The Fells offers some guided nature hikes and outdoor class activities on the Refuge.

(e) Why is this use being proposed? Walking (Hiking), Snowshoeing, and Cross-Country Skiing are not priority public uses as defined by Executive Order 12996 (March 25, 1996) and the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). However, these modes of pedestrian access facilitate participation in compatible activities.

The Refuge has been available for these types of public uses since it was first acquired in 1987. Although not large in size, the 80 acres includes interesting wildlife and ecological features including large, mature white pine stands, black gum or tupelo trees (*Nyssa sylvatica*), and two fens. People have had the opportunity to enjoy this property in the past and continuing to allow these priority public uses complies with the intent of Congress and will not detrimentally affect Refuge resources. From a larger perspective, the Refuge and the adjacent Hay Reservation owned by the Society for the Protection of New Hampshire Forests offer nearly 1,000 acres of contiguous conserved land available for public uses from the Lake Sunapee shoreline to the Sunset Hill ridgeline.

Allowing these types of access to continue would enhance the opportunity of the Service to promote the understanding of and appreciation for wildlife, fish, and their habitats, and maintain consistency in management. The public would have the chance to experience traditional recreation long associated with

the area to better appreciate the wildlife resources and high quality habitats, and become better informed about the Refuge, the National Wildlife Refuge System (NWRS), and the U.S. Fish and Wildlife Service (Service).

AVAILABILITY OF RESOURCES: Sufficient Refuge resources in terms of personnel and budget are available to administer these uses. Although the Refuge is approximately two hours from the Sunderland, Massachusetts headquarters, personnel from The Fells keeps staff apprised of issues and opportunities. Conte staff will be responsible for on-site evaluations to resolve public use issues, monitor and evaluate impacts, maintain boundaries and signs, and meet with adjacent landowners and interested public, when necessary.

There would be no additional costs to administer Walking (Hiking), Snowshoeing, or Skiing on the Refuge, as these visitors would be engaged in one of the priority public uses.

ANTICIPATED IMPACTS OF THE USE: Walking (Hiking), Snowshoeing, and Skiing can result in positive or negative impacts to the wildlife resource. A positive effect of allowing pedestrian access into the Refuge will be a better appreciation and more complete understanding of the wildlife and habitats associated with northern New England ecosystems. This can translate into more widespread and stronger support for the Refuge, the NWRS, and the Service.

Direct Effects

Direct impacts are those where the activity has an immediate effect on wildlife. Anticipated direct impacts include disturbance to wildlife by human presence which typically results in a temporary displacement without long-term effects to individuals or populations. Based on historic use patterns most visitors participating in the priority public uses will stay on the existing, developed Ecology Trail that begins and ends on The Fells property. Hiking off-trail through the forest in the summer can be difficult and unpleasant for some due to the number of biting insects, poor footing, and vegetative undergrowth. The proposed fishing access trail and additions to the Ecology Trail should not substantially increase impacts. Effects should not be significant because the use generally will be spatially and temporally predictable (i.e., on the trail during daylight hours) allowing wildlife to adapt to human presence. Based on anecdotal evidence, off-trail use is limited primarily to the shoreline, with few indications that the interior forest is popular with visitors. Although the habitat is in some respects of high quality, it is not known to be essential to any wildlife at the John Hay Refuge.

Repeated visits to areas near rare or susceptible wildlife (e.g., nesting birds, spawning rainbow smelt) could pose a problem, although there is no indication that this has been an issue in the past. No species listed by the U.S. Fish and Wildlife Service as endangered or threatened are known from the Refuge, nor are there any wildlife concentration areas. However, there are five state-listed birds that warrant additional consideration. These are: bald eagle (*Haliaeetus leucocephalus*; *endangered*), common loon (*Gavia immer*; *threatened*), osprey (*Pandion haliaetus*; *threatened*), common nighthawk (*Chordeiles minor*; *threatened*), and Cooper's hawk (*Accipiter cooperi*; *threatened*). Of these, the common loon would be unlikely to use the forested habitats on the Refuge. Minute Island potentially could serve as nesting habitat; however, there are no records of this occurring. Bald eagles and ospreys, are observed in the area during the summer, but have not nested on the Refuge to date. The large, overstory white pines offer suitable nest sites in close proximity to the lake. Cooper's hawks also might nest on the Refuge, but there are no records of this. Each of these birds can be affected by frequent human disturbance during the mating, nesting, or brood rearing seasons. However, there is no evidence that disturbance by people Walking (Hiking), Snowshoeing, or Cross-Country Skiing are detrimentally affecting these or any other wildlife species. The Fells staff will be the best source of information regarding conflicts because they are on site nearly every day and communicate regularly with visitors. It will be important to monitor, evaluate, and, if necessary, manage

public use patterns should impacts reach a level that could impact breeding.

Indirect Effects

Indirect impacts are those which ultimately, but not immediately, affect wildlife. A good example would be repeated visitation that results in impacts to habitat. Habitat degradation could, through time, result in negative consequences to wildlife. Impacts to wildlife habitat are expected to be minimal and limited to the area immediately along the Ecology Trail and, to a lesser degree, the Woods Road. These routes have been in existence for many years and the only discernable impact is soil compaction on the paths.

People can be vectors for invasive plants when seeds or other propagules are moved from one area to another. Once established, invasives can out-compete native plants, thereby altering habitats and indirectly impacting wildlife. Fortunately, at this time, invasive plants are a minor problem at the Refuge. Invasive plants known on the Refuge include Japanese barberry (*Berberis thunbergii*). The threat of invasive plant establishment will always be an issue requiring annual monitoring, and when necessary, treatment; however invasives seem to be manageable at the Refuge, thanks to the efforts of The Fells and their volunteers.

Cumulative Effects

Effects that are minor when considered alone, but collectively may be important are known as cumulative effects. It appears that use of the Refuge is well within the acceptable capacities, based on observations by Conte staff and The Fells. The only concerns noted to date were the two places where the Ecology Trails crosses Beech Brook and the shoreline beach.

The Fells estate and its historic significance is the primary draw for visitors. Refuge visitors tend to be a subset of these people who want to learn more about the forest habitats and its wildlife, and engage in one or more of the allowed compatible uses. The Refuge has been open to pedestrian access since the time the Refuge was established and there is no evidence that cumulatively, these uses have caused unacceptable impacts to the wildlife resource. Although a substantial increase in the cumulative impacts from public use is not expected in the near term, it will be important for staff to monitor use and respond if necessary to conserve the existing high quality wildlife resources.

No additional effects from Walking (Hiking), Snowshoeing, or Cross-Country Skiing are anticipated. Impacts from the aggregate of public uses seem to be within acceptable limits as there is no evidence of resource degradation, other than the trail crossings of Beech Brook. Staff will monitor and evaluate the effects of public use in collaboration with The Fells and the other conservation partners in an effort to discern and respond to unacceptable impacts to wildlife and habitats.

PUBLIC REVIEW AND COMMENT:

DETERMINATION:

THIS USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS X

THIS USE IS NOT COMPATIBLE _____
(Check One)

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY: The following stipulations will be adopted to ensure compatibility:

- Minimize or avoid negative impacts to wildlife and habitat:
1. Conte staff, in conjunction with The Fells and other volunteers, will monitor and evaluate public use impacts on the Refuge. Corrective actions will be initiated when necessary.

2. The visitors will be prohibited from harassing, baiting, and playing recorded or artificial wildlife calls and songs to attract wildlife (this does not necessarily apply to management activities).
3. Pertinent public use information and updates will be disseminated through The Fells, local media, posted in The Fells gatehouse, and, in the future, will be posted on the kiosk to be constructed in the relocated parking lot.
4. Refuge staff should develop and implement a monitoring program to assess visitor use impacts on wildlife and their habitats.
5. Use information gained from monitoring to appropriately modify programs and uses to ensure compatibility through an adaptive management system.

Visitor safety:

1. Assess the safety concern posed by the undeveloped Ecology Trail crossings of Beech Brook. Options include installation of a footbridge(s) and/or trail relocation.
2. A shared Law Enforcement Officer is available to aid in providing for visitor safety, monitor compliance with laws and regulations, perform outreach to visitors, and provide feedback to management staff about visitor use and associated impacts that will help enable adaptive management.

Minimize or avoid conflicts between different types of uses:

1. Make visitors aware of the priority status of Wildlife Observation and Photography, Environmental Education and Interpretation, Hunting, and Fishing on National Wildlife Refuges.
2. Use education and interpretation to explain the importance of wildlife and habitat management.

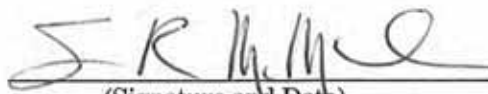
JUSTIFICATION: Walking (Hiking), Snowshoeing, and Cross-Country Skiing have been ongoing activities at the Refuge for many years. Based on observations by Refuge staff and discussions with The Fells staff these uses should not materially interfere with or detract from the fulfillment of the NWRS mission or the purposes of the John Hay National Wildlife Refuge. On the contrary, adopting these uses will help the Refuge meet the intended purpose of the Refuge "exclusively for public use as an inviolate sanctuary for migratory birds, as a migratory bird and wildlife reservation..., and for other conservation purposes consistent therewith"(Deed of Donation from Alice Hay to the United States of America, December 11, 1972) by allowing visitors to engage in the priority public uses: Wildlife Observation and Photography, Environmental Education and Interpretation, and Fishing.

Signature: Refuge Manager:


(Signature and Date) 06-11-10

Acting

Concurrence: Regional Chief:


(Signature and Date) 6-18-10

Mandatory 10-year re-evaluation date:

Compatibility Determination

USE: Hunting

REFUGE NAME: John Hay National Wildlife Refuge in Newbury, Merrimack County, New Hampshire.

DATE ESTABLISHED: The Refuge was established March 19, 1987 with the donation of 163 acres from the estate of Alice Hay.

ESTABLISHING AND ACQUISITION AUTHORITY: *Migratory Bird Conservation Act (45 Stat. 1222). The State Enabling Legislation Citation was the New Hampshire Revised Statutes Annotated 1955, title IX, Chapter 121, Section 1:1-1:8.*

REFUGE PURPOSE(S): The Refuge was established to be “exclusively for public use as an inviolate sanctuary for migratory birds, as a migratory bird and wildlife reservation..., and for other conservation purposes consistent therewith.”

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

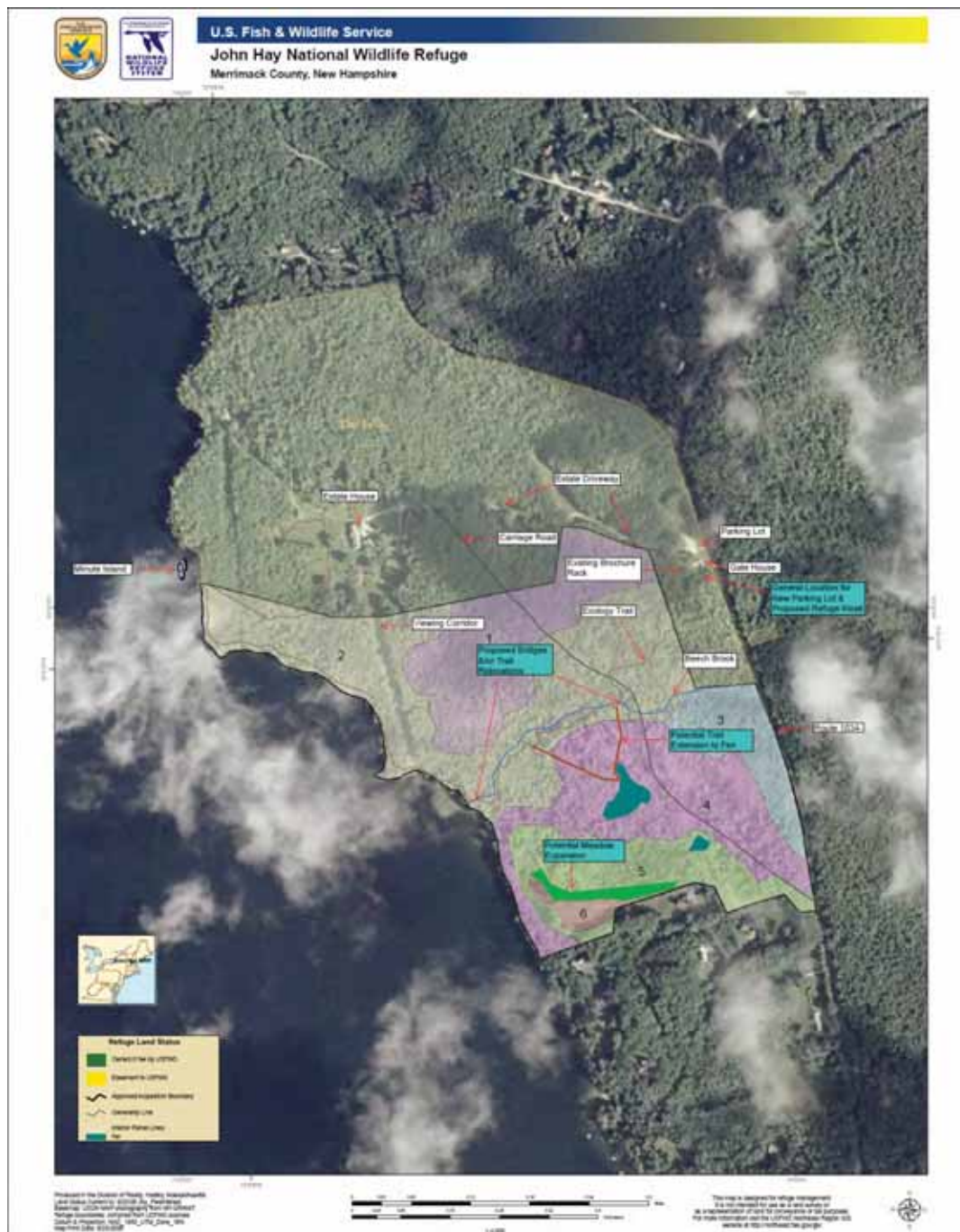
DESCRIPTION OF USE:

- (a) **What is the use? Is the use a priority public use?** The use considered in this Compatibility Determination is public Hunting. This was established as priority public uses by Executive Order 12996 (March 25, 1996), and legislatively mandated by the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57)
- (b) **Where would the use be conducted?** The Hay Refuge comprises approximately 80 acres of mostly upland forest habitat along the southeast shore of Lake Sunapee, Newbury, New Hampshire. There is a single perennial stream, Beech Brook, that originates east of Route 103A and flows west across the Refuge, emptying into Lake Sunapee. Recent habitat inventories documented two fens, a vernal pool, and an intermittent stream. Public Hunting would occur on the 80 acres owned by the Service (Maps B-1 and B- 2).
- (c) **When would the use be conducted?** The only hunting under consideration is a strictly controlled archery season for white-tailed deer during a limited period, to be determined annually, within the state season for Wildlife Management Unit I2 which generally runs from September 15 to December 15.
- (d) **How would the use be conducted?** The Refuge shares a parking lot on The Fells property. Visitors park there and enter the Refuge on the John Hay Ecology Trail, which begins just behind the Gate House (Map B- 2). As previously stated, hunting is not allowed by adjacent landowners west of State Route 103A. A limited archery deer season is the only hunting considered in this Compatibility Determination. Hunters would have to apply for a limited number of permits. They would be assigned a specific tree for their stands and be given a shooting direction. We also would have to post signs informing other visitors of the hunt. Successful hunters would be required to remove the entire animal from the Refuge.
- (e) **Why is this use being proposed?** Hunting is a priority public use as defined by Executive Order 12996 (March 25, 1996) and the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57). This legitimate and appropriate uses of a National Wildlife Refuge are generally considered compatible, as long as it does not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the national wildlife refuge.

Map B-1. Location of John Hay National Wildlife Refuge



Map B-2. John Hay National Wildlife Refuge with existing and proposed public use facilities.



AVAILABILITY OF RESOURCES: Managing a restrictive hunting season at the John Hay Refuge would impact personnel and resources at the Conte Refuge. A staff member would have to administer the lottery system to select hunters, conduct a pre-hunt information session, and be on site during the hunt. It is anticipated that at least two weeks of staff time would be necessary. This could be considerably higher the first year.

Annualized costs associated with the administration of hunting are estimated below:

Project Leader (GS-14) - Coordination with the State of New Hampshire, Congressional delegation and other interested parties (\$2,000).

Law Enforcement Officer (GS-9) – Patrols (\$1,200)

Outdoor Recreation Planner (GS-12) – Outreach and coordination with partners (\$3,600)

Assistant Manager (GS-12) – Pre-hunt orientation meetings, coordination with partners, on-site management during the hunt, and monitoring (\$3,600).

Estimated Annual Costs = \$10,400

ANTICIPATED IMPACTS OF THE USE: Hunting can result in positive or negative impacts to the wildlife resource and visitor experiences. A positive effect of allowing hunter access to the Refuge will be a better appreciation and more complete understanding of the wildlife and habitats associated with New England ecosystems. This can translate into more widespread and stronger support for the Refuge, the National Wildlife Refuge System and the Service. Negative effects are discussed below.

Direct Effects

Direct impacts are those that have an immediate affect on wildlife and other Refuge resources and compatible public uses. Anticipated direct impacts include disturbance to wildlife by human presence which typically results in a temporary displacement without long- term effects to individuals or groups of animals. People hunting from tree stands would have minimal effect on wildlife primarily during ingress and egress.

Repeated visits to view rare or susceptible wildlife (e.g. nesting birds, spawning rainbow smelt) could pose a problem; however, no impact is anticipated from the small number of hunters that would be on the Refuge. Refuge staff would predetermine their access routes to ensure minimal impact to wildlife. No species listed by the U.S. Fish and Wildlife Service as endangered or threatened are known from the Refuge, nor are there any wildlife concentration areas. However, four birds recognized by the New Hampshire Fish and Game Department as Endangered bald eagle (*Haliaeetus leucocephalus*) or Threatened common loon (*Gavia immer*), osprey (*Pandion haliaetus*), common nighthawk (*Chordeiles minor*), and Cooper's hawk (*Accipiter cooperii*) are species that warrant additional consideration. Of these, the common loon would be unlikely to use the forested habitats on the Refuge. Minute Island potentially could serve as nesting habitat; however, there are no records of this occurring. Bald eagles and ospreys, are observed in the area during the summer, but have not nested on the Refuge to date. The large, overstory white pines offer suitable nest sites in close proximity to the lake. Cooper's hawks also could nest on the Refuge; but there are no records of this. Each of these birds can be affected by frequent human disturbance during the mating, nesting or brood rearing seasons. There is no evidence that disturbance by any visitors are detrimentally affecting these or any other wildlife species. The limited hunting considered here would not substantially add to the existing impacts.

A more substantial direct effect would be the perception of people visiting The Fells or the Refuge for other compatible uses. Even with substantial outreach, informational signage, and a staff person on site, hunting would not likely be appreciated by many visitors and there undoubtedly would be conflicts. There is no history of hunting on this property and people familiar with the Refuge and The Fells do not expect to encounter hunters during their visits. We heard this concern from several people that attended the public meetings and/or wrote letters.

Although an archery hunt would be tightly controlled, there could be situations where the safety of other visitors might be compromised. For example, tree stand location and shooting direction would be predetermined by Refuge staff; however, an inadvertent errant shot could pose a danger on this small refuge.

Indirect Effects

Indirect impacts are those which ultimately, but not immediately affect wildlife. A good example would be repeated visitation that results in impacts to habitat. Habitat degradation could, through time, result in negative consequences to wildlife. Impacts to wildlife habitat would be minimal and limited to the route used to access a tree stand and trees containing the stands.

People can be vectors for invasive plants when seeds or other propagules are moved from one area to another. Once established, invasives can out-compete native plants, thereby altering habitats and indirectly impacting wildlife. Fortunately, at this time, invasive plants are a minor problem at the Hay Refuge. Invasive plants known on the Refuge include Japanese barberry (*Berberis thunbergii*), Common barberry (*Berberis vulgaris*), Japanese knotweed (*Polygonum cuspidatum*), and Scotch broom (*Cytisus scoparius*). The threat of invasive plant establishment will always be an issue requiring annual monitoring, and when necessary, treatment; however, invasives seem to be manageable at the Hay Refuge, thanks to the control efforts of The Fells and their volunteers. The threat of hunters bringing invasive plant propagules is no greater than other visitors, and is not considered to be a serious concern.

Cumulative Effects

Effects that are minor when considered alone, but collectively may be important are known as cumulative effects. It appears that overall use of the Refuge is well within the acceptable capacities, based on observations by staff from the Refuge and The Fells. The only areas of concern are the points where the Ecology Trail crosses Beech Brook (Map B- 2). These would not be affected by a hunting program.

The Fells estate and its historic significance is the primary draw for visitors. Refuge visitors tend to be a subset of these people who want to learn more about the forest habitats, its wildlife, and engage in wildlife observation and photography, environmental education and interpretation. These uses have occurred on the Refuge since the time it became public property and there is no evidence that cumulatively, these uses have caused unacceptable impacts to the wildlife resource. The addition of a limited hunt program would not be expected to increase impacts to wildlife resources. However, there may be an erosion of support for both the Refuge and The Fells should we proceed with a hunting program.

PUBLIC REVIEW AND COMMENT:

DETERMINATION:

THIS USE IS COMPATIBLE WITH THE FOLLOWING STIPULATIONS

THIS USE IS NOT COMPATIBLE

 X
 (Check One)

STIPULATIONS NECESSARY TO ENSURE COMPATIBILITY: None, the use was not found to be compatible.

JUSTIFICATION: Hunting is a priority wildlife-dependent uses for the National Wildlife Refuge System through which the public can develop an appreciation for fish and wildlife (Executive Order 12996, March 25, 1996 and The National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997 (Public Law 105-57)). The Service's policy is to provide enhanced opportunities for these uses when compatible and consistent with sound fish and wildlife management and ensure that they receive enhanced attention during planning and management. This use has not been authorized in the past.

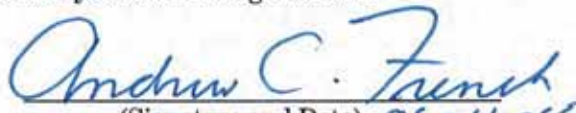
While an archery deer season would provide some recreational opportunities, it would likely create a number of issues.

1. At least one Refuge staff member would need to manage the lottery system and be on site during the hunt. Currently, the John Hay Refuge is unstaffed.
2. Hunters and other visitors would need to be spatially separated to ensure safety and limit interference, and not pose a threat to people on surrounding private property. This could be problematic due to the small size of the Refuge, and might require closing the Refuge to other visitors during the hunting season.
3. Hunters would have to park at the Gate House parking lot and walk across The Fells' property to enter the Refuge. Undoubtedly, some of their clientele would be upset seeing hunters, particularly successful hunters bringing deer back to their vehicle.
4. We heard during the Comprehensive Conservation Plan open house that hunting would be against the conservation intent of Alice Hay and the family. The Hay family did not allow hunting on the estate grounds and the property was donated to the Service as an inviolate wildlife sanctuary.

From the limited discussion of hunting at the public meetings and written comments received, it was evident that hunting would not be supported by most people familiar with Refuge history and the Hay family. Those opposed felt that hunting would conflict with the Refuge purpose and be counter to the wishes of Alice Hay.

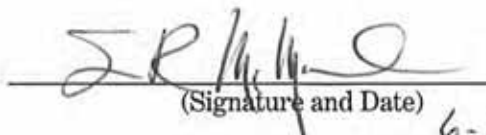
It is anticipated that a hunt program would materially interfere with the purposes of the John Hay National Wildlife Refuge and could jeopardize the safety of other Refuge visitors.

Signature: Refuge Manager:


(Signature and Date) 06-11-10

Acting

Concurrence: Regional Chief:


(Signature and Date) 6-18-10

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: John Hay National Wildlife RefugeUse: Walking, Snowshoeing, and Cross-country Skiing

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	☒	☐
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	☒	☐
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	☒	☐
(d) Is the use consistent with public safety?	☒	☐
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	☒	☐
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	☒	☐
(g) Is the use manageable within available budget and staff?	☒	☐
(h) Will this be manageable in the future within existing resources?	☒	☐
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	☒	☐
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	☒	☐

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes ☒ No ☐

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☐Appropriate ☒Refuge Manager: Andrew C. FrenchDate: 06-11-10

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: [Signature]Date: 6-14-10

A compatibility determination is required before the use may be allowed.

FWS Form 3-2319
02/06

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: John Hay National Wildlife Refuge

Use: Walking, Snowshoeing, and Cross-country Skiing

Narrative: In 1994, walking, snowshoeing, and cross-country skiing were determined to be Compatible Uses when the Refuge consisted of the entire 163.5-acres summer estate of John Hay. In 2008, the northern half of the Refuge was conveyed to The Fells in exchange for land added to the Umbagog National Wildlife Refuge. Developed access on the 80 acres now comprising the Refuge is limited to a primitive foot trail known as the John Hay Ecology Trail, and a native surface woods road referred to as the Woods Road. Walking is the primary means for people to access the Refuge for wildlife-dependent uses. Visitors walk on the Ecology Trail, Woods Road, and through the undeveloped forest habitats during the non-snow months. During the winter when snow covers the ground walking gives way to snowshoeing and cross-country skiing. Newbury receives an average of about 64 inches of snow during the winter, making snowshoeing and skiing good alternatives to walking. People use both the Ecology Trail and Woods Road during the winter, as well as breaking new trail through the woods. These two modes of pedestrian access allow visitors to explore the Refuge during the winter season when walking is difficult.

Based on the above information, walking, snowshoeing and skiing are appropriate uses on this refuge.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: John Hay National Wildlife RefugeUse: ATV, ORV, and Motorbike Use

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	☒	☐
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	☒	☐
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	☒	☐
(d) Is the use consistent with public safety?	☒	☐
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	☐	☒
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	☒	☐
(g) Is the use manageable within available budget and staff?	☒	☐
(h) Will this be manageable in the future within existing resources?	☒	☐
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	☒	☐
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	☐	☒

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes ☒ No ☐

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☒Appropriate ☐Refuge Manager: Andrew C. FrenchDate: 06-11-10

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: [Signature]Date: 6-14-10

A compatibility determination is required before the use may be allowed.

FWS Form 3-2319
02/06

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: John Hay National Wildlife Refuge

Use: ATV, ORV, and Motorbike Use

Narrative: This use has the potential to cause erosion and habitat damage. Off-road motorized use would detract from the quality of other wildlife-dependent uses at this small refuge. The noise, speed, and unpredictability of this use have the potential to disturb wildlife throughout the refuge. Use of all-terrain vehicles at the John Hay Refuge could not be managed consistent with Executive Order 11644 and Executive Order 11989 which require refuges to promote safety, minimize conflicts among users, monitor the effects of ATV use if allowed, and to close areas to ATV use if they will cause adverse effects on soil, vegetation, wildlife, habitat, or cultural or historic resources. This type of motorized use would negatively affect the experience of people visiting The Fells. This use is not consistent with any approved refuge management plan and would divert existing and future resources from accomplishing priority tasks.

Based on the above information, ATV, ORV, and motorbike use is not an appropriate use on this refuge.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: John Hay National Wildlife RefugeUse: Backpacking and Camping

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	☒	☐
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	☒	☐
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	☒	☐
(d) Is the use consistent with public safety?	☒	☐
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	☐	☒
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	☒	☐
(g) Is the use manageable within available budget and staff?	☐	☒
(h) Will this be manageable in the future within existing resources?	☐	☒
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	☒	☐
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.8D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	☐	☒

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes ☒ No ☐

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☒Appropriate ☐

Refuge Manager:

Andrew C. French

Date:

06-11-10

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor:

John M. Kennedy

Date:

6-14-10

A compatibility determination is required before the use may be allowed.

FWS Form 3-2319
02/06

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: John Hay National Wildlife Refuge

Use: Backpacking and Camping

Narrative: Backpacking was found to be a compatible use in 1994; however, it was only construed to mean day hiking with a pack, not overnight camping. Recreational overnight camping has not been allowed on the Refuge in the past. The Hay Refuge is only 80 acres in size, contains one primitive foot trail, and a historic Woods Road. Neither of these is connected to larger, regional hiking trails, so people begin and end their visits at the Gate House parking lot. There are no facilities to accommodate camping on the Refuge. Dispersed camping could result in unacceptable impacts to soils, vegetation, and wildlife particularly along the shore of Lake Sunapee. Camping is not a necessity at the Refuge as Mount Sunapee State Park, located across the lake, has a campground and there are other private campgrounds in the area.

Based on the above information, allowing backpacking and camping access are not appropriate on this refuge.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: John Hay National Wildlife RefugeUse: Bicycling

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	☒	☐
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	☒	☐
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	☒	☐
(d) Is the use consistent with public safety?	☐	☒
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	☐	☒
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	☒	☐
(g) Is the use manageable within available budget and staff?	☐	☒
(h) Will this be manageable in the future within existing resources?	☐	☒
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	☐	☒
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	☐	☒

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes ☒ No ☐

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☒Appropriate ☐Refuge Manager: Andrew C. FrenchDate: 06-11-10

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: David M. KennedyDate: 6-14-10

A compatibility determination is required before the use may be allowed.

FWS Form 3-2319
02/06

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: John Hay National Wildlife Refuge

Use: Bicycling

Narrative: Bicycling was determined to be a Compatible Use in 1994 when the Refuge consisted of the entire 163.5-acres summer estate of John Hay. It was specifically allowed on the 0.25-mile gravel driveway from the Gate House parking lot to the Main House. Bicycles were not allowed on the nature trail (i.e. John Hay Ecology Trail) or the southern half of the property, which includes the Woods Road. Neither of these were designed for bicycles and this type of use would undoubtedly result in soil erosion, stream bank degradation at the crossings, and conflicts with pedestrians. Although the Woods Road is wide enough to accommodate bicycles and pedestrians, off-trail use could not be effectively controlled and there are sensitive habitats (e.g. fens) in close proximity to this road.

Based on the above information, bicycling is not an appropriate use on this refuge.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: John Hay National Wildlife RefugeUse: Geocaching

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	☒	☐
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	☐	☒
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	☒	☐
(d) Is the use consistent with public safety?	☒	☐
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	☐	☒
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	☒	☐
(g) Is the use manageable within available budget and staff?	☒	☐
(h) Will this be manageable in the future within existing resources?	☒	☐
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	☒	☐
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.8D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	☒	☐

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes ☒ No ☐

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☒Appropriate ☐Refuge Manager: Andrew C. FrenchDate: 06-11-10

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: [Signature]Date: 6-14-10

A compatibility determination is required before the use may be allowed.

FWS Form 3-2319
02/06

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: John Hay National Wildlife Refuge

Use: Geocaching

Narrative: Traditional geocaching is not an appropriate use of a national wildlife refuge because it promotes an unauthorized abandonment of property which is in violation of 50 CFR 27.93. A geocache site encourages repeated visits that can result in unplanned trails and wildlife disturbance.

Based on the above information, geocaching is not an appropriate use on this refuge.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: John Hay National Wildlife RefugeUse: Horseback Riding

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	☒	☐
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	☒	☐
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	☒	☐
(d) Is the use consistent with public safety?	☐	☒
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	☐	☒
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	☒	☐
(g) Is the use manageable within available budget and staff?	☐	☒
(h) Will this be manageable in the future within existing resources?	☐	☒
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	☐	☒
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	☐	☒

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will **generally** not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes ☒ No ☐

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☒Appropriate ☐Refuge Manager: Andrew C. FrenchDate: 06-11-10

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: [Signature]Date: 6-14-10

A compatibility determination is required before the use may be allowed.

FWS Form 3-2319
02/06

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: John Hay National Wildlife Refuge

Use: Horseback Riding

Narrative: There is no history of horseback riding on the Refuge and allowing it would detract from the quality of other wildlife-dependent uses at this small refuge. The Ecology Trail is not suitable for both hikers and horseback riders because it is narrow and in some places, such as the split rock, horse riders would have to blaze a different route, creating an unplanned trail. There are no parking facilities on the Refuge, so riders would need to get permission from The Fells to park at the Gate House parking lot and ride across their property to gain access to the Refuge. However, this is unlikely to be allowed because horseback riding is not allowed on their property. Horses also are a vector for invasive plants. The Refuge has a limited problem with invasive plants at this time, but horses could introduce additional infestations. This small refuge does not have the capacity to support horseback riding and it could conflict with wildlife-dependent uses.

Based on the above information, horseback riding use is not an appropriate use on this refuge.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: John Hay National Wildlife RefugeUse: Jogging

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	☒	☐
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	☒	☐
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	☒	☐
(d) Is the use consistent with public safety?	☒	☐
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	☐	☒
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	☒	☐
(g) Is the use manageable within available budget and staff?	☒	☐
(h) Will this be manageable in the future within existing resources?	☒	☐
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	☐	☒
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.8D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	☐	☒

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes ☒ No ☐

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☒Appropriate ☐Refuge Manager: Andrew C. FrenchDate: 06-11-10

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor: [Signature]Date: 6-14-10

A compatibility determination is required before the use may be allowed.

FWS Form 3-2319
02/06

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: John Hay National Wildlife Refuge

Use: Jogging

Narrative: In 1994, jogging and walking were analyzed together and determined to be a Compatible Use when the Refuge consisted of the entire 163.5-acres summer estate of John Hay. This included a gravel road from the driveway on State Route 103A to the estate house and another leading from the main house to the guest cottage near Lake Sunapee. In 2008, the northern half of the Refuge was conveyed to The Fells in exchange for land added to the Umbagog National Wildlife Refuge. Developed access on the 80 acres now comprising the Refuge is limited to a primitive foot trail known as the John Hay Ecology Trail, and a native surface woods road referred to as the Carriage Trail. The Ecology Trail was not designed for joggers as there are sections with slippery footing, including the two crossings of Beech Brook. The intended use of this trail is for wildlife observation and photography, interpretation, and environmental education. Joggers using this narrow footpath would interfere with these uses. In particular, the ability of people quietly observing wildlife would be disrupted by joggers running along the path. The Carriage Road also could be used by joggers, but this would undoubtedly lead to conflicts with people using the road and that section of road that is coincident with the Ecology Trail for the four priority wildlife-dependent uses discussed above.

Based on the above information, jogging is not an appropriate use on this refuge.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: John Hay National Wildlife RefugeUse: Pet Dogs

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	☒	☐
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	☒	☐
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	☒	☐
(d) Is the use consistent with public safety?	☒	☐
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	☐	☒
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	☒	☐
(g) Is the use manageable within available budget and staff?	☐	☒
(h) Will this be manageable in the future within existing resources?	☐	☒
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	☐	☒
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	☐	☒

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes ☒ No ☐

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☒Appropriate ☐

Refuge Manager:

Andrew C. FrenchDate: 06-11-10

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor:

[Signature]Date: 6-14-10

A compatibility determination is required before the use may be allowed.

FWS Form 3-2319
02/06

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: John Hay National Wildlife Refuge

Use: Pet Dogs

Narrative: Historically, pet dogs have not been allowed on the Refuge or at The Fells. Most visitors use will be concentrated on the Ecology Trail. Dogs could negatively affect the experience of visitors on the trail seeking to observe or photograph wildlife because people pass in close proximity to each other on the narrow trail. It would not be feasible to enforce a leash requirement at this unstaffed refuge. Consequently, dogs walking or running ahead of their owners could negatively impact migratory birds, particularly during nesting season.

Based on the above information, allowing pet dog access is not appropriate on this refuge.

FINDING OF APPROPRIATENESS OF A REFUGE USE

Refuge Name: John Hay National Wildlife RefugeUse: Picknicking

This form is not required for wildlife-dependent recreational uses, take regulated by the State, or uses already described in a refuge CCP or step-down management plan approved after October 9, 1997.

Decision Criteria:	YES	NO
(a) Do we have jurisdiction over the use?	☒	☐
(b) Does the use comply with applicable laws and regulations (Federal, State, tribal, and local)?	☒	☐
(c) Is the use consistent with applicable Executive orders and Department and Service policies?	☒	☐
(d) Is the use consistent with public safety?	☒	☐
(e) Is the use consistent with goals and objectives in an approved management plan or other document?	☐	☒
(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed?	☒	☐
(g) Is the use manageable within available budget and staff?	☒	☐
(h) Will this be manageable in the future within existing resources?	☐	☒
(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources?	☐	☒
(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D, 603 FW 1, for description), compatible, wildlife-dependent recreation into the future?	☒	☐

Where we do not have jurisdiction over the use ("no" to (a)), there is no need to evaluate it further as we cannot control the use. Uses that are illegal, inconsistent with existing policy, or unsafe ("no" to (b), (c), or (d)) may not be found appropriate. If the answer is "no" to any of the other questions above, we will generally not allow the use.

If indicated, the refuge manager has consulted with State fish and wildlife agencies. Yes ☒ No ☐

When the refuge manager finds the use appropriate based on sound professional judgment, the refuge manager must justify the use in writing on an attached sheet and obtain the refuge supervisor's concurrence.

Based on an overall assessment of these factors, my summary conclusion is that the proposed use is:

Not Appropriate ☒Appropriate ☐

Refuge Manager:

Andrew C. FrenchDate: 06-11-10

If found to be **Not Appropriate**, the refuge supervisor does not need to sign concurrence if the use is a new use.

If an existing use is found **Not Appropriate** outside the CCP process, the refuge supervisor must sign concurrence.

If found to be **Appropriate**, the refuge supervisor must sign concurrence.

Refuge Supervisor:

[Signature]Date: 6-14-10

A compatibility determination is required before the use may be allowed.

FWS Form 3-2319
02/06

Justification for a Finding of Appropriateness of a Refuge Use

Refuge Name: John Hay National Wildlife Refuge

Use: Picnicking

Narrative: Picnicking was determined to be a Compatible Use in 1994 when the Refuge consisted of the entire 163.5-acres summer estate of John Hay. This included the manicured grounds around the estate house and to a lesser extent around the guest cottage near the lakeshore. These lawns and gardens were nice spots for people to picnic without affecting the rest of the Refuge. The original Compatibility Determination states that picnicking occurred along nature trails and the lakeshore. It did not anticipate any ill effects from this activity. In 2008, the northern half of the Refuge was conveyed to The Fells in exchange for land added to the Umbagog National Wildlife Refuge. Developed access on the 80 acres now comprising the Refuge is limited to a primitive foot trail known as the John Hay Ecology Trail, and a native surface woods road referred to as the Woods Road. There are no areas that are managed for uses like picnicking. There is a small meadow along the southern boundary that is maintained for habitat diversity, but it is relatively remote and is not mowed each year. The preferred spot for picnicking on the Refuge would undoubtedly be along the Lake Sunapee shoreline. However, one of the ecological attributes of the Refuge is the undeveloped shoreline that supports a healthy shrub/forest community. Allowing picnickers to use the shoreline would result in unacceptable impacts to the vegetation and ultimately could lead to beach erosion. This is already occurring on one part of the shoreline where repeated use, probably by boaters anchoring offshore, has resulted in the native vegetation being replaced by a small beach. This same type of impact would be expected if picnicking was allowed on the Refuge.

Note: Picnicking refers to the traditional sense of the term and is not meant to prohibit people from eating food while engaged in approved activities.

Based on the above information, picnicking is not an appropriate use on this refuge.

Appendix C



Erin Victory/TCI

Young forest stand

Wilderness Review

- Introduction
- Wilderness Inventory
- Wilderness Inventory Conclusions

Introduction

A wilderness review is the process followed to identify and recommend for congressional designation National Wildlife Refuge System (NWRS) lands and waters that merit inclusion in the National Wilderness Preservation System (NWPS). Wilderness reviews are a required element of comprehensive conservation plans (CCPs), and we conduct them in accordance with the refuge planning policy outlined in 602 FW 1 and 3, including interagency and tribal coordination, public involvement, and National Environmental Policy Act (NEPA) compliance.

The wilderness review process is conducted in three phases: inventory, study, and recommendation. We identify refuge lands and waters owned by the Service in fee simple that meet the minimum criteria for wilderness in the inventory phase of the review. These areas are called Wilderness Study Areas (WSAs). In the study phase, we evaluate WSA's to determine if they are suitable for wilderness designation. The findings of the study phase determine whether we will recommend the area for designation as wilderness in the final CCP. In the recommendation phase, we forward our wilderness recommendations from the Director to the Secretary of Interior (Secretary). The Secretary next forwards the final proposal to the President for consideration. The President is then responsible for formally transmitting to both houses of Congress recommendations for wilderness designation. We will conduct a wilderness review on a given refuge every 15 years through the CCP process, or sooner if significant new information becomes available affecting wilderness potential, or if a major refuge expansion occurs that warrants a reevaluation.

Site Description

The Refuge is approximately 80 acres and is located in the Town of Newbury, in Merrimack County, New Hampshire (NH) (Map 1-2). The Refuge has approximately 3,100 feet of shoreline frontage on Lake Sunapee. It is bounded on the east by NH Route 103A, to the north by property formerly owned by the Service, but now owned by The Fells, to the west by Lake Sunapee, and to the south by a private landowner. The Refuge is contiguous except for a small 1/10 acre island located a short distance from the shoreline near the northwestern corner of the contiguous tract (Map 1-1).

The Refuge is entirely forested except in the southwestern corner where 1.4 acres is currently being maintained in an open condition via mowing. The current forest is a result of old field succession, where-in abandoned farm fields and pastures were allowed to revert back to forest. This reforestation process started around 1890, at the time when John Hay began acquiring parcels of land that were previously used for agricultural purposes. After acquisition, these parcels were allowed to develop and mature into a forest. No timber harvesting or forest management has occurred on the property outside of salvage harvesting that occurred directly after a hurricane in 1938.

This property is very unique in that it has not been managed or manipulated by humans since it was a farm field (circa 1890) resulting in an abundance of old, large diameter trees throughout the Refuge. The disturbance to the forest from the hurricane in 1938 resulted in a second age class of trees that is now reaching seventy years old. Small scale disturbances from such agents as lightning strikes and wind events is evident and is creating the features that are more common with forests that have developed through natural processes, such as coarse woody debris on the forest floor, large snag and cavity trees, and a variety of ages of trees. As a whole, the forest can be considered multi-aged, yet the age distribution is not very well balanced. The understory is lacking, but as the forest continues to mature, and natural disturbances continue to occur, an increase in the density of regeneration and shrubbery is likely. A total of five forest stands, two fens, and one small field have been identified on the Refuge.

John Hay NWR was the summer estate of historic figure John Hay, and is located in Newbury, New Hampshire on the shores of Lake Sunapee. The Service acquired the property as a donation from Alice Hay in 1972, but officially took over management of 143 acres of the property in 1987 upon her death. The remaining 21 acres were given over by her children in 1999. In 2008, the northern half of the property was deeded to The Fells, the Friends of John Hay group, which has been actively overseeing and managing the

historic estate and conducting educational programs. The Service will continue to manage the southern 80 acres of the original property as the John Hay NWR. This portion of the estate has the better wildlife habitats and opportunities for wildlife-dependent public uses.

Wilderness Inventory

The wilderness inventory is a broad look at each planning area (Wilderness Inventory Area [WIA]) to identify WSAs. A WSA is required to be a roadless area or a roadless island of any size, meet the size criteria, appear natural, and provide for solitude or primitive recreation. Section 2(c) of the Wilderness Act provides the following definition.

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

The wilderness inventory process was conducted by the Refuge Wilderness Review Team (the CCP Planning Team) comprised of personnel representing the Service and NH Fish and Game Department (NH FGD). After evaluating the Refuge land base, the surrounding landscape, and transportation corridors, the review team considered it most practicable to inventory and assess the Refuge as a whole due to its small size. All 80 acres of the Refuge were assessed in its present state of 95 percent northern forest and the remaining small meadow and wetland areas. This contiguous block was viewed in relation to its separation by major roads and other motorized corridors, including the lake shoreline. The team's first objective was to identify contiguous areas as large as possible that met the roadless criteria. Only lands currently owned by the Service in fee title were evaluated. The review team identified the Refuge as a whole unit as one WIA (Map C-1).

Evaluation of the Roadless Criteria

Permanent roads are prohibited in wilderness under Section 4(c) of the Act. For the purposes of the wilderness inventory, a "roadless area" is defined as: "A reasonably compact area of undeveloped Federal land that possesses the general characteristics of a wilderness and within which there is no improved road that is suitable for public travel by means of four-wheeled, motorized vehicles intended primarily for highway use. A route maintained solely by the passage of vehicles does not constitute a road."

As such, a WSA is required to be a roadless area or a roadless island of any size. The presence of any improved road suitable and maintained for public travel by means of motorized vehicles primarily intended for highway use would preclude WSA consideration. In addition, the review team also excluded from consideration other motorized corridors, such as the lake adjacent to the WSA. The lake in the project area is state jurisdiction waters where motorized boating and use of personal motorized watercraft is allowed. Motorized vehicles and motorized equipment are prohibited refuge uses in wilderness areas.

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

- A. The area does not contain improved roads suitable and maintained for public travel by means of motorized vehicles primarily intended for highway use.

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

Evaluation of the Size Criteria

The size criteria can be satisfied if an area has at least 5,000 acres of contiguous roadless public land, or is sufficiently large that its preservation and use in an unimpaired condition is practicable. The following factors were the primary considerations in evaluating the size criteria:

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

The review team calculated the acreage of the WIA evaluated during the roadless evaluation, to see if it met the size criterion for wilderness character. The team found that the WIA was less than 5,000 acres and not of sufficient size or could be made of sufficient size as to make practicable its preservation and use in an unimpaired condition, and of a size suitable for wilderness management. The team included in the assessment Minute Island (less than an acre), which is surrounded by state waters with existing public recreational use.

Evaluation of the Naturalness Criteria

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

An area may include some human impacts provided they are substantially unnoticeable in the unit as a whole. Significant hazards caused by humans, such as the presence of unexploded ordnance from military activity and the physical impacts of refuge management facilities and activities are also considered in evaluating the naturalness criteria.

An area may not be considered unnatural in appearance solely on the basis of the sights and sounds of human impacts and activities outside the boundary of the unit. The cumulative effects of these factors in conjunction with land base size, physiographic and vegetative characteristics were considered in the evaluation of naturalness.

The following factors were the primary considerations in evaluating naturalness.

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

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

Evaluation of the Solitude or Primitive and Unconfined Recreation Criteria

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

Opportunities for solitude refer to the ability of a visitor to be alone and secluded from other visitors in the area. Primitive and unconfined recreation means non-motorized, dispersed outdoor recreation activities that are compatible and do not require developed facilities or mechanical transport. These primitive recreation activities may provide opportunities to experience challenge and risk; self reliance; and adventure. These two elements are not well defined by the Wilderness Act, but can be expected to occur together in most cases. However, an outstanding opportunity for solitude may be present in an area offering only limited primitive recreation potential. Conversely, an area may be so attractive for recreation use that experiencing solitude is not an option.

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

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

Evaluation of the Supplemental Values Criteria

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

Wilderness Inventory Conclusions

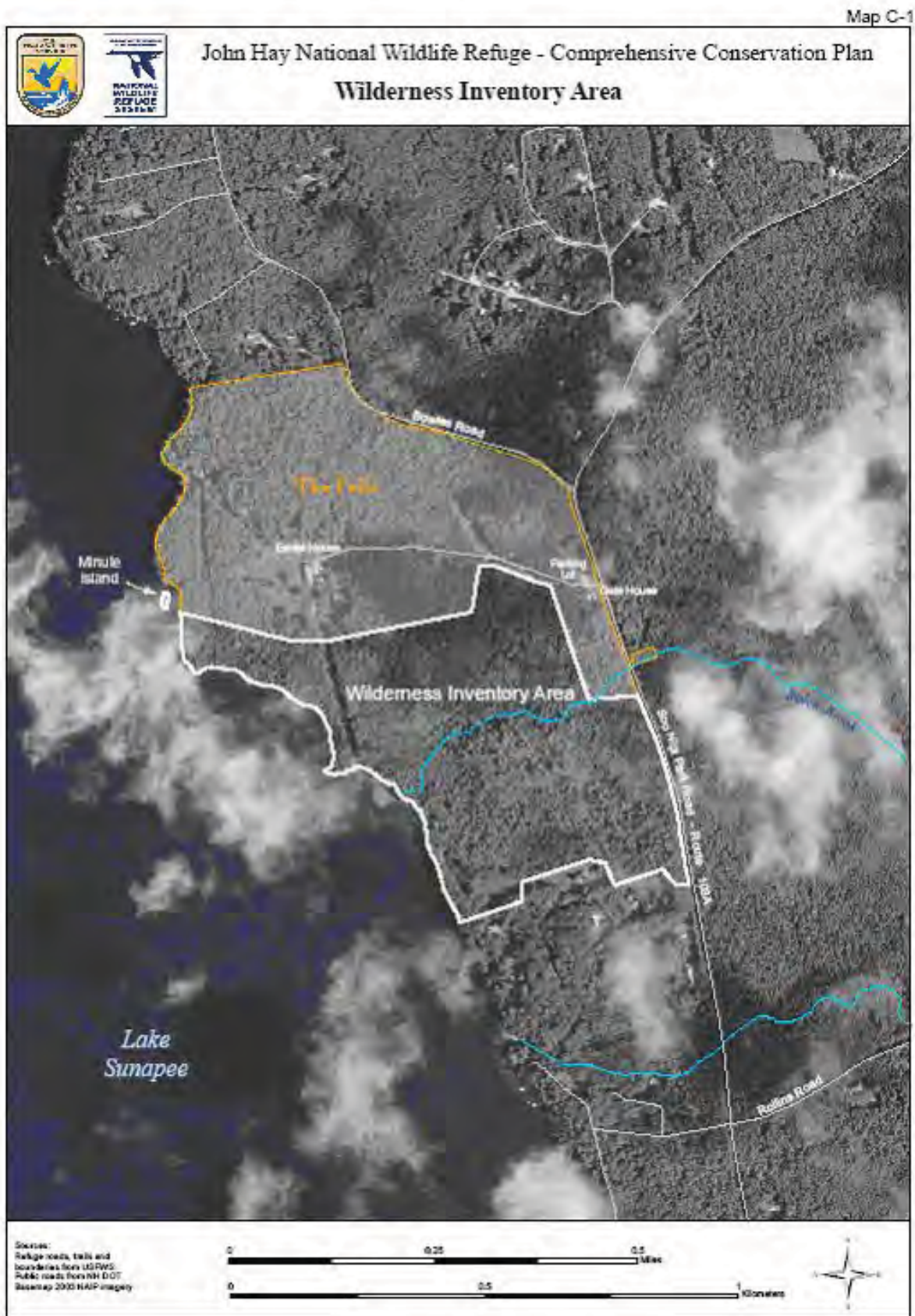
The Refuge Wilderness Review Team inventoried the lands and waters in fee title ownership within the John Hay National Wildlife Refuge, and found that no lands met the minimum criteria to be WSAs. The review team identified one WIA, the refuge unit in its entirety, and found that it did not meet the minimum criteria. The team considered various configurations of the land base to see if a larger roadless WIA could be created, but determined none could be made larger. The team considered refining the WIA by eliminating areas with no obvious wilderness character; however, they determined that further refinement of the WIA would result in much smaller areas with unmanageable boundaries. The Refuge is bounded by NH Route 103A for over 1,000 feet on its eastern boundary. From a refuge administration and management standpoint, effective law enforcement, visitor services, and public safety programs within the refined areas

would not be practicable. As a result, the team concluded that refining the size of the WIA would not make practicable its preservation and use in an unimpaired condition, and they would not be of a size suitable for wilderness management.

The team determined that the WIA, as identified on Map C-1, does not meet the criteria for a WSA as defined by the Wilderness Act. In conclusion, we do not recommend this WIA be evaluated further as a WSA. A summary of our CCP Planning Team Wilderness Review findings are listed in Table C.1.

Table C.1. John Hay NWR Wilderness Review Finding Summary.

<i>Criteria</i>	<i>Finding</i>
Refuge unit and acreage	John Hay NWR 80 acres
(1) has at least 5,000 acres of land or is of sufficient size to make practicable its preservation and use in an unconfined condition, or is a roadless island;	No, the Refuge is only 80 acres in size. The one-acre, Minute Island is roadless, but not of sufficient size to warrant a WSA.
(2) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable;	Yes, impacts of recreational use is substantially obscured by the forces of nature.
(3a) has outstanding opportunities for solitude;	No, the small NWR does not offer sights and sounds of wilderness, as it is in a populated residential and recreational lake area. Homes, state parks, ski resorts, and other improvements are visible from the NWR.
(3b) has outstanding opportunities for a primitive and unconfined type of recreation;	No. Due to its small size in a populated area, these opportunities do not exist.
(4) contains ecological, geological or other features of scientific, educational, scenic, or historical value.	Yes. The Fells, adjacent to the Refuge maintains the historic buildings and grounds of the John Hay family. The old and young successional stages of the northern forest habitat supports several priority bird species.
Parcel qualifies as a wilderness study area (meets criteria 1, 2, and 3a or 3b)	No





Erin Victory/TCI

Refuge boundary signs

Refuge Operations Needs (RONS) and Service Asset Maintenance Management System (SAMMS)

- **RONS**
 - Proposed projects
- **SAMMS**
 - Backlogged projects
 - Proposed projects

Refuge Operations Needs (RONS)

Table D.1. Proposed Refuge Operations Needs Projects (RONS) for the John Hay National Wildlife Refuge.

<i>Project Title</i>	<i>Project Number</i>	<i>Costs: Year 1</i>	<i>Costs: Recurring</i>	<i>FTE Personnel</i>
Provide Visitor Services at the Refuge	New	\$30,000	\$20,000	0.5
Inventory and Control Invasive Plants	New	\$8,000	\$3,000	0
Inventory and Map Wetlands and Obligate Wildlife	New	\$10,000	\$0	0
Inventory Beech Brook In-stream Habitat, Water Quality, and Fish Populations	New	\$10,000	\$0	0
Expand Refuge Outreach	New	\$5,000	\$3,000	0
Expand Existing Meadow Acreage and Manage for Focal Species	New	\$8,000	\$1,000	0
Inventory and Analyze Refuge Habitats (Year 10)	New	\$5,000	0	0

Service Asset Maintenance Management System (SAMMS)

Table D.2. Projects currently backlogged in the SAMMS database FY09 for John Hay NWR.

<i>Project Number</i>	<i>SAMMS Work Order Number</i>	<i>Project Description</i>	<i>Cost Estimate (\$1,000)</i>
	2006554673	Rehabilitate trail with surface materials, edging, and interpretation	20

Table D.3. New projects proposed for SAMMS database for John Hay NWR.

<i>Project Number</i>	<i>Project</i>	<i>Costs</i>	<i>Rank</i>
New	Replace Old Refuge Boundary Signs & Maintain Boundary Line	\$5,000	1
New	Replace Ecology Trail Crossing of Beech Brook with Footbridges	\$10,000	2
New	Construct Gated Parking Area for Anglers	\$25,000	3
New	Construct Interpreted Angler Trail to lake	\$10,000	4
New	Replace Trail Interpretation with Fiberglass-embedded Signs & Kiosks at Trailheads	\$19,000	5
New	Construct Spur Trail to Fen	\$5,000	6

Appendix E

Barry Parrish/USFWS



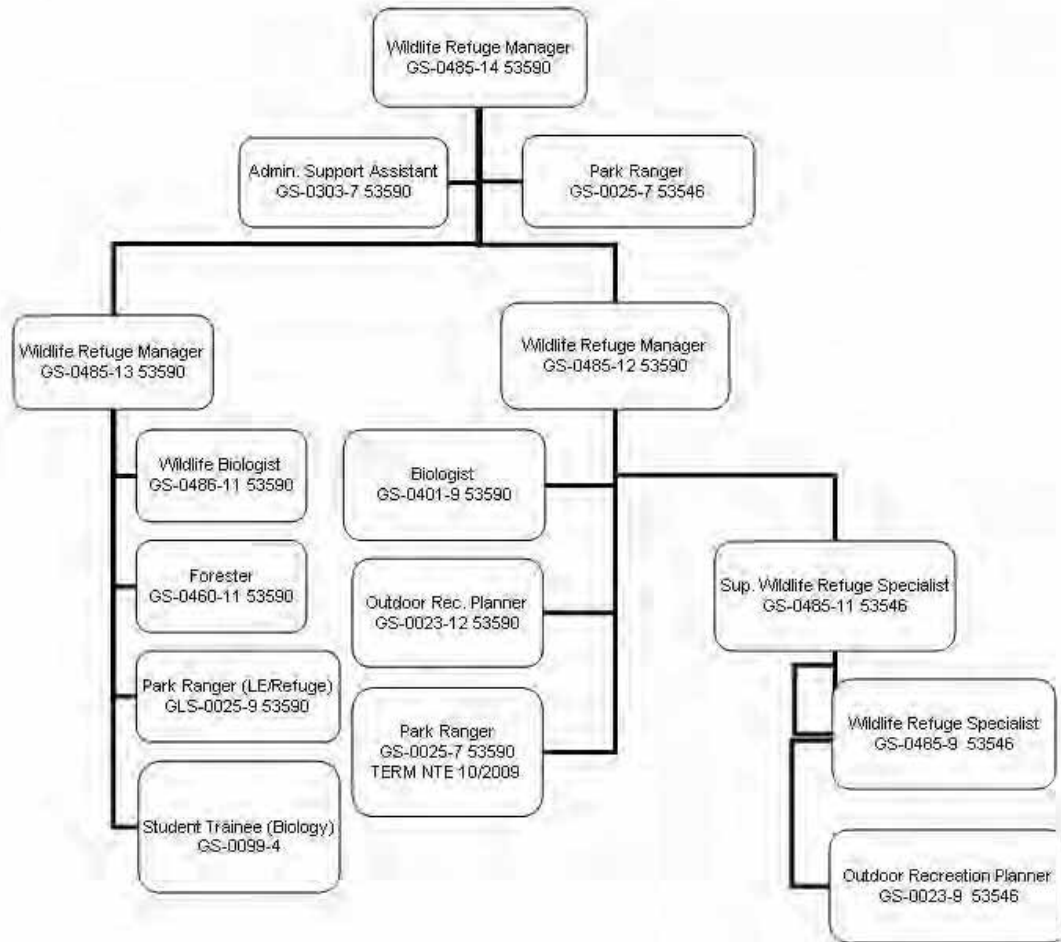
Hemlock stand

Staffing Chart

Org Code: 53590



**U.S. Fish and Wildlife Service
Silvio O. Conte National Fish and Wildlife Refuge
(Silvio O. Conte/Nulhegan Basin Division/Stewart B. McKinney/John Hay)
Proposed Staff (Alternative B)**



Temps and Contractors

- 1 GS-7 Park Ranger
(Interpretation)
- 3 GS-5 Bio-Techs
- 1 GS-4 Bio-Tech
- 1 GS-4 Visitor Services
- 1 GS-2 Maintenance Worker

GS levels indicate full performance level

Appendix F



The Fells existing parking lot

Summary of Public Comments and Service Responses on the Draft Comprehensive Conservation Plan and Environmental Assessment for the John Hay National Wildlife Refuge

Introduction

In February 2010, we completed the “John Hay National Wildlife Refuge Draft Comprehensive Conservation Plan and Environmental Assessment” (Draft CCP/EA). That draft refuge plan outlines three alternatives for managing the refuge over the next 15 years, and identifies Alternative B as the “Service-preferred Alternative.” We released the draft plan for 30 days of public review and comment from February 18 to March 22, 2010.

We evaluated all the letters and e-mails sent to us during that comment period, along with comments recorded in our public meeting. This document summarizes those comments and provides our responses to them. Based on our analysis in the Draft CCP/EA, and our evaluation of comments, we selected Alternative B, and recommended it to our Regional Director for implementation. It is that Alternative B which is detailed in this CCP.

Based on the comments received by the public and the planning team, we modified the draft CCP slightly. Our modifications include additions, corrections, or clarifications of our preferred management actions. We have also determined that none of those modifications warrants our publishing a revised or amended draft CCP/EA before publishing the CCP. These are some important changes we made.

1. We clarified that the shoreline will be monitored for impacts related to angler access once the fishing program is implemented (Chapter 4 of the final CCP, pages 4-26 and 4-27).
2. We inserted language in the Strategies to implement Objective 2.2 (Chapter 4 of the final CCP, page 4-27) that we will consult with the Town, NH Department of Transportation and NH SHPO to ensure that the new angler parking area will be safe and will minimize effects to cultural and historical resources.
3. We revised the language in the draft CCP stating that we will pursue a new MOU with The Fells, replacing the language “MOU” with “Partnership Agreement” in the final CCP.
4. We made minor edits to some of the FOA in Appendix B to include more recent justification(s) language.
5. We updated the staffing chart in Appendix E to reflect current staffing personnel.
6. We corrected all format and typographical errors that were brought to our attention.

Our Regional Director will either select our Alternative B for implementation, or one of the other two alternatives analyzed in the Draft CCP/EA, or a combination of actions from among the three alternatives. He will also determine whether a Finding of No Significant Impact (FONSI) is justified prior to finalizing his decision. He will make his decision after:

- Reviewing all the comments received on the Draft CCP/EA, and our response to those comments; and,
- Affirming that the CCP actions support the purpose and need for the CCP, the purposes for which the refuge was established, help fulfill the mission of the Refuge System, comply with all legal and policy mandates, and work best toward achieving the refuge’s vision and goals.

Concurrent with release of the approved CCP, we are publishing a notice of the availability in the *Federal Register*. That notice will complete the planning phase of the CCP process, and we can begin its implementation phase.

Summary of Comments Received

Given our interest in an objective analysis of the comments we received, we evaluated and categorized by subject or issue all of the comments we received, including all letters, e-mails, and comments recorded at the public meeting. Our responses below follow the subject headings.

During the comment period, we received 18 responses, both written and oral. We gathered oral comments at a public meeting attended by 15 people on March 11, 2010, at the Newbury, NH, Town Hall.

We received comments from these organizations:

Lake Sunapee Protective Association
Newbury Conservation Commission
Society for the Protection of New Hampshire Forests
The Fells

In the discussions below, we address every substantive comment received. Occasionally, comments received fell under two or more subject headings. In our responses, we may refer the reader to other places in this document where we address the same comment.

Directly beneath each subject heading, you will see a list of unique letter ID numbers that correspond to the person, agency or organization that submitted the comment. The cross-referenced list appears as attachment 1 to this appendix.

In several instances, we refer to specific text in the Draft CCP/EA, and indicate how the CCP was changed in response to comments. You have several options for obtaining the full version of either the Draft CCP/EA or the CCP. They are available online at <http://www.fws.gov/northeast/planning/JohnHay/ccphome.html>. For a CD ROM or a print copy, contact the refuge planner.

Eastern Massachusetts NWR Complex
73 Weir Hill Road
Sudbury, MA 01776
Phone: 978/443 4661
Fax: 978/443 2898, Attn: Carl Melberg
Email: northeastplanning@fws.gov

Service Responses to Comments by Subject

Public Uses

Fishing Program

(Letter ID#: 8, 9, 11, 14, 15, 17)

Comment: Six individuals and organizations expressed concerns to the U.S. Fish and Wildlife Service (Service; we, us) regarding the addition of a fishing program at John Hay National Wildlife Refuge (Refuge). Concerns received in both written and oral comments include that demand for the fishing program will be low because of other fishing opportunities and events nearby on Lake Sunapee, that the program will lead to more human traffic and associated environmental degradation from human impacts, that the provision of an angler trail and fishing program will lead to future development of a dock and/or boat launch, that there may be conflicts of interest between hiker-viewers and anglers on Beech Brook, and

that the shallow water depths along the Refuge's lake shoreline are too shallow to provide a quality fishing experience and that anglers will need to fish from the water instead of the shoreline.

Response: Our planning team is recommending Alternative B, including the addition of a fishing program at the Refuge, because we believe, in our best professional judgment, it best achieves the purposes, vision, and goals of the refuge; contributes to the mission of the Refuge System; adheres to Service policies and other mandates; addresses identified issues of significant; and, incorporates sound principles of fish and wildlife science. In summary, we believe it fully protects and enhances the wildlife resources we are entrusted to manage.

We will allow only the activities determined appropriate and compatible as prescribed in Service policy 603 FW 1 and 2. Hunting, fishing, wildlife observation and photography, and environmental education and interpretation, when compatible, are the priority general wildlife-dependent uses of the National Wildlife Refuge System. According to Service policy 603 FW 1.3, these six wildlife-dependent recreational uses are determined to be appropriate, and therefore, do not require a separate Finding of Appropriateness. Service Manual 605 FW 1 states that these uses should receive preferential consideration in refuge planning and management before the refuge manager analyzes other recreational opportunities for appropriateness and compatibility.

The fishing program will provide a new priority public use at the Refuge and is not intended to be a replacement of local programs, some of which are one-time events rather than an area open to fishing during the state's fishing season.

The environmental consequences likely to occur with the addition of a fishing program were evaluated and described in Chapter 4 of the draft CCP/EA, primarily on pages 4-18 and 4-19, and we believe, in our best professional judgment, that the impacts will be minimal. Angler access would be restricted to the southeast corner where the Woods Road meets Route 103A. Two to three vehicles would be allowed to park on a short section of the Woods Road. If necessary, the present gate would be moved to accommodate the vehicles, but vehicle access beyond the parking area would be restricted. A new primitive foot trail would connect this parking area with the Lake Sunapee shoreline, which would create a minimal increase in disturbance to the surrounding habitat and wildlife. Anglers would not be allowed to park in the parking lot adjacent to The Fells gatehouse. These access restrictions should minimize disturbance to the shoreline and associated wildlife by limiting the number of anglers present at any one time and their route to the lake shoreline.

Neither a dock nor a boat launch facility were proposed in the Service's preferred alternative (Alternative B) in the draft CCP/EA or this final CCP; this CCP covers the Service's management strategies for the Refuge for the next 15 years, and any significant modifications to those strategies, such as the construction of new facilities along the lakeshore, would require additional NEPA documentation and corresponding public comment and review.

We believe that any potential conflicts of interest between anglers and hiker-viewers along Beech Brook are likely to be minimal, as described in Chapter 4 of the draft CCP/EA on page 4-26. Because fishing is a quiet pastime that often requires some amount of solitude for success, it is anticipated that anglers may choose times of the day and locations on the Refuge that would minimize interactions with other Refuge recreationists, although peak periods of use would undoubtedly be weekends and holidays. Most visitors will be concentrated on the Ecology Trail, which is on the northern portion of the Refuge and disjunct from the proposed angler access. While Beech Brook will be open to fishing, this small stream is not considered a high quality fishery and is unlikely to draw many anglers. We do not anticipate substantial user conflicts between anglers and other Refuge visitors because they will tend to be spatially separated. In addition, fishing is a generally accepted pastime, and the inclusion of this activity as a public use is not anticipated to result in negative responses by other Refuge users.

We acknowledge that the shoreline itself is heavily vegetated in most areas without a beach; therefore most fishing is anticipated to be done by wading in the shallow lake waters and not from the Refuge shoreline (page 4-18 of the draft CCP/EA).

Hunting

(Letter ID#: 1, 2, 5)

Comment: Two individuals submitted comments opposed to allowing a hunting program at the Refuge and one individual expressed support for Alternative C, including the hunting program proposed under that alternative.

Response: The addition of a hunting program to the Refuge was considered under Alternative C in the draft CCP/EA (Chapter 4). As described in this final CCP, Alternative B was chosen as the preferred alternative to implement; this alternative does not include a hunting program, and as a result hunting will continue to be prohibited at John Hay National Wildlife Refuge. Our planning team is recommending Alternative B because we believe, in our best professional judgment, it best achieves the purposes, vision, and goals of the refuge; contributes to the mission of the Refuge System; adheres to Service policies and other mandates; addresses identified issues of significance; and, incorporates sound principles of fish and wildlife science. In summary, we believe the selected alternative fully protects and enhances the wildlife resources we are entrusted to manage, and a hunting program is not warranted.

Jogging

(Letter ID#: 6)

Comment: One individual argued that jogging should be considered a compatible use at the Refuge and that the Finding of Appropriateness and Compatibility Determination for jogging as a public use, as described in Appendix B, be revised to allow jogging at the Refuge.

Response: In planning which public recreational uses to consider, we first evaluated the potential to expand or enhance the six priority public uses. We next considered other uses that would not materially detract from the purposes for which the refuge was established. We describe some of the uses that were determined not to be appropriate in draft CCP/EA, Chapter 2, “Activities not Allowed” (page 2-11), and again in this CCP on pages 4-8 and 4-9 of Chapter 4. Appendix B compiles all the uses that were evaluated in detail to determine appropriateness and compatibility. We believe the combination of activities we propose in Alternative B, under Goal 2, and carried forth in the CCP, provide the best mix of activities, with emphasis on the priority public uses, that should be developed over the next 15 years. According to the Service Manual regarding Compatibility Determinations and FOA, jogging is not a wildlife-dependent nor a high priority public use. Moreover, there are sufficient opportunities for jogging on other nearby lands, including the Forest Society’s Hay Forest Reservation adjacent to the Refuge, so the lack of access on the Refuge does not eliminate those opportunities in the Lake Sunapee region.

Educational and Partnership Programs

(Letter ID#: 6, 7, 14, 15, 17)

Comment: One organization stated that there was no need for new educational kiosks and signs at the Refuge that would turn it into a “zoo-like environment,” and that the Service could collaborate with the LSPA and The Fells on educational programs. Four individuals expressed support for the proposed educational sign improvements and visitor services, including placing signs along the lakeshore to discourage the use of the area as a recreational area or as a place where kids could swim and play on the

beach. One individual recommended that signs placed along the lakeshore be seasonal instead of permanent.

Response: We appreciate the support for our recommended educational signs and kiosks. Any signs and/or kiosks will be developed in coordination with our partners, which was identified as a priority within The Fells' Master Plan as well as this CCP. The signs we propose to install along the lakeshore will be those traditionally used by the Service to demarcate Refuge boundaries and facilitate law enforcement of unauthorized activities. These signs are designed to be permanent, durable and able to withstand seasonal weather conditions and will be replaced as needed due to weathering or bleaching. The rationale for the installation of new kiosks and signs along the trails and shoreline of the Refuge was described on pages 4-11, 4-17, 4-18, 4-21 4-26, and 4-28 of the draft CCP/EA and again on page 4-29 of this final CCP. We believe that they will improve interpretive and educational programming at the Refuge and are intended to discretely and unobtrusively, using as natural a design as possible, provide information on the wildlife and habitat that visitors experience at the Refuge.

Habitat Management

Consistency with Alice Hay's Original Intent

(Letter ID#: 3, 4, 11, 14, 15)

Comment: Four individuals and one organization expressed concern that Alternative B was not as consistent with Alice Hay's original intent in donating land to the Service as a sanctuary for migratory birds and Atlantic northern forest as Alternative A. Alternative B, the Service's preferred alternative, would lead to an increase in human impacts as compared to the current management strategy described in the do-nothing Alternative A.

Response: Alternative A was fully analyzed as an option in the draft CCP/EA, but is not the alternative recommended by our planning team. Our team is recommending Alternative B because we believe, in our best professional judgment, it best achieves the purposes, vision, and goals of the refuge; contributes to the mission of the Refuge System; adheres to Service policies and other mandates; addresses identified issues of significance; and, incorporates sound principles of fish and wildlife science. In summary, we believe it fully protects and enhances the wildlife resources we are entrusted to manage, including migratory birds.

Using our best professional judgment, we developed goals and objectives for Alternative B in the draft CCP/EA, and carried them forth in the CCP, that would conserve and protect natural resources and that we believe are consistent with the Hay family's original intent in establishing the Refuge. Those goals and objectives were developed after consulting with wildlife experts in federal and state agencies. The CCP includes provisions to reduce existing human impacts to the environment such as the installation of foot bridges at the Hay Ecology Trail crossings of Beech Brook. Chapter 5 of both the draft CCP/EA and CCP provide a summary of our coordination and consultation with others.

Trail Relocation and Improvement

(Letter ID#: 6, 7, 8, 9, 11, 14, 16)

Comment: Six commenters stated support for the proposed trail expansions and improvements, including the improved stream crossings over Beech Brook. One comment heard at the public meeting, however, opposed the addition of a new trail to the fen, and another written comment expressed concern regarding the angler trail and the potential for it to lead to future development along the lakeshore.

Response: We appreciate the support for our recommended alternative, specifically the management objectives regarding the trail improvements and improved stream crossings over Beech Brook. The

environmental consequences likely to occur with the addition of a new trail to the fen were evaluated and described in Chapter 4 of the draft CCP/EA on pages 4-21 to 4-22, and we believe, in our best professional judgment, that the impacts will be minimal. This trail would be a native surface trail with minimal to no construction required, and would be marked by directional trail signs. The trail would end at some distance to one of the fens where a short post and rail fence would keep visitors away from the fen, and where interpretive signage would provide information about fens.

Regarding the potential for the addition of a trail for anglers to the lakeshore to lead to future development of the shoreline with additional facilities, see the response discussion above under *Fishing Program*.

Meadow Expansion

(Letter ID#: 3, 6)

Comment: One individual submitted comments in support of the proposed meadow expansion, while another expressed concerns that expansion of the meadow may not be feasible since a “benevolent abutter” currently mows the existing meadow, not the Service.

Response: We appreciate the support for our proposed meadow expansion. As described on page 4-19, under Objective 1.2, Strategies, we intend to identify partnership opportunities for mowing the field within five years of implementation of this CCP.

Habitat Management Objectives

(Letter ID#: 8)

Comment: The Service received one letter expressing concerns that the habitat management objectives for all three alternatives (Alternatives A, B and C) were not clear.

Response: We identified the habitat management objectives for each of the alternatives in Chapter 2 of the draft CCP/EA, numbering each and presenting them in bold type. The specific habitat management objectives for Alternative A were presented on pages 2-18 to 2-25, for Alternative B on pages 2-31 to 2-48, and for Alternative C on pages 2-53 to 2-67. The overall habitat management objectives for the CCP are described on page 4-11, and for specific objectives of the recommended alternative, Alternative B, are reiterated in Chapter 4 of this CCP on pages 4-14 through 4-33 and retain their sequential numbering. Moreover, we intend to initiate a Habitat Management Plan immediately following implementation of this CCP (see page 4-9 of this CCP).

Monitoring of Environmental Consequences

Impacts to Water Quality and Protection of the Lake Sunapee Shoreline

(Letter ID#: 3, 4, 6, 11, 15, 17)

Comment: Several comments were received describing the importance of the Refuge as an undeveloped parcel on Lake Sunapee amidst increasing development elsewhere along the lakeshore. One individual described protecting the shoreland as “critical,” and two others described the importance of the Refuge in mitigating stormwater runoff and protecting the water quality of the Lake Sunapee watershed. One organization expressed concerns that Alternative B would result in lakeshore degradation from human impacts and erosion. Another individual supported the prohibition on boats beaching along the Refuge shoreline but did not want foot traffic to be prohibited from accessing the lakeshore. Two comments were received regarding signage at the lakeshore – one in favor of the use of seasonal signs instead of permanent signs, and the other recommending prominent signs to discourage use of the lakeshore as a recreational

area. One individual opposed any changes to the Refuge that would lower the level of preservation and protection of the lake and water quality with increasing local and regional development.

Response: We concur that the Refuge provides a valuable function in protecting the resources of the Lake Sunapee shoreline and watershed. We will adhere to all requirements for permits and consultations that apply to national wildlife refuges regarding the protection of water quality and water resources.

In addition, we evaluated the environmental consequences for the CCP on water quality, as described on pages 4-5 to 4-8 of the draft CCP/EA under “Effects on Water Quality” and on the shoreline specifically under “Effects on Shoreline/Minute Island” (pages 4-17 to 4-19). Trail improvements would be designed to protect and maintain the integrity of Beech Brook while still allowing visitors to observe and explore it. Hiring a seasonal visitor services staff person would enhance our capacity to monitor public uses, ensure greater compliance of allowed and prohibited uses, and provide more public outreach on the value and sensitivity of the lakeshore and brook. These proposed activities would provide greater water quality protection than under Alternative A. In addition, we would work with the Lake Sunapee Protective Association to assess the potential effects of Route 103A winter road treatments on the water quality of Beech Brook; we would work with them and the local road authority to take mitigating steps, if necessary.

We appreciate the support for the continued prohibition on the beaching of boats along the Refuge shoreline, and the CCP does not propose any changes to the accessibility of the shoreline by foot traffic. The shoreline will remain accessible to foot traffic. The CCP recommends the use of new signage along the lakeshore to inform the public of the Refuge boundary and unauthorized uses; see the response discussion under *Educational and Partnership Programs* above for more details.

Alternative B, as described in this CCP and the draft CCP/EA, does not recommend any changes in Refuge management that would lower the level of preservation or protection of the lake and water quality; in fact, land protection is a central theme to the CCP (see page 4-4).

The permanent protection of land is the keystone of wildlife and habitat conservation. Land brought into the Refuge System will be available forever to support fish, wildlife, and plants. We can restore, enhance, or maintain the land owned by the United States and managed as part of the Refuge System to provide suitable conditions for priority species targeted for conservation, such as threatened or endangered species and those whose populations are in decline. The land we protect through conservation easements will never convert to uses that will remove permanently their value for fish and wildlife.

Though the Refuge encompasses the approved acquisition boundary, it is part of a regional matrix of conserved land. It is our goal to create new and enhance our existing conservation partnerships to both encourage and provide education about land conservation in the region.

To continue our progress toward our shared objectives in protecting land, we will employ the following, ongoing strategies.

1. Participate in local land protection meetings with partners to facilitate communication and cooperation.
2. Provide information to elected officials on land protection issues upon request.
3. Work with partners and landowners to encourage land conservation outside the Refuge boundary.
4. Keep communities around the Refuge informed about land protection issues through the distribution of outreach material and personal appearances by staff.

Impacts from an Increase in Visitation / Human Use
(Letter ID#: 4, 8, 10, 11, 15)

Comment: One individual recommended that the Service be flexible in choosing management measures that are appropriate for the Refuge property; this individual also promoted low-impact and appropriate uses. A second individual opposed an increase in human usage of the Refuge, concerned about impacts to wildlife. A third individual expressed concern with the Service's ability to control people and the environmental impacts that may result. A fourth individual was concerned that an increase in human visitation would negatively impact migratory birds and wildlife. Finally, one organization was concerned that the increase in human visitation and use of the Refuge is inconsistent with the Hay family's intent for the land to be a migratory bird sanctuary.

Response: This CCP includes adaptive management as a central theme to its management strategies (pages 4-3 to 4-4). By incorporating an adaptive management approach into our management of the Refuge, we will be able to be flexible in choosing the appropriate management actions as conditions change or as monitoring indicates a change is warranted. All public uses of the Refuge must be evaluated with a Finding of Appropriateness and/or Compatibility Determination, as contained in Appendix B. As a result, only uses found to be appropriate will be approved and implemented at the Refuge. Uses that could potentially result in high or significant impacts to Refuge resources would require additional NEPA compliance.

The impacts to wildlife and other Refuge resources were evaluated in Chapter 4 of the draft CCP/EA. Alternative B, which is recommended for implementation in this CCP, is not likely to result in any significant, adverse impacts to any Refuge resource, including birds and wildlife (e.g., see pages 4-12 to 4-15 of the draft CCP/EA, "Effects on Forest Habitat and Wildlife" and pages 4- 23 to 4-24 for "Effects on Migratory Birds"). We believe that this CCP includes all reasonable and prudent measures to limit the environmental impacts from increased human use of the Refuge; see the response discussion below on *Law Enforcement and Supervision of Impacts* regarding our ability to monitor and prevent environmental impacts from Refuge visitors. The response discussion immediately below on *Impacts to Meadow and Migratory Birds* describes our response to concerns that an increase in human use of the Refuge may negatively impact avian resources. Finally, see the response above under *Consistency with Alice Hay's Original Intent* regarding concerns that an increase in visitor use of the Refuge may be inconsistent with the Hay family's intent in establishing the Refuge as a migratory bird sanctuary.

Impacts to Meadow and Migratory Birds
(Letter ID#: 4, 6, 11, 15)

Comment: Three individuals and one organization submitted comments regarding impacts to meadow and/or migratory birds at the Refuge. One expressed concern that an increase in human visitation would negatively impact migratory birds and wildlife. A second recommended maintaining the Woods Road as an open area, providing more edge habitat and avian diversity. The third individual was concerned that Alternative B would negatively impact meadow birds, and one organization stated that Alternatives B and C would make the Refuge unsuitable for nesting birds and as a resting area for migratory birds.

Response: The impacts to meadow and migratory birds were evaluated in Chapter 4 of the draft CCP/EA. Alternative B, which is recommended for implementation in this CCP, is not likely to result in any significant, adverse impacts to any Refuge resource, including meadow and migratory birds (see page 4-16 of the draft CCP/EA, "Effects on Meadow Habitat," and pages 4-23 to 4-24, "Effects on Migratory Birds"). In our evaluation, we concluded that neither Alternative B nor Alternative C would render the Refuge unsuitable for nesting or migratory bird stopovers (see pages referenced above of the draft CCP/EA).

In this CCP we are not seeking to increase forest edge for biological diversity, as recommended by the commenter in regards to utilizing Woods Road as an area to increase edge habitat. Our intent is to expand

the size of the existing meadow, which, as a by-product will increase the meadow/forest edge, but not impact forest interior habitat.

We include the following recommendations for protecting birds and wildlife in Chapter 4 of the CCP under the respective goals and objectives noted:

- Collaborate with partners including NH Audubon and NH FGD to conduct bird species inventories every 10 to 15 years to monitor species presence over time (Goal 1 – Objectives 1.1, Forest Habitat and 1.2, Meadow Habitat).
- Ensure that Refuge habitat complements the larger landscape composition and structure for priority species (Goal 1 – Objectives 1.1, Forest Habitat).
- Monitor to ensure that management activities including trail relocation do not adversely impact the fens (Goal 1 – Objective 1.3, Wetlands Habitat).
- Inventory and georeference vernal pools on the Refuge, before any trail enhancement or habitat management is implemented (Goal 1 – Objective 1.3, Wetlands Habitat).
- Record the presence/absence of vernal pool-obligate species according to acceptable survey protocols (Goal 1 – Objective 1.3, Wetlands Habitat).
- Post the area around the mouth of Beech Brook as closed to the beaching of boats (Goal 1 – Objective 1.4, Riparian and In-stream Habitat).
- Relocate the Refuge's nature trail away from sensitive riparian areas and/or replace existing crossings with a footbridge(s) if it is found to negatively affect stream health (Goal 1 – Objective 1.4, Riparian and In-stream Habitat).
- Assess the impacts of rafting, and other public use on the biological health and integrity of Beech Brook and manage to mitigate those impacts (Goal 1 – Objective 1.4, Riparian and In-stream Habitat).
- Install signs closing the Refuge shoreline and Minute Island to all rafting, beaching of boats, and public access from the lake to minimize adverse impacts to the undeveloped shoreline and nearshore habitats (Goal 1 – Objective 1.5, Shoreline/Minute Island).

Impacts to Trees
(Letter ID#: 4)

Comment: One individual submitted comments with concerns that the proposed management strategies would impact the trees of the Atlantic northern forest protected on the Refuge.

Response: Protection of the Atlantic northern forest is Goal 1 in this CCP (page 4-14). The environmental consequences likely to occur with the implementation of Alternative B were evaluated and described in Chapter 4 of the draft CCP/EA on pages 4-12 to 4-15, and we believe, in our best professional judgment, that the impacts to trees and Atlantic northern forest will be minimal. The CCP does not recommend any alterations to the forest habitat of the Refuge except for an expansion of the existing meadow by up to 1.6 acre. As described on pages 4-16 to 4-17, the expansion will occur through the selective removal of small trees and saplings by hand without impacting the mature forest overstory. No mechanized equipment will be used, which will minimize impacts. In addition, the only long-term forest maintenance activities (Objective 1.1, page 4-14) will be maintenance of the viewing corridor, removal of felled or snagged trees that pose a safety hazard to visitors, and removal of trees infected by pathogens to protect the remaining trees from infestation.

Law Enforcement and Supervision of Impacts
(Letter ID#: 11, 15)

Comment: One individual expressed concern with the Service's ability to control people and the environmental impacts that may result, and one organization asked who will oversee the increased public use of the Refuge as described in the CCP.

Response: The Service has Law Enforcement personnel on staff at the Conte Refuge, which covers the John Hay Refuge and responds to incidents as needed. As described under Objective 1.5 of this CCP (page 4-24), we will deploy law enforcement officers to patrol the Refuge on select high-use days and work with NH Marine Patrol to monitor and enforce posted Refuge signs. We also intend to collaborate with the NH FGD on law enforcement programs (Objective 3.3, page 4-33). The addition of a seasonal staff member on-site during the periods of highest visitation to the Refuge will allow the Service to supervise public use and any impacts resulting from that use. We intend to complete a Law Enforcement Plan for the Refuge within 3 years of the implementation of this CCP (see page 4-9). Moreover, the addition of educational signs and kiosks will inform visitors of allowable and unauthorized public uses throughout the Refuge.

Use of Refuge Trails to Circumvent The Fells Admission Fees
(Letter ID#: 12)

Comment: One individual stated concerns that visitors will use the connectivity of the trails between the Refuge and The Fells to circumvent the admission fees of the latter, that people will ignore any signs and that The Fells will lose revenue.

Response: It is not our intent to facilitate visitors' ability to circumvent admission fees at The Fells by using Refuge trails. Rather our intent is to increase the collaboration and connectivity between The Fells and the Refuge by sharing a new parking lot, having a seasonal employee stationed at the gatehouse or main house of The Fells, adding an alternate route for the John Hay II Forest Ecology Trail to allow visitors to return to the trailhead without entering The Fells' property, and establishing a new Partnership Agreement between The Fells and the Refuge. By constructing a trail section that returns to the trailhead entirely on Refuge property, visitors will be better informed of their options and can decide to continue on to The Fells property, for which there is admission, or to stay on the Refuge. Explanatory signage at the trailhead and at the point of entry to The Fells will be posted. Any substantive concerns about a potential decrease in revenue at The Fells resulting from visitors using Refuge trails to access The Fells without paying admission fees may be addressed in the new Partnership Agreement between us.

Administrative

Funding / Budget
(Letter ID#: 1, 3, 9)

Comment: The Service received comments expressing concerns about a lack of funding to implement management actions proposed in the CCP. One individual argued against "unnecessary expenses" for new staff, and another doubted that there would be sufficient visitor demand to support a seasonal staff member. Another individual expressed concerns about the lack of funding and/or resources to conduct water quality monitoring on Beech Brook.

Response: Management of Service lands is dependent on a variety of factors, many of which the Service does not have direct control over. Mainly, the Service receives its annual budget from Congress, which in turn drives regional and station budgets. In addition, temporary staff, volunteers, friends groups and partners can all contribute to maintaining refuge resources. It is also important to note that the John Hay

Refuge is part the Silvio O. Conte NFWR Complex, which has a full-time staff of 12.5 employees as well as approximately 10 short-term staff who also provide support for the Refuge. As described on page 4-22 of the CCP, we intend to continue our partnership with the LSPA to conduct water quality monitoring of Beech Brook. Appendix E of the CCP defines the Service's vision for Refuge staffing and Appendix D describes Refuge projects such as those proposed in the CCP that have been or will be submitted for funding.

Lack of Inclusion of Summer Residents' Input in Planning Process
(Letter ID#: 15)

Comment: One organization stated concerns that summer residents of the area did not have the opportunity to participate in the planning process and comment period.

Response: As a public agency, our planning documents are open and available to all who wish to comment on them. The availability of the draft CCP/EA for public comment was published in the *Federal Register*, a national publication, and on the internet at the Refuge's website (<http://www.fws.gov/northeast/planning/JohnHay/ccphome.html>). We also conducted two public meetings, one during the scoping phase held on October 9, 2008, at the Newbury Town Hall, and the other on March 11, 2010, also held at the Newbury Town Hall, to present the draft CCP/EA, answer questions and receive comments. Chapter 5 of the CCP describes the public outreach measures we used throughout the planning process, including notices about the public meeting(s) published in two local newspapers, mailings (including e-mail), press releases, postings on Service websites, and notices in the *Federal Register*. We also encouraged town officials from Newbury, Sunapee, and New London to post meeting information on their bulletin boards, and to forward them to interested parties.

Attachment 1— Letter and Comment ID Numbers and Respondents

<i>Letter or Comment ID Number</i>	<i>Name</i>
1	Janet Krueger
2	Jean Public
3	June Fichter, LSPA
4	Tanya Wilke
5	Terry Wheatley
6	Claire Martin
7	Bonnie Guterl
8	Robert Wood, LSPA
9	Liz Tentarelli
10	Margaret A. Whittemore
11	Katheryn C. Holmes
12	Bruce Crawford
13	Suzanne Levine
14	Charles Crickman
15	Newbury Conservation Commission
16	Dave Anderson, SPNHF
17	Fay and Dave Barden
18	Karen Zurheide, The Fells

Appendix G



Steve Maslowski/USFWS

Wood thrush

Finding of No Significant Impact (FONSI)

Finding of No Significant Impact

John Hay National Wildlife Refuge Comprehensive Conservation Plan

In February 2010, the U.S. Fish and Wildlife Service (Service) published the Draft Comprehensive Conservation Plan and Environmental Assessment (Draft CCP/EA) for John Hay National Wildlife Refuge (Refuge). The approved Refuge boundary covers approximately 80 forested acres on the shores of Lake Sunapee in Newbury, New Hampshire. John Hay Refuge is administered by staff from the Silvio O. Conte National Fish and Wildlife Refuge (Conte Refuge) located in Sunderland, Massachusetts. The John Hay Refuge Draft CCP/EA evaluates three alternatives for managing the Refuge over the next 15 years. It carefully considers their direct, indirect, and cumulative impacts on the environment and their potential contribution to the mission of the National Wildlife Refuge System (Refuge System). The Draft CCP/EA restates the Refuge's purposes, creates a vision for the next 15 years, and proposes three goals to be achieved through plan implementation. Alternative B is identified as the Service-preferred alternative. Chapter 3 in the draft plan details the respective goals, objectives, and strategies for each of the three alternatives. Chapter 4 describes the consequences of implementing those actions under each alternative. The draft plan's appendices provide additional information supporting the assessment and specific proposals in Alternative B. A brief overview of each alternative follows.

Alternative A (Current Management): The Council of Environmental Quality regulations on implementing the National Environmental Policy Act (NEPA) require this "No Action" alternative, which we define as current management. Alternative A includes our existing Refuge programs and activities and serves as the baseline against which to compare the other alternatives. Under Alternative A, we would continue to passively manage Refuge lands through collaboration with partners. The Service would have minimal presence. Habitat management would be limited to promoting visitor safety (e.g., dropping snags that pose a threat along the Ecology Trail) and responding to invasive plants or animals that can impact habitat integrity or priority wildlife. No other active wildlife or habitat management would occur except the existing mowing of the meadow and viewing corridor, which provides early succession forest habitat. Minimal coordination with The Fells, Forest Society, Lake Sunapee Protective Association, and New Hampshire Audubon for wildlife, water quality and habitat protection would continue on an as-needed basis. The current level and types of visitor services would continue on the Refuge. Administration of visitor services, land protection, biological and law enforcement activities would be handled by existing staff from the Conte Refuge. We would maintain minimal visitor services, biological program management, and law enforcement. These activities would continue to be administered from the Sunderland office as funds and staffing permit.

Alternative B (the Service-preferred alternative): This alternative includes an array of management actions that, in our professional judgment, work best toward achieving the purposes of the Refuge, our vision and goals for those lands, the Refuge System mission, and the goals in State and regional conservation plans. Under Alternative B, we would emphasize the management of specific Refuge habitats to support focal species whose habitat needs benefit other species of conservation concern in the Lake Sunapee region. In particular, we would emphasize habitat for priority bird species of conservation concern in the Bird Conservation Region 14 and Partners In Flight Physiographic Area 27 plans, New Hampshire Wildlife Action Plan, Birds of Conservation Concern 2008, and other conservation plans at State and national scales. We would strive to integrate the habitat management objectives for species of concern with maintaining the cultural heritage of the former John Hay estate. In addition, we would focus on making improvements to our visitor services through the addition of seasonal on-site staff, fishing as an approved public use, and a minor expansion of our trail system on the Refuge. We would construct an alternate route for the John Hay II Forest Ecology Trail to allow visitors to return to the trailhead without entering The Fells' property, post explanatory

signage at the trailhead and at the point of entry to The Fells, install a kiosk at the trailhead and interpretive and informational signs throughout the Refuge to incrementally increase visitor awareness of Refuge resources, add a spur trail to the fen and back, with informational signage on the ecology of fens, and install a footbridge(s) where stream crossing of Beech Brook is a concern for public safety and stream health. Finally, our biological program would be enhanced through partnerships that would increase our ability to conduct surveys and long-term monitoring.

Alternative C: Alternative C is similar in many respects to Alternative B, but proposes more intensive forest management and wildlife dependent recreation, with a philosophy of maintaining the character and history of the forest, to the extent that it does not compromise the Refuge purposes and goals. Generally, white pine (*Pinus strobus*) and other native species would be encouraged to regenerate. The addition of permanent staff would enhance the visitor services program through a much broader array of programming and outreach. In addition to the trail and signage improvements proposed with Alternative B, under Alternative C we would improve the Ecology Trail to be compliant with the Americans with Disabilities Act (ADA) and lead to a viewing platform at the lakeshore. Both fishing and hunting would be added as new public uses at the Refuge. Biological programs would incorporate more surveys and the ability to conduct habitat improvements.

We distributed the Draft CCP/EA for a 30-day period of public review and comment from February 18 to March 22, 2010, and held a public meeting on March 11, 2010, in Newbury, NH. We received 18 unique letters and oral comments representing individuals, organizations, and State agencies. Appendix F in the final CCP includes a summary of those comments and our responses to them.

After reviewing the proposed management actions, and considering all public comments and our responses to them, I have determined that the analysis in the EA is sufficient to support my findings. I am selecting Alternative B, as presented in the Draft CCP/EA with the minor changes listed below, to implement as the final CCP. Changes we made in the final CCP are:

1. We clarified that the shoreline will be monitored for impacts related to angler access once the fishing program is implemented (Chapter 4 of the final CCP, pages 4-26 and 4-27).
2. We inserted language in the strategies to implement Objective 2.2 (Chapter 4 of the final CCP, page 4-27) that we will consult with the Town of Newbury, New Hampshire, the Department of Transportation and the New Hampshire State Historic Preservation Office to ensure that the new angler parking area will be safe and will minimize effects to cultural and historical resources.
3. We revised the language in the draft CCP which stated we will pursue a new Memorandum of Understanding with The Fells. We replaced the language “MOU” with “Partnership Agreement” in the final CCP.
4. We made minor edits to some of the Findings of Appropriateness in Appendix B to include more recent justification(s) language.
5. We updated the staffing chart in Appendix E to reflect current staffing personnel.
6. We corrected all format and typographical errors that were brought to our attention.

I concur that Alternative B, with the above changes and in comparison to the other two alternatives, will: best fulfill the mission of the Refuge System; best achieve the Refuge’s purposes, vision, and goals; best maintain and, where appropriate, restore the Refuge’s ecological integrity; best address the major issues identified during the planning process; and is most consistent with the principles of sound fish and wildlife management. Specifically, in comparison to the other two alternatives, Alternative B would make an important contribution to conserving Federal trust resources of concern in northern New England forests and maintaining the cultural heritage of the area. It also provides the most reasonable and effective improvements to existing public use programs with minimal impacts to wildlife and habitats. The plans to increase staffing and develop new infrastructure are reasonable, practicable, and will result in the most

efficient management of the Refuge and best serve the American public. This Finding of No Significant impact incorporates the EA by reference.

I have reviewed the predicted beneficial and adverse impacts associated with Alternative B that are presented in Chapter 4 of the Draft CCP/EA, and compared them to the other alternatives. I specifically reviewed the context and intensity of those predicted impacts over the short- and long-term, and considered cumulative effects.

Socio-economic, natural and cultural resource, and visitor impacts would be generally positive or negligible over the long-term. Regarding socio-economic impacts, no additional Service land acquisition is planned, so there would be no negative effects on local property tax revenues. In addition, Refuge revenue sharing payments would continue. The predicted 15 percent annual increase in Refuge visitation due to visitor infrastructure and program enhancements would provide a minimal net benefit to the local economy over the next 15 years. This is based on the fact that labor and materials purchases would be from local vendors to the extent possible, and visitors are likely to make local purchases in conjunction with their visit. Regarding natural resources, some impacts are expected to soils and vegetation from trail relocations and improvements; however, the long-term impacts would be limited in scope and scale to the designated trail footpaths. Importantly, the John Hay trail relocation would move the trail away from more sensitive riparian habitat to a more upland location. No other wetlands are impacted by the proposed actions. Setting back succession on up to three acres to enhance existing meadow habitat may have some short-term, temporary impacts to soils and water quality during management activities, but would provide long-term benefits to habitat diversity and species of conservation concern. Some wildlife would be temporarily disturbed or displaced during trail and meadow enhancement work, but no major impact to local populations of any species is predicted. Regarding visitor impacts, the planned infrastructure improvements, coupled with opening the Refuge to new fishing opportunities and hiring seasonal staff to improve outreach and education, are long-term benefits that would help satisfy demand and public expectations. No conflict among user groups, or with Refuge neighbors, is predicted.

In summary, my evaluation concludes that implementing Alternative B would not result in any concerns with public health or safety, nor result in adverse implications to any unique cultural or natural characteristics of the geographic area, including wetlands or federally listed species. I have considered how the proposed actions would interact with other past, present, or reasonably foreseeable future actions to determine there is no major cumulative impact. I find that implementing Alternative B adheres to all legal mandates and Service policies, and will not have a significant impact on the quality of the human environment, in accordance with Section 102(2)(c) of NEPA. Therefore, I have concluded that an Environmental Impact Statement is not required, and this Finding of No Significant Impact is appropriate and warranted.

Sherry M. Morgan
Acting Marvin E. Moriarty
Regional Director, Region 5
U.S. Fish and Wildlife Service

6/24/2010
Date

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